

Kingbright

Optoelectronic Components

HIGH BRIGHTNESS LEDs

0.5W

1W

5W/7W

10W

2

3

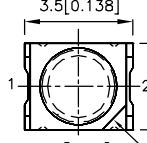
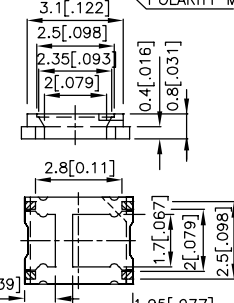
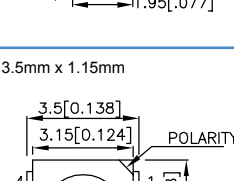
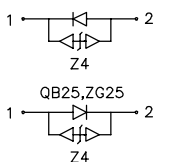
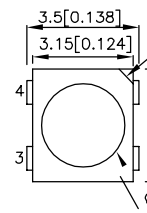
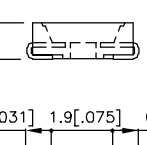
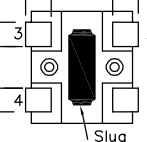
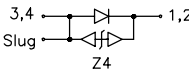
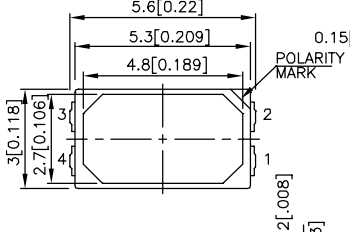
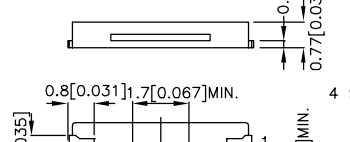
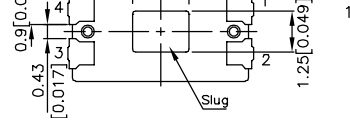
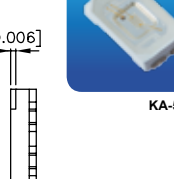
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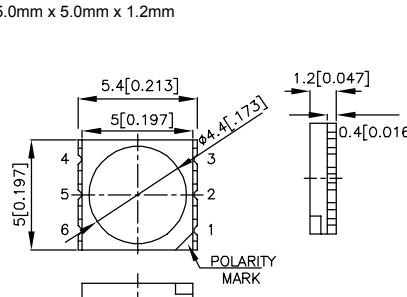
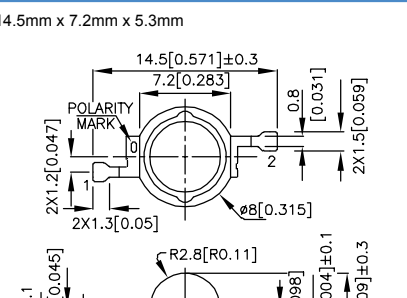
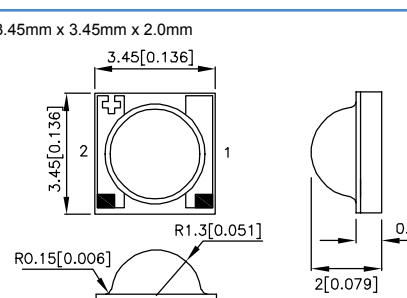
■ Quality ■ Efficiency ■ Service ■ Innovation

2013-2015

0.5W

Part Number	Material	λ_D (nm)	Lens Type	Pd (W)	Φ_V (lm) @150mA *120mA	Viewing Angle	Dimension
					Typ.	2 θ /2	
KA-3529ASELZ4S	AlGaInP	618	water clear	0.5	11	120°	3.5mm x 2.8mm x 0.8mm     Units : mm(inch) Tolerance : $\pm 0.25(0.01)$
KA-3529ASYLZ4S	AlGaInP	590	water clear	0.5	12	120°	
KA-3529AZG25Z4S	InGaN	525	water clear	0.5	20	120°	
KA-3529AQB25Z4S	InGaN	450	water clear	0.5	4.5	120°	
KA-3535SELZ4S	AlGaInP	618	water clear	0.5	11	120°	3.5mm x 3.5mm x 1.15mm     Units : mm(inch) Tolerance : $\pm 0.25(0.01)$
KA-3535SYLZ4S	AlGaInP	590	water clear	0.5	12	120°	
KA-3535ZG25Z4S	InGaN	525	water clear	0.5	20	120°	
KA-3535QB25Z4S	InGaN	450	water clear	0.5	3.5	120°	
KA-5630SELZ4S	AlGaInP	618	water clear	0.5	12	120°	5.6mm x 3.0mm x 0.77mm     Units : mm(inch) Tolerance : $\pm 0.25(0.01)$
KA-5630SYLZ4S	AlGaInP	590	water clear	0.5	14	120°	
KA-5630ZG25Z4S	InGaN	525	water clear	0.5	27	120°	
KA-5630VB38Z4S	InGaN	450	water clear	0.5	*4	120°	

1W

Part Number	Material	λ_D (nm)	Lens Type	Pd (W)	Φ_V (lm) @350mA	Viewing Angle	Dimension
KAAF-5052XSE9Z4XS	AlGaInP	623	water clear	1	42	120°	5.0mm x 5.0mm x 1.2mm 
KAAF-5052XSY9Z4XS	AlGaInP	591	water clear	1	35	120°	
KAAF-5052XZG10Z4XS	AlGaInN	530	water clear	1	65	120°	
KAAF-5052XQB14Z4XS	InGaIn	460	water clear	1	20	120°	
KADS-8072SE9Z4S	AlGaInP	623	water clear	1	47	150°	14.5mm x 7.2mm x 5.3mm 
KADS-8072SY9Z4S	AlGaInP	591	water clear	1	42	150°	
KADS-8072ZG10Z4S	AlGaInN	530	water clear	1	75	150°	
KADS-8072QB14Z4S	InGaIn	460	water clear	1	23	150°	
KTDS-3535SE9Z4S	AlGaInP	623	water clear	1	53	110°	3.45mm x 3.45mm x 2.0mm 
KTDS-3535SY9Z4S	AlGaInP	591	water clear	1	50	110°	
KTDS-3535ZG10Z4S	AlGaInN	530	water clear	1	75	110°	
KTDS-3535QB14Z4S	InGaIn	460	water clear	1	18	110°	

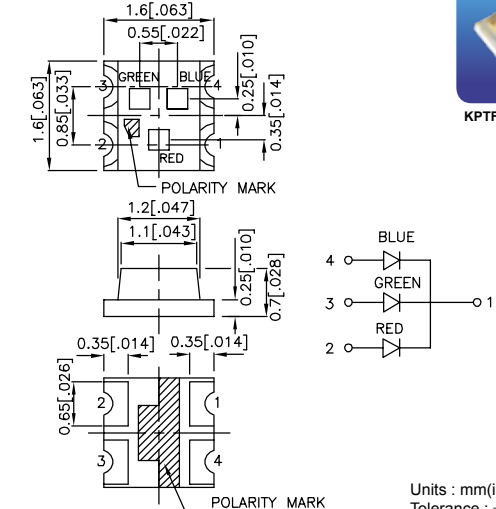
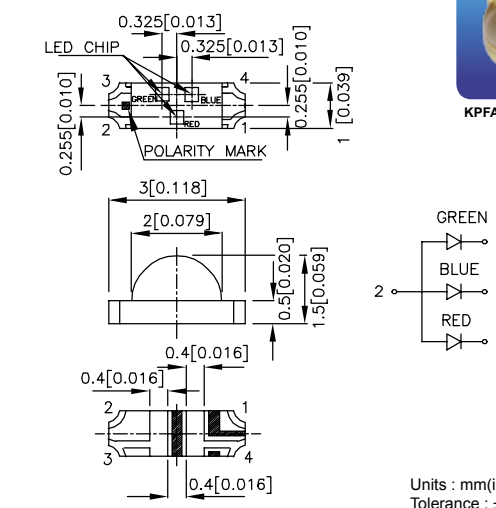
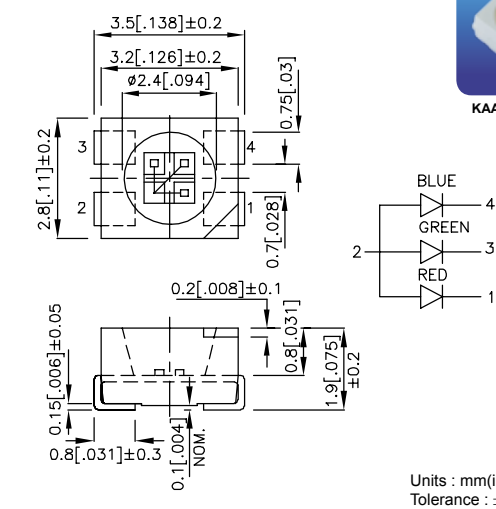
Kingbright

Optoelectronic Components

SMD LED

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RGB SMD LED

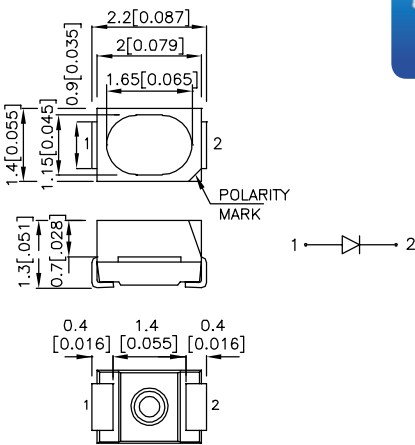
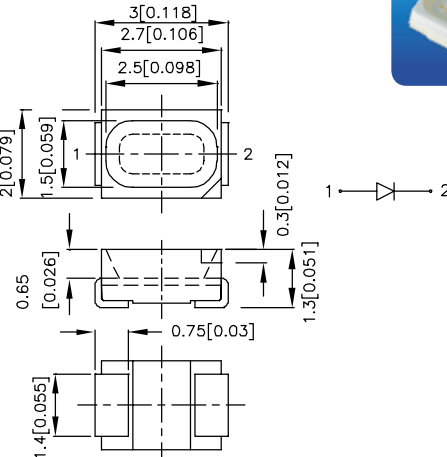
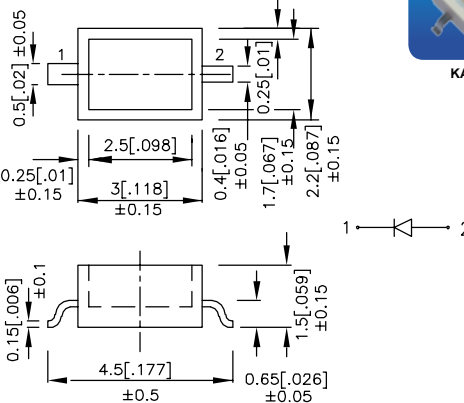
Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @20mA		Viewing Angle 2 θ 1/2	Dimension
				Min.	Typ.		
KPTF-1616RGBC-13	AlGaInP	625	water clear	200	360	120°	1.6mm x 1.6mm x 0.7mm  Units : mm(inch) Tolerance : $\pm 0.2(0.008)$
	InGaIn	525		500	750		
	InGaIn	470		80	140		
KPFA-3010RGBC-11	AlGaInP	621	water clear	80	140	120°	3.0mm x 1.0mm x 1.5mm  Units : mm(inch) Tolerance : $\pm 0.2(0.008)$
	InGaIn	525		200	300		
	InGaIn	465		40	70		
KAA-3528RGS-11	AlGaInP	621	Water Clear	120	220	120°	3.5mm x 2.8mm x 1.9mm  Units : mm(inch) Tolerance : $\pm 0.25(0.01)$
	InGaIn	525		400	500		
	InGaIn	465		55	100		

RGB SMD LED

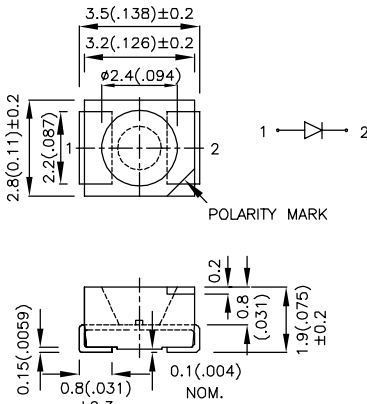
Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @20mA		Viewing Angle 2 θ 1/2	Dimension
				Min.	Typ.		
KAAF-3529RGBS-11-C3	AlGaInP	621	Water Clear	80	180	120°	3.5mm x 2.8mm x 1.8mm KAAF-3529-11-C3 Units : mm(inch) Tolerance : ±0.2(0.008)
	InGaN	525		400	580		
	InGaN	465		80	130		

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @30mA *50mA		Viewing Angle 2 θ 1/2	Dimension
				Min.	Typ.		
KAAF-5050RGBS-13	AlGaInP	625	water clear	*1000	*1400	120°	5.0mm x 5.0mm x 1.5mm KAAF-5050RGBS-13 Units : mm(inch) Tolerance : ±0.2(0.008)
	InGaN	525		1000	1400		
	InGaN	470		300	420		

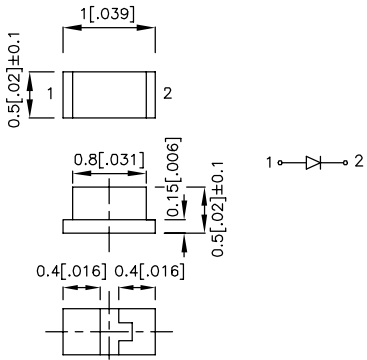
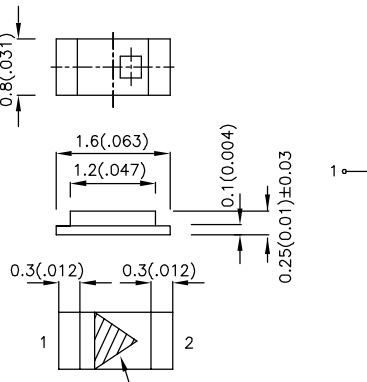
TOP-EMITTING PLCC SMD LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @20mA		Viewing Angle	Dimension
				Min.	Typ.		
KA-2214SURSK	AlGaInP	630	water clear	55	100	120°	2.2mm x 1.4mm x 1.3mm  KA-2214 Units : mm(inch) Tolerance : ±0.2(0.008)
KA-2214SESK	AlGaInP	601	water clear	80	180	120°	
KA-2214SYSK	AlGaInP	590	Water Clear	120	250	120°	
KA-2214CGSK	AlGaInP	570	water clear	40	70	120°	
KA-2214ZGS	InGaIn	525	water clear	400	700	120°	
KA-2214QBS-D	InGaIn	465	water clear	80	150	120°	
KA-2214VBS-D	InGaIn	470	water clear	120	280	120°	
KA-3021ES	GaAsP/GaP	617	water clear	8	18	125°	3.0mm x 2.0 mm x 1.3mm  KA-3021 Units : mm(inch) Tolerance : ±0.2(0.08)
KA-3021SURSK	AlGaInP	630	water clear	40	90	125°	
KA-3021SESK	AlGaInP	601	water clear	120	300	125°	
KA-3021YS	GaAsP/GaP	588	water clear	8	15	125°	
KA-3021SYSK	AlGaInP	590	water clear	120	200	125°	
KA-3021SGS	GaP	568	water clear	12	20	125°	
KA-3021CGSK	AlGaInP	570	water clear	40	80	125°	
KA-3021ZGS	InGaIn	525	water clear	400	800	125°	3.0mm x 2.2mm x 1.5mm  KA-3022-4.5SF Units : mm(inch) Tolerance : ±0.25(0.01)
KA-3022SURSK-4.5SF	AlGaInP	630	water clear	40	80	120°	
KA-3022SESK-4.5SF	AlGaInP	601	water clear	80	150	120°	
KA-3022SYSK-4.5SF	AlGaInP	590	water clear	120	200	120°	
KA-3022CGSK-4.5SF	AlGaInP	570	water clear	40	80	120°	
KA-3022ZGS-4.5SF	InGaIn	525	water clear	400	600	120°	
KA-3022QBS-D-4.5SF	InGaIn	465	water clear	80	120	120°	
KA-3022VBS-D-4.5SF	InGaIn	470	water clear	200	450	120°	

TOP-EMITTING PLCC SMD LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @20mA		Viewing Angle 2 θ 1/2	Dimension
				Min.	Typ.		
KA-3528SURCKT	AlGaInP	630	water clear	55	100	120°	3.5mm x 2.8mm x 1.9mm  Units : mm(inch) Tolerance : ±0.25(0.01)
KA-3528SECKT	AlGaInP	601	water clear	120	230	120°	
KA-3528SYCKT	AlGaInP	590	water clear	80	200	120°	
KA-3528CGCKT	AlGaInP	570	water clear	40	100	120°	
KA-3528ZGCT	InGaN	525	water clear	400	600	120°	
KA-3528QBS-D	InGaN	465	water clear	80	150	120°	
KA-3528VBS-D	InGaN	470	water clear	300	450	120°	

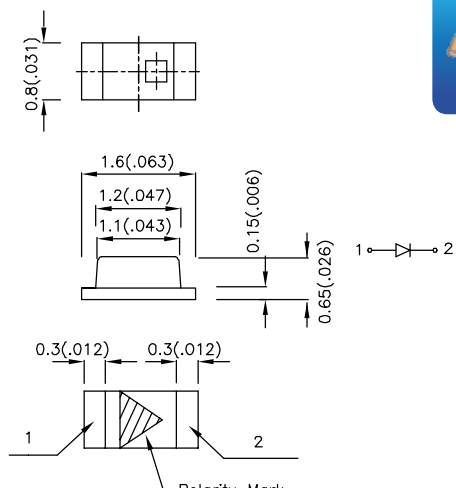
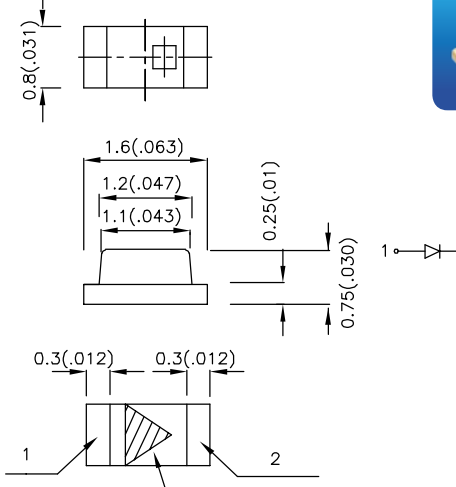
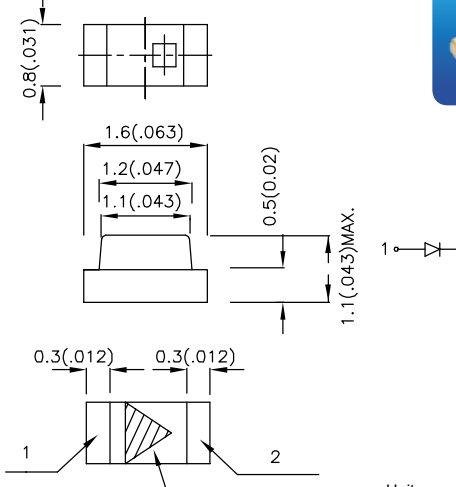
TOP-EMITTING CHIP SMD LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @20mA		Viewing Angle 2 θ 1/2	Dimension
				Min.	Typ.		
KPHHS-1005SURCK	AlGaInP	630	water clear	40	70	120°	1.0mm x 0.5mm x 0.5mm (0402)  Units : mm(inch) Tolerance : ±0.1(0.004)
KPHHS-1005SECK	AlGaInP	601	water clear	80	150	120°	
KPHHS-1005SYCK	AlGaInP	590	water clear	80	150	120°	
KPHHS-1005CGCK	AlGaInP	570	water clear	20	50	120°	
KPHHS-1005ZGC-V	InGaN	525	water clear	200	450	120°	
KPHHS-1005QBC-D-V	InGaN	465	water clear	40	60	120°	
KPG-1608SURKC-T	AlGaInP	630	water clear	55	110	120°	1.6mm x 0.8mm x 0.25mm (0603)  Units : mm(inch) Tolerance : ±0.1(0.004)
KPG-1608SEKC-T	AlGaInP	601	water clear	55	100	120°	
KPG-1608SYKC-T	AlGaInP	590	water clear	55	120	120°	
KPG-1608CGKC-T	AlGaInP	570	water clear	20	50	120°	
KPG-1608ZGC	InGaN	525	water clear	200	400	120°	
KPG-1608QBC-D	InGaN	465	water clear	40	100	120°	
KPG-1608VBC-D	InGaN	470	water clear	120	200	120°	

NOTE:

1.KP series custom-made is available upon request.

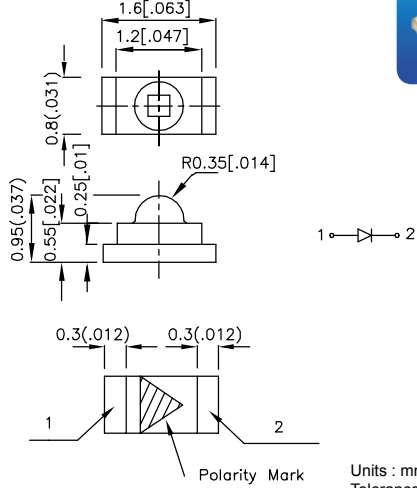
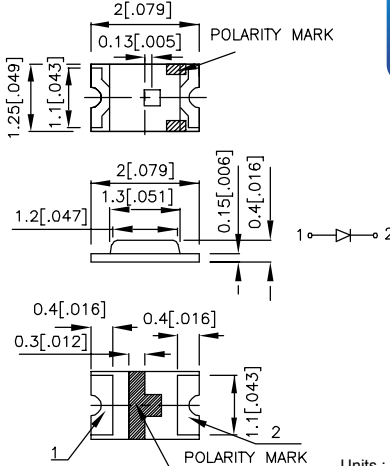
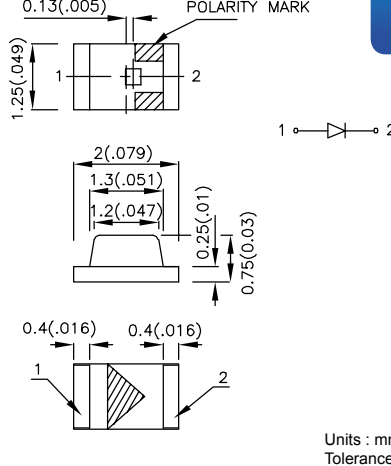
TOP-EMITTING CHIP SMD LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @20mA		Viewing Angle 2 θ 1/2	Dimension
				Min.	Typ.		
KPH-1608EC	GaAsP/GaP	617	water clear	3	8	120°	1.6mm x 0.8mm x 0.65mm (0603)  Units : mm(inch) Tolerance : $\pm 0.1(0.004)$
KPH-1608SURCK	AlGaInP	630	water clear	40	80	120°	
KPH-1608SECK	AlGaInP	601	water clear	80	180	120°	
KPH-1608YC	GaAsP/GaP	588	water clear	3	8	120°	
KPH-1608SYCK	AlGaInP	590	water clear	80	150	120°	
KPH-1608SGC	GaP	568	water clear	5	12	120°	
KPH-1608CGCK	AlGaInP	570	water clear	20	50	120°	
KPH-1608ZGC	InGaN	525	water clear	200	400	120°	
KPH-1608QBC-D	InGaN	465	water clear	40	100	120°	
KPH-1608VBC-D	InGaN	470	water clear	120	180	120°	
KPT-1608EC	GaAsP/GaP	617	water clear	3	8	120°	1.6mm x 0.8mm x 0.75mm (0603)  Units : mm(inch) Tolerance : $\pm 0.1(0.004)$
KPT-1608SURCK	AlGaInP	630	water clear	40	80	120°	
KPT-1608SECK	AlGaInP	601	water clear	80	180	120°	
KPT-1608YC	GaAsP/GaP	588	water clear	3	8	120°	
KPT-1608SYCK	AlGaInP	590	water clear	80	150	120°	
KPT-1608SGC	GaP	568	water clear	5	12	120°	
KPT-1608CGCK	AlGaInP	570	water clear	20	50	120°	
KPT-1608ZGC	InGaN	525	water clear	200	400	120°	
KPT-1608QBC-D	InGaN	465	water clear	40	100	120°	
KPT-1608VBC-D	InGaN	470	water clear	120	180	120°	
KP-1608EC	GaAsP/GaP	617	water clear	3	8	120°	1.6mm x 0.8mm x 1.1mm (0603)  Units : mm(inch) Tolerance : $\pm 0.1(0.004)$
KP-1608SURCK	AlGaInP	630	water clear	40	80	120°	
KP-1608SECK	AlGaInP	601	water clear	80	180	120°	
KP-1608YC	GaAsP/GaP	588	water clear	3	8	120°	
KP-1608SYCK	AlGaInP	590	water clear	80	150	120°	
KP-1608SGC	GaP	568	water clear	5	12	120°	
KP-1608CGCK	AlGaInP	570	water clear	20	50	120°	
KP-1608ZGC	InGaN	525	water clear	200	400	120°	
KP-1608QBC-D	InGaN	465	water clear	40	100	120°	
KP-1608VBC-D	InGaN	470	water clear	120	180	120°	

NOTE:

1.KP series custom-made is available upon request.

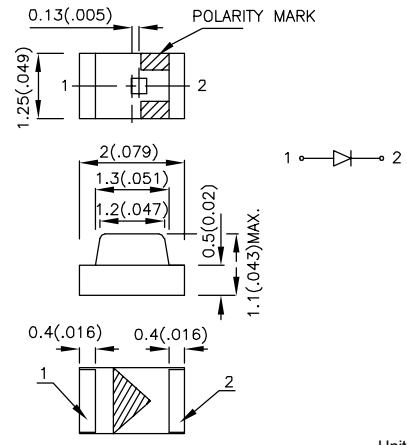
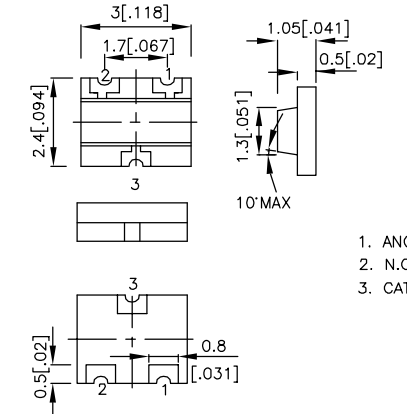
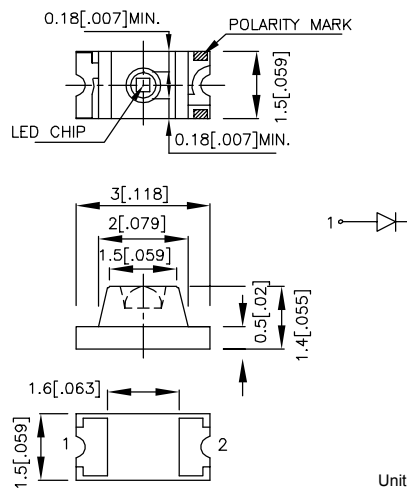
TOP-EMITTING CHIP SMD LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @20mA		Viewing Angle 2 θ 1/2	Dimension
				Min.	Typ.		
KPTD-1608SURCK	AlGaInP	630	water clear	80	250	60°	1.6mm x 0.8mm x 0.95mm (Dome Lens)  KPTD-1608 Units : mm(inch) Tolerance : $\pm 0.15(0.006)$
KPTD-1608SECK	AlGaInP	601	water clear	200	500	60°	
KPTD-1608SYCK	AlGaInP	590	water clear	200	450	60°	
KPTD-1608CGCK	AlGaInP	570	water clear	80	190	60°	
KPTD-1608ZGC	InGaN	525	water clear	500	1000	60°	
KPTD-1608ZGC-G	InGaN	525	water clear	700	1300	60°	
KPTD-1608QBC-D	InGaN	465	water clear	80	200	40°	
KPTD-1608QBC-G	InGaN	465	water clear	200	350	40°	
KPHCM-2012SURCK	AlGaInP	630	water clear	40	80	110°	2.0mm x 1.25mm x 0.4mm (0805)  KPHCM-2012 Units : mm(inch) Tolerance : $\pm 0.1(0.004)$
KPHCM-2012SECK	AlGaInP	601	water clear	80	180	110°	
KPHCM-2012SYCK	AlGaInP	590	water clear	80	150	110°	
KPHCM-2012CGCK	AlGaInP	570	water clear	20	50	110°	
KPHCM-2012ZGC	InGaN	525	water clear	200	400	110°	
KPHCM-2012QBC-D	InGaN	465	water clear	40	100	110°	
KPHCM-2012VBC-D	InGaN	470	water clear	120	180	110°	
KPT-2012EC	GaAsP/GaP	617	water clear	3	8	120°	2.0mm x 1.25mm x 0.75mm (0805)  KPT-2012 Units : mm(inch) Tolerance : $\pm 0.1(0.004)$
KPT-2012SURCK	AlGaInP	630	water clear	40	80	120°	
KPT-2012SECK	AlGaInP	601	water clear	80	180	120°	
KPT-2012YC	GaAsP/GaP	588	water clear	3	8	120°	
KPT-2012SYCK	AlGaInP	590	water clear	80	150	120°	
KPT-2012SGC	GaP	568	water clear	5	12	120°	
KPT-2012CGCK	AlGaInP	570	water clear	20	50	120°	
KPT-2012ZGC	InGaN	525	water clear	200	400	120°	
KPT-2012QBC-D	InGaN	465	water clear	40	100	120°	
KPT-2012VBC-D	InGaN	470	water clear	120	180	120°	

NOTE:

1.KP series custom-made is available upon request.

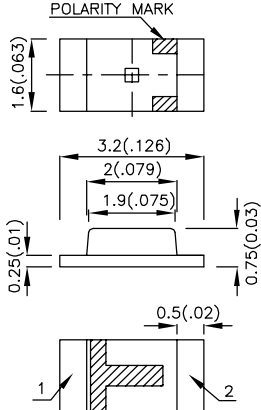
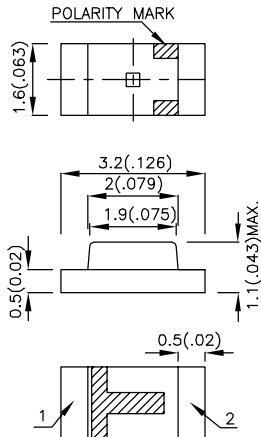
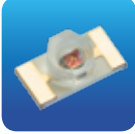
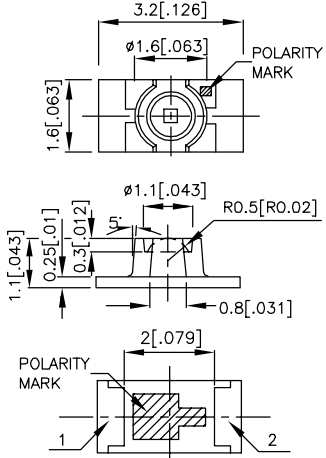
TOP-EMITTING CHIP SMD LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @20mA		Viewing Angle 2 θ 1/2	Dimension
				Min.	Typ.		
KP-2012EC	GaAsP/GaP	617	water clear	3	8	120°	2.0mm x 1.25mm x 1.1mm (0805)  KP-2012  Units : mm(inch) Tolerance : $\pm 0.1(0.004)$
KP-2012SURCK	AlGaInP	630	water clear	40	80	120°	
KP-2012SECK	AlGaInP	601	water clear	80	180	120°	
KP-2012YC	GaAsP/GaP	588	water clear	3	8	120°	
KP-2012SYCK	AlGaInP	590	water clear	80	150	120°	
KP-2012SGC	GaP	568	water clear	5	12	120°	
KP-2012CGCK	AlGaInP	570	water clear	20	50	120°	
KP-2012ZGC	InGaN	525	water clear	200	400	120°	
KP-2012QBC-D	InGaN	465	water clear	40	100	120°	
KP-2012VBC-D	InGaN	470	water clear	120	180	120°	
KP-23SURCK-F	AlGaInP	630	water clear	40	70	120°	3.0mm x 2.4mm x 1.05mm  KP-23-F  Units : mm(inch) Tolerance : $\pm 0.2(0.008)$
KP-23SECK-F	AlGaInP	601	water clear	120	230	120°	
KP-23SYCK-F	AlGaInP	590	water clear	80	150	120°	
KP-23CGCK-F	AlGaInP	570	water clear	20	50	120°	
KP-23ZGC-F	InGaN	525	water clear	200	400	120°	
KP-23QBC-D-F	InGaN	465	water clear	55	100	120°	
KP-23VBC-D-F	InGaN	470	water clear	120	180	120°	3.0mm x 1.5mm x 1.4mm (1106)  KPL-3015  Units : mm(inch) Tolerance : $\pm 0.2(0.008)$
KPL-3015EC	GaAsP/GaP	617	water clear	5	12	70°	
KPL-3015SURCK	AlGaInP	630	water clear	120	180	70°	
KPL-3015SECK	AlGaInP	601	water clear	120	350	70°	
KPL-3015SYCK	AlGaInP	590	water clear	200	350	70°	
KPL-3015YC	GaAsP/GaP	588	water clear	8	14	70°	
KPL-3015SGC	GaP	568	water clear	8	18	70°	
KPL-3015CGCK	AlGaInP	570	water clear	55	120	70°	
KPL-3015ZGC	InGaN	525	water clear	500	800	70°	
KPL-3015QBC-D	InGaN	465	water clear	120	200	70°	
KPL-3015VBC-D	InGaN	470	water clear	300	400	70°	

NOTE:

1.KP series custom-made is available upon request.

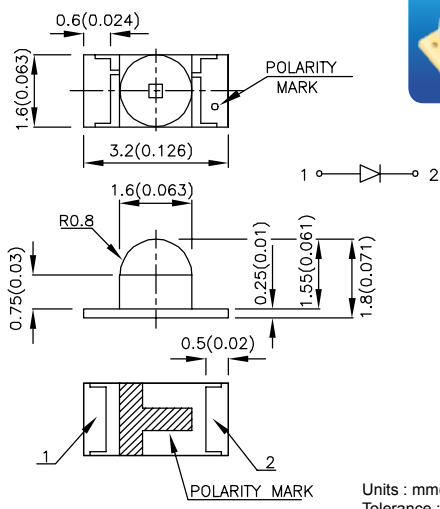
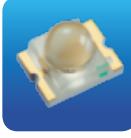
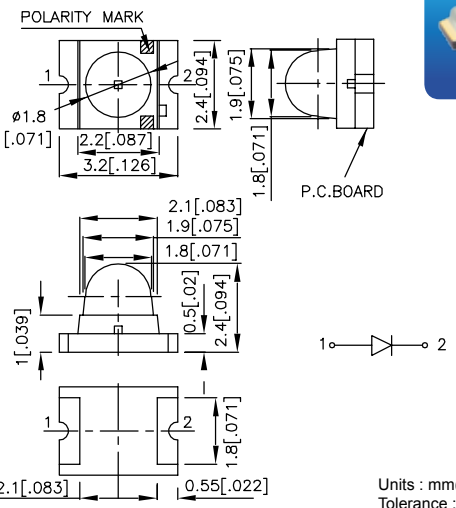
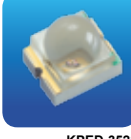
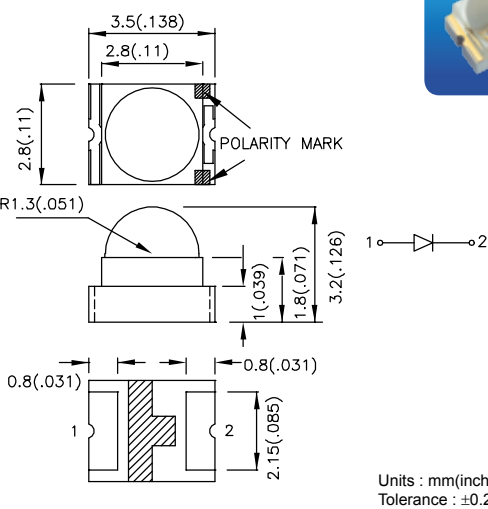
TOP-EMITTING CHIP SMD LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @20mA		Viewing Angle	Dimension
				Min.	Typ.		
KPT-3216EC	GaAsP/GaP	617	water clear	3	8	120°	3.2mm x 1.6mm x 0.75mm (1206)  KPT-3216  Units : mm(inch) Tolerance : $\pm 0.2(0.008)$
KPT-3216SURCK	AlGaInP	630	water clear	40	80	120°	
KPT-3216SECK	AlGaInP	601	water clear	80	180	120°	
KPT-3216YC	GaAsP/GaP	588	water clear	3	8	120°	
KPT-3216SYCK	AlGaInP	590	water clear	80	150	120°	
KPT-3216SGC	GaP	568	water clear	5	12	120°	
KPT-3216CGCK	AlGaInP	570	water clear	20	50	120°	
KPT-3216ZGC	InGaN	525	water clear	200	400	120°	
KPT-3216QBC-D	InGaN	465	water clear	40	100	120°	
KPT-3216VBC-D	InGaN	470	water clear	120	180	120°	
KP-3216EC	GaAsP/GaP	617	water clear	3	8	120°	3.2mm x 1.6mm x 1.1mm (1206)  KP-3216  Units : mm(inch) Tolerance : $\pm 0.2(0.008)$
KP-3216SURCK	AlGaInP	630	water clear	40	80	120°	
KP-3216SECK	AlGaInP	601	water clear	80	180	120°	
KP-3216YC	GaAsP/GaP	588	water clear	3	8	120°	
KP-3216SYCK	AlGaInP	590	water clear	80	150	120°	
KP-3216SGC	GaP	568	water clear	5	12	120°	
KP-3216CGCK	AlGaInP	570	water clear	20	50	120°	
KP-3216ZGC	InGaN	525	water clear	200	400	120°	
KP-3216QBC-D	InGaN	465	water clear	40	100	120°	
KP-3216VBC-D	InGaN	470	water clear	120	180	120°	
KPTL-3216SURCK	AlGaInP	630	water clear	120	230	70°	3.2mm x 1.6mm x 1.1mm (1206)  KPTL-3216  Units : mm(inch) Tolerance : $\pm 0.1(0.004)$
KPTL-3216SECK	AlGaInP	601	water clear	200	350	70°	
KPTL-3216SYCK	AlGaInP	590	water clear	200	350	70°	
KPTL-3216CGCK	AlGaInP	570	water clear	55	100	70°	
KPTL-3216ZGC	InGaN	525	water clear	500	1100	70°	
KPTL-3216ZGC-G	InGaN	525	water clear	700	1500	70°	
KPTL-3216QBC-D	InGaN	465	water clear	80	250	70°	
KPTL-3216VBC-D	InGaN	470	water clear	400	600	70°	

NOTE:

1.KP series custom-made is available upon request.

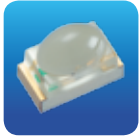
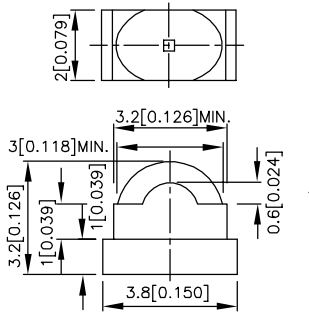
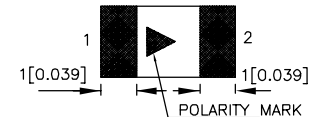
TOP-EMITTING CHIP SMD LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @20mA		Viewing Angle 2 θ 1/2	Dimension
				Min.	Typ.		
KPTD-3216SURCK	AlGaInP	630	water clear	300	800	35°	3.2mm x 1.6mm x 1.8mm (1206 Dome Lens)  KPTD-3216  Units : mm(inch) Tolerance : $\pm 0.2(0.008)$
KPTD-3216SECK	AlGaInP	601	water clear	500	1000	35°	
KPTD-3216SYCK	AlGaInP	590	water clear	700	800	35°	
KPTD-3216CGCK	AlGaInP	570	water clear	120	300	35°	
KPTD-3216ZGC	InGaN	525	water clear	1300	2300	35°	
KPTD-3216ZGC-G	InGaN	525	water clear	3100	4200	35°	
KPTD-3216QBC-D	InGaN	465	water clear	300	700	35°	
KPTD-3216VBC-D	InGaN	470	water clear	700	1200	35°	
KPD-3224SURCK	AlGaInP	630	water clear	700	1500	20°	3.2mm x 2.4mm x 2.4mm (Dome Lens)  KPD-3224  Units : mm(inch) Tolerance : $\pm 0.1(0.004)$
KPD-3224SECK	AlGaInP	601	water clear	1000	1600	20°	
KPD-3224SYCK	AlGaInP	590	water clear	1000	1300	20°	
KPD-3224CGCK	AlGaInP	570	water clear	400	600	20°	
KPD-3224ZGC	InGaN	525	water clear	1900	3000	20°	
KPD-3224ZGC-G	InGaN	525	water clear	3600	6000	20°	
KPD-3224QBC-D	InGaN	465	water clear	400	800	20°	
KPD-3224QBC-G	InGaN	465	water clear	700	1400	20°	
KPD-3224VBC-D	InGaN	470	water clear	1600	2000	20°	
KPED-3528SURCK	AlGaInP	630	water clear	120	250	40°	3.5mm x 2.8mm x 3.2mm (Dome Lens)  KPED-3528  Units : mm(inch) Tolerance : $\pm 0.2(0.008)$
KPED-3528SECK	AlGaInP	601	water clear	400	700	40°	
KPED-3528SYCK	AlGaInP	590	water clear	300	500	40°	
KPED-3528CGCK	AlGaInP	570	water clear	80	200	40°	
KPED-3528ZGC	InGaN	525	water clear	1000	1600	40°	
KPED-3528ZGC-G	InGaN	525	water clear	1900	3200	40°	
KPED-3528QBC-D	InGaN	465	water clear	300	400	40°	
KPED-3528QBC-G	InGaN	465	water clear	500	800	40°	
KPED-3528VBC-D	InGaN	470	water clear	500	750	40°	

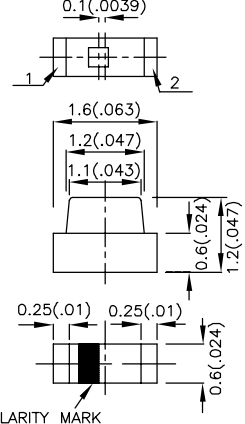
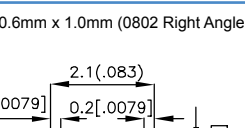
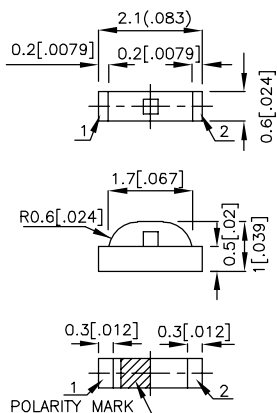
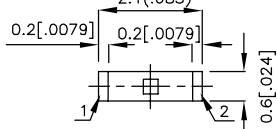
NOTE:

1.KP series custom-made is available upon request.

TOP-EMITTING CHIP SMD LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @20mA		Viewing Angle 2 θ 1/2	Dimension
				Min.	Typ.		
KPED-3820SURCK	AlGaInP	630	water clear	120	350	60°(H) 35°(V)	3.8mm x 2.0mm x 3.2mm (Dome Lens)  KPED-3820   Units : mm(inch) Tolerance : $\pm 0.2(0.008)$
KPED-3820SECK	AlGaInP	601	water clear	300	600	60°(H) 35°(V)	
KPED-3820SYCK	AlGaInP	590	water clear	200	400	60°(H) 35°(V)	
KPED-3820CGCK	AlGaInP	570	water clear	80	150	60°(H) 35°(V)	
KPED-3820ZGC	InGaIn	525	water clear	700	1300	60°(H) 35°(V)	
KPED-3820ZGC-G	InGaIn	525	water clear	1900	2700	60°(H) 35°(V)	
KPED-3820QBC-D	InGaIn	465	water clear	120	250	60°(H) 35°(V)	
KPED-3820QBC-G	InGaIn	465	water clear	400	600	60°(H) 35°(V)	
KPED-3820VBC-D	InGaIn	470	water clear	500	750	60°(H) 35°(V)	

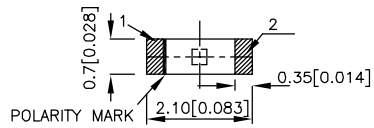
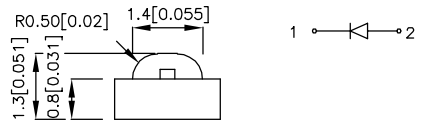
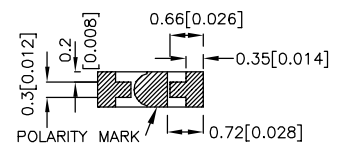
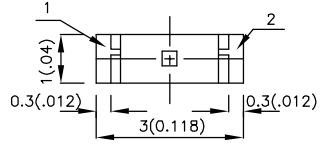
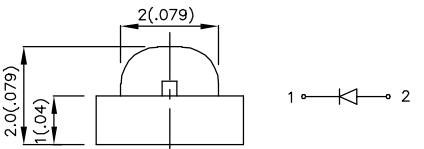
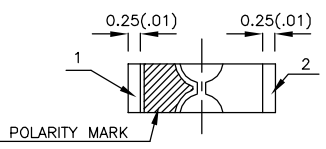
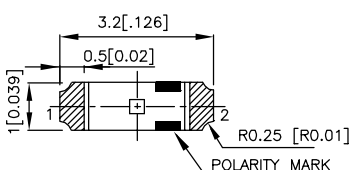
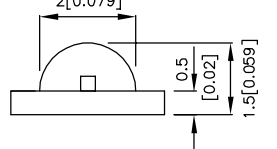
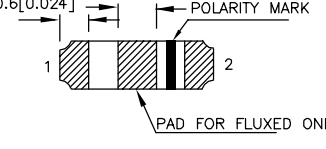
RIGHT ANGLE SMD LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @20mA		Viewing Angle 2 θ 1/2	Dimension
				Min.	Typ.		
KPA-1606EC	GaAsP/GaP	617	water clear	3	6	110°	1.6mm x 0.6mm x 1.2mm (0602 Right Angle)  KPA-1606   Units : mm(inch) Tolerance : $\pm 0.1(0.004)$
KPA-1606SURCK	AlGaInP	630	water clear	40	80	110°	
KPA-1606SECK	AlGaInP	601	water clear	80	180	110°	
KPA-1606YC	GaAsP/GaP	588	water clear	3	6	110°	
KPA-1606SYCK	AlGaInP	590	water clear	80	150	110°	
KPA-1606SGC	GaP	568	water clear	5	12	110°	
KPA-1606CGCK	AlGaInP	570	water clear	20	50	110°	
KPA-1606ZGC	InGaIn	525	water clear	200	400	110°	
KPA-1606ZGC-G	InGaIn	525	water clear	400	650	110°	
KPA-1606QBC-D	InGaIn	465	water clear	40	80	110°	
KPA-1606QBC-G	InGaIn	465	water clear	80	150	110°	
KPA-1606VBC-D	InGaIn	470	water clear	120	200	110°	
KPA-2106SURCK	AlGaInP	630	water clear	40	80	120°	2.1mm x 0.6mm x 1.0mm (0802 Right Angle)  KPA-2106   Units : mm(inch) Tolerance : $\pm 0.1(0.004)$
KPA-2106SECK	AlGaInP	601	water clear	80	180	120°	
KPA-2106SYCK	AlGaInP	590	water clear	80	150	120°	
KPA-2106CGCK	AlGaInP	570	water clear	20	50	120°	
KPA-2106ZGC	InGaIn	525	water clear	200	400	120°	
KPA-2106ZGC-G	InGaIn	525	water clear	400	650	120°	
KPA-2106QBC-D	InGaIn	465	water clear	40	80	120°	
KPA-2106QBC-G	InGaIn	465	water clear	80	150	120°	
KPA-2106VBC-D	InGaIn	470	water clear	120	200	120°	

NOTE:

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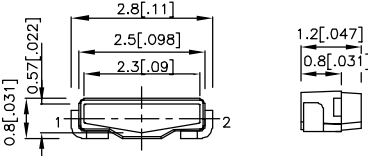
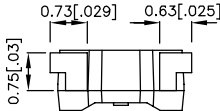
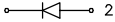
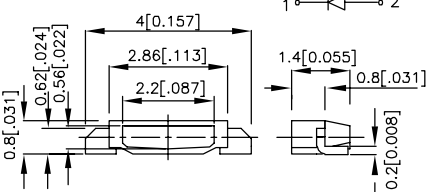
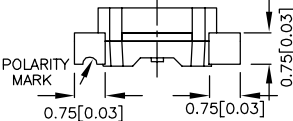
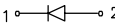
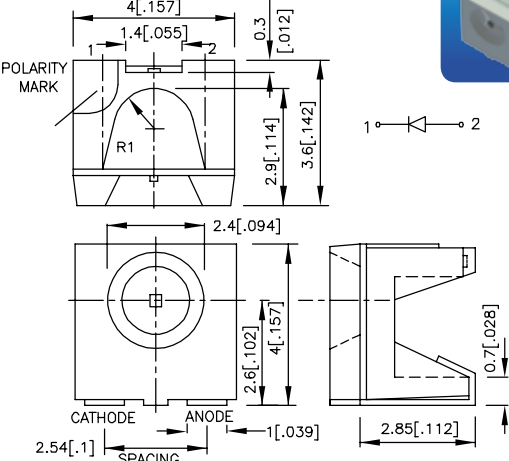
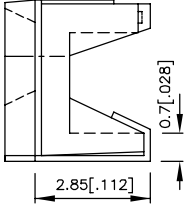
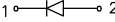
RIGHT ANGLE SMD LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @20mA		Viewing Angle	Dimension
				Min.	Typ.		
KPJA-2107SURCK	AlGaInP	630	water clear	40	80	120°	2.1mm x 0.7mm x 1.3mm (0802 Right Angle)  KPJA-2107    Units : mm(inch) Tolerance : $\pm 0.15(0.006)$
KPJA-2107SECK	AlGaInP	601	water clear	80	180	120°	
KPJA-2107SYCK	AlGaInP	590	water clear	80	150	120°	
KPJA-2107CGCK	AlGaInP	570	water clear	20	50	120°	
KPJA-2107ZGC	InGaN	525	water clear	200	400	120°	
KPJA-2107ZGC-G	InGaN	525	water clear	400	650	120°	
KPJA-2107QBC-D	InGaN	465	water clear	40	80	120°	
KPJA-2107QBC-G	InGaN	465	water clear	80	150	120°	
KPJA-2107VBC-D	InGaN	470	water clear	120	200	120°	
KPA-3010EC	GaAsP/GaP	617	water clear	3	6	120°	3.0mm x 1.0mm x 2.0mm (1104 Right Angle)  KPA-3010    Units : mm(inch) Tolerance : $\pm 0.15(0.006)$
KPA-3010SURCK	AlGaInP	630	water clear	40	80	120°	
KPA-3010SECK	AlGaInP	601	water clear	80	180	120°	
KPA-3010YC	GaAsP/GaP	588	water clear	3	6	120°	
KPA-3010SYCK	AlGaInP	590	water clear	80	150	120°	
KPA-3010SGC	GaP	568	water clear	5	12	120°	
KPA-3010CGCK	AlGaInP	570	water clear	20	50	120°	
KPA-3010ZGC	InGaN	525	water clear	200	400	120°	
KPA-3010ZGC-G	InGaN	525	water clear	400	650	120°	
KPA-3010QBC-D	InGaN	465	water clear	40	80	120°	3.2mm x 1.0mm x 1.5mm (1304 Right Angle)  KPA-3210    Units : mm(inch) Tolerance : $\pm 0.1(0.004)$
KPA-3210SECK	AlGaInP	601	water clear	80	180	120°	
KPA-3210SYCK	AlGaInP	590	water clear	80	150	120°	
KPA-3210CGCK	AlGaInP	570	water clear	20	50	120°	
KPA-3210ZGC	InGaN	525	water clear	200	400	120°	
KPA-3210ZGC-G	InGaN	525	water clear	400	650	120°	
KPA-3210QBC-D	InGaN	465	water clear	40	80	120°	
KPA-3210QBC-G	InGaN	465	water clear	80	150	120°	
KPA-3210VBC-D	InGaN	470	water clear	120	200	120°	

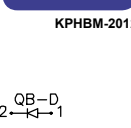
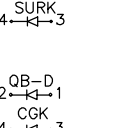
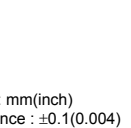
NOTE:

1.KP series custom-made is available upon request.

RIGHT ANGLE SMD LED

Part Number	Material	λ D (nm)	Lens Type	Iv (mcd) @20mA		Viewing Angle	Dimension
				Min.	Typ.		
KA-2810ASURSK	AlGaInP	630	water clear	40	100	110°	2.8mm x 0.8mm (Right Angle)  KA-2810A    Units : mm(inch) Tolerance : $\pm 0.1(0.004)$
KA-2810ASESK	AlGaInP	601	water clear	120	250	110°	
KA-2810ASYSK	AlGaInP	590	water clear	120	200	110°	
KA-2810ACGSK	AlGaInP	570	water clear	20	60	110°	
KA-2810AZGS	InGaN	525	water clear	400	700	110°	
KA-2810AZGS-G	InGaN	525	water clear	700	1200	110°	
KA-2810AQBS-D	InGaN	465	water clear	80	150	110°	
KA-2810AQBS-G	InGaN	465	water clear	200	300	110°	
KA-2810AVBS-D	InGaN	470	water clear	200	350	110°	
KA-4008SURSK	AlGaInP	630	water clear	55	90	120°	4.0mm x 0.8mm (Right Angle)  KA-4008    Units : mm(inch) Tolerance : $\pm 0.1(0.004)$
KA-4008SESK	AlGaInP	601	water clear	80	160	120°	
KA-4008SYSK	AlGaInP	590	water clear	80	200	120°	
KA-4008ZGS	InGaN	525	water clear	400	600	120°	
KA-4008ZGS-G	InGaN	525	water clear	700	1200	120°	
KA-4008QBS-D	InGaN	465	water clear	55	120	120°	
KA-4008QBS-G	InGaN	465	water clear	200	300	120°	
KA-4008VBS-D	InGaN	470	water clear	300	450	120°	
KA-4040SURSK	AlGaInP	630	water clear	80	150	120°	4.0mm x 4.0mm (Right Angle)  KA-4040    Units : mm(inch) Tolerance : $\pm 0.25(0.01)$
KA-4040SESK	AlGaInP	601	water clear	80	220	120°	
KA-4040SYSK	AlGaInP	590	water clear	120	250	120°	
KA-4040CGSK	AlGaInP	570	water clear	40	90	120°	
KA-4040ZGS	InGaN	525	water clear	400	800	120°	
KA-4040ZGS-G	InGaN	525	water clear	700	1200	120°	
KA-4040QBS-D	InGaN	465	water clear	80	220	120°	
KA-4040QBS-G	InGaN	465	water clear	200	350	120°	
KA-4040VBS-D	InGaN	470	water clear	300	500	120°	

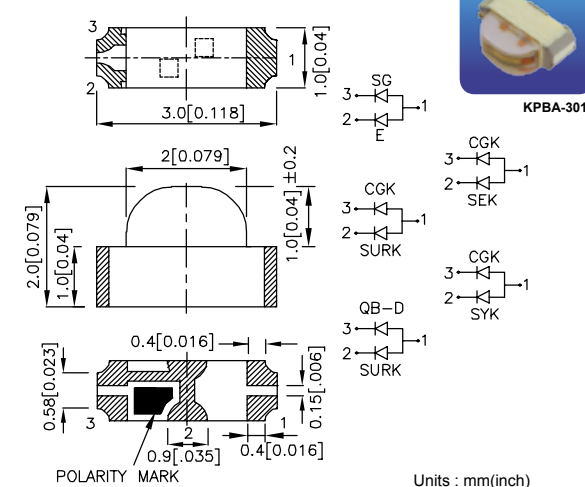
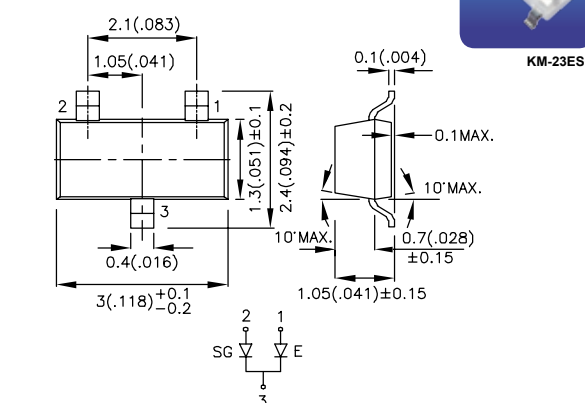
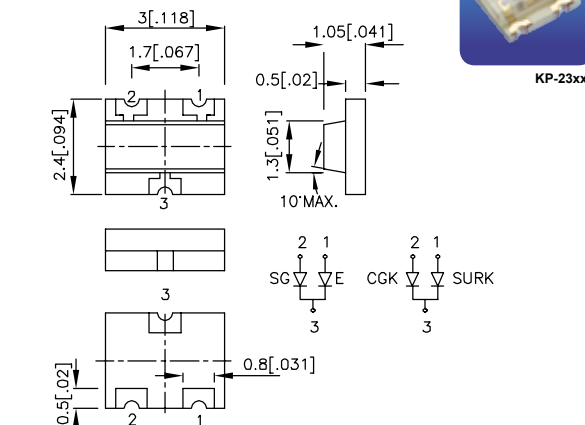
MULTI-COLOR SMD LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @20mA		Viewing Angle 2 θ 1/2	Dimension
				Min.	Typ.		
KPTB-1612ESGC	GaAsP/GaP	617	water clear	3	7	120°	1.6mm x 1.25mm x 0.65mm (0605 Bi-Color)  KPTB-1612
	GaP	568		5	12		
KPTB-1612SURKCGKC	AlGaInP	630	water clear	40	80	120°	 KPTB-1615
	AlGaInP	570		20	50		
KPTB-1612SURKQBDC	AlGaInP	630	water clear	40	80	120°	 KPTB-2012
	InGaN	465		40	80		
KPTB-1612SYKCGKC	AlGaInP	590	water clear	80	120	120°	 KPTB-2012CGKSEKC
	AlGaInP	570		20	50		
KPTB-1612QBDBSEKC	InGaN	465	water clear	40	80	120°	 KPTB-2012CGKSYKC
	AlGaInP	601		80	150		
KPTB-1615ESGC	GaAsP/GaP	617	water clear	3	7	120°	1.6mm x 1.5mm x 0.7mm (0606 Bi-Color)  KPTB-2012QBDSEKC
	GaP	568		5	12		
KPTB-1615SURKCGKC	AlGaInP	630	water clear	40	80	120°	 KPTB-2012QBDSEKC
	AlGaInP	570		20	50		
KPTB-1615SURKQBDC	AlGaInP	630	water clear	40	80	120°	 KPTB-2012QBDSEKC
	InGaN	465		40	80		
KPTB-1615YSGC	GaAsP/GaP	588	water clear	3	8	120°	 KPTB-2012QBDSEKC
	GaP	568		5	12		
KPTB-1615SYKCGKC	AlGaInP	590	water clear	80	120	120°	 KPTB-2012QBDSEKC
	AlGaInP	570		20	50		
KPHBM-2012SURKCGKC	AlGaInP	630	water clear	40	80	120°	 KPTB-2012QBDSEKC
	AlGaInP	570		20	50		
KPHBM-2012CGKSEKC	AlGaInP	570	water clear	20	50	120°	 KPTB-2012QBDSEKC
	AlGaInP	601		80	180		
KPHBM-2012CGKSYKC	AlGaInP	570	water clear	20	50	120°	 KPTB-2012QBDSEKC
	AlGaInP	590		80	120		
KPHBM-2012QBDSURKC	InGaN	465	water clear	40	80	120°	 KPTB-2012QBDSEKC
	AlGaInP	630		40	80		
KPHBM-2012QBDCGKC	InGaN	465	water clear	40	80	120°	 KPTB-2012QBDSEKC
	AlGaInP	570		20	50		

NOTE:

1.KP series custom-made is available upon request.

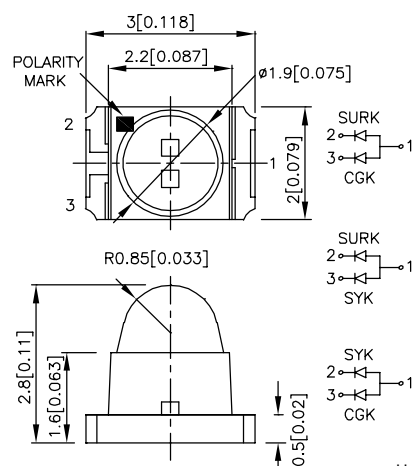
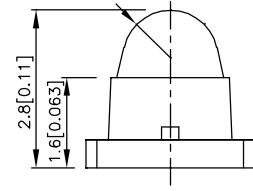
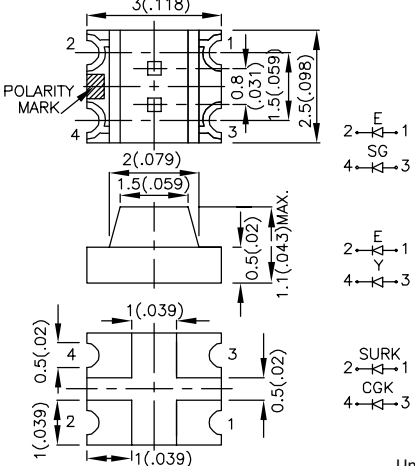
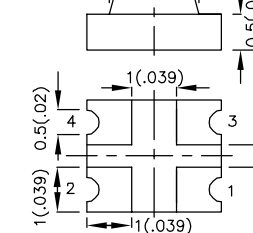
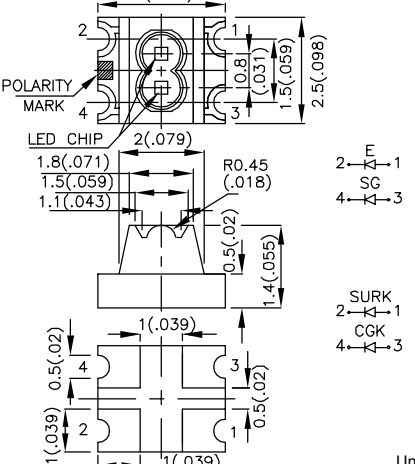
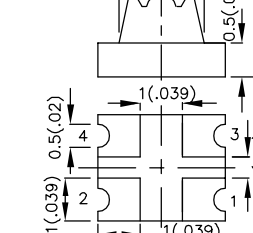
MULTI-COLOR SMD LED

Part Number	Material	λ D (nm)	Lens Type	Iv (mcd) @20mA		Viewing Angle	Dimension
				Min.	Typ.		
KPBA-3010ESGC	GaAsP/GaP	617	water clear	3	8	140°	3.0mm x 1.0mm x 2.0mm (1104 Right Angle, Bi-Color)  KPBA-3010  Units : mm(inch) Tolerance : $\pm 0.15(0.006)$
	GaP	568		5	15		
KPBA-3010SURKCGKC	AlGaInP	630	water clear	40	80	140°	
	AlGaInP	570		40	70		
KPBA-3010SURKQBDC	AlGaInP	630	water clear	40	80	140°	
	InGaIn	465		40	90		
KPBA-3010SEKCGKC	AlGaInP	601	water clear	80	150	140°	
	AlGaInP	570		40	70		
KPBA-3010SYKCGKC	AlGaInP	590	water clear	80	120	140°	
	AlGaInP	570		40	70		
KM-23ESGC	GaAsP/GaP	617	water clear	3	5	140°	SOT-23 Surface Mount LED Lamp (3mm x 1.3mm)  KM-23ESG  Units : mm(inch) Tolerance : $\pm 0.25(0.01)$
	GaP	568		5	10		
KP-23ESGC	GaAsP/GaP	617	water clear	3	6	120°	3.0mm x 2.4mm x 1.05mm  KP-23xxx  Units : mm(inch) Tolerance : $\pm 0.2(0.008)$
	GaP	568		5	12		
KP-23SURKCGKC	AlGaInP	630	water clear	40	80	120°	
	AlGaInP	570		40	70		

NOTE:

1.KP series custom-made is available upon request.

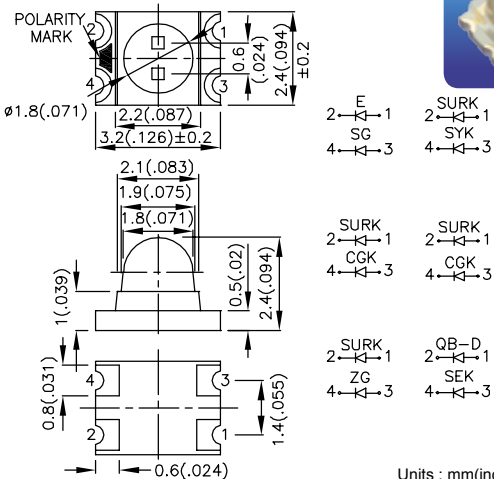
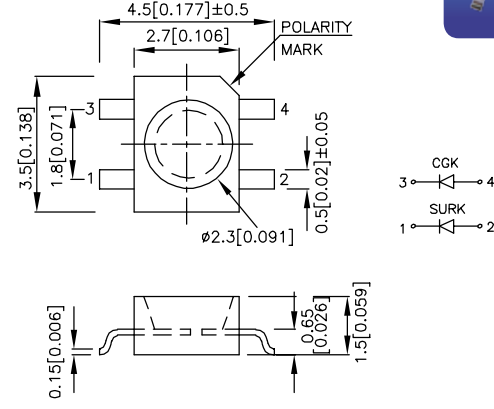
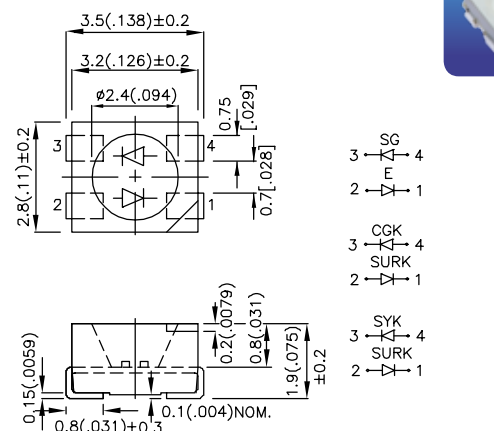
MULTI-COLOR SMD LED

Part Number	Material	λ D (nm)	Lens Type	Iv (mcd) @20mA		Viewing Angle	Dimension
				Min.	Typ.		
KPBD A-3020SURKCGKC-PF	AlGaInP	630	water clear	120	300	15°	3.0mm x 2.0mm x 2.8mm (Right Angle, Dome Lens)   Units : mm(inch) Tolerance : $\pm 0.2(0.008)$
	AlGaInP	570		120	300		
KPBD A-3020SURKSYKC-PF	AlGaInP	630	water clear	120	300	15°	
	AlGaInP	590		400	700		
KPBD A-3020SYKCGKC-PF	AlGaInP	590	water clear	500	900	15°	
	AlGaInP	570		120	300		
KPBD A-3020SYKZGC-PF	AlGaInP	590	water clear	500	900	15°	
	InGaN	525		400	800		
KPBD A-3020QBDCGKC-PF	InGaN	465	water clear	120	300	15°	
	AlGaInP	570		120	300		
KPB-3025ESGC	GaAsP/GaP	617	water clear	3	8	120°	3.0mm x 2.5mm x 1.1mm (1109 Bi-Color)   Units : mm(inch) Tolerance : $\pm 0.2(0.008)$
	GaP	568		8	15		
KPB-3025EYC	GaAsP/GaP	617	water clear	3	8	120°	
	GaAsP/GaP	588		5	10		
KPB-3025SURKCGKC	AlGaInP	630	water clear	40	70	120°	
	AlGaInP	570		20	60		
KPB-3025SURKZGC	AlGaInP	630	water clear	40	70	120°	
	InGaN	525		200	350		
KPB-3025SYKCGKC	AlGaInP	590	water clear	80	120	120°	
	AlGaInP	570		20	60		
KPB-3025QBDSYKC	InGaN	465	water clear	55	80	120°	
	AlGaInP	590		80	120		
KPBL-3025ESGC	GaAsP/GaP	617	water clear	8	15	100°	3.0mm x 2.5mm x 1.4mm (1109 Bi-Color)   Units : mm(inch) Tolerance : $\pm 0.2(0.008)$
	GaP	568		12	20		
KPBL-3025SURKCGKC	AlGaInP	630	water clear	80	200	100°	
	AlGaInP	570		55	120		
KPBL-3025SURKZGC	AlGaInP	630	water clear	80	200	100°	
	InGaN	525		400	800		
KPBL-3025SYKCGKC	AlGaInP	590	water clear	200	400	100°	
	AlGaInP	570		55	120		
KPBL-3025QBDSYKC	InGaN	465	water clear	120	250	100°	
	AlGaInP	590		200	400		

NOTE:

1.KP series custom-made is available upon request.

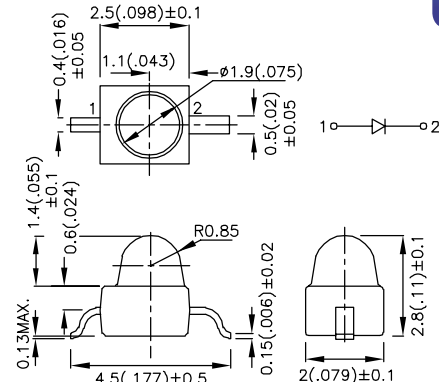
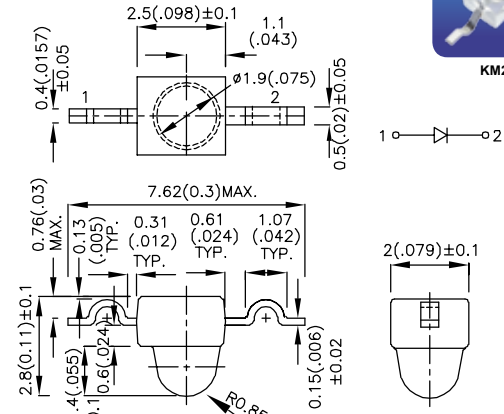
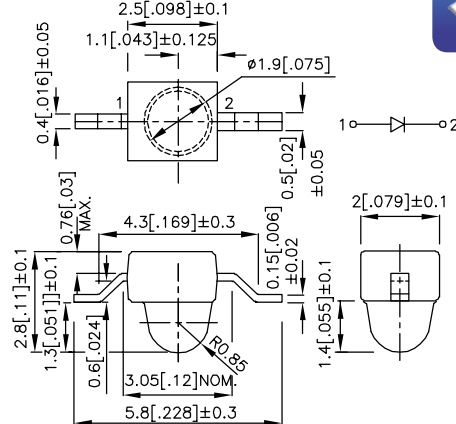
MULTI-COLOR SMD LED

Part Number	Material	λ D (nm)	Lens Type	Iv (mcd) @20mA		Viewing Angle	Dimension
				Min.	Typ.		
KPBD-3224ESGC	GaAsP/GaP	617	water clear	12	40	20°	3.2mm x 2.4mm x 2.4mm (Dome Lens)  Units : mm(inch) Tolerance : $\pm 0.1(0.004)$
	GaP	568		20	55		
KPBD-3224SURKCGKC	AlGaInP	630	water clear	120	400	20°	
	AlGaInP	570		80	280		
KPBD-3224SURKZGC	AlGaInP	630	water clear	120	400	20°	
	InGaIn	525		500	950		
KPBD-3224SURKSYKC	AlGaInP	630	water clear	120	400	20°	
	AlGaInP	590		300	600		
KPBD-3224SYKCGKC	AlGaInP	590	water clear	400	800	20°	
	AlGaInP	570		80	280		
KPBD-3224QBDSEKC	InGaIn	465	water clear	120	300	20°	
	AlGaInP	601		300	400		
KA-2735SURKCGKS	AlGaInP	630	water clear	55	100	120°	2.7mm x 3.5mm (Bi-Color)  Units : mm(inch) Tolerance : $\pm 0.25(0.01)$
	AlGaInP	570		40	65		
KAA-3528ESGS	GaAsP/GaP	617	water clear	8	15	120°	3.5mm x 2.8mm  Units : mm(inch) Tolerance : $\pm 0.25(0.01)$
	GaP	568		12	30		
KAA-3528SURKCGKS	AlGaInP	630	water clear	55	100	120°	
	AlGaInP	570		40	80		
KAA-3528SURKSYKS	AlGaInP	630	water clear	55	100	120°	
	AlGaInP	590		120	240		

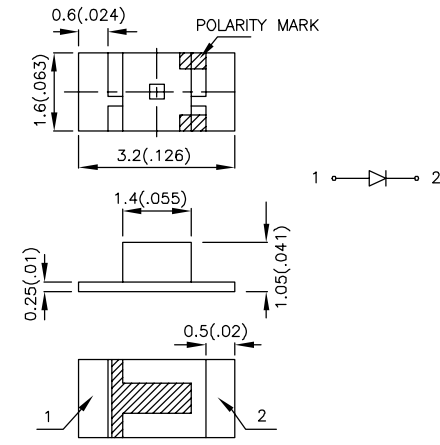
NOTE:

1.KP series custom-made is available upon request.

SUBMINIATURE SMD LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @20mA		Viewing Angle	Dimension
				Min.	Typ.		
KM2520EC03	GaAsP/GaP	617	water clear	20	50	20°	Subminiature Solid State Lamps Gull Wing Lead  KM2520xxx03  Units : mm(inch) Tolerance : ±0.25(0.01)
KM2520SURCK03	AlGaInP	630	water clear	500	1000	20°	
KM2520SECK03	AlGaInP	601	water clear	1000	1800	20°	
KM2520YC03	GaAsP/GaP	588	water clear	20	50	20°	
KM2520SYCK03	AlGaInP	590	water clear	1300	2300	20°	
KM2520SGC03	GaP	568	water clear	40	90	20°	
KM2520CGCK03	AlGaInP	570	water clear	400	800	20°	
KM2520ZGC03	InGaN	525	water clear	1900	3000	20°	
KM2520ZGC-G03	InGaN	525	water clear	3600	5000	20°	
KM2520QBC-D03	InGaN	465	water clear	300	900	20°	
KM2520QBC-G03	InGaN	465	water clear	700	1300	20°	
KM2520VBC-D03	InGaN	470	water clear	1000	1600	20°	
KM2520SURCK08	AlGaInP	630	water clear	500	1000	20°	Subminiature Solid State Lamps Yoke Lead  KM2520xxx08  Units : mm(inch) Tolerance : ±0.25(0.01)
KM2520SECK08	AlGaInP	601	water clear	1000	1800	20°	
KM2520SYCK08	AlGaInP	590	water clear	1300	2300	20°	
KM2520CGCK08	AlGaInP	570	water clear	400	800	20°	
KM2520ZGC08	InGaN	525	water clear	1900	3000	20°	
KM2520QBC-D08	InGaN	465	water clear	300	900	20°	
KM2520QBC-G08	InGaN	465	water clear	700	1300	20°	
KM2520VBC-D08	InGaN	470	water clear	1000	1600	20°	Subminiature Solid State Lamps Z-Bend Lead  KM2520xxx09  Units : mm(inch) Tolerance : ±0.25(0.01)
KM2520EC09	GaAsP/GaP	617	water clear	20	50	20°	
KM2520SURCK09	AlGaInP	630	water clear	500	1000	20°	
KM2520SECK09	AlGaInP	601	water clear	1000	1800	20°	
KM2520YC09	GaAsP/GaP	588	water clear	20	50	20°	
KM2520SYCK09	AlGaInP	590	water clear	1300	2300	20°	
KM2520SGC09	GaP	568	water clear	40	90	20°	
KM2520CGCK09	AlGaInP	570	water clear	400	800	20°	
KM2520ZGC09	InGaN	525	water clear	1900	3000	20°	
KM2520ZGC-G09	InGaN	525	water clear	3600	5000	20°	
KM2520QBC-D09	InGaN	465	water clear	300	900	20°	
KM2520QBC-G09	InGaN	465	water clear	700	1300	20°	
KM2520VBC-D09	InGaN	470	water clear	1000	1600	20°	

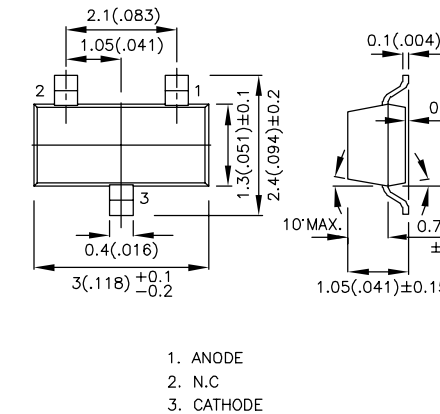
REVERSE MOUNT SMD LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @20mA		Viewing Angle 2 θ 1/2	Dimension
				Min.	Typ.		
KPTR-3216SURCK	AlGaInP	630	water clear	40	80	120°	3.2mm x 1.6mm x 1.05mm (1206 Reverse Mount)  KPTR-3216  Units : mm(inch) Tolerance : $\pm 0.2(0.008)$
KPTR-3216SECK	AlGaInP	601	water clear	80	180	120°	
KPTR-3216SYCK	AlGaInP	590	water clear	80	150	120°	
KPTR-3216CGCK	AlGaInP	570	water clear	20	50	120°	
KPTR-3216ZGC	InGaIn	525	water clear	200	400	120°	
KPTR-3216ZGC-G	InGaIn	525	water clear	400	750	120°	
KPTR-3216QBC-D	InGaIn	465	water clear	40	100	120°	
KPTR-3216QBC-G	InGaIn	465	water clear	80	160	120°	
KPTR-3216VBC-D	InGaIn	470	water clear	120	180	120°	

NOTE:

1.KP series custom-made is available upon request.

SOT-23 SMD LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @20mA		Viewing Angle 2 θ 1/2	Dimension
				Min.	Typ.		
KM-23EC-F	GaAsP/GaP	617	water clear	3	5	140°	SOT-23 Surface Mount LED Lamp (3mm x 1.3mm)  KM-23-F  1. ANODE 2. N.C 3. CATHODE Units : mm(inch) Tolerance : $\pm 0.25(0.01)$
KM-23SURCK-F	AlGaInP	630	water clear	40	60	140°	
KM-23YC-F	GaAsP/GaP	588	water clear	3	8	140°	
KM-23SYCK-F	AlGaInP	590	water clear	80	120	140°	
KM-23SGC-F	GaP	568	water clear	5	10	140°	
KM-23CGCK-F	AlGaInP	570	water clear	20	50	140°	
KM-23ZGC-F	InGaIn	525	water clear	200	300	140°	
KM-23ZGC-G-F	InGaIn	525	water clear	400	500	140°	
KM-23QBC-D-F	InGaIn	465	water clear	40	70	140°	
KM-23QBC-G-F	InGaIn	465	water clear	80	150	140°	
KM-23VBC-D-F	InGaIn	470	water clear	120	170	140°	

AMBIENT LIGHT SENSOR

Part Number

KPS-3227SP1C

Electrical And Radiant Characteristics
(T_A =25°C, Unless Otherwise Specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Collector Emitter Breakdown Voltage	BV _{ceo}	60	-	-	V	I _{ceo} =100μA
Emitter Collector Breakdown Voltage	BV _{eco}	4	-	-	V	I _{eco} =100μA
Collector Dark Current	I _D	-	10	100	nA	V _{CE} =5V E _V =0Lx
Angle Of half Sensitivity	2θ1/2	-	120	-	°	-
Light Current(1)	I _{PH1}	-	6	-	μA	V _{CE} =5V, E _V =100 Lx ^[1]
Light Current(2)	I _{PH2}	-	130	-	μA	V _{CE} =5V, E _V =1000 Lx ^[1]
Light Current(3)	I _{PH3}	-	950	-	μA	V _{CE} =5V, E _V =1000 Lx ^[2]
Light Current(4)	I _{PH4}	-	420	-	μA	V _{CE} =5V, E _V =1000 Lx ^[3]
Saturation Output Voltage	V _O	4.5	4.7	-	V	V _{CC} =5V, E _V =1000Lx ^[1] , R _L =75KΩ
Peak Wavelength	λ _P	-	580	-	nm	-
Response Wavelength	λ	390	-	700	nm	>10% Response
Collector Emitter Saturation Voltage	V _{CE(sat)}	-	-	0.4	V	I _C =10 mA

Notes:

- 1.White Fluorescent light (Color Temperature = 6200K) is used as light source.
- 2.Illuminance by CIE standard illuminant-A/2856K, incandescent lamp.
- 3.Sunlight (Color Temperature = 4600K) is used as light source.

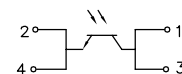
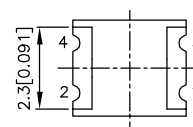
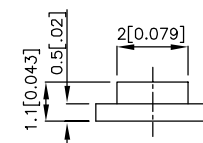
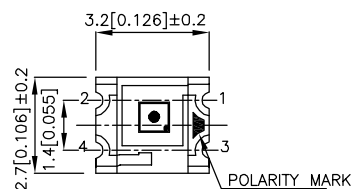
Dimension

KPS-3227SP1C 3.2mm x 2.7mm x 1.1mm

(Ambient Light Sensor)



KPS-3227SP1C



1,3 Collector
2,4 Emitter

Units : mm(inch)
Tolerance : ±0.1(0.004)

COLOR SENSOR

Part Number

KPS-5130PD7C

Electrical And Radiant Characteristics
(T_A =25°C, Unless Otherwise Specified)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Peak Sensitivity Wavelength	λ _P	Red	-	620	-	nm
		Green	-	550	-	
		Blue	-	470	-	
Light Current (1)	I _{L1}	100Lux [1] V _R =5V	Red	-	0.039	μA
			Green	-	0.042	
			Blue	-	0.022	
Light Current (2)	I _{L2}	1000Lux [1] V _R =5V	Red	-	0.427	V
			Green	-	0.498	
			Blue	-	0.262	
Diameter of the irradiation sensitive area	D		-	2.0	-	mm
Irradiation sensitive area per element	A		-	0.85	-	mm ²
Photo sensitivity of the single color areas	S _{Max}	λ _R =620 nm λ _G =550 nm λ _B =470 nm	-	0.33 0.25 0.18	-	A/W
Reverse Dark Current	I _D	V _R =5V	-	-	10	nA

Note:

- 1.White fluorescent light (Color Temperature = 6500K) is used as light source.

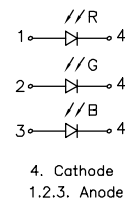
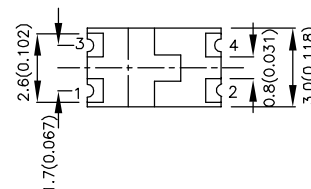
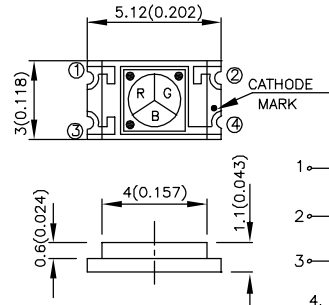
Dimension

KPS-5130PD7C 5.12mm x 3mm x 1.1mm

(RGB Color Sensor)



KPS-5130PD7C



4. Cathode
1,2,3. Anode

Units : mm(inch)
Tolerance : ±0.1(0.004)

Kingbright

Optoelectronic Components

THROUGH-HOLE LED

Degradation Resistant Blue	24
Subminiature LED	25
Round LED	25
Oval LED	29
Flat Top LED	30
Rectangular LED	30
Cylindrical LED	32
Multi-Color LED	33
Resistor LED	37
Low Current LED	38
Blinking LED	38
Super Flux LED	39
Side View	40
Tape and Reel Selections	41

DEGRADATION RESISTANT BLUE

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @20mA		Viewing Angle	Dimension
				Min.	Typ.		
L-10934VBC/DS-D	InGaN	470	water clear	2300	4000	20°	T-1 (3mm) Round L-10934
L-19294VBC/DS-D	InGaN	470	water clear	400	800	60°	5mm Round L-19294
L-19804VBC/DS-D	InGaN	470	water clear	6000	9000	12°	T-1 3/4 (5mm) Round L-19804
L-17114VBC/DS-D	InGaN	470	water clear	6000	9000	15°	T-1 3/4 (5mm) Round L-17114

NOTES:

1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.

SUBMINIATURE LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @20mA		Viewing Angle 2 θ 1/2	Dimension
				Min.	Typ.		
KM2520EC01	GaAsP/GaP	617	water clear	20	50	20°	Subminiature Solid State Lamps
KM2520SURCK01	AlGaInP	630	water clear	500	1800	20°	
KM2520SECK01	AlGaInP	601	water clear	1000	1800	20°	
KM2520YC01	GaAsP/GaP	588	water clear	20	50	20°	
KM2520SYCK01	AlGaInP	590	water clear	1300	2300	20°	
KM2520SGC01	GaP	568	water clear	40	90	20°	
KM2520CGCK01	AlGaInP	570	water clear	400	800	20°	
KM2520ZGC01	InGaN	525	water clear	1900	3000	20°	
KM2520ZGC-G01	InGaN	525	water clear	3600	5000	20°	
KM2520QBC-D01	InGaN	465	water clear	300	900	20°	
KM2520QBC-G01	InGaN	465	water clear	700	1300	20°	
KM2520VBC-D01	InGaN	470	water clear	1000	1600	20°	

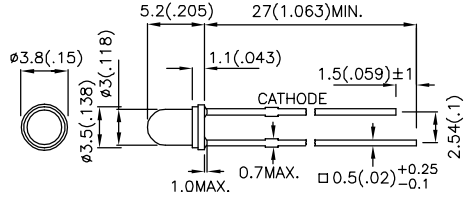
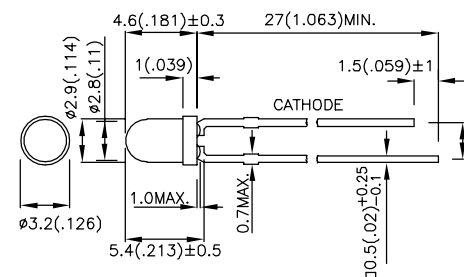
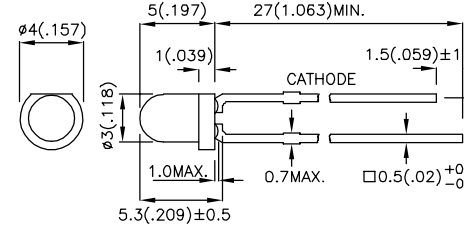
ROUND LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @10mA *20mA		Viewing Angle 2 θ 1/2	Dimension
				Min.	Typ.		
L-4060ID	GaAsP/GaP	617	red diffused	4	8	70°	1.8mm Round
L-4060SRD	GaAlAs	640	red diffused	*30	*80	70°	
L-4060YD	GaAsP/GaP	588	yellow diffused	4	8	70°	
L-4060GD	GaP	568	green diffused	6	12	70°	
L-4060ZGD	InGaN	525	green diffused	*300	*900	70°	
L-4060QBC-D	InGaN	465	water clear	*400	*700	30°	
L-908A8ID	GaAsP/GaP	617	red diffused	6	15	80°	T-1 (3mm) Round
L-908A8SURTK	AlGaInP	630	red transparent	*200	*400	50°	
L-908A8SYTK	AlGaInP	590	yellow transparent	*400	*900	50°	
L-908A8GD	GaP	568	green diffused	10	25	80°	
L-1154ID	GaAsP/GaP	617	red diffused	6	15	60°	T-1 (3mm) Round
L-1154SURDK	AlGaInP	630	red diffused	*120	*200	60°	
L-1154YD	GaAsP/GaP	588	yellow diffused	5	15	60°	
L-1154GD	GaP	568	green diffused	10	25	60°	
L-1154ZGW	InGaN	525	white diffused	*1800	*2300	60°	
L-1154QBW-D	InGaN	465	white diffused	*600	*1100	60°	

NOTES:

1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.

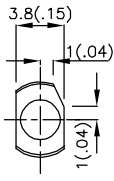
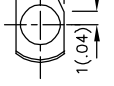
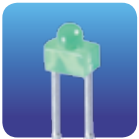
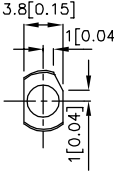
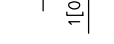
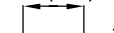
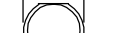
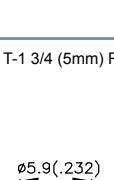
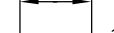
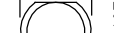
ROUND LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @10mA *20mA		Viewing Angle	Dimension
				Min.	Typ.		
L-132XID	GaAsP/GaP	617	red diffused	8	16	60°	T-1 (3mm) Round  
L-132XSURTK	AlGaInP	630	red transparent	*200	*400	50°	
L-132XSED-E	AlGaInP	621	orange diffused	*120	*300	60°	
L-132XND	GaAsP/GaP	602	orange diffused	8	16	60°	
L-132XNT	GaAsP/GaP	602	orange transparent	10	20	50°	
L-132XYD	GaAsP/GaP	588	yellow diffused	6	15	60°	
L-132XYT	GaAsP/GaP	588	yellow transparent	10	20	50°	
L-132XSYCK	AlGaInP	590	water clear	400	700	50°	
L-132XGD	GaP	568	green diffused	15	25	60°	
L-132XGC	GaP	568	water clear	20	40	50°	
L-132XPGC	GaP	557	water clear	6	15	50°	
L-132XQBC-D	InGaN	465	water clear	*750	*1300	50°	
L-7104ID	GaAsP/GaP	617	red diffused	10	20	40°	T-1 (3mm) Round  
L-7104EC	GaAsP/GaP	617	water clear	12	30	34°	
L-7104ND	GaAsP/GaP	602	orange diffused	10	20	40°	
L-7104NC	GaAsP/GaP	602	water clear	12	25	34°	
L-7104YD	GaAsP/GaP	588	yellow diffused	8	15	40°	
L-7104GD	GaP	568	green diffused	10	25	40°	
L-7104GC	GaP	568	water clear	12	40	34°	
L-7104PGD	GaP	557	green diffused	3	8	40°	
L-7104SRD-F	GaAlAs	640	red diffused	*90	*160	40°	
L-7104SRC-D	GaAlAs	640	water clear	*120	*240	34°	
L-7104SURDK	AlGaInP	630	red diffused	*120	*240	40°	
L-7104SURC-E	AlGaInP	630	water clear	*560	*900	34°	
L-7104SECK	AlGaInP	601	water clear	*300	*700	34°	
L-7104SEC-H	AlGaInP	625	water clear	*500	*1000	34°	
L-7104SYCK	AlGaInP	590	water clear	*650	*1150	34°	T-1 (3mm) Round  
L-7104SYC-H	AlGaInP	589	water clear	*1100	*2000	34°	
L-7104SGD	GaP	568	green diffused	*18	*40	40°	
L-7104SGC	GaP	568	water clear	*30	*60	34°	
L-7104CGCK	AlGaInP	570	water clear	*150	*330	34°	
L-7104ZGC	InGaN	525	water clear	*6000	*9000	34°	
L-7104QBC-D	InGaN	465	water clear	*900	*1600	20°	
L-7104VBC-D	InGaN	470	water clear	*2100	*3700	20°	
L-34ID	GaAsP/GaP	617	red diffused	6	15	60°	
L-34SURDK	AlGaInP	630	red diffused	*100	*250	60°	
L-34SURCK	AlGaInP	630	water clear	*120	*300	50°	
L-34SEDK	AlGaInP	601	orange diffused	*250	*500	60°	
L-34YD	GaAsP/GaP	588	yellow diffused	8	15	60°	
L-34SYCK	AlGaInP	590	water clear	*400	*700	50°	
L-34GD	GaP	568	green diffused	12	25	60°	
L-34CGCK	AlGaInP	570	water clear	*150	*400	50°	
L-34ZGC	InGaN	525	water clear	*4200	*6500	50°	
L-34QBC-D	InGaN	465	water clear	*800	*1500	25°	
L-34VBC-D	InGaN	470	water clear	*1900	*3000	25°	

NOTES:

1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.

ROUND LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @10mA *20mA		Viewing Angle	Dimension
				Min.	Typ.		
L-174XIT	GaAsP/GaP	617	red transparent	8	20	35°	3.2mm Round    
L-174XSRT	GaAlAs	640	red transparent	*80	*160	35°	
L-174XYT	GaAsP/GaP	588	yellow transparent	8	20	35°	
L-174XGT	GaP	568	green transparent	15	30	35°	
L-174A2IT	GaAsP/GaP	617	red transparent	10	40	35°	3.2mm Round   
L-174A2YT	GaAsP/GaP	588	yellow transparent	15	30	35°	
L-174A2GT	GaP	568	green transparent	20	70	35°	
L-43HD	GaP	635	red diffused	0.8	2	80°	4mm Round    
L-43ID	GaAsP/GaP	617	red diffused	4	10	80°	
L-43YD	GaAsP/GaP	588	yellow diffused	5	10	80°	
L-43GD	GaP	568	green diffused	8	16	80°	
L-9294QBC-D	InGaN	465	water clear	*200	*500	60°	5mm Round 
L-63ID	GaAsP/GaP	617	red diffused	8	12	60°	T-1 3/4 (5mm) Round      
L-63IT	GaAsP/GaP	617	red transparent	10	30	30°	
L-63YD	GaAsP/GaP	588	yellow diffused	5	10	60°	
L-63YT	GaAsP/GaP	588	yellow transparent	20	70	30°	
L-63GD	GaP	568	green diffused	8	16	60°	
L-63GT	GaP	568	green transparent	30	80	30°	

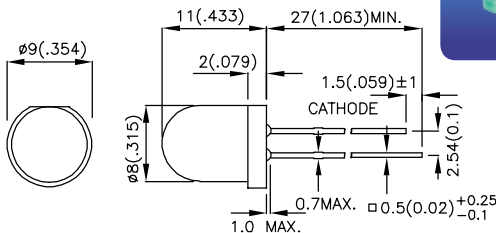
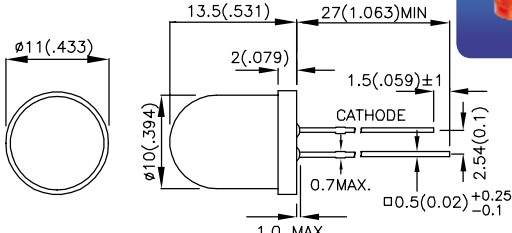
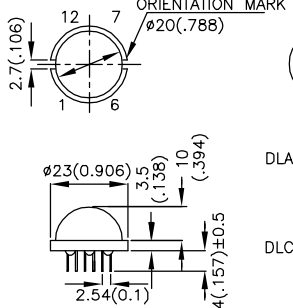
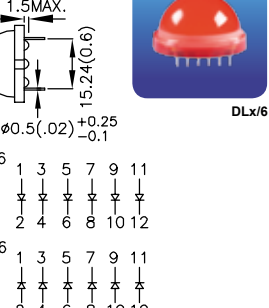
NOTES:

1. All dimensions are in millimeters (inches).
2. Tolerance is $\pm 0.25\text{mm}$ (0.01") unless otherwise noted.

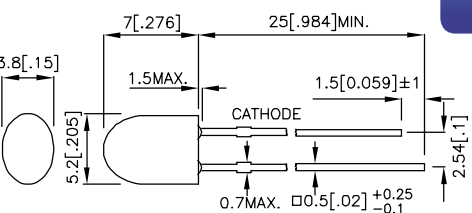
NOTES:

1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.

ROUND LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @10mA *20mA		Viewing Angle 2 θ 1/2	Dimension
				Min.	Typ.		
L-793ID	GaAsP/GaP	617	red diffused	*30	*60	30°	8mm Round  
L-793SRD-C	GaAlAs	640	red diffused	*40	*120	30°	
L-793SRD-D	GaAlAs	640	red diffused	*60	*140	30°	
L-793SRD-E	GaAlAs	640	red diffused	*140	*180	30°	
L-793ED	GaAsP/GaP	617	orange diffused	*30	*60	30°	
L-793YD	GaAsP/GaP	588	yellow diffused	*20	*50	30°	
L-793GD	GaP	568	green diffused	*30	*60	30°	10mm Round  
L-813ID	GaAsP/GaP	617	red diffused	*36	*80	30°	
L-813SRD-C	GaAlAs	640	red diffused	*80	*160	30°	
L-813SRD-D	GaAlAs	640	red diffused	*110	*180	30°	
L-813SRD-E	GaAlAs	640	red diffused	*120	*200	30°	
L-813YD	GaAsP/GaP	588	yellow diffused	*18	*50	30°	
L-813GD	GaP	568	green diffused	*20	*60	30°	20mm  
L-813QBD-D	InGaP	465	blue diffused	*180	*400	20°	
DLA/6ID	GaAsP/GaP	617	red diffused	20	49	120°	
DLC/6ID	GaAsP/GaP	617	red diffused	20	49	120°	
DLA/6SRD	GaAlAs	640	red diffused	*300	*470	120°	
DLC/6SRD	GaAlAs	640	red diffused	*300	*470	120°	
DLA/6YD	GaAsP/GaP	588	yellow diffused	20	48	120°	
DLC/6YD	GaAsP/GaP	588	yellow diffused	20	48	120°	
DLA/6GD	GaP	568	green diffused	20	45	120°	
DLC/6GD	GaP	568	green diffused	20	45	120°	
DLA/6SGD	GaP	568	green diffused	*55	*100	120°	
DLC/6SGD	GaP	568	green diffused	*55	*100	120°	

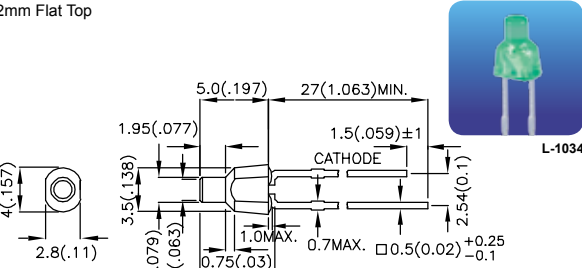
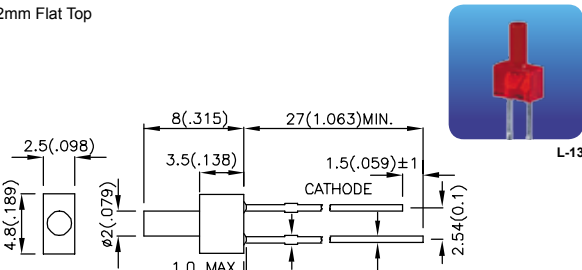
OVAL LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @20mA		Viewing Angle 2 θ 1/2	Dimension
				Min.	Typ.		
L-5603SURCK	AlGaInP	630	water clear	400	800	70°(H) 30°(V)	5.2 x 3.8mm Oval  
L-5603SIDL/SD-H	AlGaInP	625	red semi diffused	400	900	80°(H) 40°(V)	
L-5603SIDL/SD-J3	AlGaInP	625	red semi diffused	800	1400	80°(H) 40°(V)	
L-5603SYDL/SD-H	AlGaInP	589	yellow semi diffused	700	1300	80°(H) 40°(V)	
L-5603ZGDL/SD-G	InGaP	525	green semi diffused	2300	5000	80°(H) 40°(V)	
L-5603QBDEL/SD-G	InGaP	465	blue semi diffused	650	1100	80°(H) 40°(V)	

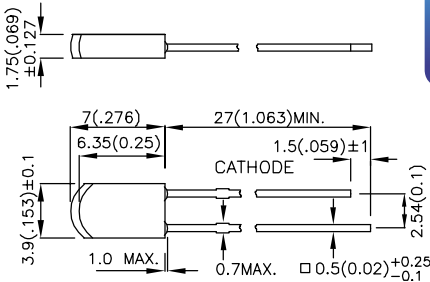
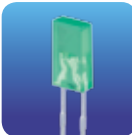
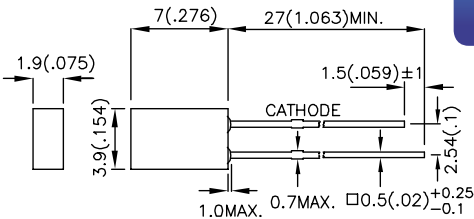
NOTES:

1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.

FLAT TOP LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @10mA		Viewing Angle	Dimension
				Min.	Typ.		
L-1034IDT	GaAsP/GaP	617	red diffused	2	4	70°	2mm Flat Top 
L-1034YDT	GaAsP/GaP	588	yellow diffused	1.8	3	70°	
L-1034GDT	GaP	568	green diffused	2	5	70°	
L-13ID	GaAsP/GaP	617	red diffused	6	12	70°	2mm Flat Top 
L-13YD	GaAsP/GaP	588	yellow diffused	4	8	70°	
L-13GD	GaP	568	green diffused	6	12	70°	

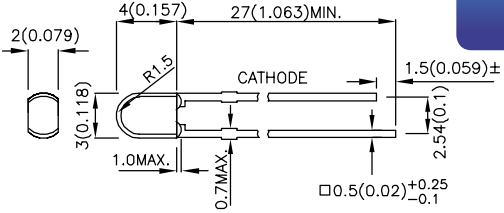
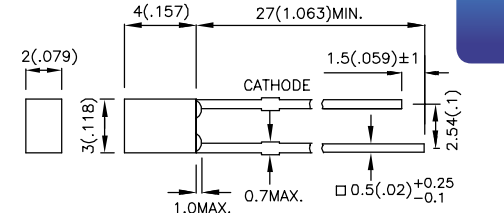
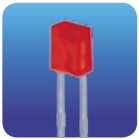
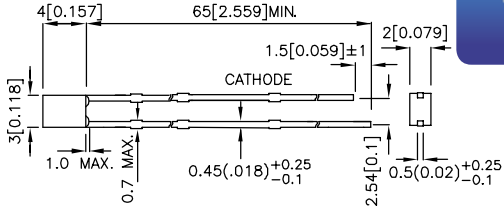
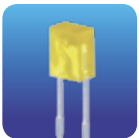
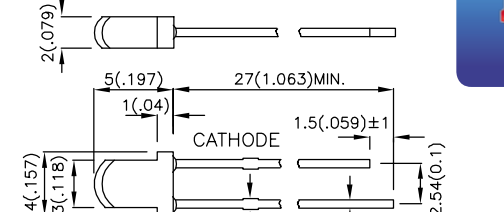
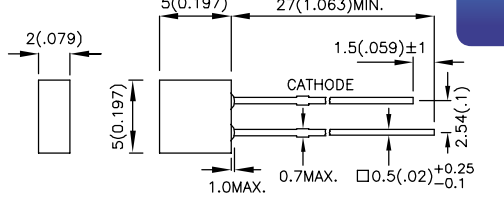
RECTANGULAR LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @10mA		Viewing Angle	Dimension
				Min.	Typ.		
L-2774ID	GaAsP/GaP	617	red diffused	2	6	70°	1.75mm x 3.9mm Rectangular  
L-2774ND	GaAsP/GaP	602	orange diffused	2	6	70°	
L-2774YD	GaAsP/GaP	588	yellow diffused	2	5	70°	
L-2774GD	GaP	568	green diffused	4	12	70°	
L-144HDT	GaP	635	red diffused	0.2	0.5	110°	
L-144IDT	GaAsP/GaP	617	red diffused	1.2	3	110°	1.9mm x 3.9mm Rectangular  
L-144YDT	GaAsP/GaP	588	yellow diffused	1.5	4	110°	
L-144GDT	GaP	568	green diffused	2	6	110°	

NOTES:

1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.

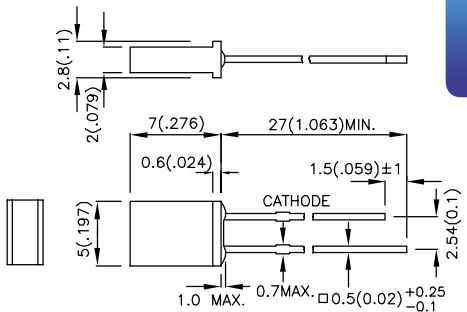
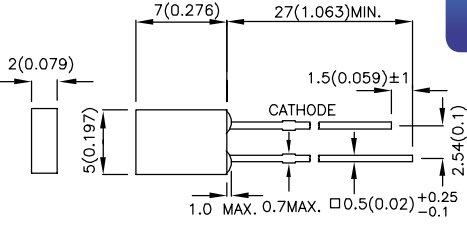
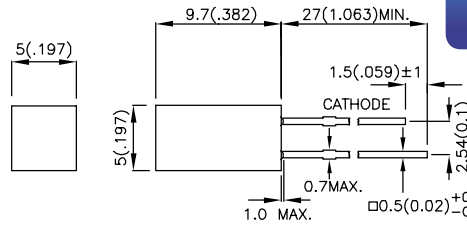
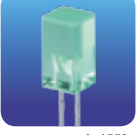
RECTANGULAR LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @10mA *20mA		Viewing Angle 2 θ 1/2	Dimension
				Min.	Typ.		
L-2914ID	GaAsP/GaP	617	red diffused	2	5	50°	2mm x 3mm Rectangular  
L-2914YD	GaAsP/GaP	588	yellow diffused	5	12	50°	
L-2914SYCK	AlGaInP	590	water clear	*300	*600	45°	
L-2914GD	GaP	568	green diffused	6	15	50°	
L-914HDT	GaP	635	red diffused	0.1	0.4	100°	2mm x 3mm Rectangular  
L-914IDT	GaAsP/GaP	617	red diffused	1.2	4	100°	
L-914SURDK	AlGaInP	630	red diffused	*20	*50	100°	
L-914SYCK	AlGaInP	590	water clear	*70	*150	100°	
L-914GDT	GaP	568	green diffused	3	6	100°	2mm x 3mm Rectangular  
L-91A7IDT	GaAsP/GaP	617	red diffused	1.2	4	100°	
L-91A7YDT	GaAsP/GaP	588	yellow diffused	1.5	4	100°	
L-91A7GDT	GaP	568	green diffused	4	7	100°	
L-169XID	GaAsP/GaP	617	red diffused	8	14	60°	2mm x 3mm Rectangular  
L-169XYD	GaAsP/GaP	588	yellow diffused	5	10	60°	
L-169XSYDK	AlGaInP	590	yellow diffused	*300	*500	60°	
L-169XGD	GaP	568	green diffused	8	15	60°	
L-169XCGDK	AlGaInP	570	green diffused	*50	*120	60°	2mm x 5mm Rectangular  
L-9763PBDT-A	InGaN	465	blue diffused	*20	*55	80°	

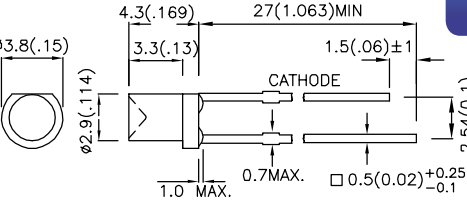
NOTES:

1. All dimensions are in millimeters (inches).
2. Tolerance is $\pm 0.25\text{mm}$ (0.01") unless otherwise noted.

RECTANGULAR LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @10mA *20mA		Viewing Angle 2 θ 1/2	Dimension
				Min.	Typ.		
L-103IDT	GaAsP/GaP	617	red diffused	1.2	3	110°	2mm x 5mm Rectangular   L-103
L-103EDT	GaAsP/GaP	617	orange diffused	1.2	3	110°	
L-103YDT	GaAsP/GaP	588	yellow diffused	1.5	4	110°	
L-103GDT	GaP	568	green diffused	2	5	110°	
L-113IDT	GaAsP/GaP	617	red diffused	2	4	110°	2mm x 5mm Rectangular   L-113
L-113EDT	GaAsP/GaP	617	orange diffused	2	4	110°	
L-113YDT	GaAsP/GaP	588	yellow diffused	1.2	4	110°	
L-113SYDTK	AlGaInP	590	yellow diffused	*70	*120	110°	
L-113GDT	GaP	568	green diffused	1.2	5	110°	5mm x 5mm Square   L-1553
L-1553IDT	GaAsP/GaP	617	red diffused	2	5	110°	
L-1553YDT	GaAsP/GaP	588	yellow diffused	1.5	5	110°	
L-1553SYDTK	AlGaInP	590	yellow diffused	*80	*180	110°	
L-1553GDT	GaP	568	green diffused	3	6	110°	

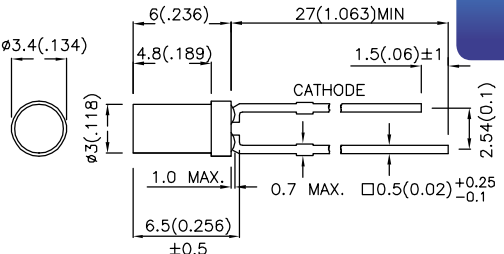
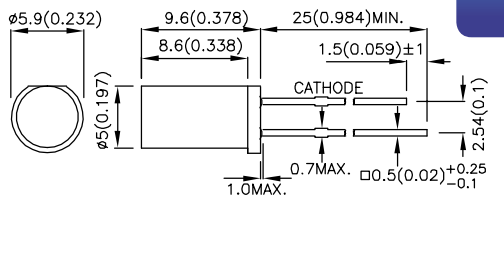
CYLINDRICAL LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @10mA *20mA		Viewing Angle 2 θ 1/2	Dimension
				Min.	Typ.		
L-47XEC	GaAsP/GaP	617	water clear	4	8	130°	T-1 (3mm) Cylindrical   L-47X
L-47XYT	GaAsP/GaP	588	yellow transparent	2	4	130°	
L-47XSYCK	AlGaInP	590	water clear	*40	*100	130°	
L-47XZGC	InGaN	525	water clear	*180	*500	130°	

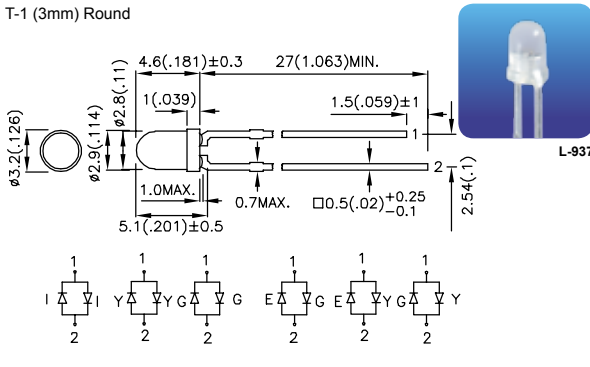
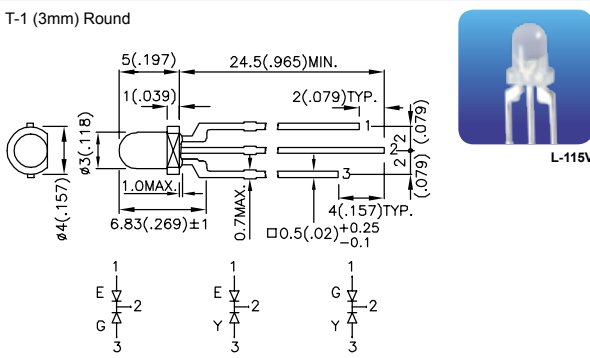
NOTES:

1. All dimensions are in millimeters (inches).
2. Tolerance is $\pm 0.25\text{mm}$ (0.01") unless otherwise noted.

CYLINDRICAL LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @10mA *20mA		Viewing Angle 2 θ 1/2	Dimension
				Min.	Typ.		
L-424HDT	GaP	635	red diffused	0.2	0.6	100°	T-1 (3mm) Cylindrical 
L-424IDT	GaAsP/GaP	617	red diffused	1.2	4	100°	
L-424YDT	GaAsP/GaP	588	yellow diffused	1.2	3	100°	
L-424GDT	GaP	568	green diffused	2	6	100°	
L-483IDT	GaAsP/GaP	617	red diffused	1.2	4	100°	T-1 3/4 (5mm) Cylindrical 
L-483YDT	GaAsP/GaP	588	yellow diffused	1.2	3	100°	
L-483GDT	GaP	568	green diffused	1.5	3	100°	
L-483ZGDT	InGaN	525	green diffused	*100	*250	100°	

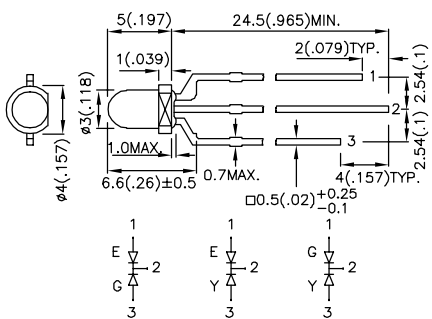
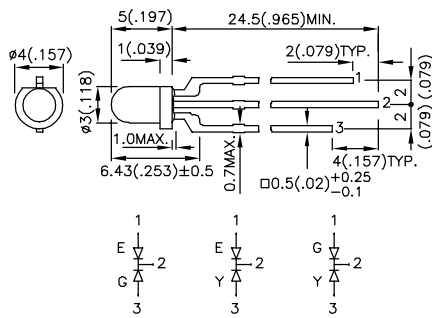
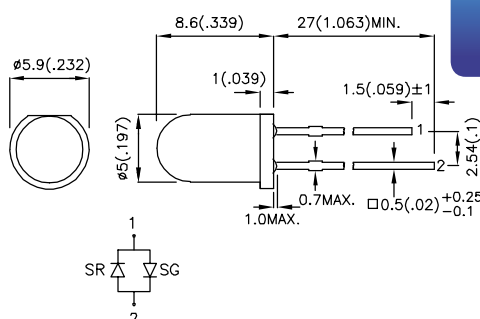
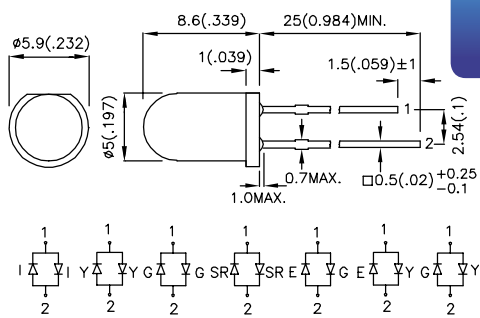
MULTI-COLOR LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @20mA		Viewing Angle	Dimension
				Min.	Typ.		
L-937IID	GaAsP/GaP	617	red diffused	2	4	60°	T-1 (3mm) Round  L-937
	GaAsP/GaP	617		2	4		
L-937YYD	GaAsP/GaP	588	yellow diffused	3	9	60°	
	GaAsP/GaP	588		3	9		
L-937GGD	GaP	568	green diffused	4	10	60°	
	GaP	568		4	10		
L-937EGW	GaAsP/GaP	617	white diffused	4	10	60°	
	GaP	568		6	14		
L-937EYW	GaAsP/GaP	617	white diffused	4	10	60°	
	GaAsP/GaP	588		4	8		
L-937GYW	GaP	568	white diffused	6	14	60°	
	GaAsP/GaP	588		4	8		
L-115VEGW	GaAsP/GaP	617	white diffused	8	20	60°	T-1 (3mm) Round  L-115V
	GaP	568		10	30		
L-115VEYW	GaAsP/GaP	617	white diffused	8	20	60°	
	GaAsP/GaP	588		10	24		
L-115VGW	GaP	568	white diffused	10	30	60°	
	GaAsP/GaP	588		10	24		

NOTES:

1. All dimensions are in millimeters (inches).
2. Tolerance is $\pm 0.25\text{mm}$ (0.01") unless otherwise noted.

MULTI-COLOR LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @20mA		Viewing Angle 2 θ 1/2	Dimension
				Min.	Typ.		
L-115WEGW	GaAsP/GaP	617	white diffused	12	20	60°	T-1 (3mm) Round 
	GaP	568		20	40		
L-115WEYW	GaAsP/GaP	617	white diffused	12	20	60°	
	GaAsP/GaP	588		10	20		
L-115WGYW	GaP	568	white diffused	15	40	60°	
	GaAsP/GaP	588		10	20		
L-3VEGW	GaAsP/GaP	617	white diffused	10	30	60°	T-1 (3mm) Round 
	GaP	568		20	40		
L-3VEYW	GaAsP/GaP	617	white diffused	10	30	60°	
	GaAsP/GaP	588		10	15		
L-3VGYW	GaP	568	white diffused	15	40	60°	
	GaAsP/GaP	588		10	15		
L-7113SRSGW	GaAlAs	640	white diffused	40	100	35°	T-1 3/4 (5mm) Round 
	GaP	568		20	60		
L-57IID	GaAsP/GaP	617	red diffused	4	12	60°	T-1 3/4 (5mm) Round 
	GaAsP/GaP	617		4	12		
L-57YYD	GaAsP/GaP	588	yellow diffused	6	12	60°	
	GaAsP/GaP	588		6	12		
L-57GGD	GaP	568	green diffused	8	20	60°	
	GaP	568		8	20		
L-57SRSRD	GaAlAs	640	red diffused	30	60	60°	
	GaAlAs	640		30	60		
L-57EGW	GaAsP/GaP	617	white diffused	6	14	60°	
	GaP	568		12	30		
L-57EYW	GaAsP/GaP	617	white diffused	6	14	60°	
	GaAsP/GaP	588		4	10		
L-57GYW	GaP	568	white diffused	12	30	60°	
	GaAsP/GaP	588		4	10		

NOTES:

1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.

MULTI-COLOR LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @20mA		Viewing Angle	Dimension	
				Min.	Typ.			
L-59EGW	GaAsP/GaP	617	white diffused	20	40	60°	T-1 3/4 (5mm) Round L-59	
L-59EGW-CA	GaP	568		20	60			
L-59EYW	GaAsP/GaP	617	white diffused	1.2	3	60°		
	GaP	568		3	8			
L-59GYW	GaAsP/GaP	617	white diffused	20	40	60°		
	GaAsP/GaP	588		20	40			
L-59SURKCGKW	AlGaInP	630	white diffused	80	200	60°		
	AlGaInP	570		80	180			
L-59EGC	GaAsP/GaP	617	water clear	50	100	24°		
	GaP	568		50	120			
L-59EYC	GaAsP/GaP	617	water clear	50	100	24°		
	GaAsP/GaP	588		40	80			
L-59GYC	GaP	568	water clear	50	120	24°		
	GaAsP/GaP	588		40	80			
L-59SURKSGC	AlGaInP	630	water clear	600	1200	24°		
	GaP	568		50	120			
L-154A4 SURKQBDZGC	AlGaInP	630	water clear	150	300	50°		T-1 3/4 (5mm) Full color L-154A4
	InGaIn	465		300	700			
	InGaIn	525		1000	1700			
L-154A4 SURKQBDZGW	AlGaInP	630	white diffused	100	200	60°		
	InGaIn	465		120	300			
	InGaIn	525		600	1300			
L-154A4 SUREQBFZGEC	AlGaInP	630	water clear	200	400	50°		
	InGaIn	465		400	900			
	InGaIn	525		2200	3600			
L-154A4 SUREQBFZGEW	AlGaInP	630	white diffused	120	250	60°		
	InGaIn	465		300	500			
	InGaIn	525		900	1700			
L-799EGW	GaAsP/GaP	617	white diffused	20	40	50°	8mm Round L-799	
	GaP	568		20	50			
L-799SURKCGKW	AlGaInP	630	white diffused	150	300	50°		
	AlGaInP	570		55	130			
L-819IID	GaAsP/GaP	617	red diffused	10	30	50°		10mm Round L-819
	GaAsP/GaP	617		8	20			
L-819EGW	GaAsP/GaP	617	white diffused	30	60	50°		
	GaP	568		15	50			
L-819SURKCGKW	AlGaInP	630	white diffused	120	350	50°		
	AlGaInP	570		55	130			

NOTES:

1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.

MULTI-COLOR LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @20mA		Viewing Angle 2 θ 1/2	Dimension
				Min.	Typ.		
L-91A6GNWT	GaP	568	white diffused	4	8	110°	2mm x 3mm Rectangular
	GaAsP/GaP	602		4	8		
L-91A6YGT	GaAsP/GaP	588	white diffused	2	4	110°	
	GaP	568		4	8		
L-113SRSGWT	GaAlAs	640	white diffused	12	30	110°	2mm x 5mm Rectangular
	GaP	568		3	8		
L-117EGWT	GaAsP/GaP	617	white diffused	1.2	4	110°	2mm x 5mm Rectangular
	GaP	568		2	6		
L-117EYWT	GaAsP/GaP	617	white diffused	1.2	4	110°	
	GaAsP/GaP	588		2	4		
L-117GYWT	GaP	568	white diffused	2	6	110°	
	GaAsP/GaP	588		2	4		
L-119EGWT	GaAsP/GaP	617	white diffused	4	10	110°	2mm x 5mm Rectangular
	GaP	568		3	9		
L-119SURKCGKWT	AlGaInP	630	white diffused	30	55	110°	
	AlGaInP	570		15	30		

NOTES:

1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.

MULTI-COLOR LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @20mA		Viewing Angle 2 θ 1/2	Dimension
				Min.	Typ.		
L-489SURKCGKC	AlGaInP	630	water clear	55	100	80°	T-1 3/4 (5mm) Cylindrical L-489
	AlGaInP	570		40	90		

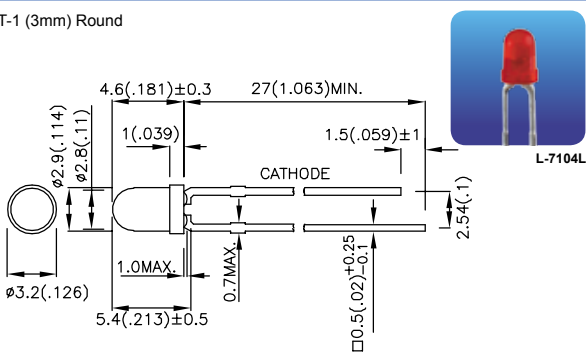
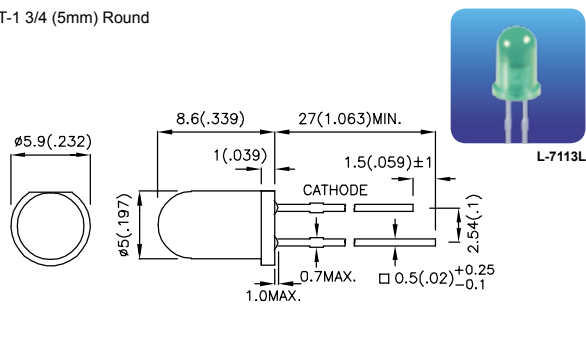
RESISTOR LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) V=5V *V=12V **V=14V		Viewing Angle 2 θ 1/2	Dimension
				Min.	Typ.		
L-7104ID-5V	GaAsP/GaP	617	red diffused	6	14	40°	T-1 (3mm) Round L-7104
L-7104ID-12V	GaAsP/GaP	617	red diffused	*2	*5	40°	
L-7104ID-14V	GaAsP/GaP	617	red diffused	**5	**10	40°	
L-7104YD-5V	GaAsP/GaP	588	yellow diffused	7	15	40°	
L-7104YD-12V	GaAsP/GaP	588	yellow diffused	*5	*10	40°	
L-7104YD-14V	GaAsP/GaP	588	yellow diffused	**6	**11	40°	
L-7104GD-5V	GaP	568	green diffused	12	25	40°	
L-7104GD-12V	GaP	568	green diffused	*6	*15	40°	
L-7104GD-14V	GaP	568	green diffused	**8	**20	40°	
L-7104SRD-5V	GaAlAs	640	red diffused	25	50	40°	
L-7104SRD-14V	GaAlAs	640	red diffused	**20	**40	40°	
L-7113ID-5V	GaAsP/GaP	617	red diffused	12	25	30°	T-1 3/4 (5mm) Round L-7113
L-7113ID-12V	GaAsP/GaP	617	red diffused	*10	*20	30°	
L-7113ID-14V	GaAsP/GaP	617	red diffused	**10	**22	30°	
L-7113YD-5V	GaAsP/GaP	588	yellow diffused	10	22	30°	
L-7113YD-12V	GaAsP/GaP	588	yellow diffused	*8	*15	30°	
L-7113YD-14V	GaAsP/GaP	588	yellow diffused	**8	**20	30°	
L-7113GD-5V	GaP	568	green diffused	15	25	30°	
L-7113GD-12V	GaP	568	green diffused	*8	*20	30°	
L-7113GD-14V	GaP	568	green diffused	**10	**22	30°	

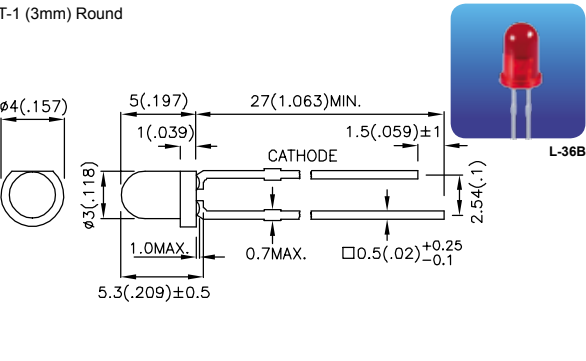
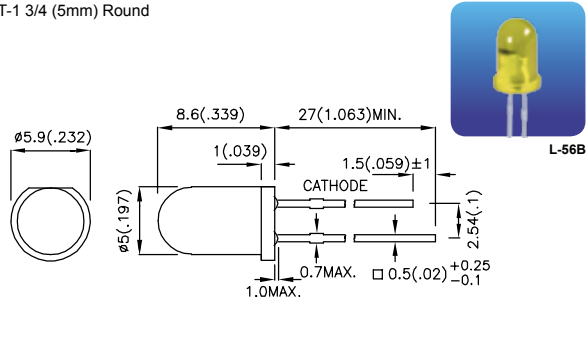
NOTES:

1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.

LOW CURRENT LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @2mA		Viewing Angle 2 θ /2	Dimension
				Min.	Typ.		
L-7104LID	GaAsP/GaP	617	red diffused	0.2	0.6	40°	T-1 (3mm) Round 
L-7104LYD	GaAsP/GaP	588	yellow diffused	0.7	1.5	40°	
L-7104LGD	GaP	568	green diffused	1	2	40°	
L-7113LID	GaAsP/GaP	617	red diffused	0.7	2	30°	T-1 3/4 (5mm) Round 
L-7113LYD	GaAsP/GaP	588	yellow diffused	1	3	30°	
L-7113LGD	GaP	568	green diffused	1.2	3	30°	

BLINKING LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) V=9V		Viewing Angle 2 θ /2	Dimension
				Min.	Typ.		
L-36BHD	GaP	635	red diffused	0.6	1.8	60°	T-1 (3mm) Round 
L-36BID	GaAsP/GaP	617	red diffused	6	15	60°	
L-36BSRD-B	GaAlAs	640	red diffused	40	100	60°	
L-36BYD	GaAsP/GaP	588	yellow diffused	8	15	60°	
L-36BGD	GaP	568	green diffused	12	25	60°	
L-56BHD	GaP	635	red diffused	1.2	4	60°	T-1 3/4 (5mm) Round 
L-56BID	GaAsP/GaP	617	red diffused	12	25	60°	
L-56BSRD-B	GaAlAs	640	red diffused	30	70	60°	
L-56BYD	GaAsP/GaP	588	yellow diffused	12	20	60°	
L-56BGD	GaP	568	green diffused	15	30	60°	

NOTES:

1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.

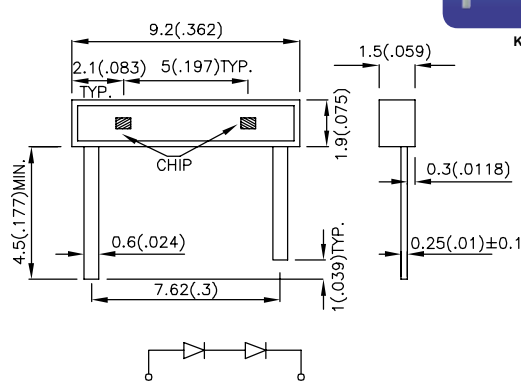
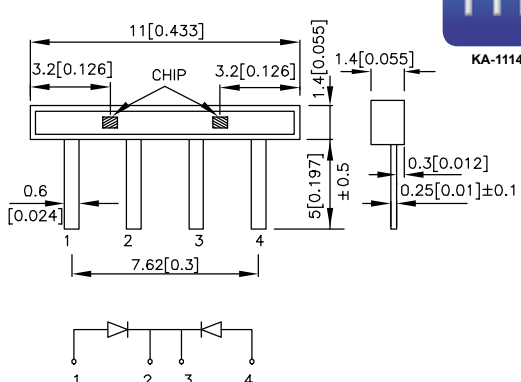
SUPER FLUX LED

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @20mA		Viewing Angle 2 θ 1/2	Dimension
				Min.	Typ.		
L-7676CSURC-G	AlGaInP	630	water clear	120	200	70°	7.6mm x 7.6mm L-7676C
L-7676CSEC-H	AlGaInP	625	water clear	400	800	70°	
L-7676CSYC-H	AlGaInP	589	water clear	400	600	70°	
L-7676CZGC-G	InGaN	525	water clear	1900	2500	70°	
L-7676CQBC-G	InGaN	465	water clear	380	780	70°	
L-76765CSURC-G	AlGaInP	630	water clear	120	200	70°	7.6mm x 7.6mm L-76765C
L-76765CSEC-H	AlGaInP	625	water clear	300	600	70°	
L-76765CSYC-H	AlGaInP	589	water clear	200	500	70°	
L-76765CZGC-G	InGaN	525	water clear	1300	2200	70°	
L-76765CQBC-G	InGaN	465	water clear	280	410	70°	
L-7679C1SURC-G	AlGaInP	630	water clear	500	1000	70°	7.62mm x 7.62mm L-7679C1
L-7679C1SEC-H	AlGaInP	625	water clear	1000	2300	70°	
L-7679C1SYC-H	AlGaInP	589	water clear	2300	4200	70°	
L-7679C1ZGC	InGaN	525	water clear	*600	*1200	70°	
L-7679C1ZGC-G	InGaN	525	water clear	*2700	*3600	70°	
L-7679C1QBC-D	InGaN	465	water clear	*360	*800	70°	

NOTES:

1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.

SIDE VIEW

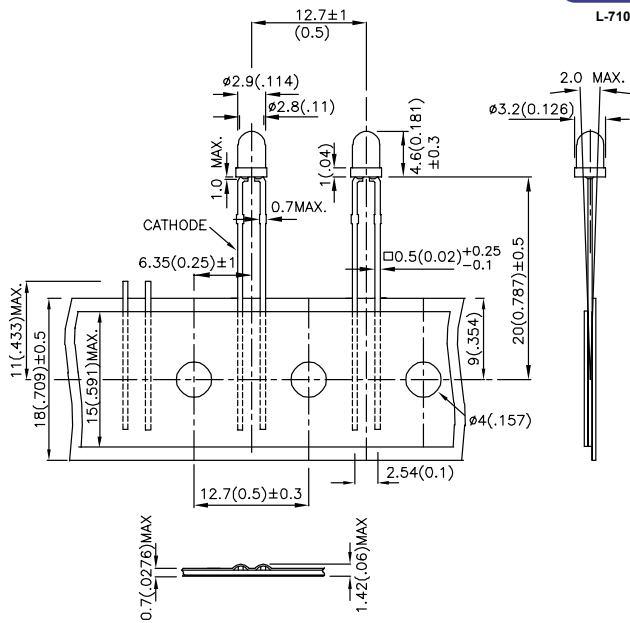
Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @20mA		Viewing Angle 2 θ /2	Dimension
				Min.	Typ.		
KA-9219/2SURSK	AlGaInP	630	water clear	80	150	100°	9.2mm x 1.9mm 
KA-9219/2SESK	AlGaInP	601	water clear	200	300	100°	
KA-9219/2SYSK	AlGaInP	590	water clear	120	250	100°	
KA-9219/2CGSK	AlGaInP	570	water clear	55	120	100°	
KA-9219/2ZGS	InGaIn	525	water clear	500	900	100°	
KA-9219/2QBS-D	InGaIn	465	water clear	120	250	100°	
KA-1114/2SURSK-CC-L5	AlGaInP	630	water clear	55	100	120°	11mm x 1.4mm 
KA-1114/2SESK-CC-L5	AlGaInP	601	water clear	120	200	120°	
KA-1114/2SYSK-CC-L5	AlGaInP	590	water clear	120	200	120°	
KA-1114/2CGSK-CC-L5	AlGaInP	570	water clear	40	70	120°	
KA-1114/2ZGS-CC-L5	InGaIn	525	water clear	400	700	120°	
KA-1114/2QBS-D-CC-L5	InGaIn	465	water clear	80	130	120°	

NOTES:

1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.

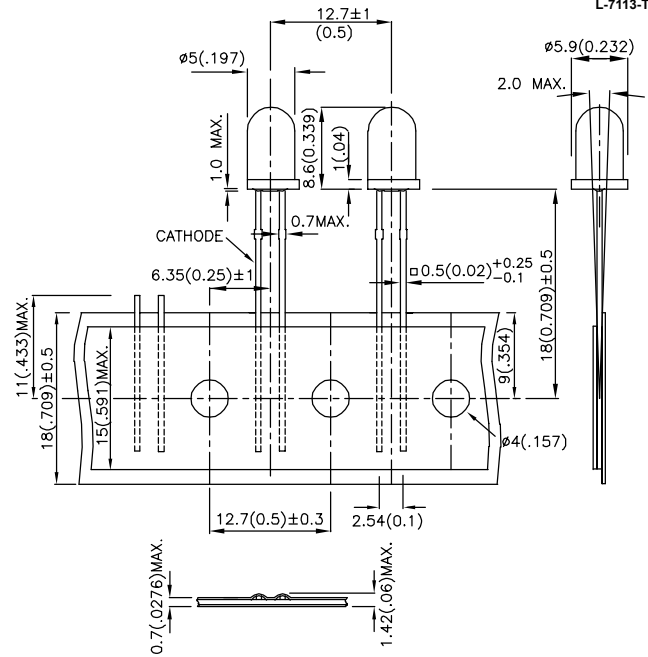
TAPE AND REEL SELECTIONS

L-7104-TNR2.54



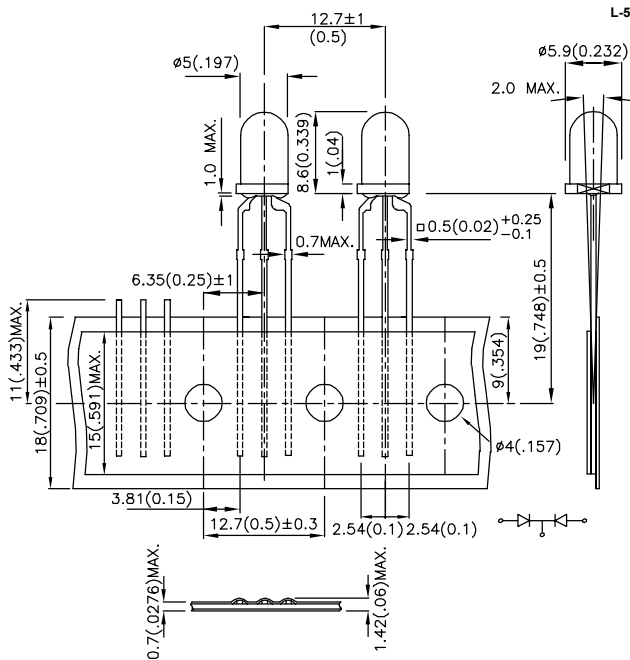
L-7104-TNR2.54

L-7113-TNR2.54



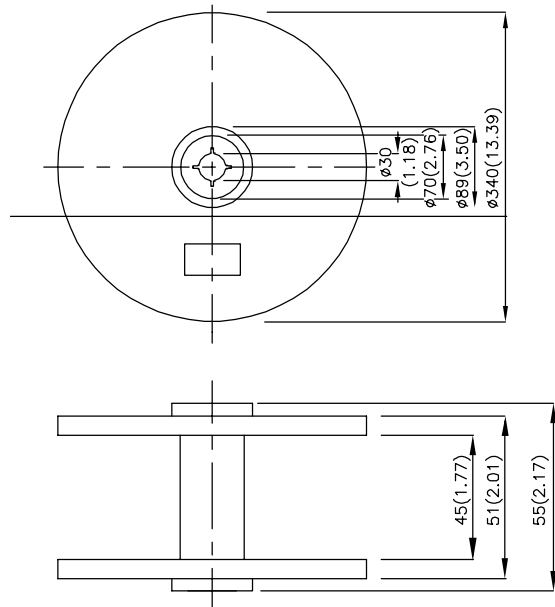
L-7113-TNR2.54

L-59-TNR2.54



L-59-TNR2.54

REEL DIMENSION



NOTES:

1. All dimensions are in millimeters (inches).
2. Tolerance is ±0.25mm (0.01") unless otherwise noted.

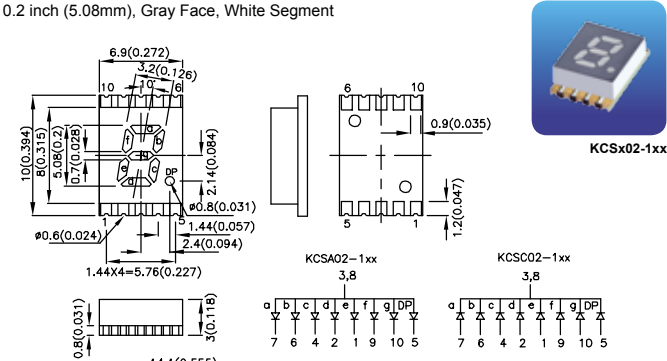
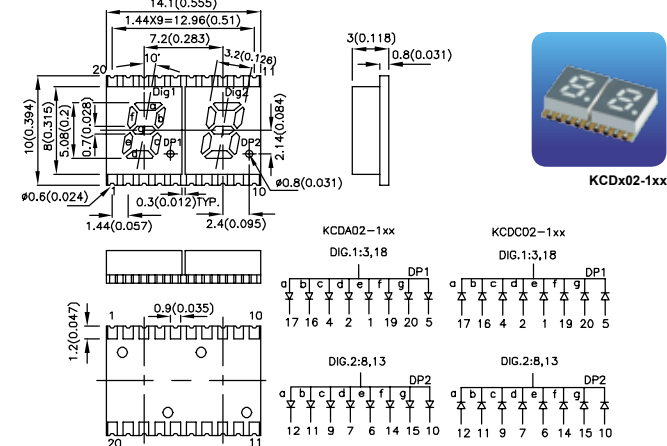
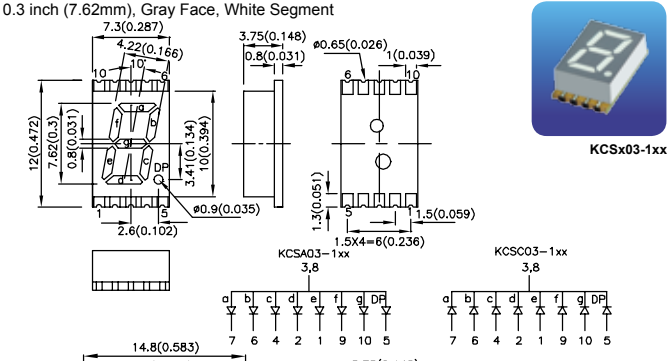
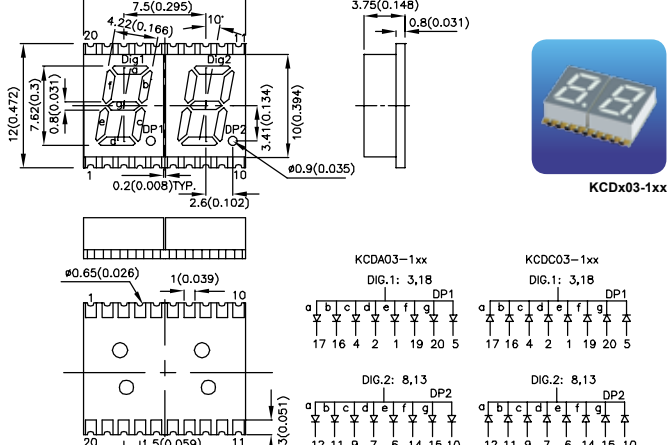
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Optoelectronic Components

SMD DISPLAY

7-Segment SMD Display	42
Alphanumeric SMD Display	45

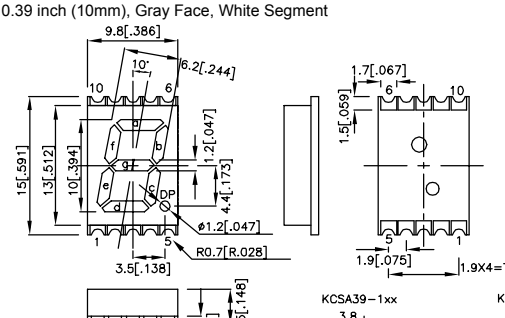
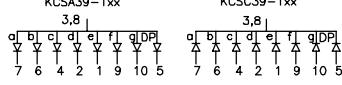
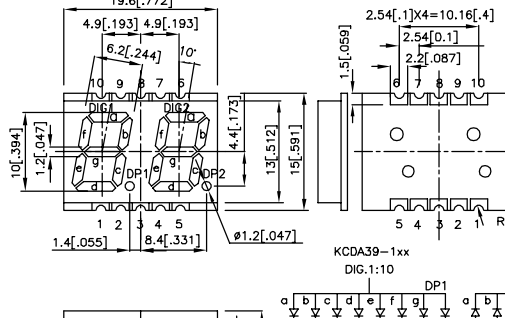
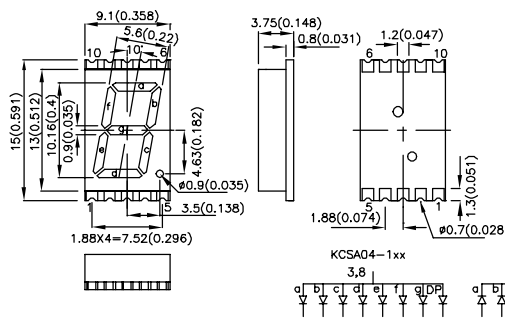
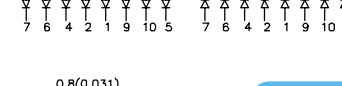
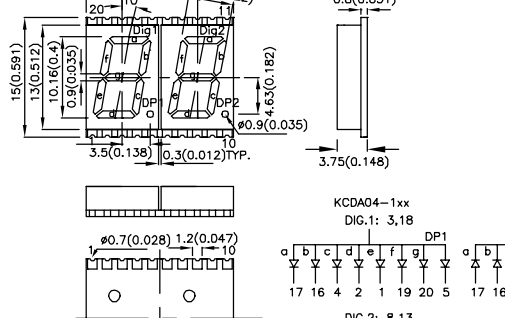
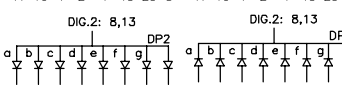
7-SEGMENT SMD DISPLAY

Part Number		Material	λ D (nm)	Iv (ucd) @10mA		Dimension
Common Anode	Common Cathode			Min.	Typ.	
KCSA02-105 KCDA02-105	KCSC02-105 KCDC02-105	AlGaInP	630	14000	30000	0.2 inch (5.08mm), Gray Face, White Segment  
KCSA02-106 KCDA02-106	KCSC02-106 KCDC02-106	AlGaInP	601	21000	37000	
KCSA02-107 KCDA02-107	KCSC02-107 KCDC02-107	AlGaInP	590	21000	50000	
KCSA02-123 KCDA02-123	KCSC02-123 KCDC02-123	AlGaInP	570	3600	12000	
KCSA02-136 KCDA02-136	KCSC02-136 KCDC02-136	InGaN	465	2200	4300	
KCSA03-105 KCDA03-105	KCSC03-105 KCDC03-105	AlGaInP	630	14000	27000	0.3 inch (7.62mm), Gray Face, White Segment  
KCSA03-106 KCDA03-106	KCSC03-106 KCDC03-106	AlGaInP	601	21000	46000	
KCSA03-107 KCDA03-107	KCSC03-107 KCDC03-107	AlGaInP	590	21000	36000	
KCSA03-123 KCDA03-123	KCSC03-123 KCDC03-123	AlGaInP	570	3600	12000	
KCSA03-136 KCDA03-136	KCSC03-136 KCDC03-136	InGaN	465	1400	2500	

NOTES:

1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.

7-SEGMENT SMD DISPLAY

Part Number		Material	λ_D (nm)	Iv (ucd) @10mA		Dimension
Common Anode	Common Cathode			Min.	Typ.	
KCSA39-105 KCDA39-105	/	AlGaInP	630	14000	36000	0.39 inch (10mm), Gray Face, White Segment    
KCSA39-106 KCDA39-106	/	AlGaInP	601	52000	120000	
KCSA39-107 KCDA39-107	/	AlGaInP	590	31000	91000	
KCSA39-123 KCDA39-123	/	AlGaInP	570	9000	19000	
KCSA39-136 KCDA39-136	KCSC39-136 KCDC39-136	InGaIn	465	2200	5600	
KCSA04-105 KCDA04-105	KCSC04-105 KCDC04-105	AlGaInP	630	14000	27000	0.4 inch (10.16mm) Gray Face, White Segment    
KCSA04-106 KCDA04-106	KCSC04-106 KCDC04-106	AlGaInP	601	21000	60000	
KCSA04-107 KCDA04-107	KCSC04-107 KCDC04-107	AlGaInP	590	21000	35000	
KCSA04-123 KCDA04-123	KCSC04-123 KCDC04-123	AlGaInP	570	5600	11000	
KCSA04-136 KCDA04-136	KCSC04-136 KCDC04-136	InGaIn	465	2200	5200	

NOTES:

1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.

7-SEGMENT SMD DISPLAY

Part Number		Material	λ D (nm)	Iv (ucd) @10mA		Dimension
Common Anode	Common Cathode			Min.	Typ.	
KCSA51-136	KCSC51-136	InGaN	465	3600	6500	0.51 inch (13mm) Gray Face, White Segment
KCSA51-136	KCSC51-136	InGaN	465	3600	6500	
KCSA56-105	KCSC56-105	AlGaInP	630	21000	44000	0.56 inch (14.22mm), Gray Face, White Segment
KCSA56-105	KCSC56-105	AlGaInP	630	21000	44000	
KCSA56-106	KCSC56-106	AlGaInP	601	31000	78000	0.56 inch (14.22mm), Gray Face, White Segment
KCSA56-106	KCSC56-106	AlGaInP	601	31000	78000	
KCSA56-107	KCSC56-107	AlGaInP	590	31000	76000	0.56 inch (14.22mm), Gray Face, White Segment
KCSA56-107	KCSC56-107	AlGaInP	590	31000	76000	
KCSA56-123	KCSC56-123	AlGaInP	570	9000	25000	0.56 inch (14.22mm), Gray Face, White Segment
KCSA56-123	KCSC56-123	AlGaInP	570	9000	25000	
KCSA56-131	KCSC56-131	InGaN	465	5600	15000	0.56 inch (14.22mm), Gray Face, White Segment
KCSA56-131	KCSC56-131	InGaN	465	5600	15000	
KCSA56-136	KCSC56-136	InGaN	465	2200	6600	0.56 inch (14.22mm), Gray Face, White Segment
KCSA56-136	KCSC56-136	InGaN	465	2200	6600	

NOTES:

1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.

Part Number		Material	λ D (nm)	Iv (ucd) @10mA		Dimension
Common Anode	Common Cathode			Min.	Typ.	
KCPSA04-105 KCPDA04-105	KCPSC04-105 KCPDC04-105	AlGaInP	630	14000	36000	0.4 inch (10.16mm), Gray Face, White Segment
KCPSA04-106 KCPDA04-106	KCPSC04-106 KCPDC04-106	AlGaInP	601	21000	44000	
KCPSA04-107 KCPDA04-107	KCPSC04-107 KCPDC04-107	AlGaInP	590	21000	46000	
KCPSA04-123 KCPDA04-123	KCPSC04-123 KCPDC04-123	AlGaInP	570	5600	11000	

NOTES:

1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.

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Optoelectronic Components

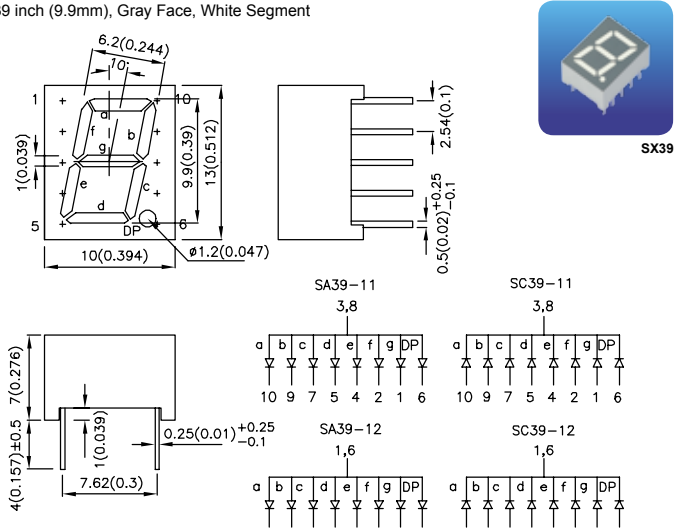
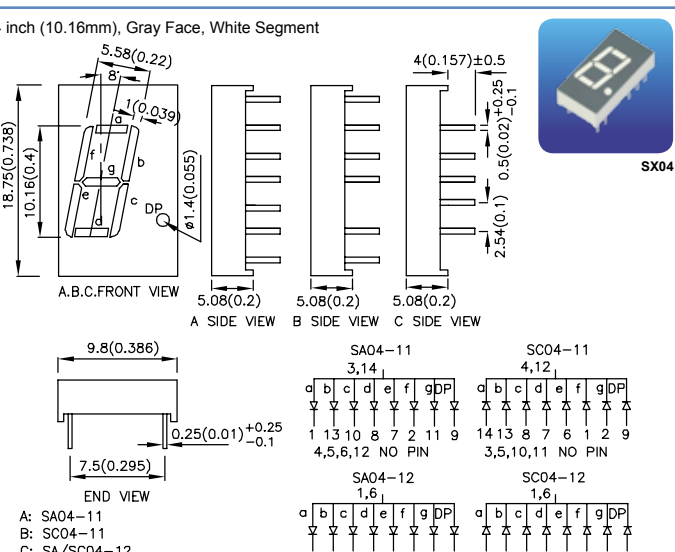
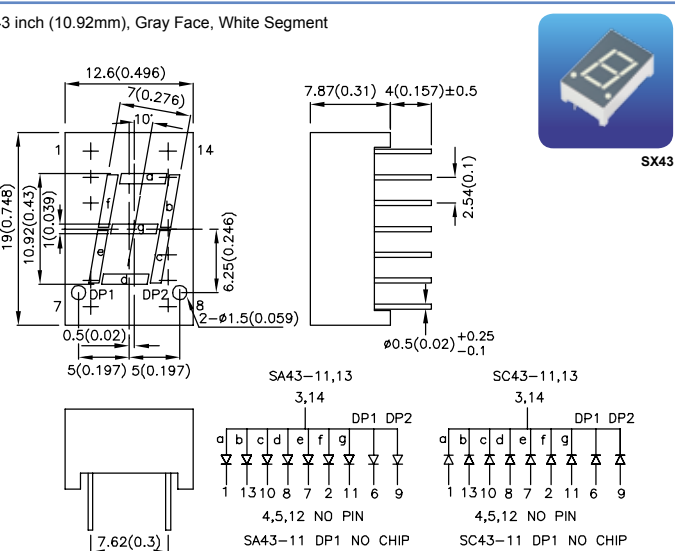
THROUGH-HOLE DISPLAY

Single Digit 7-Segment Through-Hole Display	46
Dual Digit 7-Segment Through-Hole Display	52
Three Digit 7-Segment Through-Hole Display	54
Four Digit 7-Segment Through-Hole Display	56
Alphanumeric Through-Hole Display	59
Dot Matrix	62
Bar Graph Array	70
Light Bar	71

Part Number		Material	λ D (nm)	Iv (ucd) @10mA		Dimension
Common Anode	Common Cathode			Min.	Typ.	
SA03-11SEKWA	SC03-12SEKWA	AlGaInP	601	52000	150000	0.3 inch (7.62mm), Gray Face, White Segment
SA03-11SURKWA	SC03-12SURKWA	AlGaInP	630	31000	67000	
SA03-11SYKWA	SC03-12SYKWA	AlGaInP	590	52000	100000	
SA03-11CGKWA	SC03-12CGKWA	AlGaInP	570	21000	57000	
SA32-11EWA	SC32-11EWA	GaAsP/GaP	617	3600	7600	0.32 inch (8mm), Gray Face, White Segment
SA32-11SRWA	SC32-11SRWA	GaAlAs	640	14000	31000	
SA32-11YWA	SC32-11YWA	GaAsP/GaP	588	2200	5000	
SA32-11GWA	SC32-11GWA	GaP	568	3600	7100	
SA36-11SEKWA	SC36-11SEKWA	AlGaInP	601	21000	45000	0.36 inch (9.14mm), Gray Face, White Segment
SA36-11SURKWA	SC36-11SURKWA	AlGaInP	630	14000	28000	
SA36-11SYKWA	SC36-11SYKWA	AlGaInP	590	21000	45000	
SA36-11CGKWA	SC36-11CGKWA	AlGaInP	570	3600	11000	

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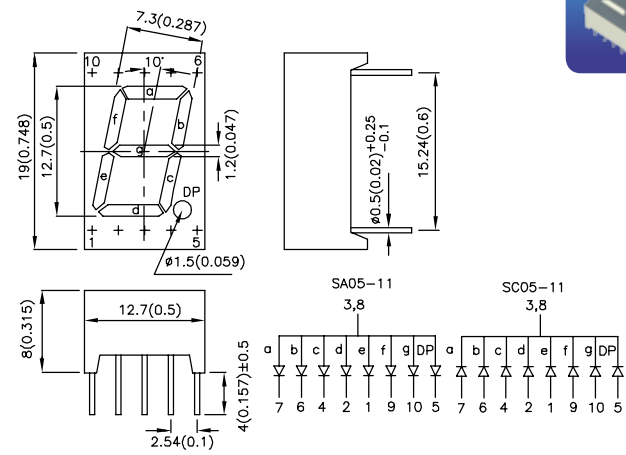
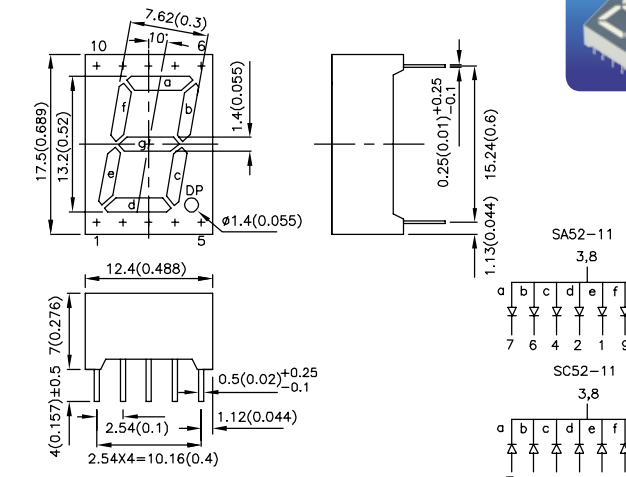
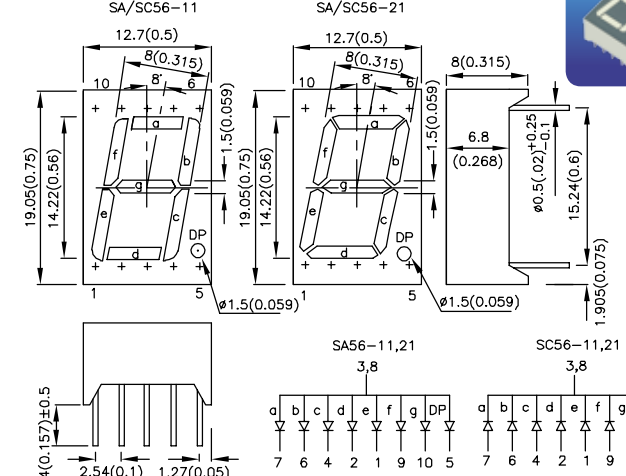
SINGLE DIGIT 7-SEGMENT THROUGH-HOLE DISPLAY

Part Number		Material	λ D (nm)	Iv (ucd) @10mA		Dimension
Common Anode	Common Cathode			Min.	Typ.	
SA39-11SEKWA SA39-12SEKWA	SC39-11SEKWA SC39-12SEKWA	AlGaInP	601	21000	59000	0.39 inch (9.9mm), Gray Face, White Segment 
SA39-11SURKWA SA39-12SURKWA	SC39-11SURKWA SC39-12SURKWA	AlGaInP	630	21000	46000	
SA39-11SYKWA SA39-12SYKWA	SC39-11SYKWA SC39-12SYKWA	AlGaInP	590	31000	86000	
SA39-11CGKWA SA39-12CGKWA	SC39-11CGKWA SC39-12CGKWA	AlGaInP	570	9000	21000	
SA04-11SEKWA SA04-12SEKWA	SC04-11SEKWA SC04-12SEKWA	AlGaInP	601	52000	160000	0.4 inch (10.16mm), Gray Face, White Segment 
SA04-11SURKWA SA04-12SURKWA	SC04-11SURKWA SC04-12SURKWA	AlGaInP	630	31000	80000	
SA04-11SYKWA SA04-12SYKWA	SC04-11SYKWA SC04-12SYKWA	AlGaInP	590	52000	130000	
SA04-11CGKWA SA04-12CGKWA	SC04-11CGKWA SC04-12CGKWA	AlGaInP	570	14000	30000	
SA43-11SEKWA SA43-13SEKWA	SC43-11SEKWA SC43-13SEKWA	AlGaInP	601	88000	220000	0.43 inch (10.92mm), Gray Face, White Segment 
SA43-11SURKWA SA43-13SURKWA	SC43-11SURKWA SC43-13SURKWA	AlGaInP	630	52000	100000	
SA43-11SYKWA SA43-13SYKWA	SC43-11SYKWA SC43-13SYKWA	AlGaInP	590	52000	160000	
SA43-11CGKWA SA43-13CGKWA	SC43-11CGKWA SC43-13CGKWA	AlGaInP	570	14000	39000	

NOTES:

1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.

SINGLE DIGIT 7-SEGMENT THROUGH-HOLE DISPLAY

Part Number		Material	λ D (nm)	Iv (ucd) @10mA		Dimension
Common Anode	Common Cathode			Min.	Typ.	
SA05-11SEKWA	SC05-11SEKWA	AlGaInP	601	31000	93000	0.5 inch (12.7mm), Gray Face, White Segment 
SA05-11SURKWA	SC05-11SURKWA	AlGaInP	630	31000	69000	
SA05-11SYKWA	SC05-11SYKWA	AlGaInP	590	52000	120000	
SA05-11CGKWA	SC05-11CGKWA	AlGaInP	570	14000	34000	
SA52-11SEKWA	SC52-11SEKWA	AlGaInP	601	52000	160000	0.52 inch (13.2mm), Gray Face, White Segment 
SA52-11SURKWA	SC52-11SURKWA	AlGaInP	630	52000	110000	
SA52-11SYKWA	SC52-11SYKWA	AlGaInP	590	52000	140000	
SA52-11CGKWA	SC52-11CGKWA	AlGaInP	570	14000	46000	
SA56-11SEKWA SA56-21SEKWA	SC56-11SEKWA SC56-21SEKWA	AlGaInP	601	52000	110000	0.56 inch (14.2mm), Gray Face, White Segment 
SA56-11SURKWA SA56-21SURKWA	SC56-11SURKWA SC56-21SURKWA	AlGaInP	630	31000	97000	
SA56-11SYKWA SA56-21SYKWA	SC56-11SYKWA SC56-21SYKWA	AlGaInP	590	52000	160000	
SA56-11CGKWA SA56-21CGKWA	SC56-11CGKWA SC56-21CGKWA	AlGaInP	570	14000	35000	

NOTES:

1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.

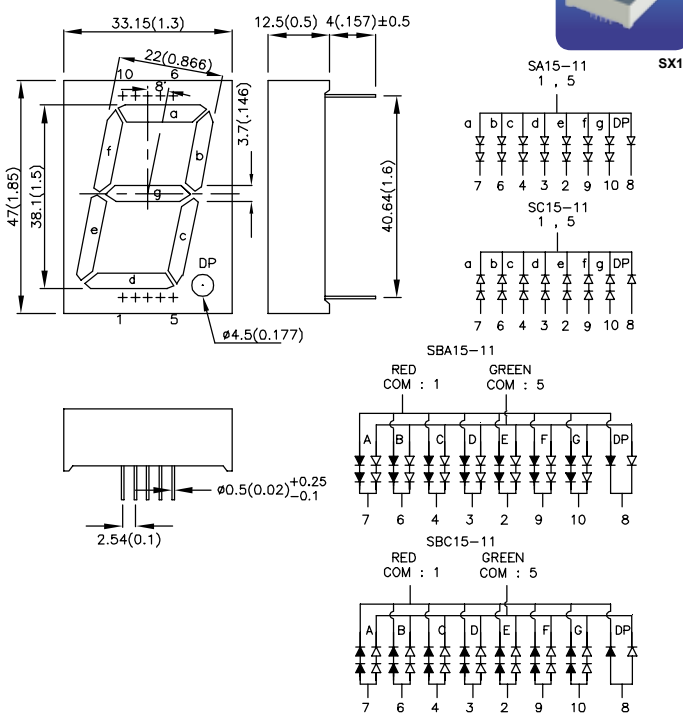
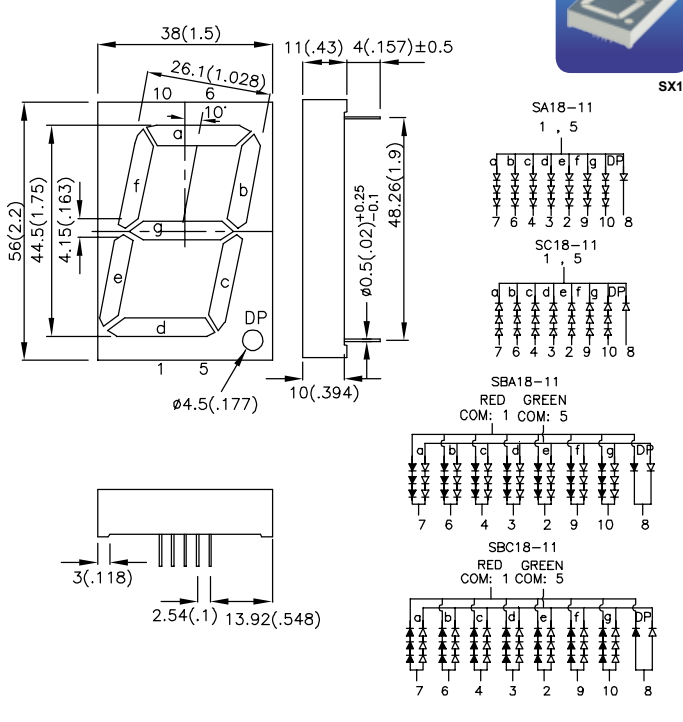
SINGLE DIGIT 7-SEGMENT THROUGH-HOLE DISPLAY

Part Number		Material	λ D (nm)	Iv (ucd) @10mA		Dimension
Common Anode	Common Cathode			Min.	Typ.	
SA08-11SEKWA SA08-12SEKWA SA08-21SEKWA	SC08-11SEKWA SC08-12SEKWA SC08-21SEKWA	AlGaInP	601	52000	150000	0.8 inch (20.32mm), Gray Face, White Segment SA/SC08-11 SA/SC08-12 SA08-11,12 3,5,11,16 SC08-11,12 3,5,11,16 SA08-21 2,15,13,11,9,5,7,3,14,10 SC08-21 4,9,12,17 7, 8, 15 NO PIN
SA08-11SURKWA SA08-12SURKWA SA08-21SURKWA	SC08-11SURKWA SC08-12SURKWA SC08-21SURKWA	AlGaInP	630	21000	61000	
SA08-11SYKWA SA08-12SYKWA SA08-21SYKWA	SC08-11SYKWA SC08-12SYKWA SC08-21SYKWA	AlGaInP	590	52000	140000	
SA08-11CGKWA SA08-12CGKWA SA08-21CGKWA	SC08-11CGKWA SC08-12CGKWA SC08-21CGKWA	AlGaInP	570	14000	25000	
SA10-11SEKWA SA10-21SEKWA	SC10-11SEKWA SC10-21SEKWA	AlGaInP	601	150000	440000	1.0 inch (25.4mm), Gray Face, White Segment SA/SC10-11 SA10-11 3,6,14 SC10-11 3,6,14 SA10-21 3,8 SC10-21 3,8 4, 5, 12 NO PIN
SA10-11SURKWA SA10-21SURKWA	SC10-11SURKWA SC10-21SURKWA	AlGaInP	630	88000	260000	
SA10-11SYKWA SA10-21SYKWA	SC10-11SYKWA SC10-21SYKWA	AlGaInP	590	150000	400000	
SA10-11CGKWA SA10-21CGKWA	SC10-11CGKWA SC10-21CGKWA	AlGaInP	570	52000	95000	

NOTES:

1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.

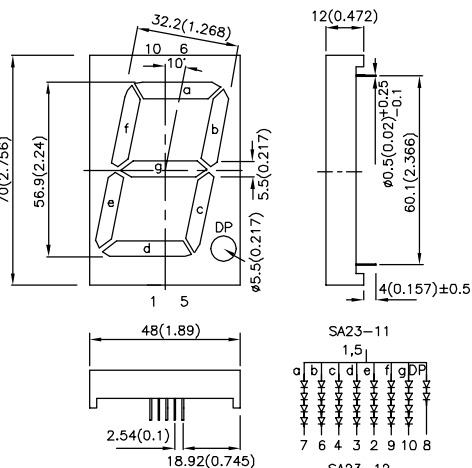
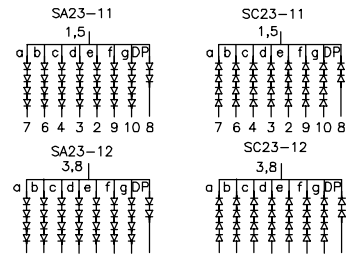
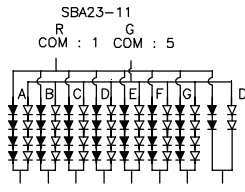
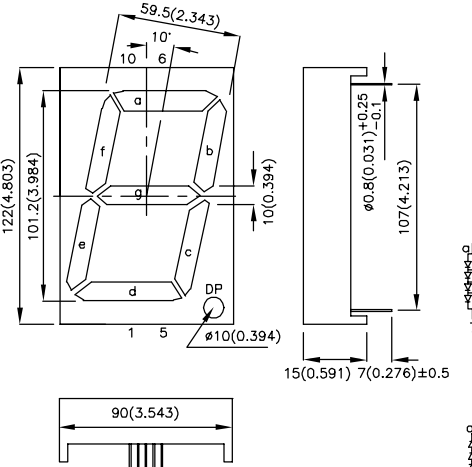
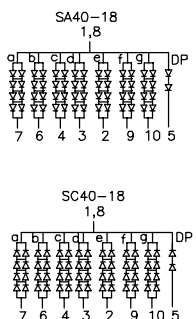
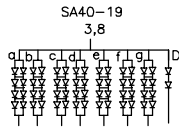
SINGLE DIGIT 7-SEGMENT THROUGH-HOLE DISPLAY

Part Number		Material	λ D (nm)	Iv (ucd) @10mA		Dimension
Common Anode	Common Cathode			Min.	Typ.	
SA15-11SEKWA	SC15-11SEKWA	AlGaInP	601	150000	420000	1.5 inch (38.1mm), Gray Face, White Segment 
SA15-11SURKWA	SC15-11SURKWA	AlGaInP	630	88000	210000	
SA15-11SYKWA	SC15-11SYKWA	AlGaInP	590	150000	400000	
SA15-11CGKWA	SC15-11CGKWA	AlGaInP	570	52000	100000	
SBA15-11 SURKCGKWA	SBC15-11 SURKCGKWA	AlGaInP	630	88000	210000	
		AlGaInP	570	52000	100000	
SA18-11SEKWA	SC18-11SEKWA	AlGaInP	601	255000	610000	1.75 inch (44.5mm), Gray Face, White Segment 
SA18-11SURKWA	SC18-11SURKWA	AlGaInP	630	150000	310000	
SA18-11SYKWA	SC18-11SYKWA	AlGaInP	590	255000	590000	
SA18-11CGKWA	SC18-11CGKWA	AlGaInP	570	52000	140000	
SBA18-11 SURKCGKWA	SBC18-11 SURKCGKWA	AlGaInP	630	150000	310000	
		AlGaInP	570	52000	140000	

NOTES:

1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.

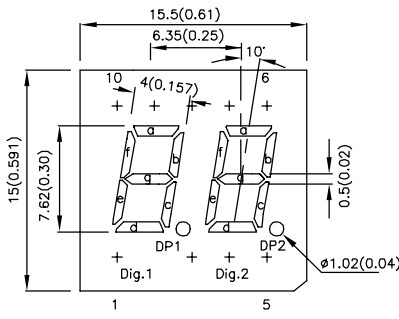
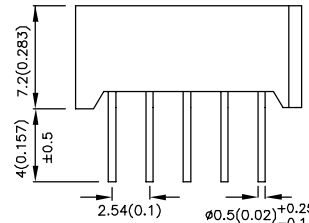
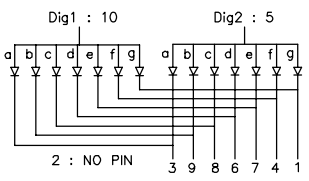
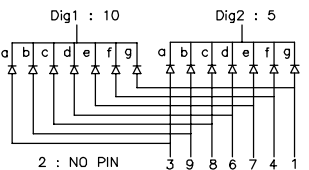
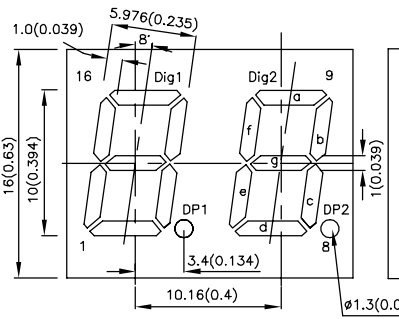
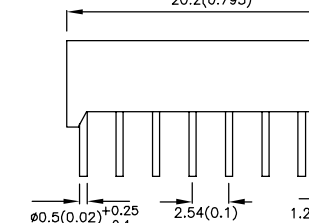
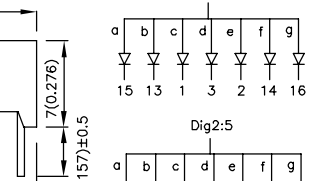
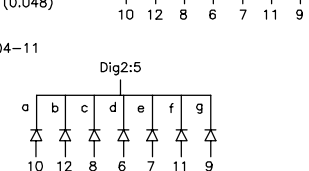
SINGLE DIGIT 7-SEGMENT THROUGH-HOLE DISPLAY

Part Number		Material	λ D (nm)	Iv (ucd) @10mA		Dimension
Common Anode	Common Cathode			Min.	Typ.	
SA23-11SEKWA SA23-12SEKWA	SC23-11SEKWA SC23-12SEKWA	AlGaInP	601	255000	650000	2.24 inch (56.9mm), Gray Face, White Segment   
SA23-11SURKWA SA23-12SURKWA	SC23-11SURKWA SC23-12SURKWA	AlGaInP	630	255000	440000	
SA23-11SYKWA SA23-12SYKWA	SC23-11SYKWA SC23-12SYKWA	AlGaInP	590	255000	720000	
SA23-11CGKWA SA23-12CGKWA	SC23-11CGKWA SC23-12CGKWA	AlGaInP	570	88000	200000	
SBA23-11 SURKCGKWA	SBC23-11 SURKCGKWA	AlGaInP	630	255000	440000	
		AlGaInP	570	88000	200000	
SA40-18SEKWA SA40-19SEKWA	SC40-18SEKWA SC40-19SEKWA	AlGaInP	601	255000	500000	3.984 inch (101.2mm), Gray Face, White Segment   
SA40-18SURKWA SA40-19SURKWA	SC40-18SURKWA SC40-19SURKWA	AlGaInP	630	88000	250000	
SA40-18SYKWA SA40-19SYKWA	SC40-18SYKWA SC40-19SYKWA	AlGaInP	590	150000	450000	
SA40-18CGKWA SA40-19CGKWA	SC40-18CGKWA SC40-19CGKWA	AlGaInP	570	31000	100000	

NOTES:

1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.

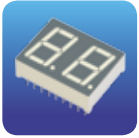
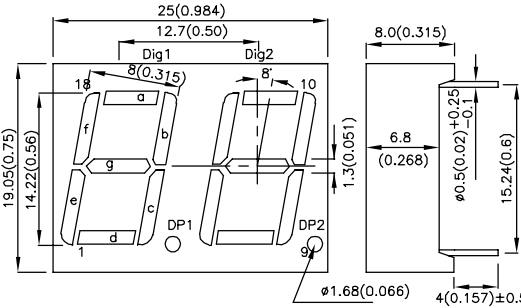
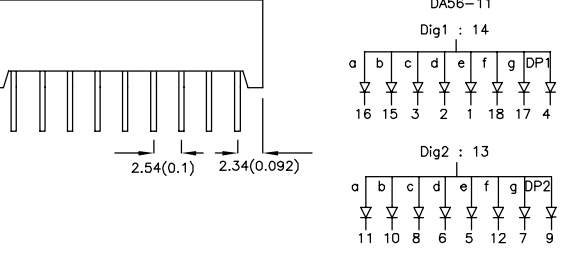
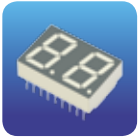
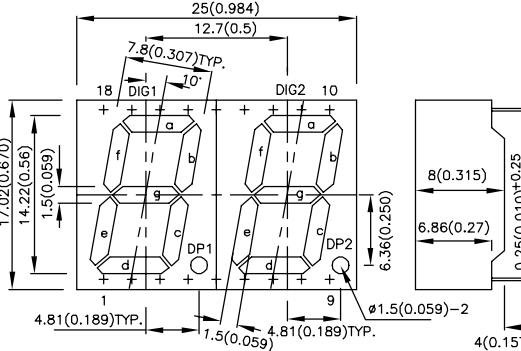
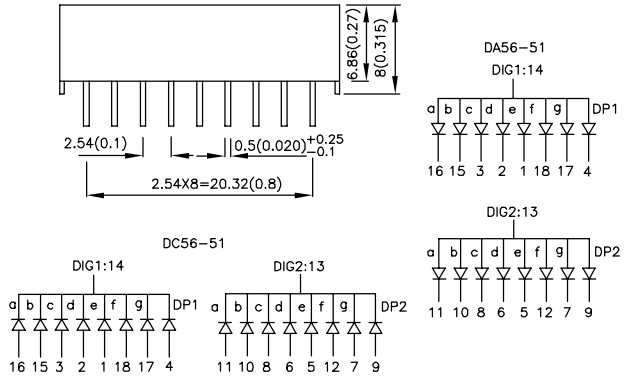
DUAL DIGIT 7-SEGMENT THROUGH-HOLE DISPLAY

Part Number		Material	λ D (nm)	Iv (ucd) @10mA		Dimension
Common Anode	Common Cathode			Min.	Typ.	
DA03-11SEKWA	DC03-11SEKWA	AlGaInP	601	31000	64000	0.3 inch (7.62mm), Gray Face, White Segment     
DA03-11SURKWA	DC03-11SURKWA	AlGaInP	630	21000	47000	
DA03-11SYKWA	DC03-11SYKWA	AlGaInP	590	21000	54000	
DA03-11CGKWA	DC03-11CGKWA	AlGaInP	570	9000	16000	
DA04-11SEKWA	DC04-11SEKWA	AlGaInP	601	31000	100000	0.394 inch (10mm), Gray Face, White Segment     
DA04-11SURKWA	DC04-11SURKWA	AlGaInP	630	21000	54000	
DA04-11SYKWA	DC04-11SYKWA	AlGaInP	590	31000	84000	
DA04-11CGKWA	DC04-11CGKWA	AlGaInP	570	9000	25000	

NOTES:

- All dimensions are in millimeters(inches).
- Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.

DUAL DIGIT 7-SEGMENT THROUGH-HOLE DISPLAY

Part Number		Material	λ D (nm)	Iv (ucd) @10mA		Dimension
Common Anode	Common Cathode			Min.	Typ.	
DA56-11SEKWA	DC56-11SEKWA	AlGaInP	601	52000	110000	0.56 inch (14.22mm), Gray Face, White Segment  DX56-11  DA56-11 Dig1 : 14 Dig2 : 13 
DA56-11SURKWA	DC56-11SURKWA	AlGaInP	630	31000	85000	
DA56-11SYKWA	DC56-11SYKWA	AlGaInP	590	52000	130000	
DA56-11CGKWA	DC56-11CGKWA	AlGaInP	570	14000	35000	
DA56-51SEKWA	DC56-51SEKWA	AlGaInP	601	52000	120000	0.56 inch, (14.22mm), Gray Face, White Segment  DX56-51  DA56-51 DIG1:14 DIG2:13 
DA56-51SURKWA	DC56-51SURKWA	AlGaInP	630	52000	100000	
DA56-51SYKWA	DC56-51SYKWA	AlGaInP	590	52000	120000	
DA56-51CGKWA	DC56-51CGKWA	AlGaInP	570	14000	23000	

NOTES:

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2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.

DUAL DIGIT 7-SEGMENT THROUGH-HOLE DISPLAY

Part Number		Material	λ D (nm)	Iv (ucd) @10mA		Dimension
Common Anode	Common Cathode			Min.	Typ.	
DA08-11SEKWA	DC08-11SEKWA	AlGaInP	601	52000	120000	0.8 inch (20.32mm), Gray Face, White Segment DA08-11 Dig1 : 14 DC08-11 Dig1 : 14 DA08-11 Dig2 : 13 DC08-11 Dig2 : 13
DA08-11SURKWA	DC08-11SURKWA	AlGaInP	630	31000	75000	
DA08-11SYKWA	DC08-11SYKWA	AlGaInP	590	52000	94000	
DA08-11CGKWA	DC08-11CGKWA	AlGaInP	570	14000	38000	

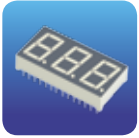
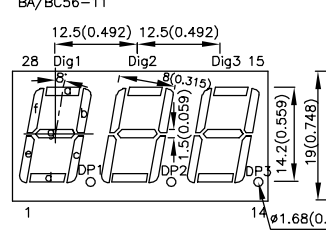
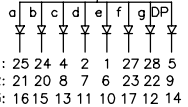
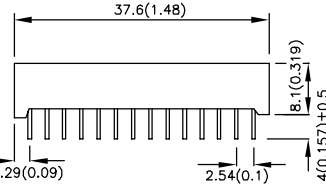
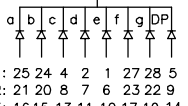
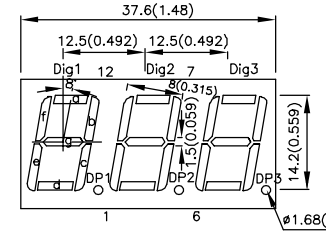
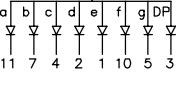
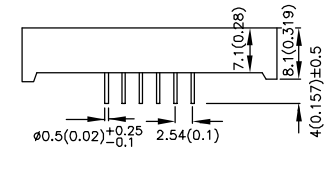
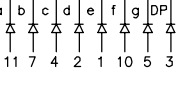
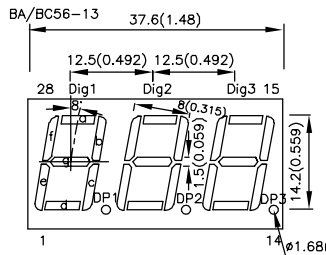
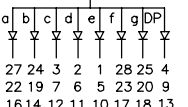
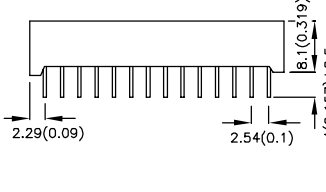
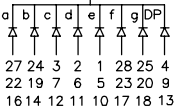
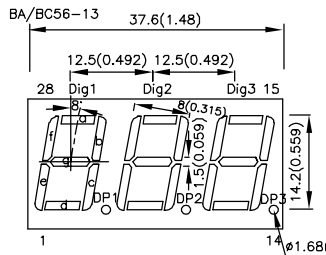
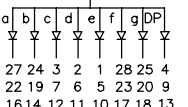
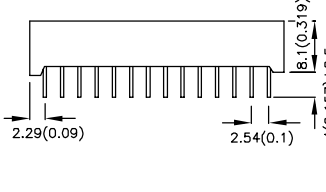
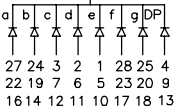
THREE DIGIT 7-SEGMENT THROUGH-HOLE DISPLAY

Part Number		Material	λ D (nm)	Iv (ucd) @10mA		Dimension
Common Anode	Common Cathode			Min.	Typ.	
BA04-11SEKWA	BC04-11SEKWA	AlGaInP	601	52000	160000	0.4 inch (10.2mm), Gray Face, White Segment BA04-11 Dig1:14 BC04-11 Dig1:14 BA04-11 Dig2:5 BC04-11 Dig2:5 BA04-11 Dig3:9 BC04-11 Dig3:9
BA04-11SURKWA	BC04-11SURKWA	AlGaInP	630	21000	56000	
BA04-11SYKWA	BC04-11SYKWA	AlGaInP	590	52000	92000	
BA04-11CGKWA	BC04-11CGKWA	AlGaInP	570	9000	25000	

NOTES:

1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.

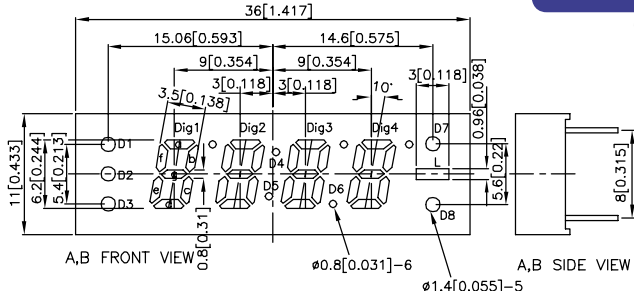
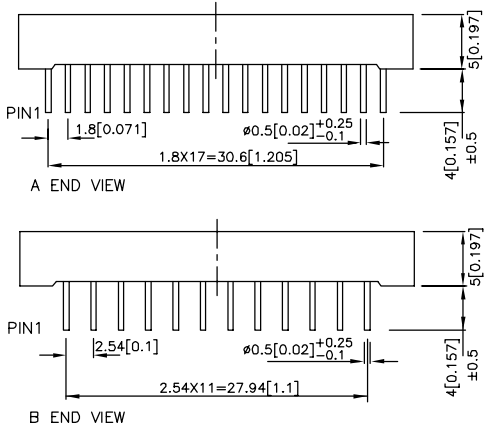
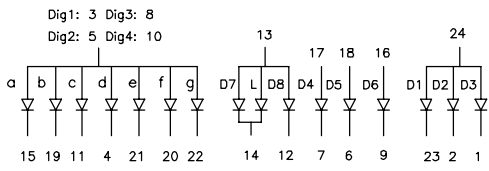
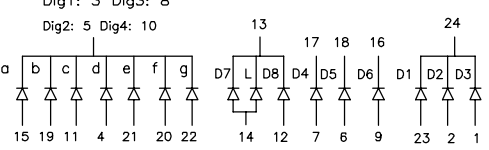
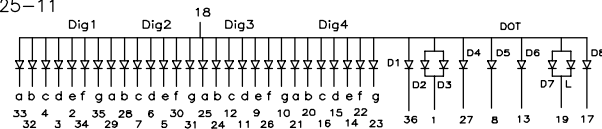
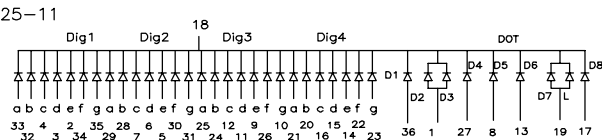
THREE DIGIT 7-SEGMENT THROUGH-HOLE DISPLAY

Part Number		Material	λ D (nm)	Iv (ucd) @10mA		Dimension
Common Anode	Common Cathode			Min.	Typ.	
BA56-11SEKWA BA56-12SEKWA BA56-13SEKWA	BC56-11SEKWA BC56-12SEKWA BC56-13SEKWA	AlGaInP	601	52000	120000	0.56 inch (14.22mm), Gray Face, White Segment  BA/BC56-11  BA56-11 Dig1:3,26 Dig2:19 Dig3:18  Dig1: 25 24 4 2 1 27 28 5 Dig2: 21 20 8 7 6 23 22 9 Dig3: 16 15 13 11 10 17 12 14  BC56-11 Dig1:3,26 Dig2:19 Dig3:18  Dig1: 25 24 4 2 1 27 28 5 Dig2: 21 20 8 7 6 23 22 9 Dig3: 16 15 13 11 10 17 12 14
BA56-11SURKWA BA56-12SURKWA BA56-13SURKWA	BC56-11SURKWA BC56-12SURKWA BC56-13SURKWA	AlGaInP	630	31000	73000	BA/BC56-12  BA56-12 Dig1:12 Dig2:9 Dig3:8  Dig1: 11 7 4 2 1 10 5 3  BC56-12 Dig1:12 Dig2:9 Dig3:8  Dig1: 11 7 4 2 1 10 5 3
BA56-11SYKWA BA56-12SYKWA BA56-13SYKWA	BC56-11SYKWA BC56-12SYKWA BC56-13SYKWA	AlGaInP	590	52000	120000	BA/BC56-13  BA56-13 Dig1:26 Dig2:8,21 Dig3:15  Dig1: 27 24 3 2 1 28 25 4 Dig2: 22 19 7 6 5 23 20 9 Dig3: 16 14 12 11 10 17 18 13  BC56-13 Dig1:26 Dig2:8,21 Dig3:15  Dig1: 27 24 3 2 1 28 25 4 Dig2: 22 19 7 6 5 23 20 9 Dig3: 16 14 12 11 10 17 18 13
BA56-11CGKWA BA56-12CGKWA BA56-13CGKWA	BC56-11CGKWA BC56-12CGKWA BC56-13CGKWA	AlGaInP	570	14000	35000	BA/BC56-13  BA56-13 Dig1:26 Dig2:8,21 Dig3:15  Dig1: 27 24 3 2 1 28 25 4 Dig2: 22 19 7 6 5 23 20 9 Dig3: 16 14 12 11 10 17 18 13  BC56-13 Dig1:26 Dig2:8,21 Dig3:15  Dig1: 27 24 3 2 1 28 25 4 Dig2: 22 19 7 6 5 23 20 9 Dig3: 16 14 12 11 10 17 18 13

NOTES:

1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.

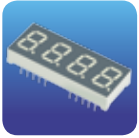
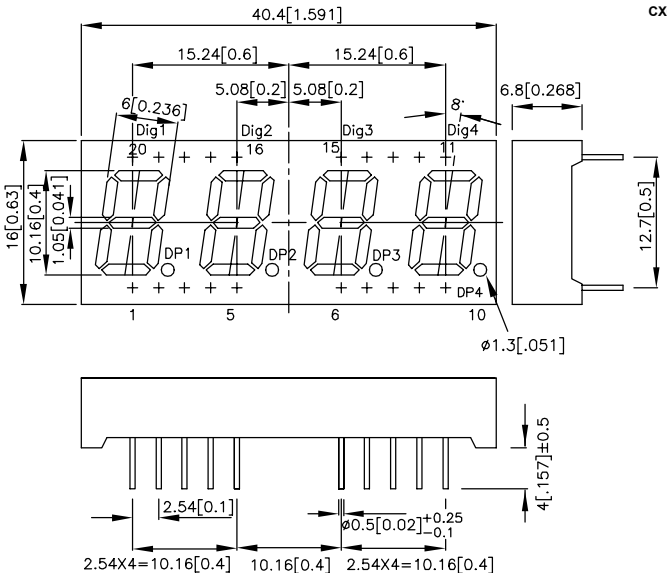
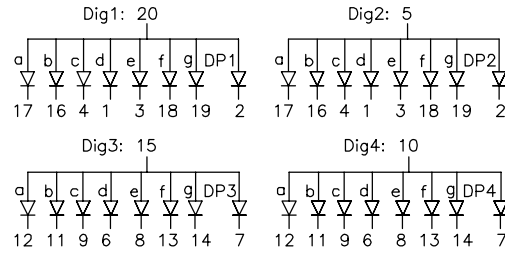
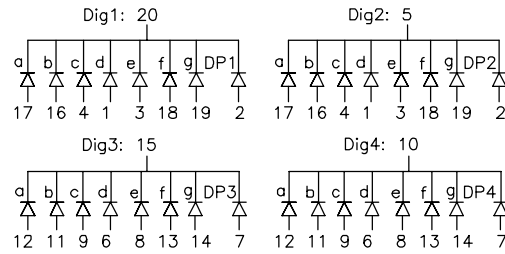
FOUR DIGIT 7-SEGMENT THROUGH-HOLE DISPLAY

Part Number		Material	λ D (nm)	Iv (ucd) @10mA		Dimension
Common Anode	Common Cathode			Min.	Typ.	
CA25-11SEKWA CA25-12SEKWA	CC25-11SEKWA CC25-12SEKWA	AlGaInP	601	52000	160000	0.244 inch (6.2mm), Gray Face, White Segment A: CA/CC25-11 B: CA/CC25-12  A,B FRONT VIEW A,B SIDE VIEW
CA25-11SURKWA CA25-12SURKWA	CC25-11SURKWA CC25-12SURKWA	AlGaInP	630	31000	80000	 A END VIEW B END VIEW
CA25-11SYKWA CA25-12SYKWA	CC25-11SYKWA CC25-12SYKWA	AlGaInP	590	52000	110000	CA25-12  CC25-12 
CA25-11CGKWA CA25-12CGKWA	CC25-11CGKWA CC25-12CGKWA	AlGaInP	570	14000	34000	CA25-11  CC25-11 

NOTES:

1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.

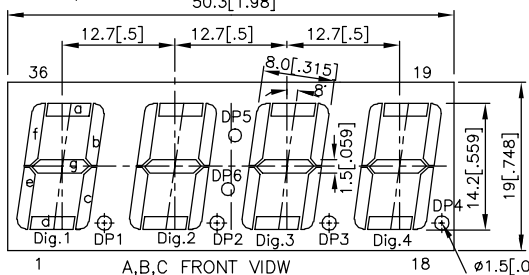
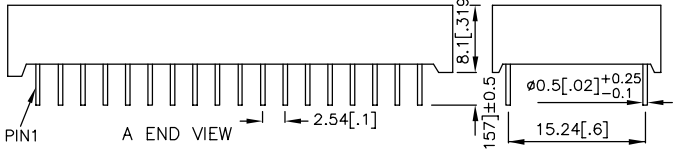
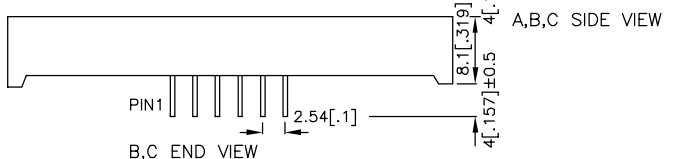
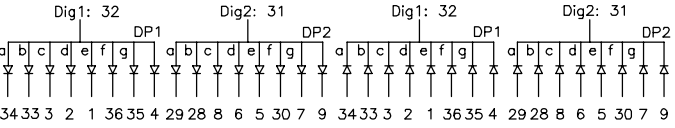
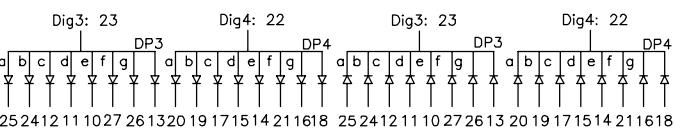
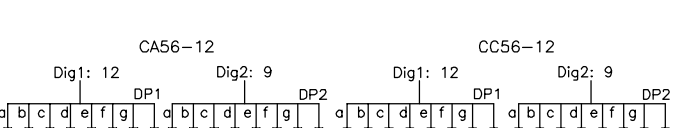
FOUR DIGIT 7-SEGMENT THROUGH-HOLE DISPLAY

Part Number		Material	λ D (nm)	Iv (ucd) @10mA		Dimension
Common Anode	Common Cathode			Min.	Typ.	
CA04-41SEKWA	CC04-41SEKWA	AlGaInP	601	52000	140000	0.4 inch (10.16mm), Gray Face, White Segment  CX04  CA04-41  CC04-41 
CA04-41SURKWA	CC04-41SURKWA	AlGaInP	630	31000	87000	
CA04-41SYKWA	CC04-41SYKWA	AlGaInP	590	52000	110000	
CA04-41CGKWA	CC04-41CGKWA	AlGaInP	570	9000	24000	

NOTES:

1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.

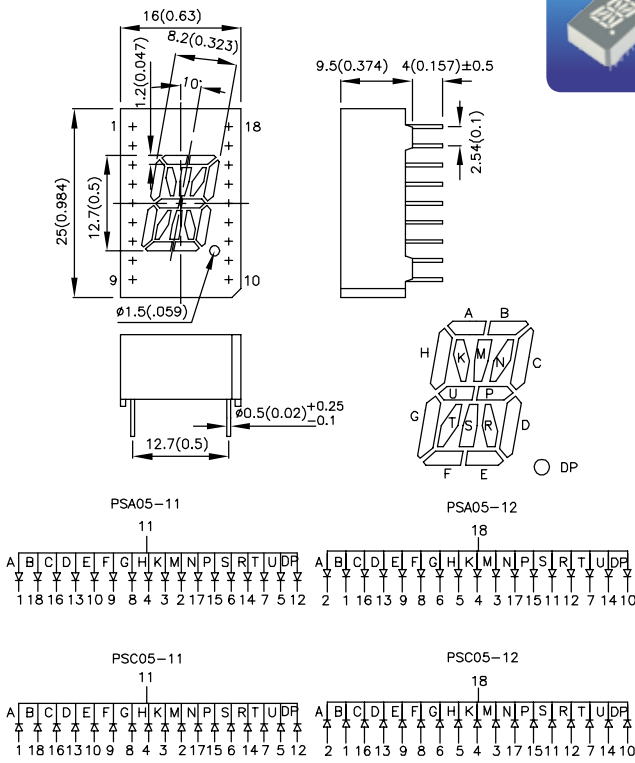
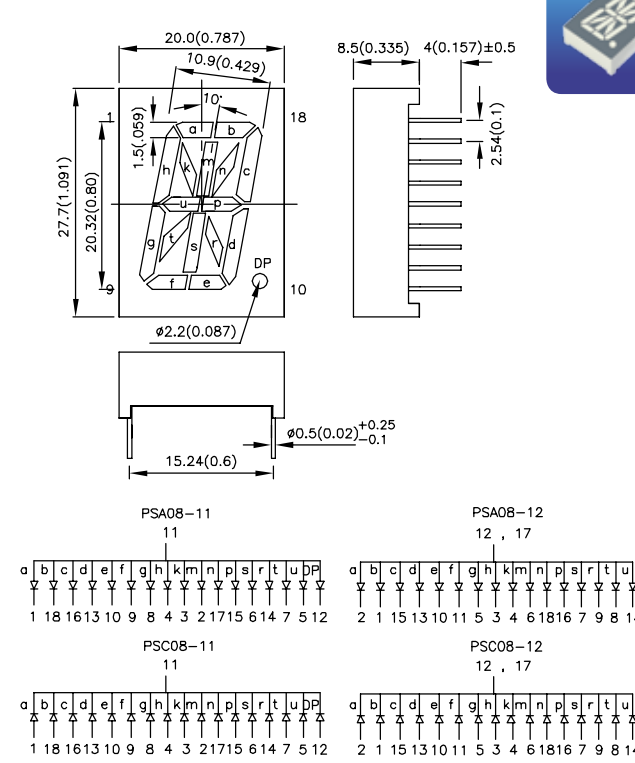
FOUR DIGIT 7-SEGMENT THROUGH-HOLE DISPLAY

Part Number		Material	λ D (nm)	Iv (ucd) @10mA		Dimension
Common Anode	Common Cathode			Min.	Typ.	
CA56-11SEKWA CA56-12SEKWA CA56-21SEKWA	CC56-11SEKWA CC56-12SEKWA CC56-21SEKWA	AlGaInP	601	52000	120000	0.56 inch (14.22mm), Gray Face, White Segment A:CA/CC56-11 B:CA/CC56-12 C:CA/CC56-21  CX56     CA56-11 CC56-11  CA56-12 CC56-12  CA56-21 CC56-21 
CA56-11SURKWA CA56-12SURKWA CA56-21SURKWA	CC56-11SURKWA CC56-12SURKWA CC56-21SURKWA	AlGaInP	630	31000	72000	
CA56-11SYKWA CA56-12SYKWA CA56-21SYKWA	CC56-11SYKWA CC56-12SYKWA CC56-21SYKWA	AlGaInP	590	52000	120000	
CA56-11CGKWA CA56-12CGKWA CA56-21CGKWA	CC56-11CGKWA CC56-12CGKWA CC56-21CGKWA	AlGaInP	570	14000	35000	

NOTES:

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- Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.

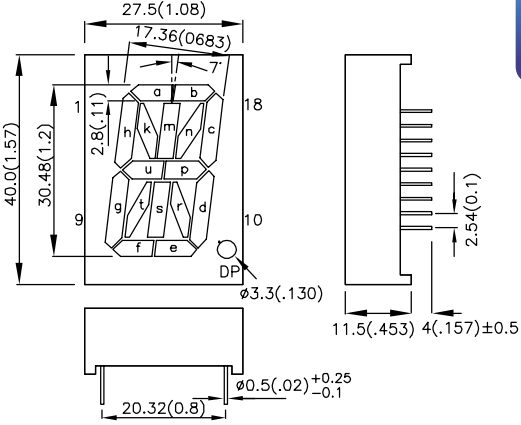
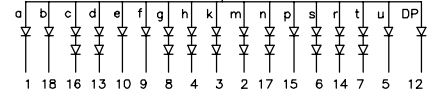
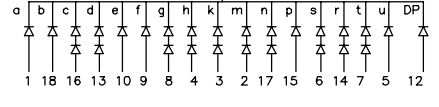
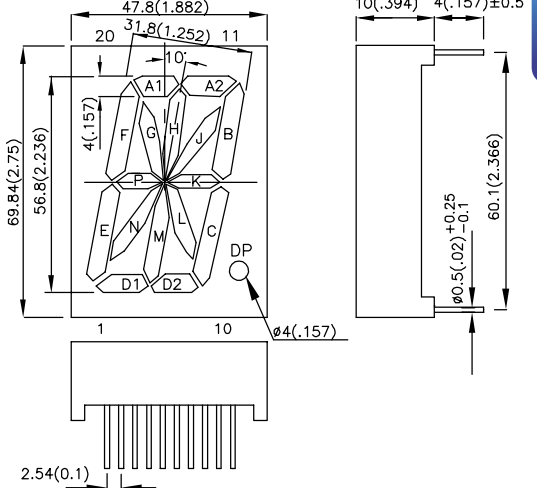
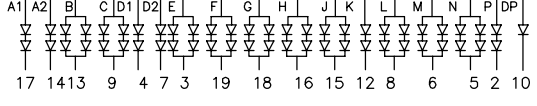
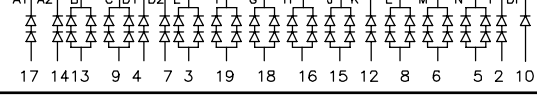
ALPHANUMERIC THROUGH-HOLE DISPLAY

Part Number		Material	λ D (nm)	Iv (ucd) @10mA		Dimension
Common Anode	Common Cathode			Min.	Typ.	
PSA05-11SEKWA PSA05-12SEKWA	PSC05-11SEKWA PSC05-12SEKWA	AlGaInP	601	52000	140000	0.5 inch (12.7mm), Gray Face, White Segment  PSX05 
PSA05-11SURKWA PSA05-12SURKWA	PSC05-11SURKWA PSC05-12SURKWA	AlGaInP	630	52000	110000	
PSA05-11SYKWA PSA05-12SYKWA	PSC05-11SYKWA PSC05-12SYKWA	AlGaInP	590	52000	160000	
PSA05-11CGKWA PSA05-12CGKWA	PSC05-11CGKWA PSC05-12CGKWA	AlGaInP	570	14000	32000	
PSA08-11SEKWA PSA08-12SEKWA	PSC08-11SEKWA PSC08-12SEKWA	AlGaInP	601	31000	100000	0.8 inch (20.32mm), Gray Face, White Segment  PSX08 
PSA08-11SURKWA PSA08-12SURKWA	PSC08-11SURKWA PSC08-12SURKWA	AlGaInP	630	31000	71000	
PSA08-11SYKWA PSA08-12SYKWA	PSC08-11SYKWA PSC08-12SYKWA	AlGaInP	590	52000	120000	
PSA08-11CGKWA PSA08-12CGKWA	PSC08-11CGKWA PSC08-12CGKWA	AlGaInP	570	14000	25000	

NOTES:

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2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.

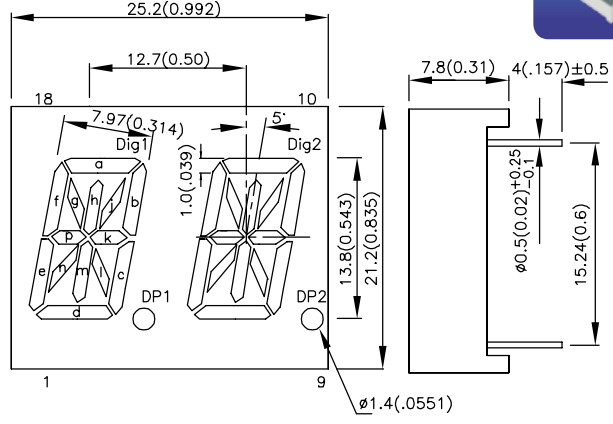
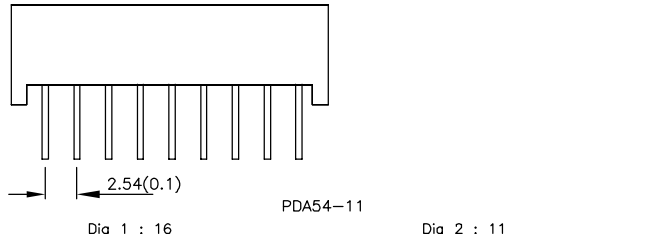
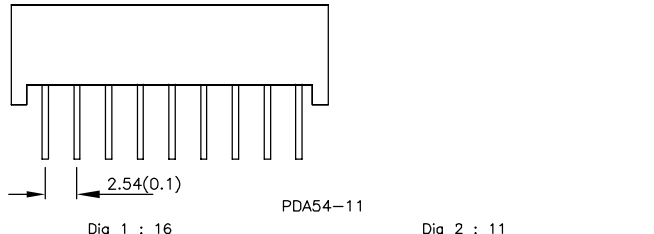
ALPHANUMERIC THROUGH-HOLE DISPLAY

Part Number		Material	λ D (nm)	Iv (ucd) @10mA		Dimension
Common Anode	Common Cathode			Min.	Typ.	
PSA12-11SEKWA	PSC12-11SEKWA	AlGaInP	601	52000	110000	1.2 inch (30.48mm), Gray Face, White Segment  PSA12-11  PSC12-11 
PSA12-11SURKWA	PSC12-11SURKWA	AlGaInP	630	31000	63000	
PSA12-11SYKWA	PSC12-11SYKWA	AlGaInP	590	52000	100000	
PSA12-11CGKWA	PSC12-11CGKWA	AlGaInP	570	14000	25000	
PSA23-11SEKWA	PSC23-11SEKWA	AlGaInP	601	52000	160000	2.24 inch (56.8mm), Gray Face, White Segment  PSA23-11  PSC23-11 
PSA23-11SURKWA	PSC23-11SURKWA	AlGaInP	630	52000	95000	
PSA23-11SYKWA	PSC23-11SYKWA	AlGaInP	590	52000	170000	
PSA23-11CGKWA	PSC23-11CGKWA	AlGaInP	570	14000	39000	

NOTES:

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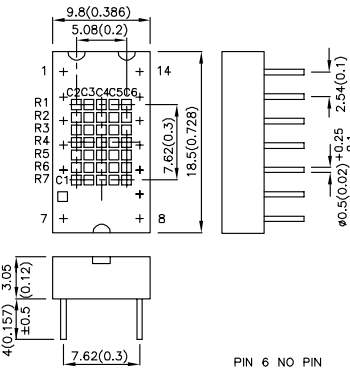
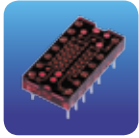
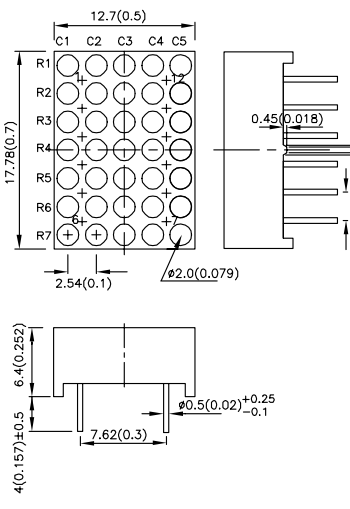
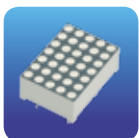
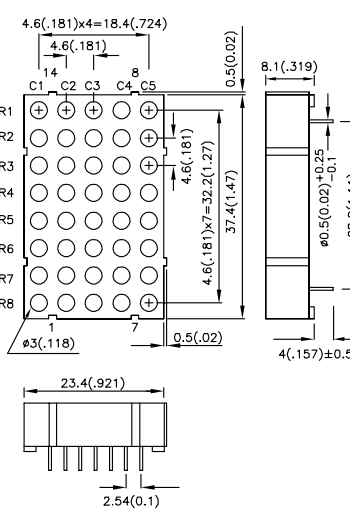
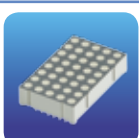
ALPHANUMERIC THROUGH-HOLE DISPLAY

Part Number		Material	λ D (nm)	Iv (ucd) @10mA		Dimension
Common Anode	Common Cathode			Min.	Typ.	
PDA54-11SEKWA PDA54-12SEKWA	PDC54-11SEKWA PDC54-12SEKWA	AlGaInP	601	52000	120000	0.543inch (13.8mm), Gray Face, White Segment  25.2(0.992) 12.7(0.50) 18 7.97(0.314) 10 5° Dig1 Dig2 1.0(.039) 13.8(0.543) 21.2(0.835) 7.8(0.31) 4(.157)±0.5 ø0.5(0.02)±0.25 15.24(0.6) ø1.4(.0551)  PDA54-11 Dig 1 : 16 Dig 2 : 11 a b c d e f g h j k l m n p DP1 a b c d e f g h j k l m n p DP2 1210 9 7 1 1817 1514 6 5 4 2 13 8 1210 9 7 1 1817 1514 6 5 4 2 13 8 PDC54-11 Dig 1 : 16 Dig 2 : 11 a b c d e f g h j k l m n p DP1 a b c d e f g h j k l m n p DP2 1210 9 7 1 1817 1514 6 5 4 2 13 8 1210 9 7 1 1817 1514 6 5 4 2 13 8 PDA54-12 Dig. 1 12 14 4 1 17 18 3 6 12 14 4 1 17 18 3 9 a f e p h g n DP1 a f e p h g n DP2 d b c k m j i d b c k m j i PIN 2,7,11,13,16 NO CONNECTION PDC54-12 Dig. 1 12 14 4 1 17 18 3 6 12 14 4 1 17 18 3 9 a f e p h g n DP1 a f e p h g n DP2 d b c k m j i d b c k m j i PIN 2,7,11,13,16 NO CONNECTION
PDA54-11SURKWA PDA54-12SURKWA	PDC54-11SURKWA PDC54-12SURKWA	AlGaInP	630	31000	68000	 PDA54-11 Dig 1 : 16 Dig 2 : 11 a b c d e f g h j k l m n p DP1 a b c d e f g h j k l m n p DP2 1210 9 7 1 1817 1514 6 5 4 2 13 8 1210 9 7 1 1817 1514 6 5 4 2 13 8 PDC54-11 Dig 1 : 16 Dig 2 : 11 a b c d e f g h j k l m n p DP1 a b c d e f g h j k l m n p DP2 1210 9 7 1 1817 1514 6 5 4 2 13 8 1210 9 7 1 1817 1514 6 5 4 2 13 8 PDA54-12 Dig. 1 12 14 4 1 17 18 3 6 12 14 4 1 17 18 3 9 a f e p h g n DP1 a f e p h g n DP2 d b c k m j i d b c k m j i PIN 2,7,11,13,16 NO CONNECTION PDC54-12 Dig. 1 12 14 4 1 17 18 3 6 12 14 4 1 17 18 3 9 a f e p h g n DP1 a f e p h g n DP2 d b c k m j i d b c k m j i PIN 2,7,11,13,16 NO CONNECTION
PDA54-11SYKWA PDA54-12SYKWA	PDC54-11SYKWA PDC54-12SYKWA	AlGaInP	590	31000	87000	PDA54-11 Dig 1 : 16 Dig 2 : 11 a b c d e f g h j k l m n p DP1 a b c d e f g h j k l m n p DP2 1210 9 7 1 1817 1514 6 5 4 2 13 8 1210 9 7 1 1817 1514 6 5 4 2 13 8 PDC54-11 Dig 1 : 16 Dig 2 : 11 a b c d e f g h j k l m n p DP1 a b c d e f g h j k l m n p DP2 1210 9 7 1 1817 1514 6 5 4 2 13 8 1210 9 7 1 1817 1514 6 5 4 2 13 8 PDA54-12 Dig. 1 12 14 4 1 17 18 3 6 12 14 4 1 17 18 3 9 a f e p h g n DP1 a f e p h g n DP2 d b c k m j i d b c k m j i PIN 2,7,11,13,16 NO CONNECTION PDC54-12 Dig. 1 12 14 4 1 17 18 3 6 12 14 4 1 17 18 3 9 a f e p h g n DP1 a f e p h g n DP2 d b c k m j i d b c k m j i PIN 2,7,11,13,16 NO CONNECTION
PDA54-11CGKWA PDA54-12CGKWA	PDC54-11CGKWA PDC54-12CGKWA	AlGaInP	570	9000	22000	PDA54-11 Dig 1 : 16 Dig 2 : 11 a b c d e f g h j k l m n p DP1 a b c d e f g h j k l m n p DP2 1210 9 7 1 1817 1514 6 5 4 2 13 8 1210 9 7 1 1817 1514 6 5 4 2 13 8 PDC54-11 Dig 1 : 16 Dig 2 : 11 a b c d e f g h j k l m n p DP1 a b c d e f g h j k l m n p DP2 1210 9 7 1 1817 1514 6 5 4 2 13 8 1210 9 7 1 1817 1514 6 5 4 2 13 8 PDA54-12 Dig. 1 12 14 4 1 17 18 3 6 12 14 4 1 17 18 3 9 a f e p h g n DP1 a f e p h g n DP2 d b c k m j i d b c k m j i PIN 2,7,11,13,16 NO CONNECTION PDC54-12 Dig. 1 12 14 4 1 17 18 3 6 12 14 4 1 17 18 3 9 a f e p h g n DP1 a f e p h g n DP2 d b c k m j i d b c k m j i PIN 2,7,11,13,16 NO CONNECTION

NOTES:

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2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.

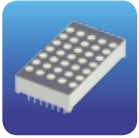
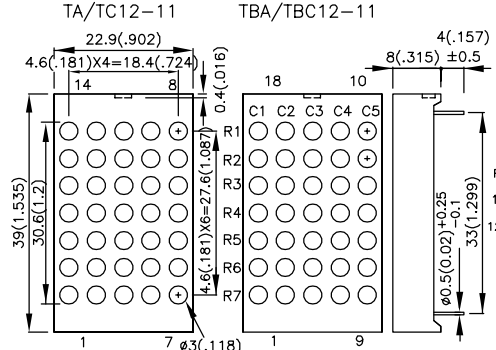
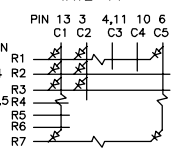
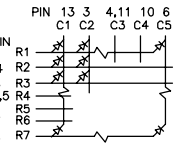
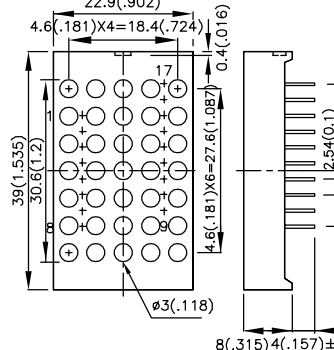
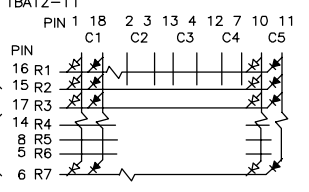
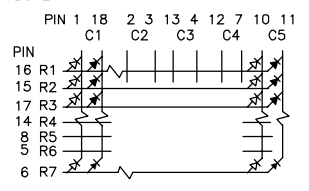
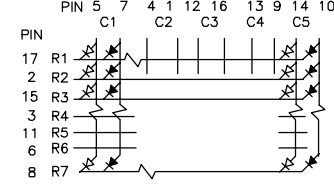
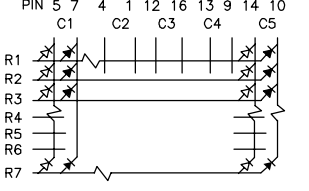
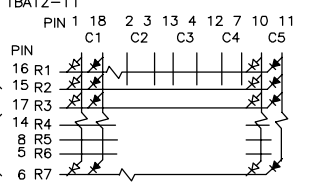
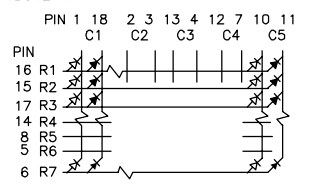
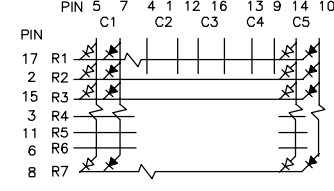
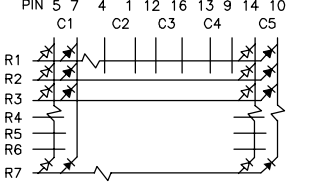
DOT MATRIX

Part Number		Material	λ D (nm)	Iv (ucd) @10mA		Dimension
Column Anode	Column Cathode			Min.	Typ.	
TA03-11SRT	/	GaAlAs	640	14000	30000	0.3 inch (7.62mm) Dot Matrix   TX03
TA03-11GT	/	GaP	568	3600	8300	
TA07-11SEKWA	TC07-11SEKWA	AlGaInP	601	52000	120000	0.7 inch (18mm), 5x7, Gray Face, White Dot   TX07
TA07-11SURKWA	TC07-11SURKWA	AlGaInP	630	31000	90000	
TA07-11SYKWA	TC07-11SYKWA	AlGaInP	590	52000	140000	
TA07-11CGKWA	TC07-11CGKWA	AlGaInP	570	21000	38000	
TA16-11SEKWA	TC16-11SEKWA	AlGaInP	601	88000	200000	1.38 inch (35.2mm), 5x8, Gray Face, White Dot   TX16
TA16-11SURKWA	TC16-11SURKWA	AlGaInP	630	52000	130000	
TA16-11SYKWA	TC16-11SYKWA	AlGaInP	590	88000	190000	
TA16-11CGKWA	TC16-11CGKWA	AlGaInP	570	21000	42000	

NOTES:

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2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.

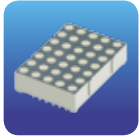
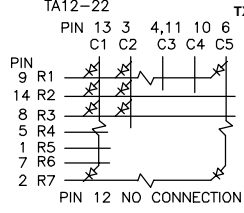
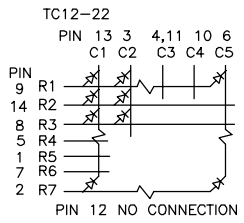
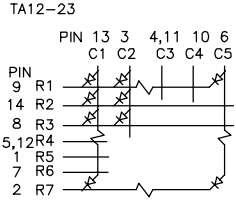
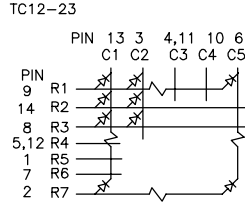
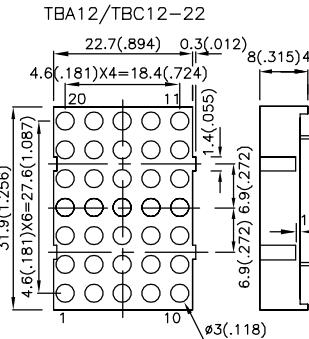
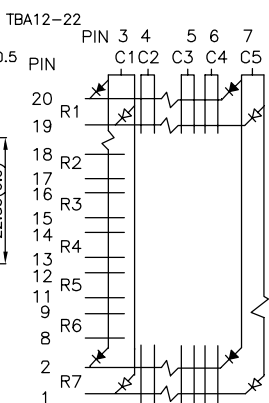
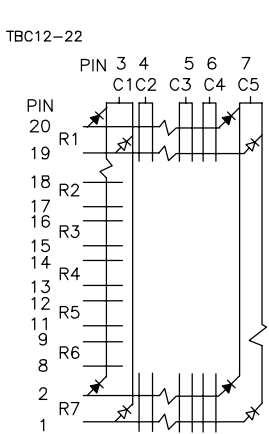
DOT MATRIX

Part Number		Material	λ D (nm)	Iv (ucd) @10mA		Dimension
Column Anode	Column Cathode			Min.	Typ.	
TA12-11SEKWA	TC12-11SEKWA	AlGaInP	601	88000	240000	1.2 inch (30mm), 5x7, Gray Face, White Dot  TA/TC12-11 TBA/TBC12-11  TA12-11  TC12-11  TBA/TBC12-12  TBA12-11  TBC12-11  TBA12-12  TBC12-12 
TA12-11SURKWA	TC12-11SURKWA	AlGaInP	630	52000	130000	
TA12-11SYKWA	TC12-11SYKWA	AlGaInP	590	88000	220000	
TA12-11CGKWA	TC12-11CGKWA	AlGaInP	570	31000	73000	
TBA12-11 SURKCGKWA	TBC12-11 SURKCGKWA	AlGaInP	630	52000	130000	TBA12-11  TBC12-11 
		AlGaInP	570	31000	73000	
TBA12-12 SURKCGKWA	TBC12-12 SURKCGKWA	AlGaInP	630	52000	130000	TBA12-12  TBC12-12 
		AlGaInP	570	31000	73000	

NOTES:

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2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.

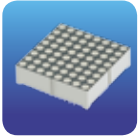
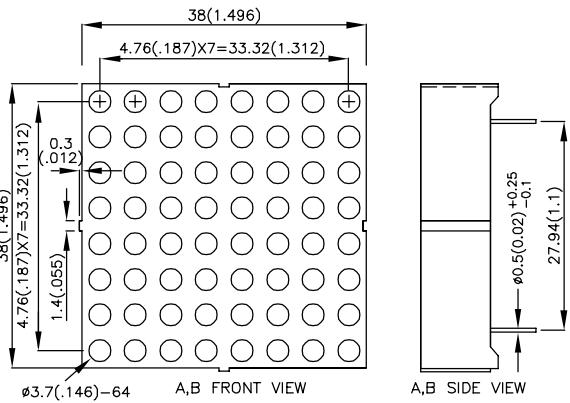
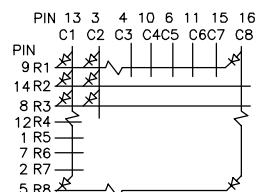
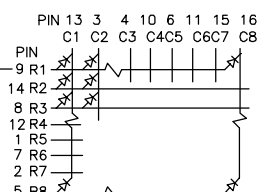
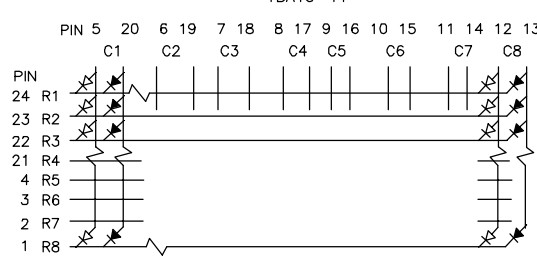
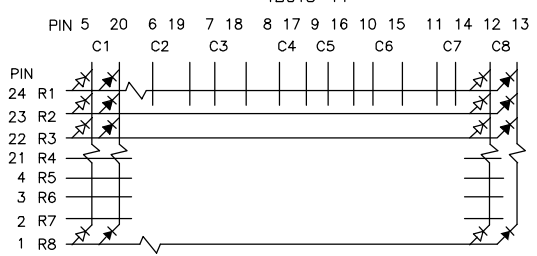
DOT MATRIX

Part Number		Material	λ D (nm)	Iv (ucd) @10mA		Dimension
Column Anode	Column Cathode			Min.	Typ.	
TA12-22SEKWA	TC12-22SEKWA	AlGaInP	601	88000	240000	1.2 inch (30mm), 5x7, Gray Face, White Dot TA12/TC12-22 TA12/TC12-23  TA12-22  TC12-22  TA12-23  TC12-23 
TA12-22SURKWA	TC12-22SURKWA	AlGaInP	630	52000	130000	
TA12-22SYKWA	TC12-22SYKWA	AlGaInP	590	88000	220000	
TA12-22CGKWA	TC12-22CGKWA	AlGaInP	570	31000	73000	
TBA12-22 SURKCGKWA	TBC12-22 SURKCGKWA	AlGaInP	630	52000	130000	
		AlGaInP	570	31000	73000	TBA12/TBC12-22  TBA12-22  TBC12-22 
TA12-23SRWA	TC12-23SRWA	GaAlAs	640	21000	45000	
TA12-23YWA	TC12-23YWA	GaAsP/GaP	588	5600	13000	

NOTES:

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- Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.

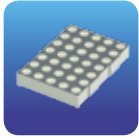
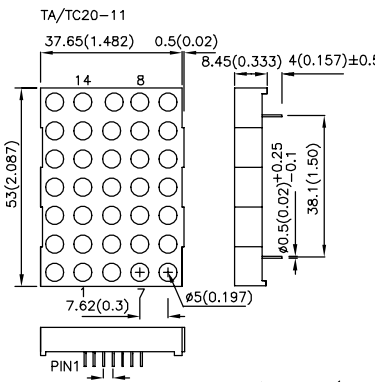
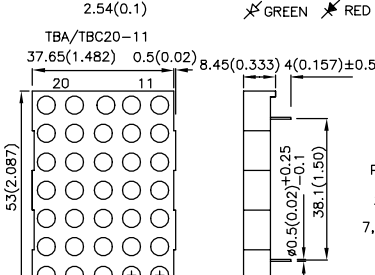
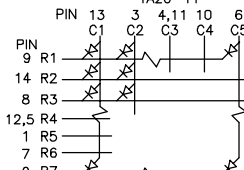
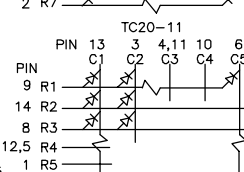
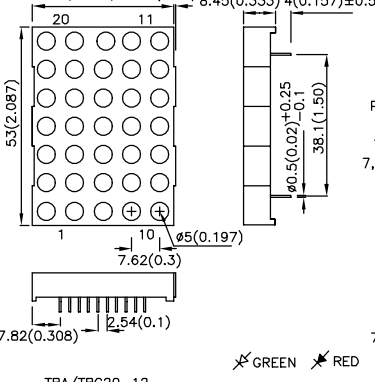
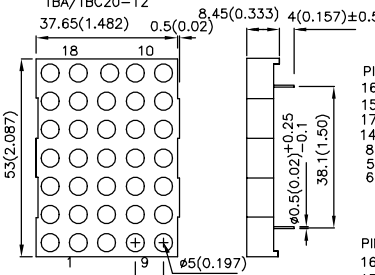
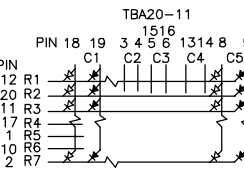
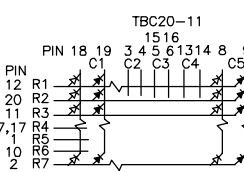
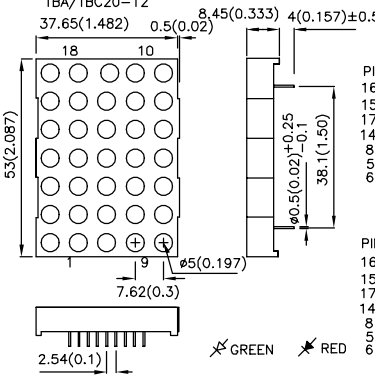
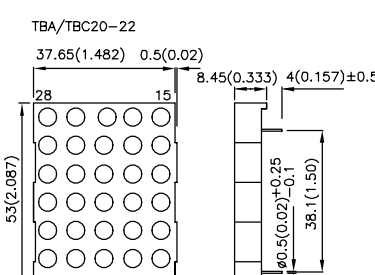
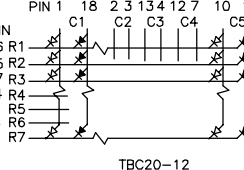
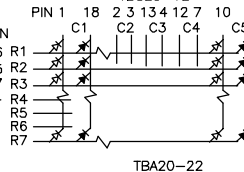
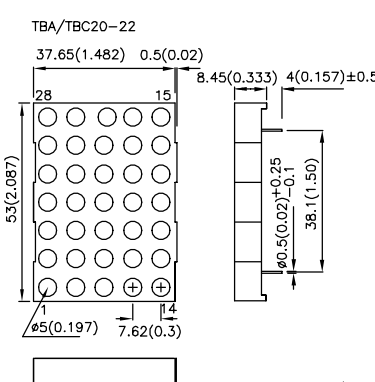
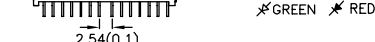
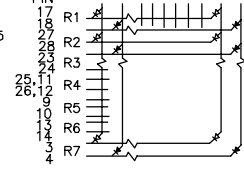
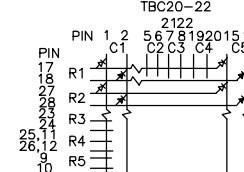
DOT MATRIX

Part Number		Material	λ D (nm)	Iv (ucd) @10mA		Dimension
Column Anode	Column Cathode			Min.	Typ.	
TA15-11SEKWA	TC15-11SEKWA	AlGaInP	601	52000	180000	1.5 inch (38mm), 8x8, Gray Face, White Dot  TX15 A : TA/TC15-11 B : TBA/TBC15-11  A,B FRONT VIEW A,B SIDE VIEW TA15-11  TC15-11  TBA15-11  TBC15-11  GREEN RED
TA15-11SURKWA	TC15-11SURKWA	AlGaInP	630	52000	130000	
TA15-11SYKWA	TC15-11SYKWA	AlGaInP	590	88000	220000	
TA15-11CGKWA	TC15-11CGKWA	AlGaInP	570	21000	54000	
TBA15-11SURKCGKWA	TBC15-11SURKCGKWA	AlGaInP	630	52000	130000	
		AlGaInP	570	21000	54000	

NOTES:

1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.

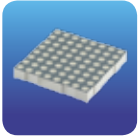
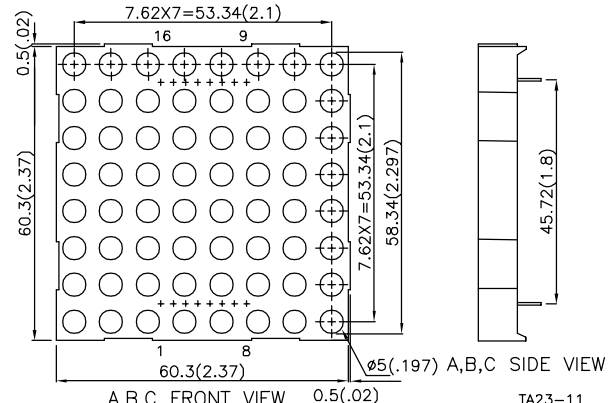
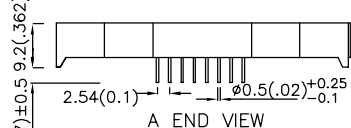
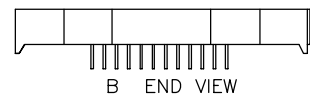
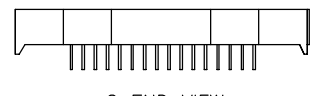
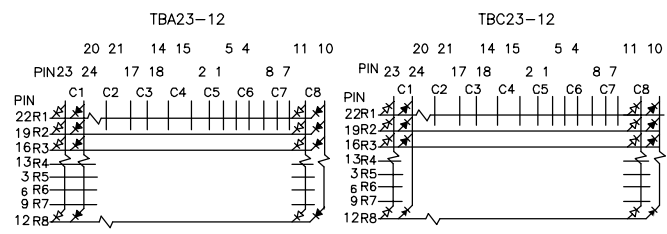
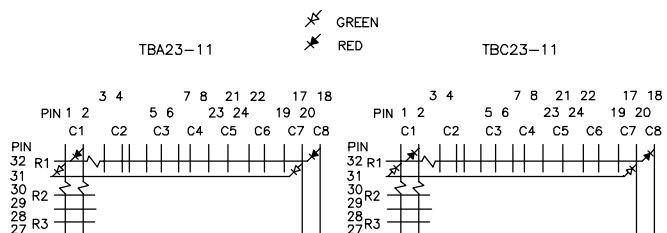
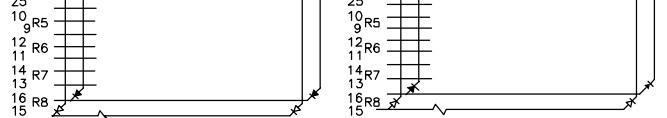
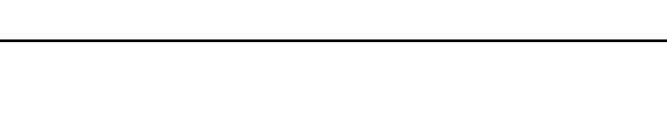
DOT MATRIX

Part Number		Material	λ D (nm)	Iv (ucd) @10mA		Dimension
Column Anode	Column Cathode			Min.	Typ.	
TA20-11SEKWA	TC20-11SEKWA	AlGaInP	601	88000	180000	2.0 inch (50mm), 5x7, Gray Face, White Dot                 
TA20-11SURKWA	TC20-11SURKWA	AlGaInP	630	52000	130000	
TA20-11SYKWA	TC20-11SYKWA	AlGaInP	590	88000	160000	
TA20-11CGKWA	TC20-11CGKWA	AlGaInP	570	21000	52000	
TBA20-11 SURKCGKWA	TBC20-11 SURKCGKWA	AlGaInP	630	52000	130000	
		AlGaInP	570	21000	52000	
TBA20-12 SURKCGKWA	TBC20-12 SURKCGKWA	AlGaInP	630	52000	130000	
		AlGaInP	570	21000	52000	
TBA20-22 SURKCGKWA	TBC20-22 SURKCGKWA	AlGaInP	630	52000	130000	
		AlGaInP	570	21000	52000	

NOTES:

1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.

DOT MATRIX

Part Number		Material	λ D (nm)	Iv (ucd) @10mA		Dimension
Column Anode	Column Cathode			Min.	Typ.	
TA23-11SEKWA	TC23-11SEKWA	AlGaInP	601	88000	190000	2.3 inch (58mm), 8x8, Gray Face, White Dot  TX23 A : TA/TC23-11 B : TBA/TBC23-12 C : TBA/TBC23-11  A,B,C FRONT VIEW  A END VIEW  B END VIEW  C END VIEW  TBA23-12  TBC23-12  TBA23-11  TBC23-11 
TA23-11SURKWA	TC23-11SURKWA	AlGaInP	630	52000	110000	
TA23-11SYKWA	TC23-11SYKWA	AlGaInP	590	88000	200000	
TA23-11CGKWA	TC23-11CGKWA	AlGaInP	570	21000	51000	
TBA23-11 SURKCGKWA	TBC23-11 SURKCGKWA	AlGaInP	630	52000	110000	
		AlGaInP	570	21000	51000	
TBA23-12 SURKCGKWA	TBC23-12 SURKCGKWA	AlGaInP	630	52000	110000	
		AlGaInP	570	21000	51000	

NOTES:

1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.

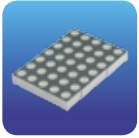
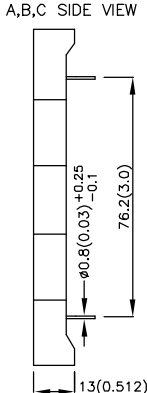
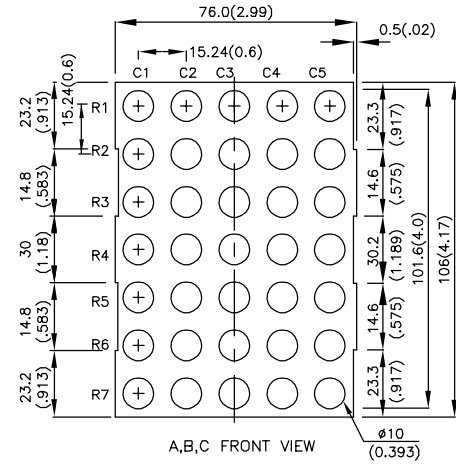
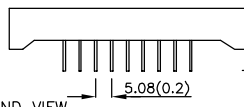
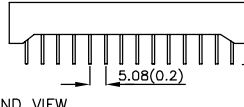
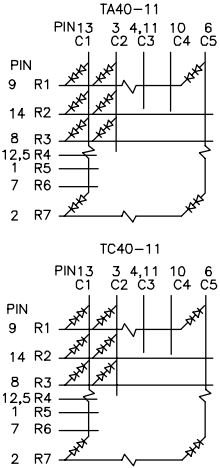
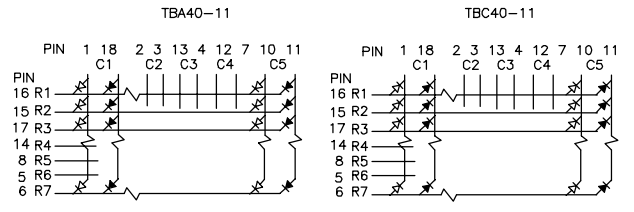
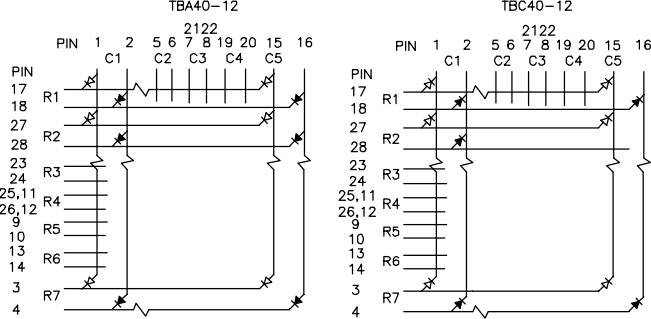
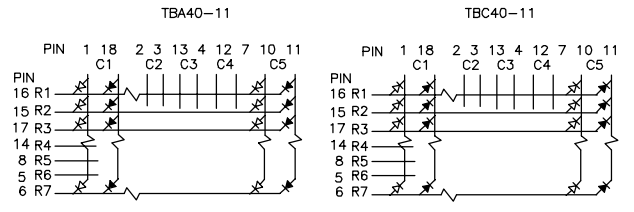
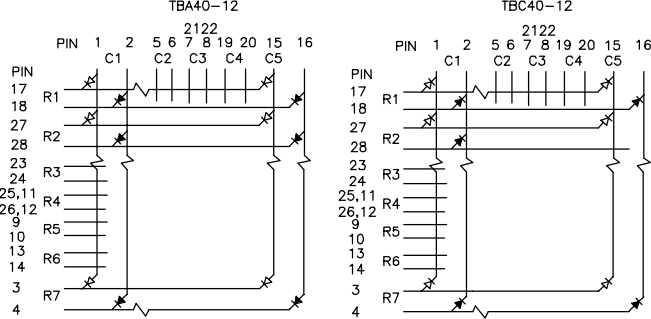
DOT MATRIX

Part Number		Material	λ D (nm)	Iv (ucd) @10mA		Dimension
Column Anode	Column Cathode			Min.	Typ.	
TA24-11SEKWA	TC24-11SEKWA	AlGaInP	601	88000	200000	2.4 inch (60.8mm), 5x8, Gray Face, White Dot A: TA/TC24-11 B: TBA/TBC24-11 A,B FRONT VIEW A,B SIDE VIEW TBA/TBC24-22 TA24-11 PIN 13 3 4,11 10 6 C1 C2 C3 C4 C5 PIN 9 R1 14 R2 8 R3 12 R4 5 R5 1 R6 7 R7 2 R8 TC24-11 PIN 13 3 4,11 10 6 C1 C2 C3 C4 C5 PIN 9 R1 14 R2 8 R3 12 R4 5 R5 1 R6 7 R7 2 R8 TBA24-11 PIN 1 18 2 3 13 4 12 7 10 11 C1 C2 C3 C4 C5 PIN 16 R1 15 R2 17 R3 14 R4 8 R5 5 R6 6 R7 9 R8 TBC24-11 PIN 1 18 2 3 13 4 12 7 10 11 C1 C2 C3 C4 C5 PIN 16 R1 15 R2 17 R3 14 R4 8 R5 5 R6 6 R7 9 R8 TBA24-22 PIN 17 18 R1 27 R2 15 16 R3 23 R4 10 R5 1 R6 13 R7 14 R8 C1 C2 C3 C4 C5 PIN 2122 5 6 7 8 19 20 11 12 TBC24-22 PIN 17 18 R1 27 R2 15 16 R3 23 R4 10 R5 1 R6 13 R7 14 R8 C1 C2 C3 C4 C5 PIN 2122 5 6 7 8 19 20 11 12
TA24-11SURKWA	TC24-11SURKWA	AlGaInP	630	52000	150000	
TA24-11SYKWA	TC24-11SYKWA	AlGaInP	590	88000	230000	
TA24-11CGKWA	TC24-11CGKWA	AlGaInP	570	21000	42000	
TBA24-11 SURKCGKWA	TBC24-11 SURKCGKWA	AlGaInP	630	52000	150000	
TBA24-11 SURKCGKWA	TBC24-11 SURKCGKWA	AlGaInP	570	21000	42000	TBA24-22 PIN 17 18 R1 27 R2 15 16 R3 23 R4 10 R5 1 R6 13 R7 14 R8 C1 C2 C3 C4 C5 PIN 2122 5 6 7 8 19 20 11 12 TBC24-22 PIN 17 18 R1 27 R2 15 16 R3 23 R4 10 R5 1 R6 13 R7 14 R8 C1 C2 C3 C4 C5 PIN 2122 5 6 7 8 19 20 11 12
TBA24-22 SURKCGKWA	TBC24-22 SURKCGKWA	AlGaInP	570	21000	42000	

NOTES:

1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.

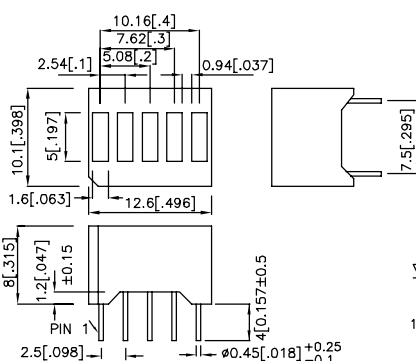
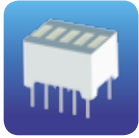
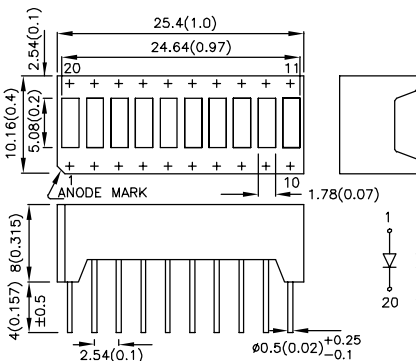
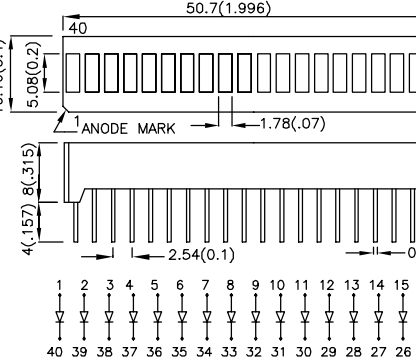
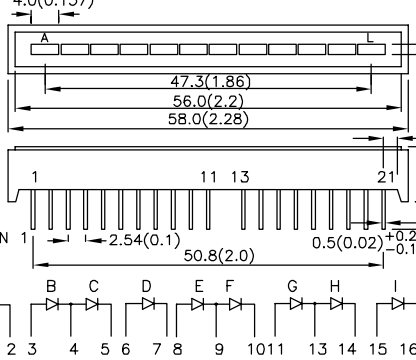
DOT MATRIX

Part Number		Material	λ D (nm)	Iv (ucd) @10mA		Dimension
Column Anode	Column Cathode			Min.	Typ.	
TA40-11SEKWA	TC40-11SEKWA	AlGaInP	601	255000	590000	4.0 inch (100mm), 5x7, Gray Face, White Dot A : TA/TC40-11 B : TBA/TBC40-11 C : TBA/TBC40-12  TX40         * FOR 2 RED CHIPS * FOR 2 GREEN CHIPS
TA40-11SURKWA	TC40-11SURKWA	AlGaInP	630	88000	240000	
TA40-11SYKWA	TC40-11SYKWA	AlGaInP	590	255000	570000	
TA40-11CGKWA	TC40-11CGKWA	AlGaInP	570	52000	140000	
TBA40-11 SURKCGKWA	TBC40-11 SURKCGKWA	AlGaInP	630	88000	240000	
		AlGaInP	570	52000	140000	  * FOR 2 RED CHIPS * FOR 2 GREEN CHIPS
TBA40-12 SURKCGKWA	TBC40-12 SURKCGKWA	AlGaInP	630	88000	240000	
		AlGaInP	570	52000	140000	

NOTES:

1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.

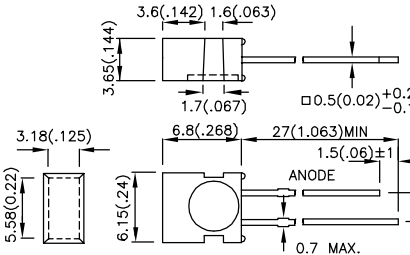
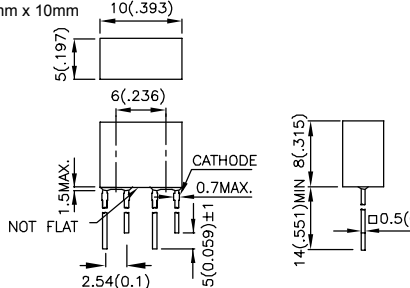
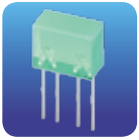
BAR GRAPH ARRAY

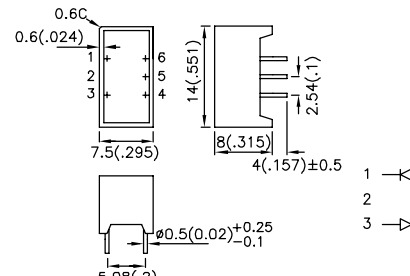
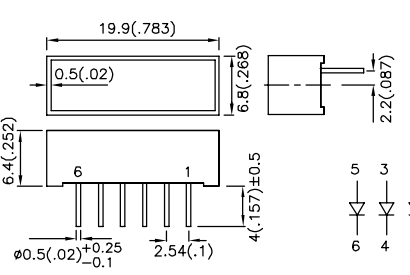
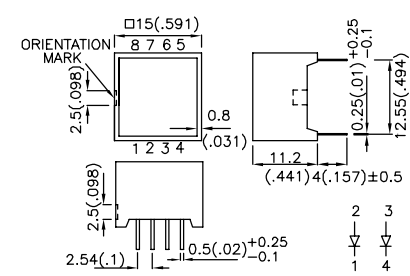
Part Number	Material	λ D (nm)	Iv (ucd) @10mA		Dimension
			Min.	Typ.	
DC-05YWA	GaAsP/GaP	588	2200	9000	5 Segments, Bar graph-Display, Gray Face, White Segment   DC-05
DC-05GWA	GaP	568	5600	12000	
DC-10SEKWA	AlGaInP	601	52000	110000	10 Segments, Bar graph-Display, Gray Face, White Segment   DC-10
DC-10SURKWA	AlGaInP	630	31000	100000	
DC-10SYKWA	AlGaInP	590	52000	110000	
DC-10CGKWA	AlGaInP	570	14000	28000	
DC-20/20SEKWA	AlGaInP	601	52000	110000	20 Segments, Bar graph-Display, Gray Face, White Segment   DC-20/20
DC-20/20SURKWA	AlGaInP	630	31000	100000	
DC-20/20SYKWA	AlGaInP	590	52000	110000	
DC-20/20CGKWA	AlGaInP	570	14000	28000	
DD-12SEKWB	AlGaInP	601	88000	180000	12 Segments, Bar graph-Display, Black Face, White Segment   DD-12
DD-12SURKWB	AlGaInP	630	52000	95000	
DD-12SYKWB	AlGaInP	590	52000	110000	
DD-12CGKWB	AlGaInP	570	21000	35000	

NOTES:

1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.

LIGHT BAR

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @20mA		Viewing Angle 2 θ 1/2	Dimension
				Min.	Typ.		
L-1043SEDTK	AlGaInP	601	orange diffused	60	120	100°	3.65mm x 6.15mm   L-1043
L-1043SURDTK	AlGaInP	630	red diffused	30	60	100°	
L-1043SYDTK	AlGaInP	590	yellow diffused	80	150	100°	
L-1043CGDTK	AlGaInP	570	green diffused	8	20	100°	
L-835/2SEDTK	AlGaInP	601	orange diffused	55	150	120°	5mm x 10mm   L-835/2
L-835/2SURDTK	AlGaInP	630	red diffused	20	80	120°	
L-835/2SYDTK	AlGaInP	590	yellow diffused	55	120	120°	
L-835/2CGDTK	AlGaInP	570	green diffused	12	30	120°	

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @20mA		Dimension
				Min.	Typ.	
DE/2SEKD	AlGaInP	601	orange diffused	500	1000	7.5mm x 14mm   DE/2
DE/2SURKD	AlGaInP	630	red diffused	400	600	
DE/2SYKD	AlGaInP	590	yellow diffused	700	1100	
DE/2CGKD	AlGaInP	570	green diffused	120	200	
DF-3SEKD	AlGaInP	601	orange diffused	700	1100	6.8mm x 19.9mm   DF-3
DF-3SURKD	AlGaInP	630	red diffused	400	620	
DF-3SYKD	AlGaInP	590	yellow diffused	700	1100	
DF-3CGKD	AlGaInP	570	green diffused	120	270	
DE/4SEKD	AlGaInP	601	orange diffused	1000	1500	15mm x 15mm   DE/4
DE/4SURKD	AlGaInP	630	red diffused	500	930	
DE/4SYKD	AlGaInP	590	yellow diffused	700	1200	
DE/4CGKD	AlGaInP	570	green diffused	120	220	

NOTES:

1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.

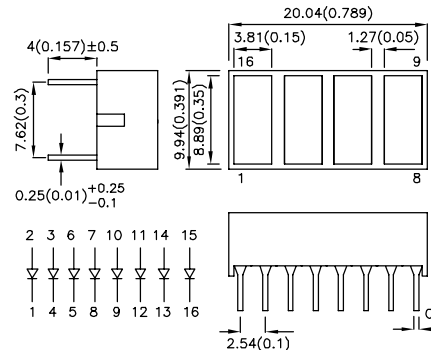
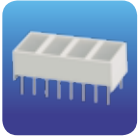
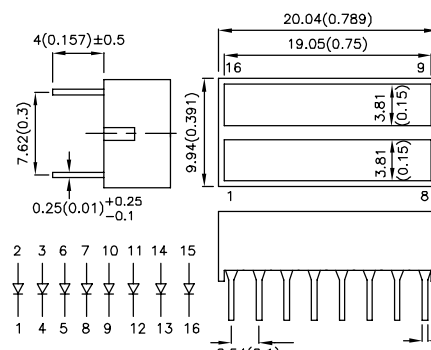
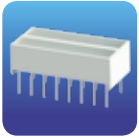
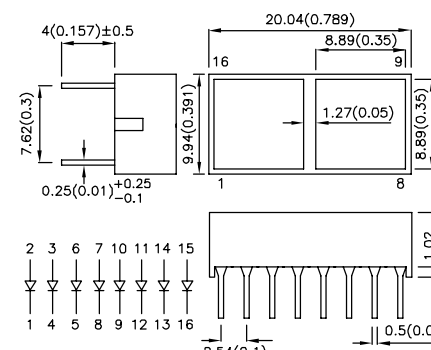
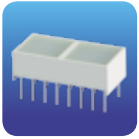
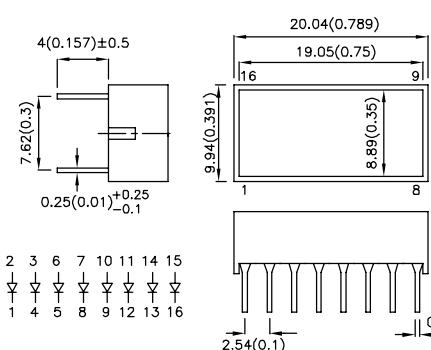
LIGHT BAR

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @20mA		Dimension
				Min.	Typ.	
KB-2300SEKW	AlGaInP	601	white diffused	400	530	8.89mm x 3.81mm Size of Light Emitting Areas
KB-A100SURKW	AlGaInP	630	white diffused	120	230	
KB-2400SYKW	AlGaInP	590	white diffused	200	370	
KB-2500CGKD	AlGaInP	570	green diffused	40	75	
KB-2350SEKW	AlGaInP	601	white diffused	400	700	19.05mm x 3.81mm Size of Light Emitting Areas
KB-B100SURKW	AlGaInP	630	white diffused	200	370	
KB-2450SYKW	AlGaInP	590	white diffused	400	630	
KB-2550CGKD	AlGaInP	570	green diffused	55	110	
KB-2655SEKW	AlGaInP	601	white diffused	500	910	8.89mm x 8.89mm Size of Light Emitting Areas
KB-C100SURKW	AlGaInP	630	white diffused	400	550	
KB-2755SYKW	AlGaInP	590	white diffused	500	810	
KB-2855CGKD	AlGaInP	570	green diffused	80	140	
KB-2600SEKW	AlGaInP	601	white diffused	200	380	8.89mm x 3.81mm Size of Light Emitting Areas
KB-D100SURKW	AlGaInP	630	white diffused	120	230	
KB-2700SYKW	AlGaInP	590	white diffused	200	370	
KB-2800CGKD	AlGaInP	570	green diffused	55	91	

NOTES:

1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.

LIGHT BAR

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @20mA		Dimension
				Min.	Typ.	
KB-2620SEKW	AlGaInP	601	white diffused	200	360	8.89mm x 3.81mm Size of Light Emitting Areas   KB-2620SEKW
KB-E100SURKW	AlGaInP	630	white diffused	120	240	
KB-2720SYKW	AlGaInP	590	white diffused	300	400	
KB-2820CGKD	AlGaInP	570	green diffused	20	47	
KB-2635SEKW	AlGaInP	601	white diffused	200	370	3.81mm x 19.05mm Size of Light Emitting Areas   KB-2635SEKW
KB-F100SURKW	AlGaInP	630	white diffused	120	230	
KB-2735SYKW	AlGaInP	590	white diffused	120	250	
KB-2835CGKD	AlGaInP	570	green diffused	20	50	
KB-2670SEKW	AlGaInP	601	white diffused	300	440	8.89mm x 8.89mm Size of Light Emitting Areas   KB-2670SEKW
KB-G100SURKW	AlGaInP	630	white diffused	120	210	
KB-2770SYKW	AlGaInP	590	white diffused	80	180	
KB-2870CGKD	AlGaInP	570	green diffused	20	54	
KB-2685SEKW	AlGaInP	601	white diffused	200	380	8.89mm x 19.05mm Size of Light Emitting Areas   KB-2685SEKW
KB-H100SURKW	AlGaInP	630	white diffused	120	230	
KB-2785SYKW	AlGaInP	590	white diffused	200	360	
KB-2885CGKD	AlGaInP	570	green diffused	40	59	

NOTES:

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Kingbright

Optoelectronic Components

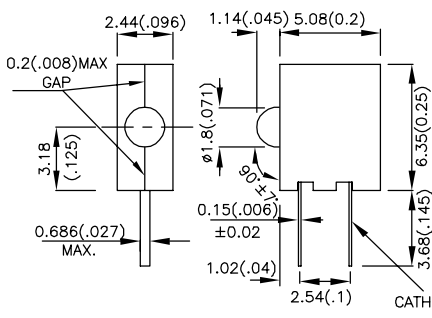
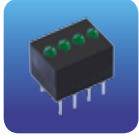
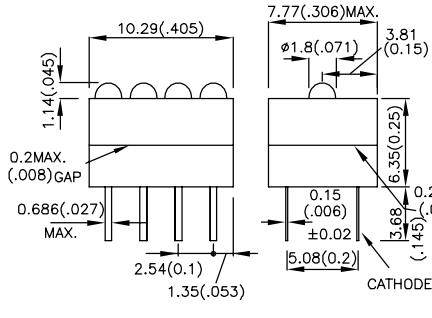
CIRCUIT BOARD INDICATOR

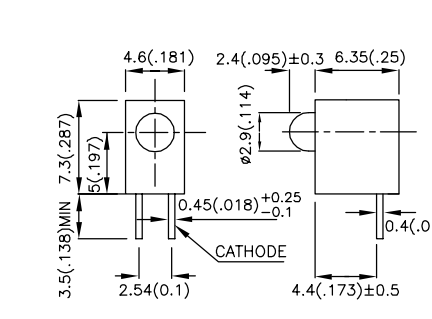
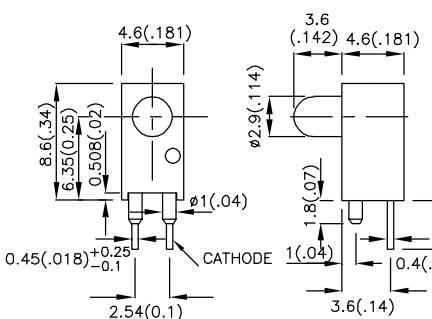
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LED CLIPS AND MOUNTS

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SINGLE-LEVEL CBI

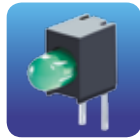
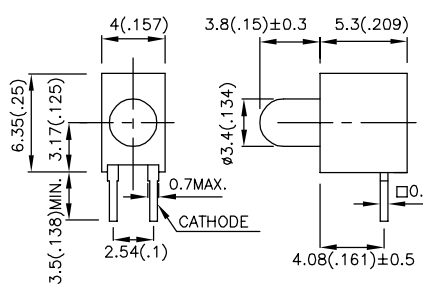
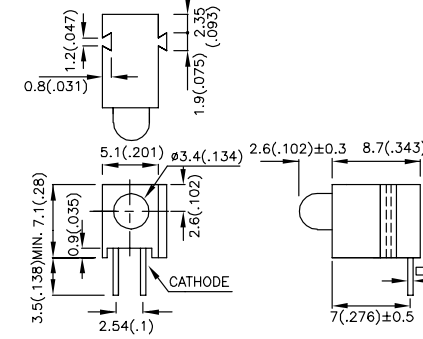
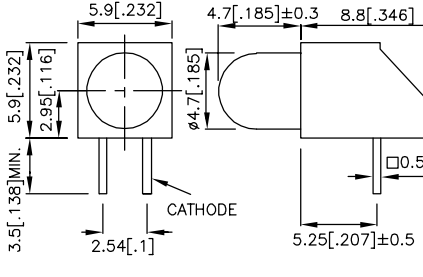
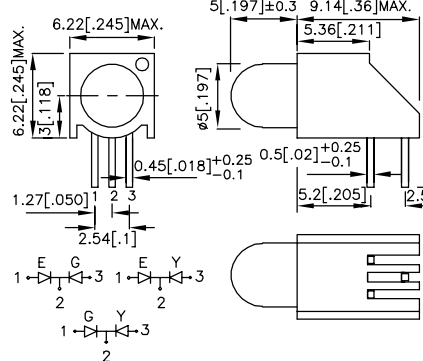
Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @20mA V=5V		Viewing Angle 2 θ 1/2	Dimension
				Min.	Typ.		
KM2520EH/1ID	GaAsP/GaP	617	red diffused	8	16	40°	Subminiature Solid State Lamps  KM2520EH/1 
KM2520EH/1ID-5V	GaAsP/GaP	617	red diffused	*3	*8	40°	
KM2520EH/1YD	GaAsP/GaP	588	yellow diffused	5	10	40°	
KM2520EH/1YD-5V	GaAsP/GaP	588	yellow diffused	*1.2	*3	40°	
KM2520EH/1SGD	GaP	568	green diffused	5	12	40°	
KM2520EH/1SGD-5V	GaP	568	green diffused	*3	*8	40°	
KM2520EG/4ID	GaAsP/GaP	617	red diffused	8	16	40°	Subminiature Solid State Lamps  KM2520EG/4 
KM2520EG/4ID-5V	GaAsP/GaP	617	red diffused	*3	*8	40°	
KM2520EG/4YD	GaAsP/GaP	588	yellow diffused	5	10	40°	
KM2520EG/4YD-5V	GaAsP/GaP	588	yellow diffused	*1.2	*3	40°	
KM2520EG/4SGD	GaP	568	green diffused	5	12	40°	
KM2520EG/4SGD-5V	GaP	568	green diffused	*3	*8	40°	

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @10mA *20mA		Viewing Angle 2 θ 1/2	Dimension
				Min.	Typ.		
L-710A8CB/1ID	GaAsP/GaP	617	red diffused	6	12	40°	T-1 (3mm) Right Angle  L-710A8CB/1 
L-710A8CB/1YD	GaAsP/GaP	588	yellow diffused	6	15	40°	
L-710A8CB/1GD	GaP	568	green diffused	8	25	40°	
L-710A8RS/1ID	GaAsP/GaP	617	red diffused	6	12	40°	T-1 (3mm) Right Angle  L-710A8RS/1 
L-710A8RS/1YD	GaAsP/GaP	588	yellow diffused	6	15	40°	
L-710A8RS/1GD	GaP	568	green diffused	8	25	40°	

NOTES:

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2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.

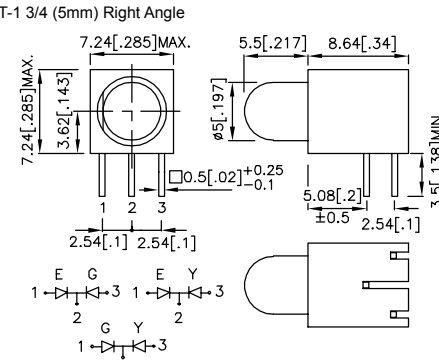
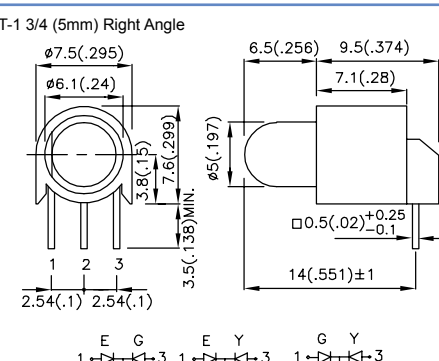
SINGLE-LEVEL CBI

Part Number	Material	λ D (nm)	Lens Type	Iv (mcd) @10mA *20mA		Viewing Angle	Dimension
				Min.	Typ.		
L-1384AD/1ID	GaAsP/GaP	617	red diffused	8	16	60°	3.4mm Right Angle  L-1384AD/1 
L-1384AD/1YD	GaAsP/GaP	588	yellow diffused	8	15	60°	
L-1384AD/1GD	GaP	568	green diffused	10	20	60°	
L-1384AL/1ID	GaAsP/GaP	617	red diffused	8	16	60°	3.4mm Right Angle  L-1384AL/1 
L-1384AL/1YD	GaAsP/GaP	588	yellow diffused	8	15	60°	
L-1384AL/1GD	GaP	568	green diffused	10	20	60°	
L-1533BQ/1ID	GaAsP/GaP	617	red diffused	12	30	60°	4.7mm Right Angle  L-1533BQ/1 
L-1533BQ/1YD	GaAsP/GaP	588	yellow diffused	15	40	60°	
L-1533BQ/1GD	GaP	568	green diffused	20	50	60°	
L-150A9VS/1EGW	GaAsP/GaP	617	white diffused	*12	*30	30°	T-1 3/4 (5mm) Right Angle  L-150A9VS/1 
	GaP	568		*18	*50		
L-150A9VS/1EYW	GaAsP/GaP	617	white diffused	*12	*30	30°	
	GaAsP/GaP	588		*8	*20		
L-150A9VS/1GYW	GaP	568	white diffused	*18	*50	30°	
	GaAsP/GaP	588		*8	*20		

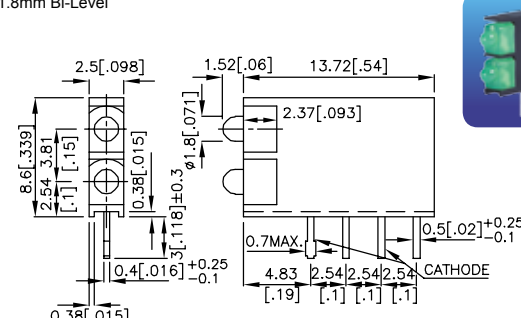
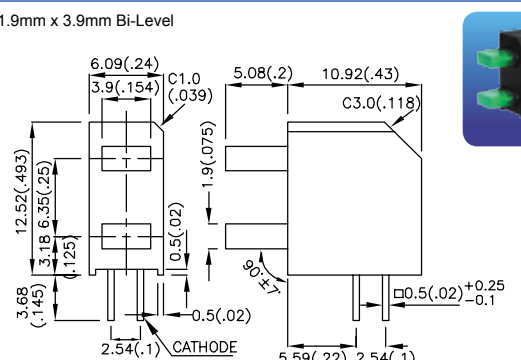
NOTES:

1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.

SINGLE-LEVEL CBI

Part Number	Material	λ D (nm)	Lens Type	Iv (mcd) @10mA *20mA		Viewing Angle 2 θ 1/2	Dimension
				Min.	Typ.		
L-59BL/1EGW	GaAsP/GaP	617	white diffused	*20	*40	60°	T-1 3/4 (5mm) Right Angle  L-59BL/1
	GaP	568		*20	*60		
L-59BL/1EYW	GaAsP/GaP	617	white diffused	*20	*40	60°	
	GaAsP/GaP	588		*20	*40		
L-59BL/1GYW	GaP	568	white diffused	*50	*100	60°	
	GaAsP/GaP	588		*20	*40		
L-59CB/1EGW	GaAsP/GaP	617	white diffused	*20	*40	60°	T-1 3/4 (5mm) Right Angle  L-59CB/1
	GaP	568		*20	*60		
L-59CB/1EYW	GaAsP/GaP	617	white diffused	*20	*40	60°	
	GaAsP/GaP	588		*20	*40		
L-59CB/1GYW	GaP	568	white diffused	*50	*100	60°	
	GaAsP/GaP	588		*20	*40		

BI-LEVEL CBI

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @10mA		Viewing Angle 2 θ 1/2	Dimension
				Min.	Typ.		
L-4060VH/2ID	GaAsP/GaP	617	red diffused	4	8	70°	1.8mm Bi-Level  L-4060VH/2
L-4060VH/2YD	GaAsP/GaP	588	yellow diffused	4	8	70°	
L-4060VH/2GD	GaP	568	green diffused	6	12	70°	
L-144HX/2GDT	GaP	568	green diffused	2	6	110°	1.9mm x 3.9mm Bi-Level  L-144HX/2

NOTES:

1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.

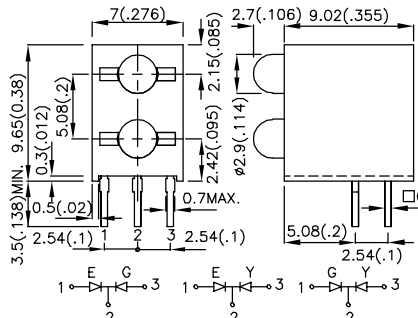
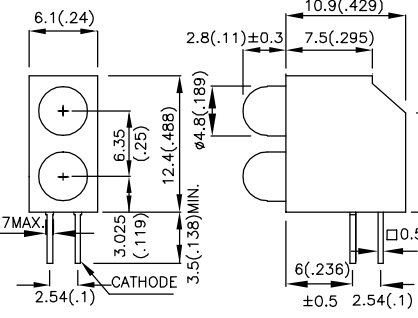
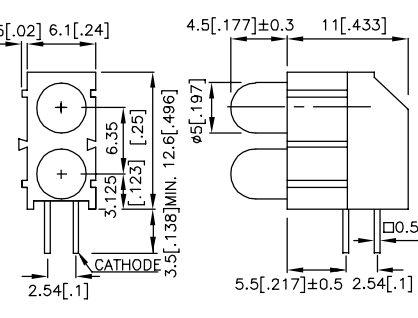
BI-LEVEL CBI

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @10mA		Viewing Angle 2 θ 1/2	Dimension
				Min.	Typ.		
L-7104EB/2ID	GaAsP/GaP	617	red diffused	10	20	40°	T-1 (3mm) Bi-Level L-7104EB/2
L-7104EB/2YD	GaAsP/GaP	588	yellow diffused	8	15	40°	
L-7104EB/2GD	GaP	568	green diffused	10	25	40°	
L-7104GO/2ID	GaAsP/GaP	617	red diffused	10	20	40°	T-1 (3mm) Bi-Level L-7104GO/2
L-7104GO/2YD	GaAsP/GaP	588	yellow diffused	8	15	40°	
L-7104GO/2GD	GaP	568	green diffused	10	25	40°	
L-7104MD/2ID	GaAsP/GaP	617	red diffused	10	20	40°	T-1 (3mm) Bi-Level L-7104MD/2
L-7104MD/2YD	GaAsP/GaP	588	yellow diffused	8	15	40°	
L-7104MD/2GD	GaP	568	green diffused	10	25	40°	
L-7104RT/2ID	GaAsP/GaP	617	red diffused	10	20	40°	T-1 (3mm) Bi-Level L-7104RT/2
L-7104RT/1G1YD	GaP	568	green diffused	10	25	40°	
	GaAsP/GaP	588	yellow diffused	8	15	40°	

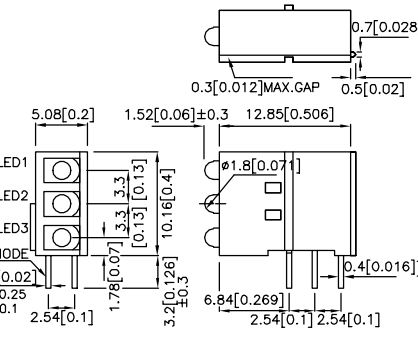
NOTES:

1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.

BI-LEVEL CBI

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @10mA *20mA		Viewing Angle	Dimension
				Min.	Typ.		
L-130WCP/2EGW	GaAsP/GaP	617	white diffused	*10	*24	60°	T-1(3mm) Bi-Level  L-130WCP/2
	GaP	568		*12	*30		
L-130WCP/2EYW	GaAsP/GaP	617	white diffused	*10	*24	60°	
	GaAsP/GaP	588		*10	*20		
L-130WCP/2GYW	GaP	568	white diffused	*18	*40	60°	
	GaAsP/GaP	588		*10	*20		
L-73EB/2IDA	GaAsP/GaP	617	red diffused	8	20	60°	4.8mm Bi-Level  L-73EB/2
L-73EB/2YDA	GaAsP/GaP	588	yellow diffused	6	15	60°	
L-73EB/2GDA	GaP	568	green diffused	10	30	60°	
L-1503EB/2ID	GaAsP/GaP	617	red diffused	12	40	60°	T-1 3/4 (5mm) Bi-Level  L-1503EB/2
L-1503EB/2YD	GaAsP/GaP	588	yellow diffused	15	30	60°	
L-1503EB/2GD	GaP	568	green diffused	15	30	60°	

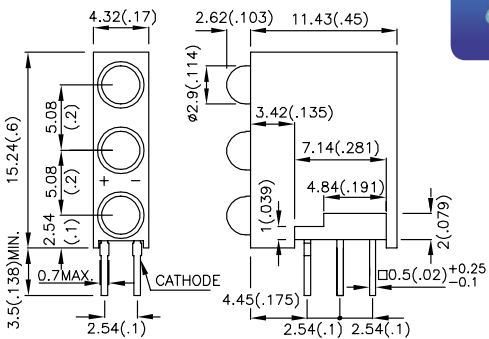
TRI-LEVEL CBI

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @10mA		Viewing Angle 2 θ 1/2	Dimension
				Min.	Typ.		
L-4060XHA/3ID	GaAsP/GaP	617	red diffused	4	8	70°	1.8mm Tri-Level  L-4060XHA/3
L-4060XHA/3YD	GaAsP/GaP	588	yellow diffused	4	8	70°	
L-4060XHA/3GD	GaP	568	green diffused	6	12	70°	

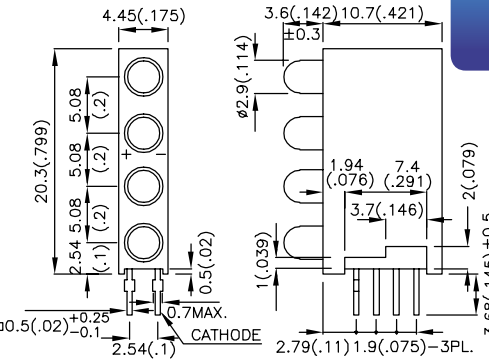
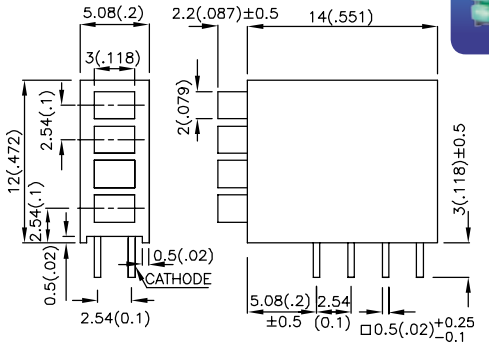
NOTES:

1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.

TRI-LEVEL CBI

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @10mA		Viewing Angle 2 θ 1/2	Dimension
				Min.	Typ.		
L-7104SA/3ID	GaAsP/GaP	617	red diffused	10	20	40°	T-1 (3mm) Tri-Level   L-7104SA/3
L-7104SA/3YD	GaAsP/GaP	588	yellow diffused	8	15	40°	
L-7104SA/3GD	GaP	568	green diffused	10	25	40°	

QUAD-LEVEL CBI

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @10mA		Viewing Angle 2 θ 1/2	Dimension
				Min.	Typ.		
L-7104SB/4ID	GaAsP/GaP	617	red diffused	10	20	40°	T-1 (3mm) Quad-Level   L-7104SB/4
L-7104SB/4YD	GaAsP/GaP	588	yellow diffused	8	15	40°	
L-7104SB/4GD	GaP	568	green diffused	10	25	40°	
L-914CK/4IDT	GaAsP/GaP	617	red diffused	1.2	4	100°	2mm x 3mm Quad-Level   L-914CK/4
L-914CK/4YDT	GaAsP/GaP	588	yellow diffused	1.5	4	100°	
L-914CK/4GDT	GaP	568	green diffused	3	6	100°	

NOTES:

1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.

WITH SPACER

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @10mA *20mA		Viewing Angle 2 θ 1/2	Dimension
				Min.	Typ.		
L-7113BR-5.08/ID L-7113BR-6.35/ID L-7113BR-9.52/ID L-7113BR-17.8/ID L-7113BR-23.5/ID	GaAsP/GaP	617	red diffused	18	40	30°	T-1 3/4 (5mm) With Spacer L-7113BR-5.08/xxx (Dim. A : 5.08) L-7113BR-6.35/xxx (Dim. A : 6.35) L-7113BR-9.52/xxx (Dim. A : 9.52) L-7113BR-17.8/xxx (Dim. A : 17.8) L-7113BR-23.5/xxx (Dim. A : 23.5)
L-7113BR-5.08/YD L-7113BR-6.35/YD L-7113BR-9.52/YD L-7113BR-17.8/YD L-7113BR-23.5/YD	GaAsP/GaP	588	yellow diffused	10	25	30°	
L-7113BR-5.08/GD L-7113BR-6.35/GD L-7113BR-9.52/GD L-7113BR-17.8/GD L-7113BR-23.5/GD	GaP	568	green diffused	15	30	30°	
L-59MX-11/EGW	GaAsP/GaP	617	white diffused	*20	*40	60°	T-1 3/4 (5mm) With Spacer L-59MX-11/
	GaP	568		*20	*60		

SMD CBI

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @10mA		Viewing Angle 2 θ 1/2	Dimension
				Min.	Typ.		
L-96A8YVP/1GD/TG-0L	GaP	568	green diffused	12	25	60°	T-1 (3mm) Right Angle L-96A8YVP/1-0L

NOTES:

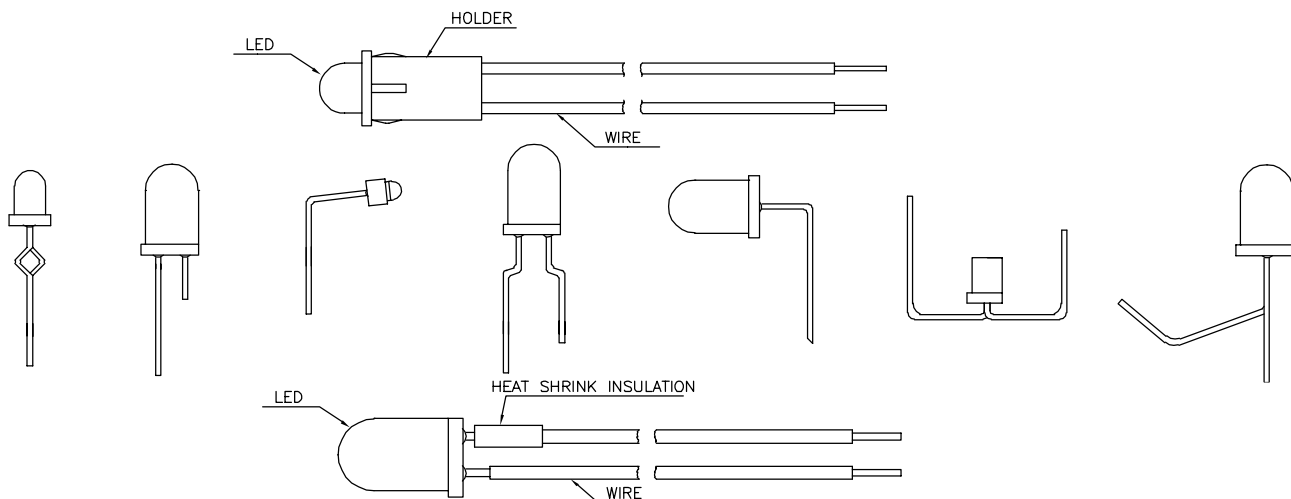
1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.

SMD CBI

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd) @10mA *20mA		Viewing Angle	Dimension
				Min.	Typ.		
L-138A8QMP/1ID	GaAsP/GaP	617	red diffused	4	10	60°	3.4mm Right Angle  L-138A8QMP/1

VALUE ADDED LED LAMPS

LED lamp with forming/wire leads available

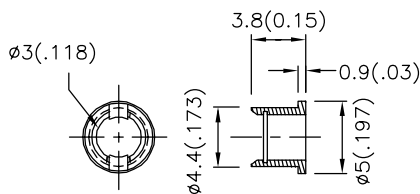


NOTES:

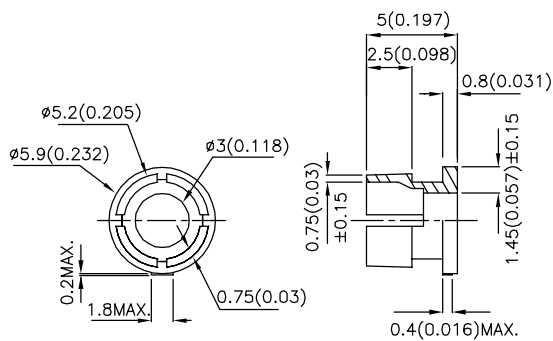
- NOTES:
1. All dimensions are in millimeters(inches).
 2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.

LED CLIPS AND MOUNTS

RTC-31

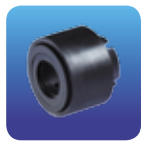
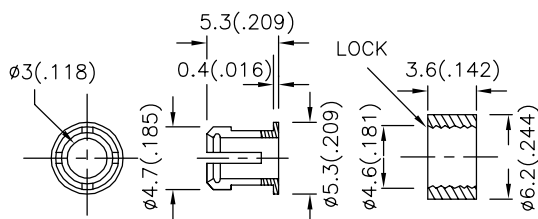


RTC-31

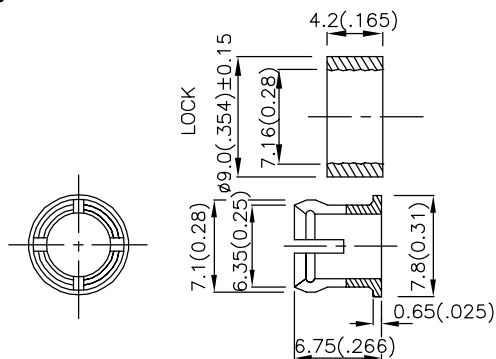
CB-30

CB-30

RTC-32

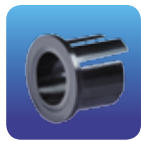
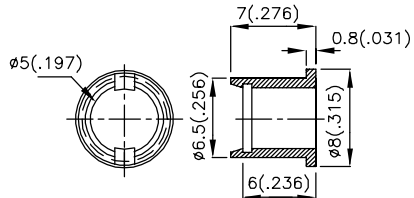


RTC-32

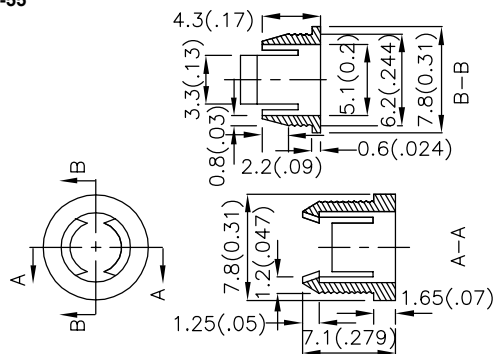
CB-50

CB-50

RTC-51

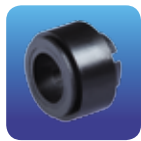
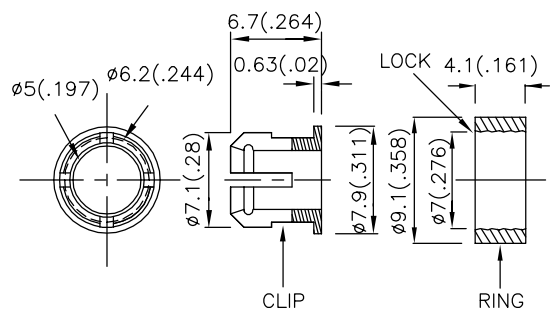


RTC-51

CB-55

CB-55

RTC-52

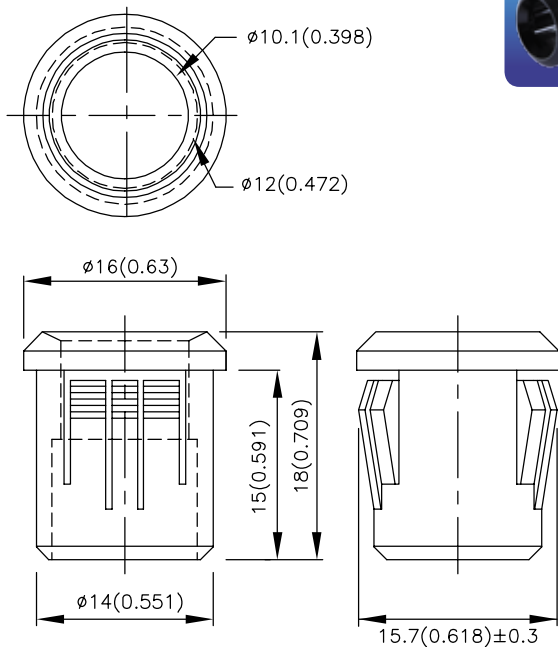


RTC-52

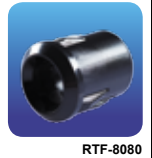
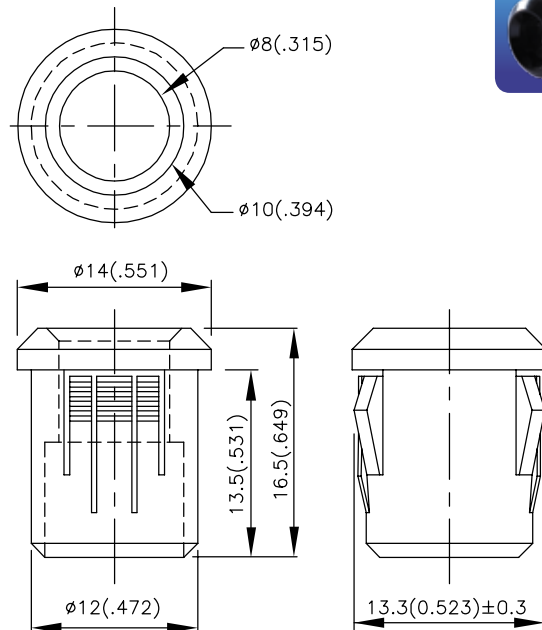
NOTES:

- NOTES:
1. All dimensions are in millimeters(inches).
 2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.

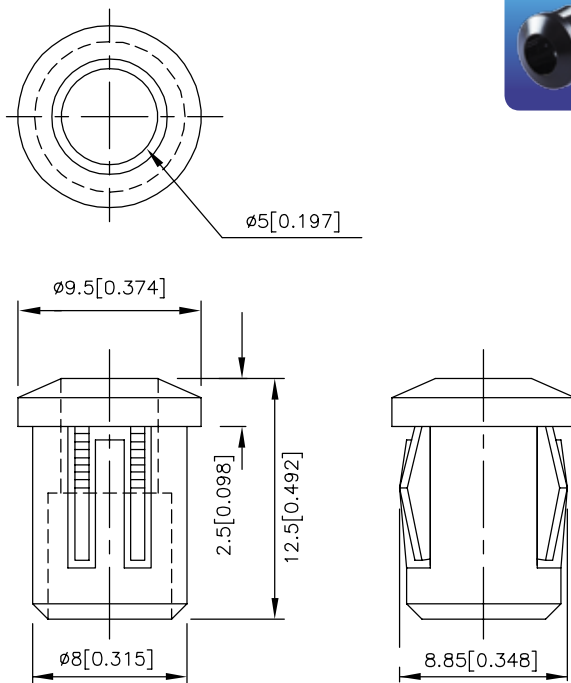
RTF-1090



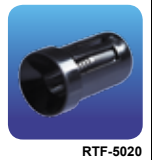
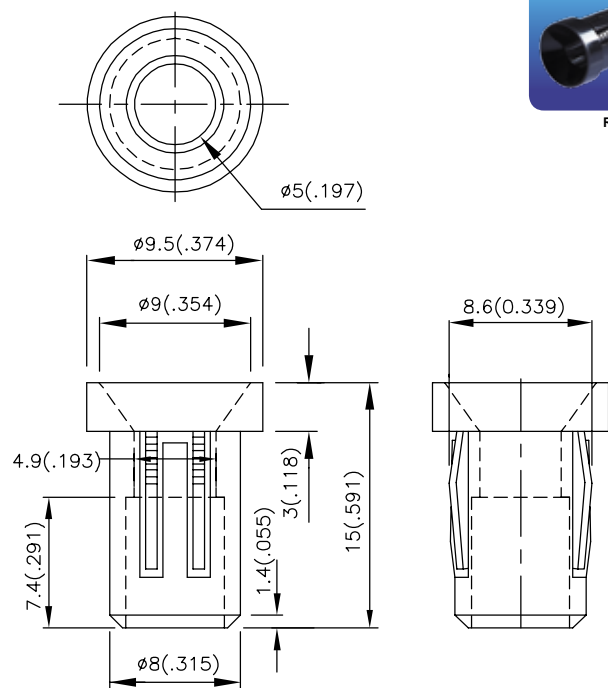
RTF-8080



RTF-5010



RTF-5020



NOTES:

1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.

Kingbright

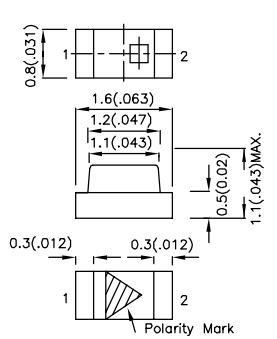
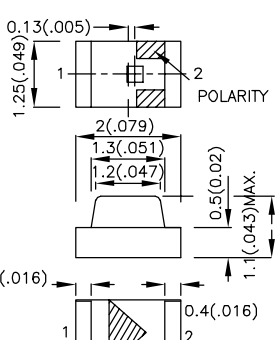
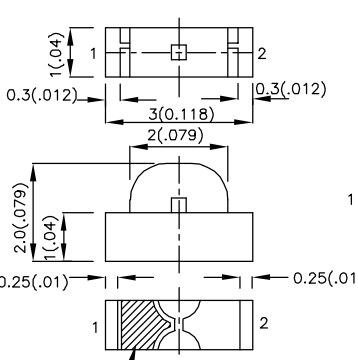
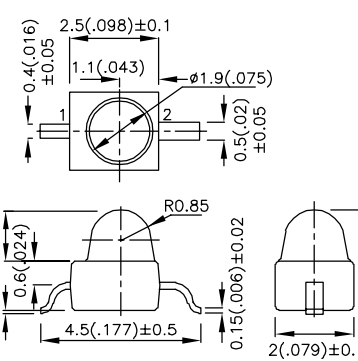
Optoelectronic Components

INFRARED & PHOTOTRANSISTOR

Infrared Emitting Diode	85
Phototransistor	87

LIGHT PIPE	89
CLUSTER	90

INFRARED EMITTING DIODE

Part Number	Material	λ_P (nm)	Lens Type	Iv (mcd) @20mA *50mA		Viewing Angle	Dimension
				Min.	Typ.		
KP-1608F3C	GaAs	940	water clear	0.8	2	120°	1.6mm x 0.8mm x 1.1mm (0603)   KP-1608F3C F3 1  2 SF4 1  2 Units : mm(inch) Tolerance : ±0.1(0.004)
KP-1608SF4C	GaAlAs	880	water clear	0.8	1.5	120°	
KP-2012F3C	GaAs	940	water clear	0.8	2	120°	2.0mm x 1.25mm x 1.1mm (0805)   KP-2012F3C F3 1  2 SF4 1  2 Units : mm(inch) Tolerance : ±0.1(0.004)
KP-2012SF4C	GaAlAs	880	water clear	0.8	1.5	120°	
KPA-3010F3C	GaAs	940	water clear	0.8	2	120°	3.0mm x 1.0mm x 2.0mm (1104 Right Angle)   KPA-3010F3C 1  2 Units : mm(inch) Tolerance : ±0.15(0.006)
KM2520F3C03	GaAs	940	water clear	3	8	20°	2mm Subminiature IR Emitter   KM2520F3C03 F3 1  2 SF4 1  2 Units : mm(inch) Tolerance : ±0.25(0.01)
KM2520SF4C03	GaAlAs	880	water clear	2	4	20°	
				*3	*8		

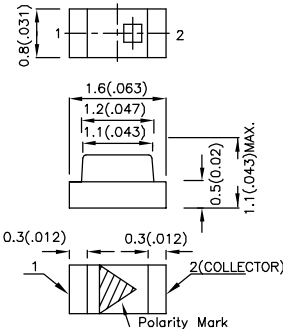
Part Number	Material	λ_P (nm)	Lens Type	Po (mW/sr) @20mA *50mA		Viewing Angle	Dimension	
				Min.	Typ.	20/1/2		
L-34F3C	GaAs	940	water clear	3	8	50°	T-1 (3mm) Round L-34F3C Units : mm(inch) Tolerance : ±0.25(0.01)	
				*8	*15	50°		
L-34F3BT	GaAs	940	blue transparent	3	8	50°		
				*8	*15	50°		
L-34SF4C	GaAlAs	880	water clear	3	16	50°		
				*5	*20	50°		
L-34SF4BT	GaAlAs	880	blue transparent	3	16	50°		
				*5	*20	50°		
L-7104F3C	GaAs	940	water clear	3	8	34°		T-1 (3mm) Round L-7104F3C Units : mm(inch) Tolerance : ±0.25(0.01)
				*12	*25	34°		
L-7104F3BT	GaAs	940	blue transparent	3	8	34°		
				*12	*25	34°		
L-7104SF6C	GaAlAs	860	water clear	7	12	34°		
				*12	*30	34°		
L-7104SF6BT	GaAlAs	860	blue transparent	7	12	34°		
				*12	*30	34°		
L-7104SF7C	GaAlAs	850	water clear	10	30	34°		
				*15	*40	34°		
L-7104SF7BT	GaAlAs	850	blue transparent	10	30	34°		
				*15	*40	34°		
L-7113F3C	GaAs	940	water clear	8	20	20°	T-1 3/4 (5mm) Round L-7113F3C Units : mm(inch) Tolerance : ±0.25(0.01)	
				*25	*50	20°		
L-7113F3BT	GaAs	940	blue transparent	8	20	20°		
				*25	*50	20°		
L-7113SF4C	GaAlAs	880	water clear	6	15	20°		
				*12	*25	20°		
L-7113SF4BT	GaAlAs	880	blue transparent	6	15	20°		
				*12	*25	20°		
L-7113SF6C	GaAlAs	860	water clear	18	40	20°		
				*55	*100	20°		
L-7113SF6BT	GaAlAs	860	blue transparent	18	40	20°		
				*55	*100	20°		
L-7113SF7C	GaAlAs	850	water clear	12	30	20°		
				*40	*90	20°		
L-7113SF7BT	GaAlAs	850	blue transparent	12	30	20°		
				*40	*90	20°		

PHOTOTRANSISTOR

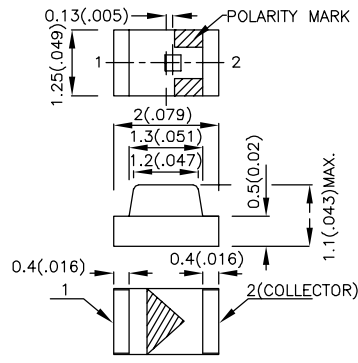
Part Number		Lens Type		Dimension	
KP-1608P1C		water clear		1.6mm x 0.8mm x 1.1mm (0603)	
KP-2012P3C		water clear		2.0mm x 1.25mm x 1.1mm (0805)	
KP-3216P3C		water clear		3.2mm x 1.6mm x 1.1mm (1206)	
KPA-3010P3C		water clear		3.0mm x 1.0mm x 2.0mm (1104)	

</

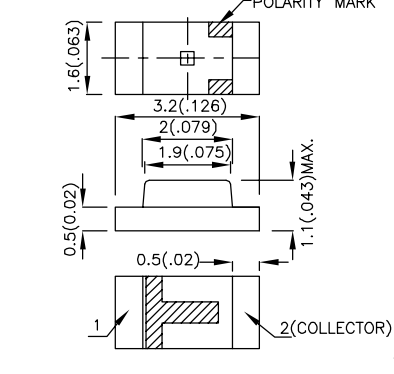
1.6mm x 0.8mm x 1.1mm (0603)



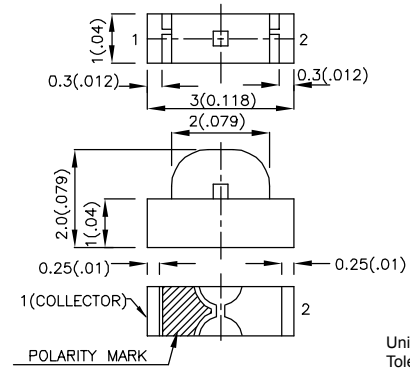
2.0mm x 1.25mm x 1.1mm (0805)



3.2mm x 1.6mm x 1.1mm (1206)



3.0mm x 1.0mm x 2.0mm (1104)



PHOTOTRANSISTOR

Part Number		Lens Type		Dimension	
L-3DP3BT		blue transparent		T-1 (3mm) Phototransistor  L-3DP3BT	
L-7113P3C		water clear			

Electrical And Radiant Characteristics TA =25°C

Parameter	Symbol	Part Number	Min.	Typ.	Max.	Unit	Test Condition
Collector-to-Emitter Breakdown Voltage	$V_{BR\ CEO}$	-	30	-	-	V	$I_C=100\mu A$ $E_e=0mW/cm^2$
Emitter-to-Collector Breakdown Voltage	$V_{BR\ ECO}$	-	5	-	-	V	$I_E=100\mu A$ $E_e=0mW/cm^2$
Collector-to-Emitter Saturation Voltage	$V_{CE\ (SAT)}$	-	-	-	0.8	V	$I_C=2mA$ $E_e=20mW/cm^2$
Collector Dark Current	I_{CEO}	-	-	-	100	nA	$V_{CE}=10V$ $E_e=0mW/cm^2$
Rise Time (10% to 90%)	T_R	-	-	15	-	μs	$V_{CE}=5V$ $I_C=1mA$ $R_L=1K\Omega$
Fall Time (90% to 10%)	T_F	-	-	15	-	μs	
On State Collector Current	$I_{(ON)}$	L-3DP3BT	0.1	0.2	-	mA	$V_{CE}=5V$, $E_e=1mW/cm^2$ $\lambda=940nm$
		L-7113P3C	0.5	2.5			

Absolute Maximum Rating TA =25°C

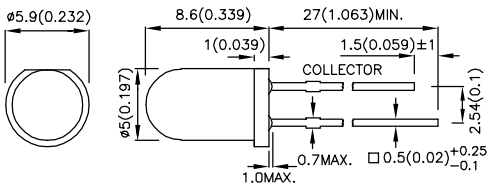
Parameter	Maximum Ratings
Collector-to-Emitter Voltage	30V
Emitter-to-Collector Voltage	5V
Power Dissipation at (or below) 25°C Free Air Temperature	100mW
Operating Temperature Range	-40°C ~ +85°C
Storage Temperature Range	-40°C ~ +85°C
Lead Soldering Temperature (>5mm For 5sec)	260°C

Units : mm(inch)
Tolerance : ±0.25(0.01)

T-1 3/4 (5mm) Phototransistor



L-7113P3C

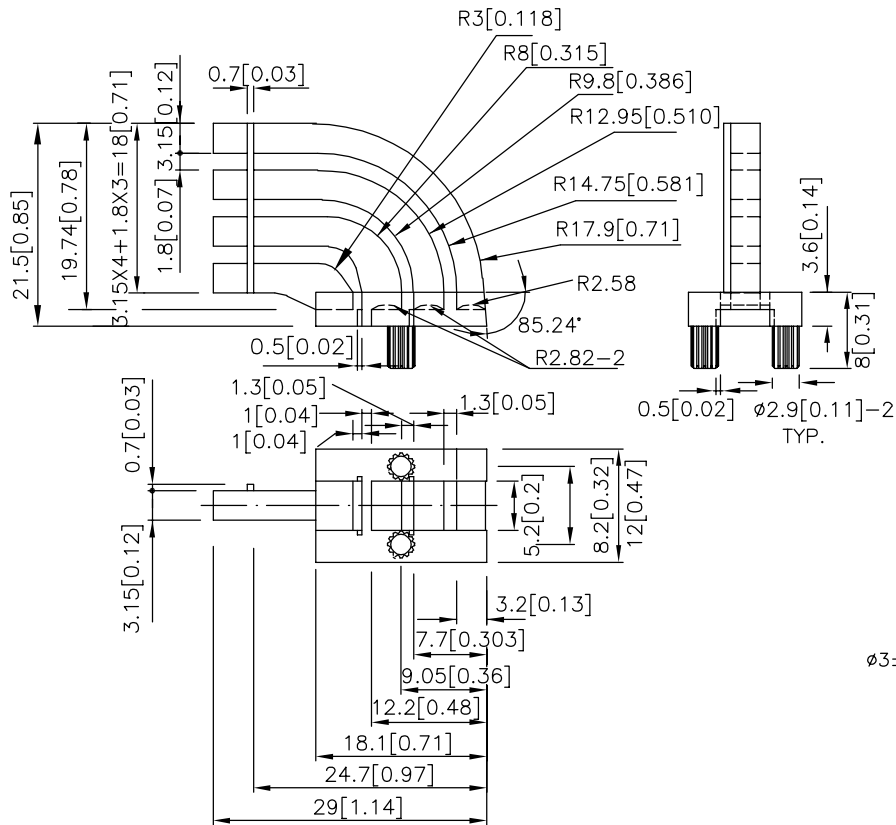


Units : mm(inch)
Tolerance : ±0.25(0.01)

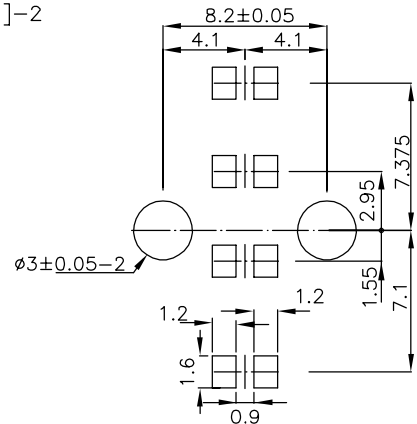
KL-05



KL-05



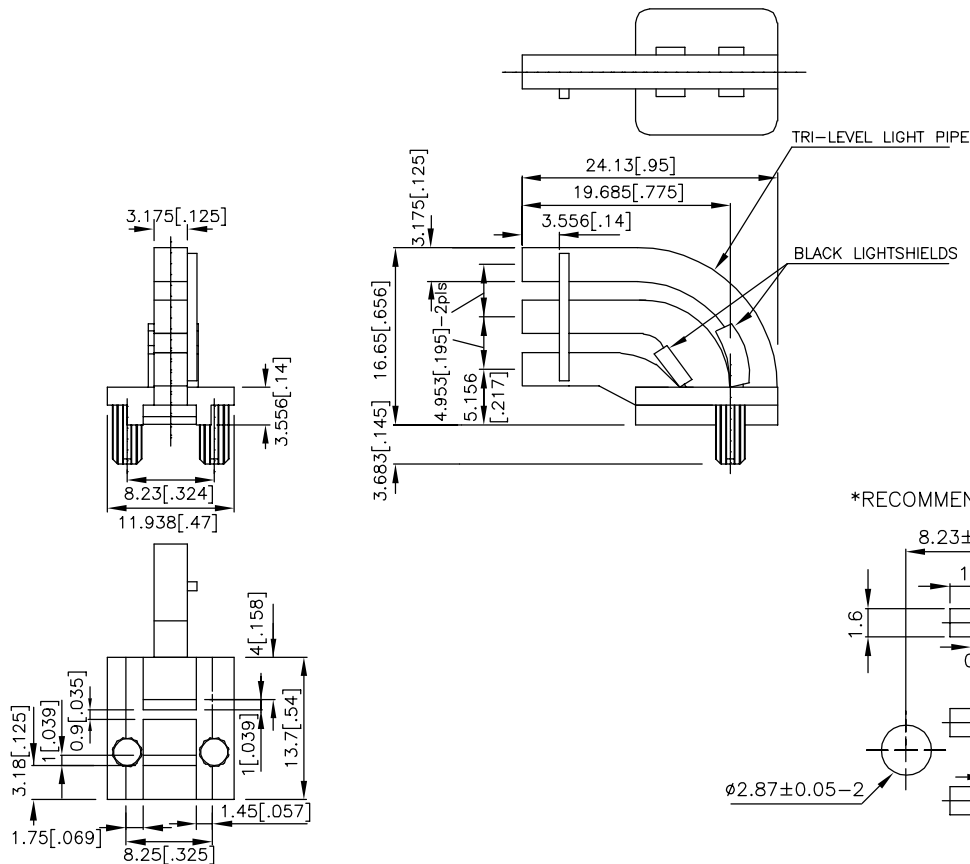
*RECOMMENDED FOOTPRINT



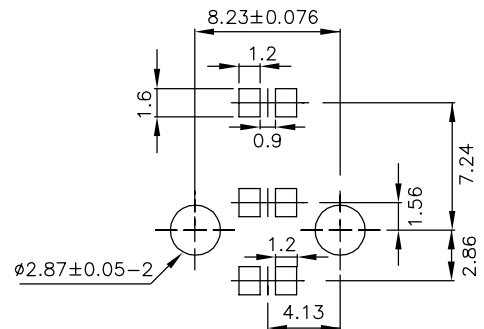
KL-07LS



KL-07LS



*RECOMMENDED FOOTPRINT

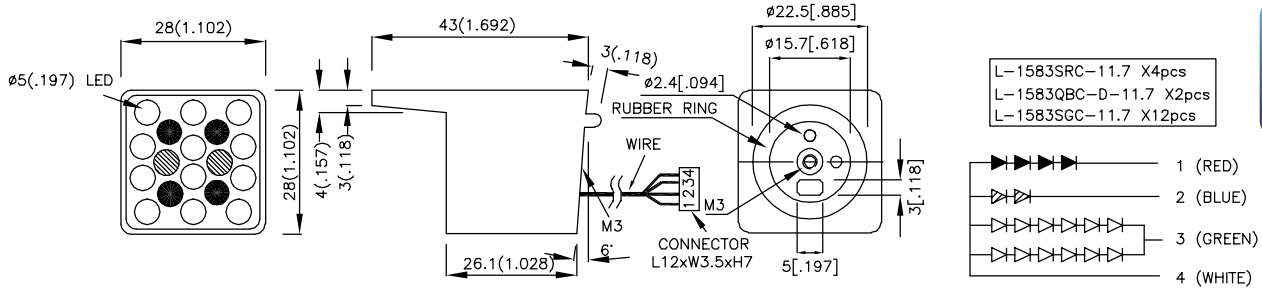


NOTES:

1. All dimensions are in millimeters (inches).
2. Tolerance is $\pm 0.25\text{mm}$ (0.01") unless otherwise noted.

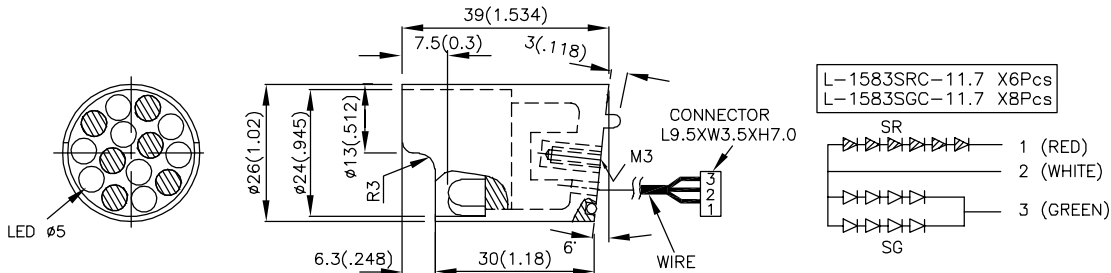
28mmX28mm

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd)		Viewing Angle 2 θ 1/2	IF(mA)
				Min.	Typ.		
BL0709-18-462	GaAlAs	640	water clear	400	800	40°	20
	InGaN	465	water clear	1600	3000	40°	20
	GaP	568	water clear	1200	2400	40°	40



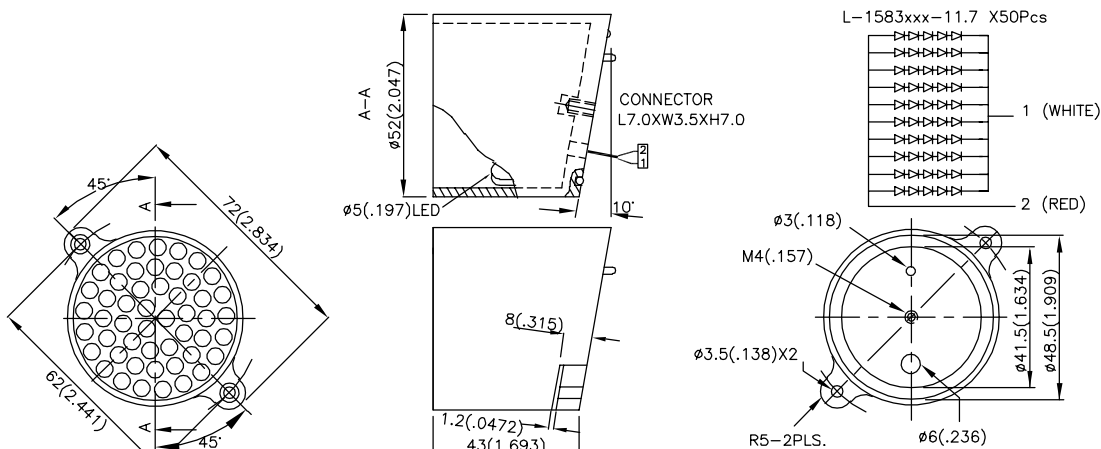
26mm

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd)		Viewing Angle 2 θ 1/2	IF(mA)
				Min.	Typ.		
BL0102-14-34	GaAlAs	640	water clear	600	1200	40°	20
	GaP	568	water clear	800	1600	40°	40



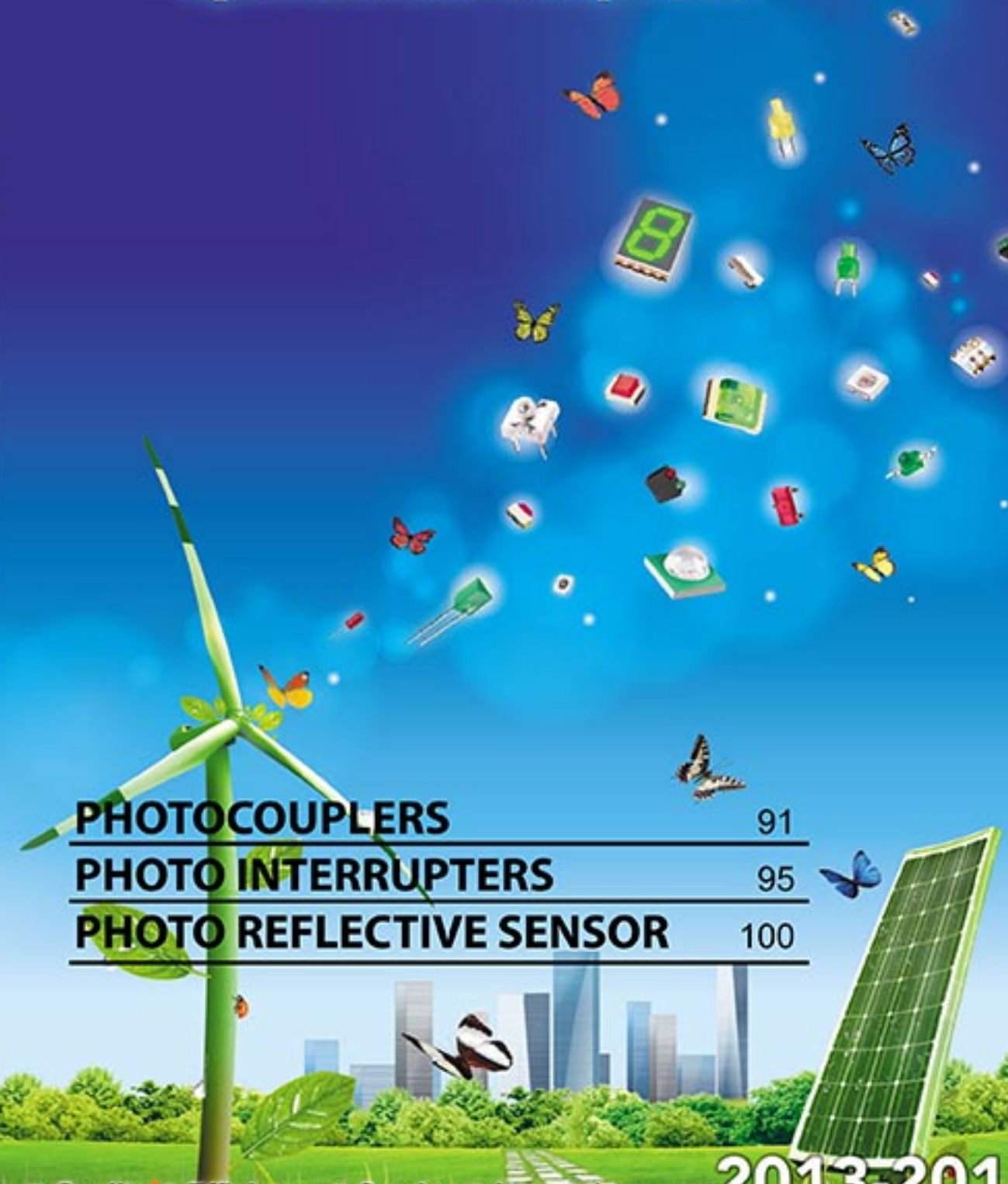
52mm

Part Number	Material	λ_D (nm)	Lens Type	Iv (mcd)		Viewing Angle 2 θ 1/2	IF(mA)
				Min.	Typ.		
BL0307-50-360	AlGaInP	570	water clear	15000	25000	40°	200
BL0307-50-374	AlGaInP	590	water clear	45000	75000	40°	200
BL0307-50-433	AlGaInP	630	water clear	12300	23000	40°	200



Kingbright

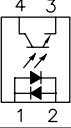
Optoelectronic Components

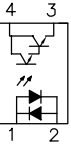


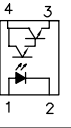
PHOTOCOUPPLERS	91
PHOTO INTERRUPTERS	95
PHOTO REFLECTIVE SENSOR	100

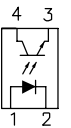
■ Quality ■ Efficiency ■ Service ■ Innovation

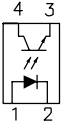
2013-2015

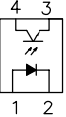
Part Number	Pin Configuration	Safety Standards	Features	Absolute Maximum Ratings		Electrical Characteristics					
				Isolation Voltage(AC) Viso(Vrms)	Collector Emitter Voltage V _{CEO} (V)	CTR(%)		V(sat) (V)		Response Time (μs) Typ.	
						IF=±1mA, V _{CE} =5V		IF=±20mA, I _C =1mA		V _{CE} =2V, I _C =2mA, R _L =100Ω	
						Min.	Max.	Typ.	Max.	Tr	Tf
KB814		UL NO.E225308 & VDE0884. NO.40006364	High isolation voltage AC input response	5000	35	20	300	0.1	0.2	4	3

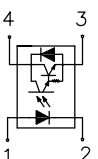
Part Number	Pin Configuration	Safety Standards	Features	Absolute Maximum Ratings		Electrical Characteristics					
				Isolation Voltage(AC) Viso(Vrms)	Collector Emitter Voltage V _{CEO} (V)	CTR(%)		V(sat) (V)		Response Time (μs) Typ.	
						IF=±1mA, V _{CE} =2V		IF=±20mA, I _C =5mA		V _{CE} =2V, I _C =10mA, R _L =100Ω	
						Min.	Max.	Typ.	Max.	Tr	Tf
KB8141		UL NO.E225308 & VDE0884. NO.40006364	High isolation voltage High sensitivity AC input response	5000	35	600	7500	0.8	1	60	53

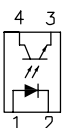
Part Number	Pin Configuration	Safety Standards	Features	Absolute Maximum Ratings		Electrical Characteristics					
				Isolation Voltage(AC) Viso(Vrms)	Collector Emitter Voltage V _{CEO} (V)	CTR(%)		V(sat) (V)		Response Time (μs) Typ.	
						IF=1mA, V _{CE} =2V		IF=20mA, I _C =5mA		V _{CE} =2V, I _C =10mA, R _L =100Ω	
						Min.	Max.	Typ.	Max.	Tr	Tf
KB815		UL NO.E225308 & VDE0884. NO.40006364	High isolation voltage High sensitivity	5000	35	600	7500	0.8	1	60	53

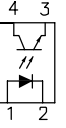
Part Number	Pin Configuration	Safety Standards	Features	Absolute Maximum Ratings		Electrical Characteristics					
				Isolation Voltage(AC) Viso(Vrms)	Collector Emitter Voltage V _{CEO} (V)	CTR(%)		V(sat) (V)		Response Time (μs) Typ.	
						IF=5mA, V _{CE} =5V		IF=20mA, I _C =1mA		V _{CE} =2V, I _C =2mA, R _L =100Ω	
						Min.	Max.	Typ.	Max.	Tr	Tf
KB816		UL NO.E225308 & VDE0884. NO.40006364	High isolation voltage High collector-emitter voltage	5000	70	50	600	0.1	0.2	4	3

Part Number	Pin Configuration	Safety Standards	Features	Absolute Maximum Ratings		Electrical Characteristics					
				Isolation Voltage(AC) Viso(Vrms)	Collector Emitter Voltage V _{CEO} (V)	CTR(%)		V(sat) (V)		Response Time (μs) Typ.	
						IF=5mA, V _{CE} =5V		IF=20mA, I _C =1mA		V _{CE} =2V, I _C =2mA, R _L =100Ω	
						Min.	Max.	Typ.	Max.	Tr	Tf
KB817		UL NO.E225308 & VDE0884. NO.40006364	High isolation voltage	5000	35	50	600	0.1	0.2	4	3

Part Number	Pin Configuration	Safety Standards	Features	Absolute Maximum Ratings		Electrical Characteristics					
				Isolation Voltage(AC) Viso(Vrms)	Collector Emitter Voltage V _{CEO} (V)	CTR(%)		V(sat) (V)		Response Time (μs) Typ.	
						IF=5mA, V _{CE} =5V		IF=20mA, I _C =1mA		V _{CE} =2V, I _C =2mA, R _L =100Ω	
						Min.	Max.	Typ.	Max.	Tr	Tf
KB851		VDE0884. NO.40006364	High collector-emitter Voltage	5000	350	-	-	0.1	0.3	4	3

Part Number	Pin Configuration	Safety Standards	Features	Absolute Maximum Ratings		Electrical Characteristics					
				Isolation Voltage(AC) Viso(Vrms)	Collector Emitter Voltage V _{CEO} (V)	CTR(%)		V(sat) (V)		Response Time (μs) Typ.	
						IF=1mA, V _{CE} =2V		IF=20mA, I _C =100mA		V _{CE} =2V, I _C =20mA, R _L =1000Ω	
						Min.	Max.	Typ.	Max.	Tr	Tf
KB852		VDE0884. NO.40006364	High collector-emitter voltage High sensitivity	5000	350	1000	15000	-	1.2	100	20

Part Number	Pin Configuration	Safety Standards	Features	Absolute Maximum Ratings		Electrical Characteristics					
				Isolation Voltage(AC) Viso(Vrms)	Collector Emitter Voltage V _{CEO} (V)	CTR(%)		V(sat) (V)		Response Time (μs) Typ.	
						IF=5mA, V _{CE} =5V		IF=20mA, I _C =1mA		V _{CE} =2V, I _C =2mA, R _L =100Ω	
						Min.	Max.	Typ.	Max.	Tr	Tf
KB817-B		UL NO.E225308 & VDE0884. NO.40006364	High isolation voltage SMD Type	5000	35	50	600	0.1	0.2	4	3

Part Number	Pin Configuration	Safety Standards	Features	Absolute Maximum Ratings		Electrical Characteristics					
				Isolation Voltage(AC) Viso(Vrms)	Collector Emitter Voltage V _{CEO} (V)	CTR(%)		V(sat) (V)		Response Time (μs) Typ.	
						IF=5mA, V _{CE} =5V		IF=20mA, I _C =1mA		V _{CE} =2V, I _C =2mA, R _L =100Ω	
						Min.	Max.	Typ.	Max.	Tr	Tf
KB817-M		UL NO.E225308 & VDE0884. NO.40006364	High isolation voltage	5000	35	50	600	0.1	0.2	4	3

Part Number	Pin Configuration	Safety Standards	Features	Absolute Maximum Ratings		Electrical Characteristics					
				Isolation Voltage(AC) Viso(Vrms)	Collector Emitter Voltage V _{CEO} (V)	CTR(%)		V(sat) (V)		Response Time (μs) Typ.	
						IF=1mA, V _{CE} =2V		IF=20mA, I _C =1mA		V _{CE} =2V, I _C =2mA, R _L =100Ω	
						Min.	Max.	Typ.	Max.	Tr	Tf
KB355NT		UL NO.E225308 & VDE0884. NO.40017614	High current transfer ratio Small package size	3750	35	600	7500	0.8	1.0	60	53

Part Number	Pin Configuration	Safety Standards	Features	Absolute Maximum Ratings		Electrical Characteristics					
				Isolation Voltage(AC) Viso(Vrms)	Collector Emitter Voltage V _{CEO} (V)	CTR(%)		V(sat) (V)		Response Time (μs) Typ.	
						IF=5mA, V _{CE} =5V		IF=20mA, I _C =1mA		V _{CE} =2V, I _C =2mA, R _L =100Ω	
						Min.	Max.	Typ.	Max.	Tr	Tf
KB356NT		UL NO.E225308 & VDE0884. NO.40017614	High collector-emitter Voltage Small package size	3750	80	50	600	0.1	0.2	6	8
KB357NT			Small package size	3750	35	50	600	-	0.2	4	3

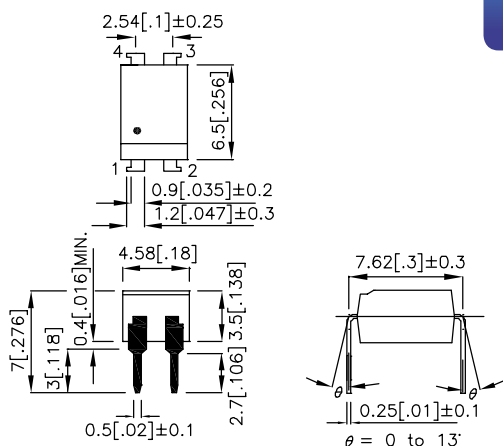
Part Number	Pin Configuration	Safety Standards	Features	Absolute Maximum Ratings		Electrical Characteristics					
				Isolation Voltage(AC) Viso(Vrms)	Collector Emitter Voltage V _{CEO} (V)	CTR(%)		V(sat) (V)		Response Time (μs) Typ.	
						IF=±1mA, V _{CE} =5V		IF=±20mA, I _C =1mA		V _{CE} =2V, I _C =2mA, R _L =100Ω	
						Min.	Max.	Typ.	Max.	Tr	Tf
KB354NT		UL NO.E225308 & VDE0884. NO.40017614	AC.input response Small package size	3750	35	20	400	0.1	0.2	4	3

Part Number	Pin Configuration	Safety Standards	Features	Absolute Maximum Ratings		Electrical Characteristics					
				Isolation Voltage(AC) Viso(Vrms)	Collector Emitter Voltage V _{CEO} (V)	CTR(%)		V(sat) (V)		Response Time (μs) Typ.	
						IF=±1mA, V _{CE} =2V		IF=±20mA, I _C =1mA		V _{CE} =2V, I _C =2mA, R _L =100Ω	
						Min.	Max.	Typ.	Max.	Tr	Tf
KB3541NT		UL NO.E225308 & VDE0884. NO.40017614	AC.input response High sensitivity Small package size	3750	35	450	7400	0.8	1.0	60	53

KB814, KB8141, KB815, KB816, KB817, KB851, KB852



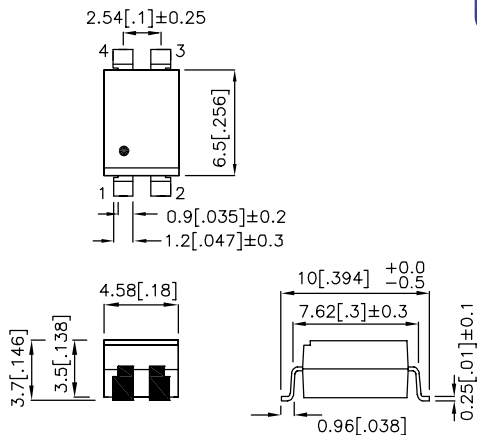
KB814



KB817-B



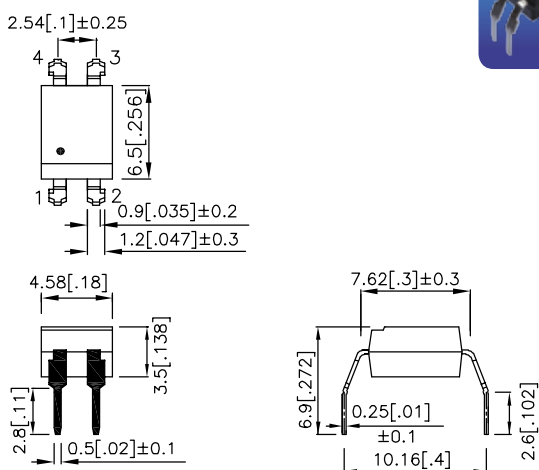
KB817-B



KB817-M



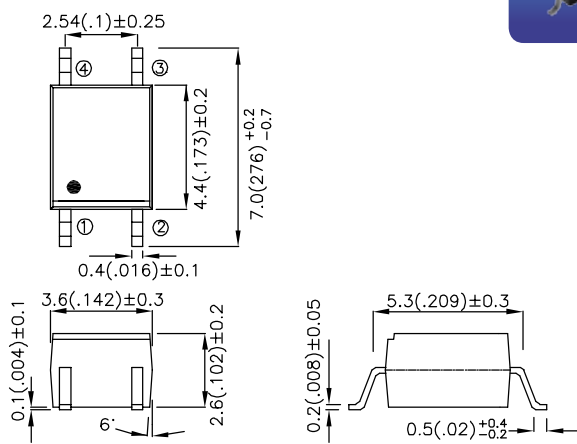
KB817-M



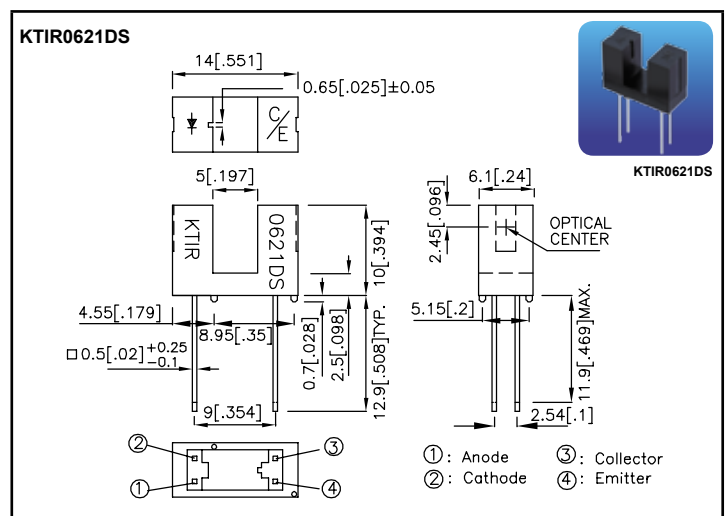
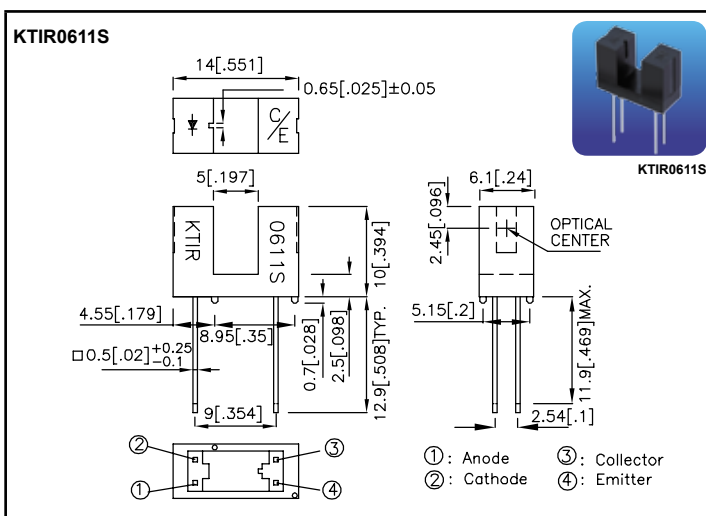
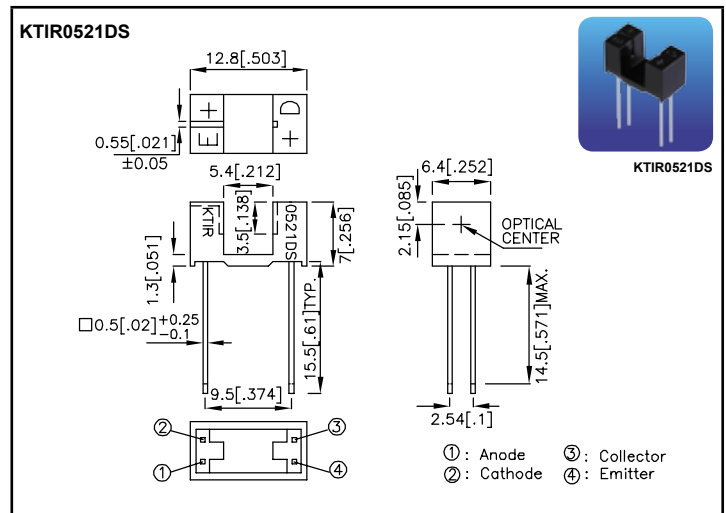
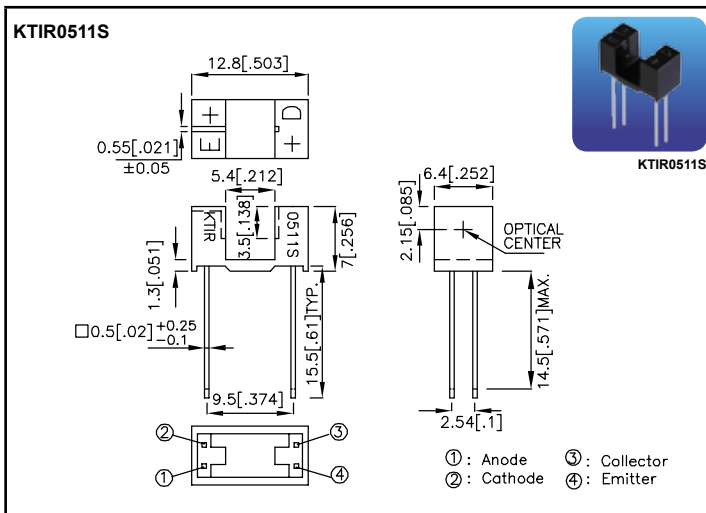
KB355NT, KB356NT, KB357NT, KB354NT, KB3541NT



KB355NT

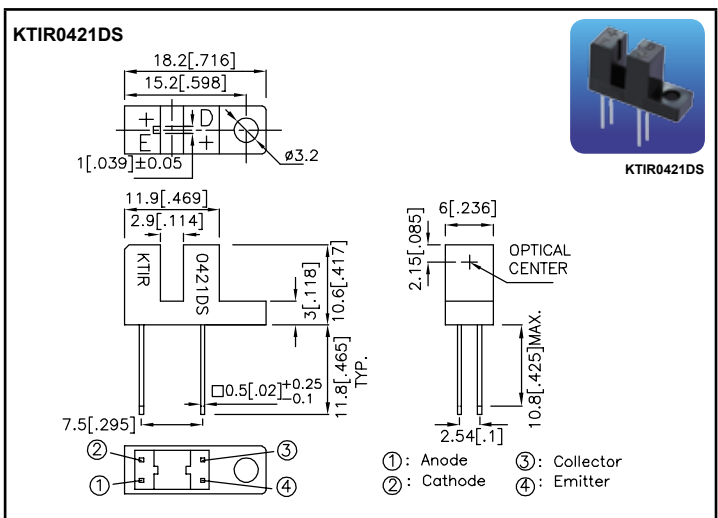
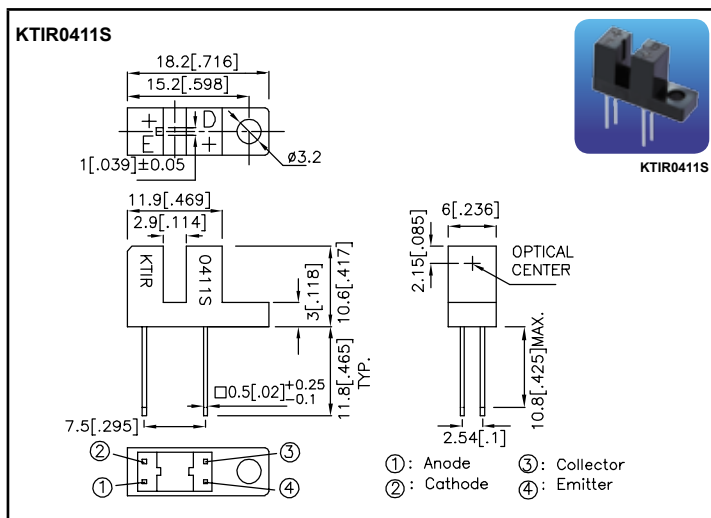
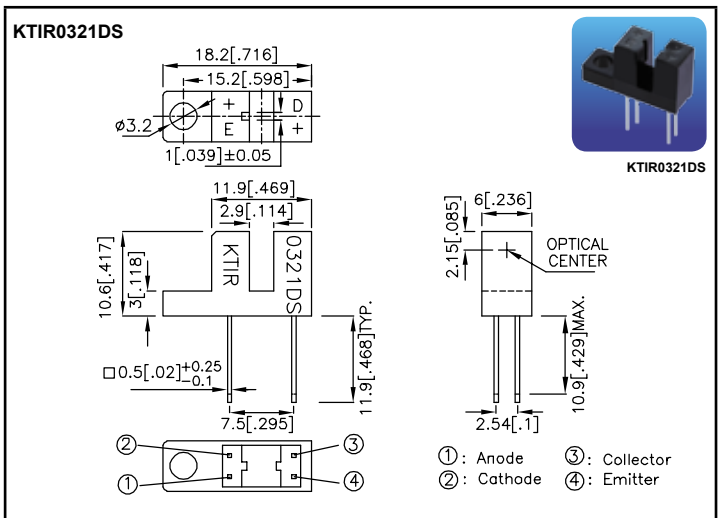
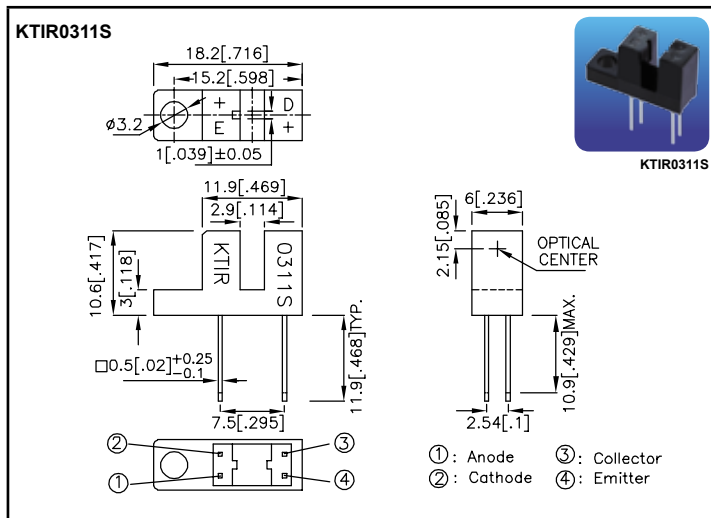


Part Number	Pin Configuration	Material	λ_P (nm)	CTR			$V_{CE(SAT)}$			Rise Time (μs)	Fall Time (μs)
				IF(mA)	$V_{CE(V)}$	Typ.(%)	IF(mA)	IC(mA)	Max.(V)	Typ.	Typ.
KTIR0511S		GaAs/SiC	940	20	5	10	40	1	0.4	5	4
KTIR0521DS		GaAs/SiC	940	1	2	180	2	1	1	90	80
KTIR0611S		GaAs/SiC	940	20	5	14	40	1	0.4	5	4
KTIR0621DS		GaAs/SiC	940	1	2	200	2	1	1	90	80



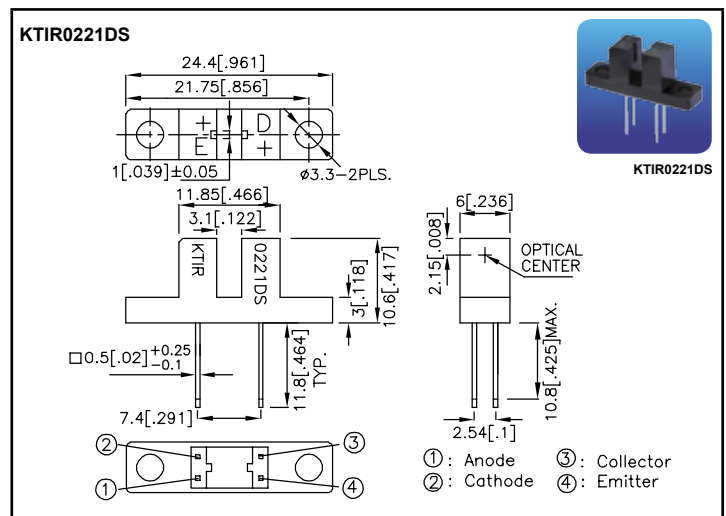
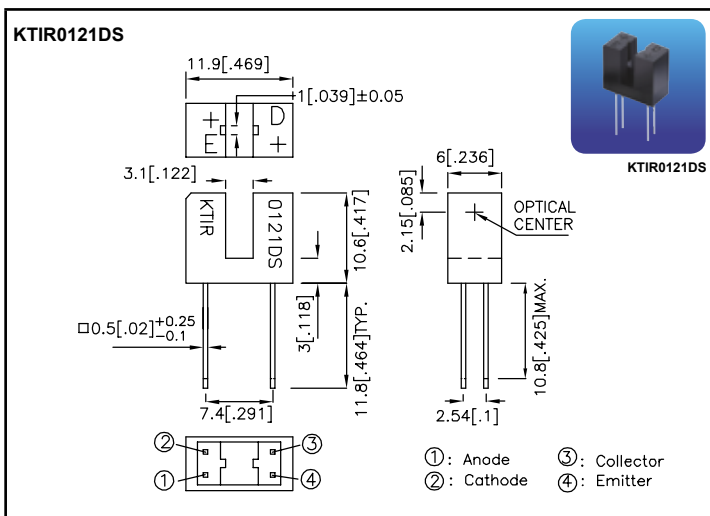
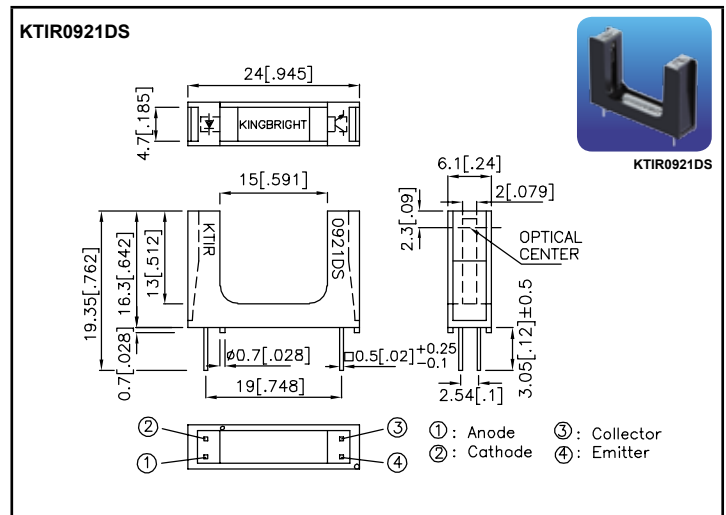
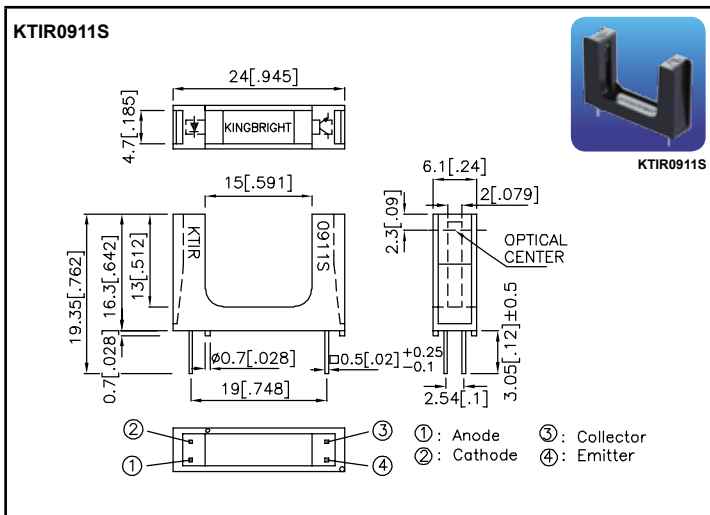
NOTES:
 1. All dimensions are in millimeters(inches).
 2. Tolerance is ±0.25mm(0.01") unless otherwise noted.

Part Number	Pin Configuration	Material	λ_P (nm)	CTR			$V_{CE(SAT)}$			Rise Time (μs)	Fall Time (μs)
				IF(mA)	$V_{CE(V)}$	Typ.(%)	IF(mA)	IC(mA)	Max.(V)	Typ.	Typ.
KTIR0311S		GaAs/SiC	940	20	5	38	40	1	0.4	5	4
KTIR0321DS		GaAs/SiC	940	1	2	650	2	1	1	90	80
KTIR0411S		GaAs/SiC	940	20	5	38	40	1	0.4	5	4
KTIR0421DS		GaAs/SiC	940	1	2	650	2	1	1	90	80

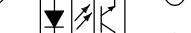


NOTES:
1. All dimensions are in millimeters(inches).
2. Tolerance is ±0.25mm(0.01") unless otherwise noted.

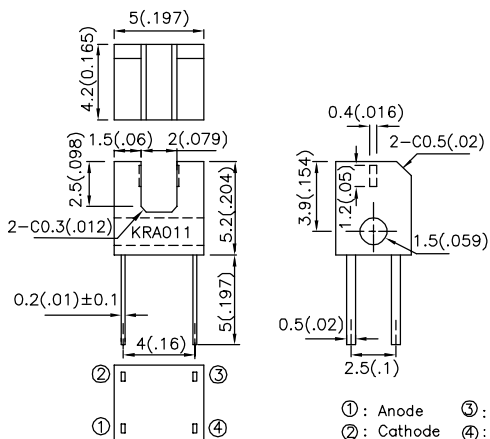
Part Number	Pin Configuration	Material	λ_P (nm)	CTR			$V_{CE(SAT)}$			Rise Time (μs)	Fall Time (μs)
				IF(mA)	$V_{CE(V)}$	Typ.(%)	IF(mA)	IC(mA)	Max.(V)	Typ.	Typ.
KTIR0911S		GaAs/SiC	940	20	5	9.5	40	1	0.4	5	4
KTIR0921DS		GaAs/SiC	940	1	2	120	2	1	1	90	80
KTIR0121DS		GaAs/SiC	940	1	2	600	2	1	1	90	80
KTIR0221DS		GaAs/SiC	940	1	2	600	2	1	1	90	80



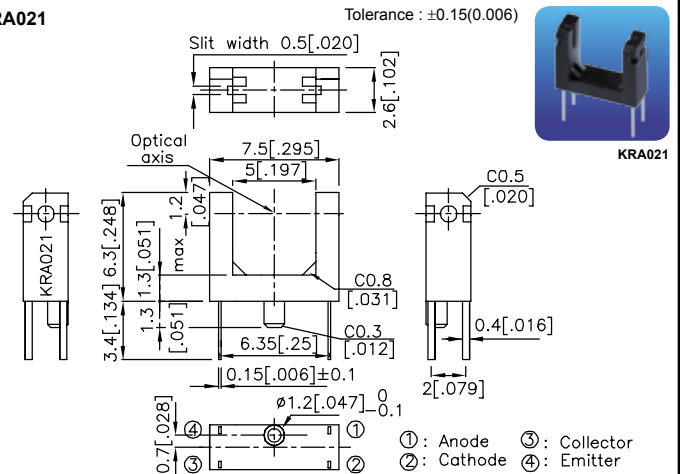
NOTES:
 1. All dimensions are in millimeters(inches).
 2. Tolerance is ±0.25mm(0.01") unless otherwise noted.

Part Number	Pin Configuration	Material	λ P (nm)	CTR			$V_{CE(SAT)}$			Rise Time (μ s)	Fall Time (μ s)
				IF(mA)	$V_{CE(V)}$	Typ.(%)	IF(mA)	IC(mA)	Max.(V)	Typ.	Typ.
KRA011		GaAs/SiC	 940	5	5	8	10	0.04	0.4	50	50
KRA021		GaAs/SiC	 940	10	2	18	20	0.25	0.4	15	15

KRA011



KRA021

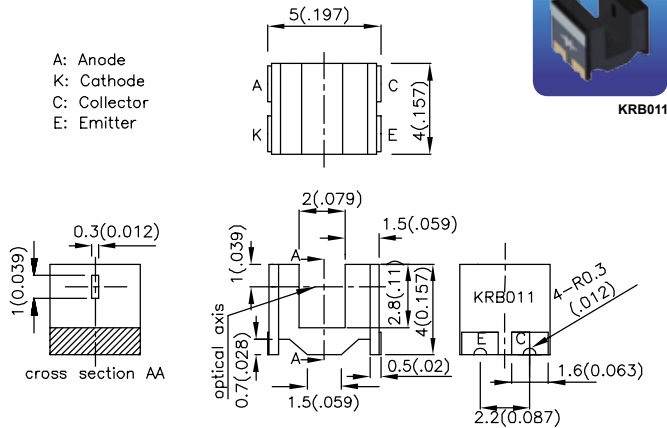


NOTES:

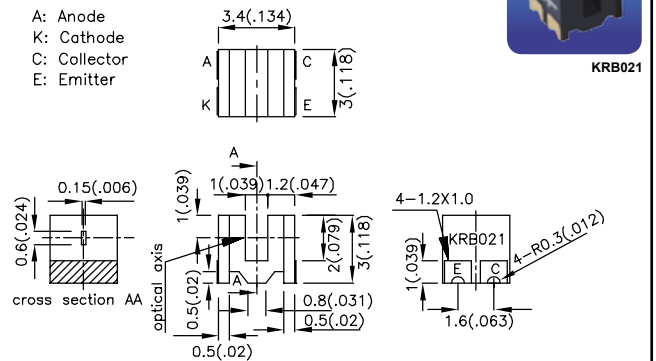
- NOTES:
1. All dimensions are in millimeters(inches).
 2. Tolerance is $\pm 0.25\text{mm}(0.01")$ unless otherwise noted.

Part Number	Pin Configuration	Material	λ_p (nm)	IC (μ A)	$V_{CE(SAT)}$			Rise Time (μ s)	Fall Time (μ s)
				$V_{CE}=5V, I_F=5mA$				Typ.	Typ.
				Typ.	$I_F(mA)$	$I_C(mA)$	Max.(V)		
KRB011		GaAs/SiC	940	650	20	0.05	0.4	8	10
KRB021		GaAs/SiC	940	500	20	0.05	0.4	8	10
KRB031		GaAs/SiC	940	150	20	0.05	0.4	8	10

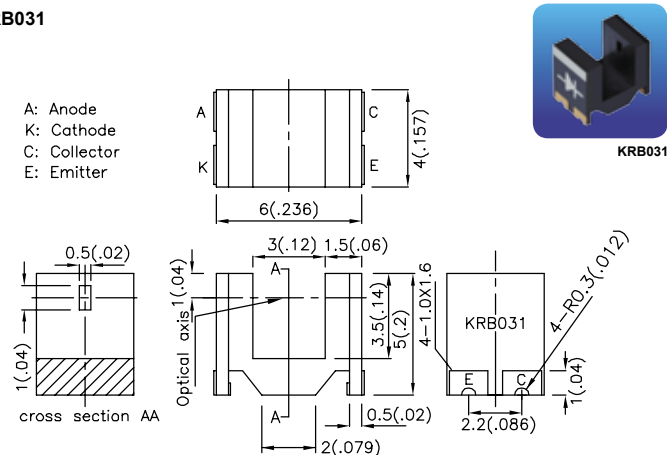
KRB011



KRB021



KRB031

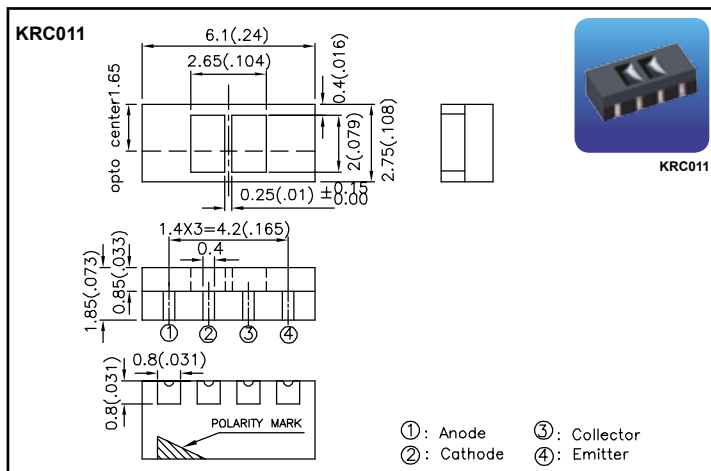
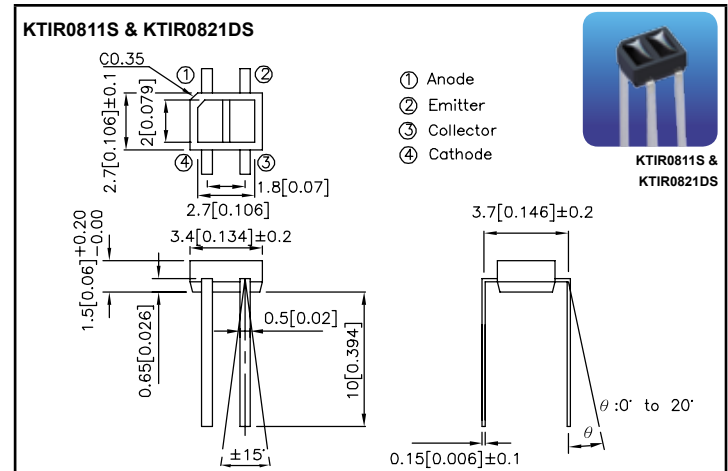
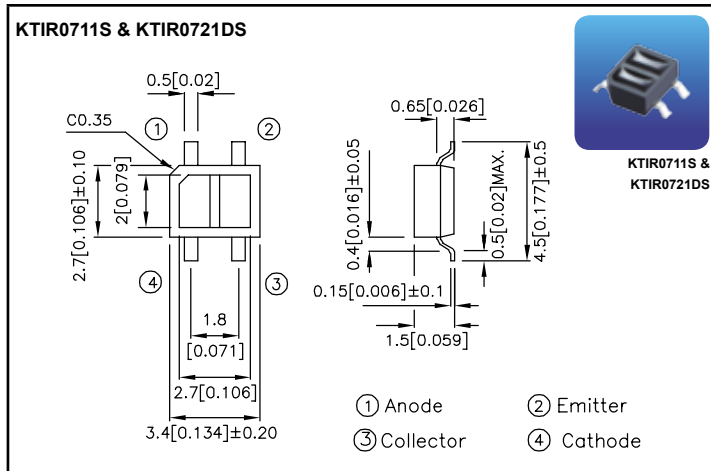


NOTES:

1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.15mm(0.006")$ unless otherwise noted.

Part Number	Pin Configuration	Material	λ_P (nm)	IC (μA)			$V_{CE(SAT)}$			Rise Time (μs)	Fall Time (μs)
				$V_{CE}=2V, I_F=4mA$							
				Min.	Typ.	Max.	IF(mA)	IC(mA)	Max.(V)	Typ.	Typ.
KTIR0711S		GaAs/SiC	940	10	-	400	-	-	-	20	20
KTIR0721DS		GaAs/SiC	940	-	3000	-	-	-	-	80	70
KTIR0811S		GaAs/SiC	940	10	-	400	-	-	-	20	20
KTIR0821DS		GaAs/SiC	940	-	3000	-	-	-	-	80	70

Part Number	Pin Configuration	Material	λ_P (nm)	IC (μA)			$V_{CE(SAT)}$			Rise Time (μs)	Fall Time (μs)
				$V_{CE}=5V, I_F=20mA$							
				Min.	Typ.	Max.	IF(mA)	IC(mA)	Max.(V)	Typ.	Typ.
KRC011		GaAs/SiC	940	10	-	300	-	-	-	20	20



NOTES:
1. All dimensions are in millimeters(inches).
2. Tolerance is $\pm 0.25mm(0.01")$ unless otherwise noted.

Kingbright

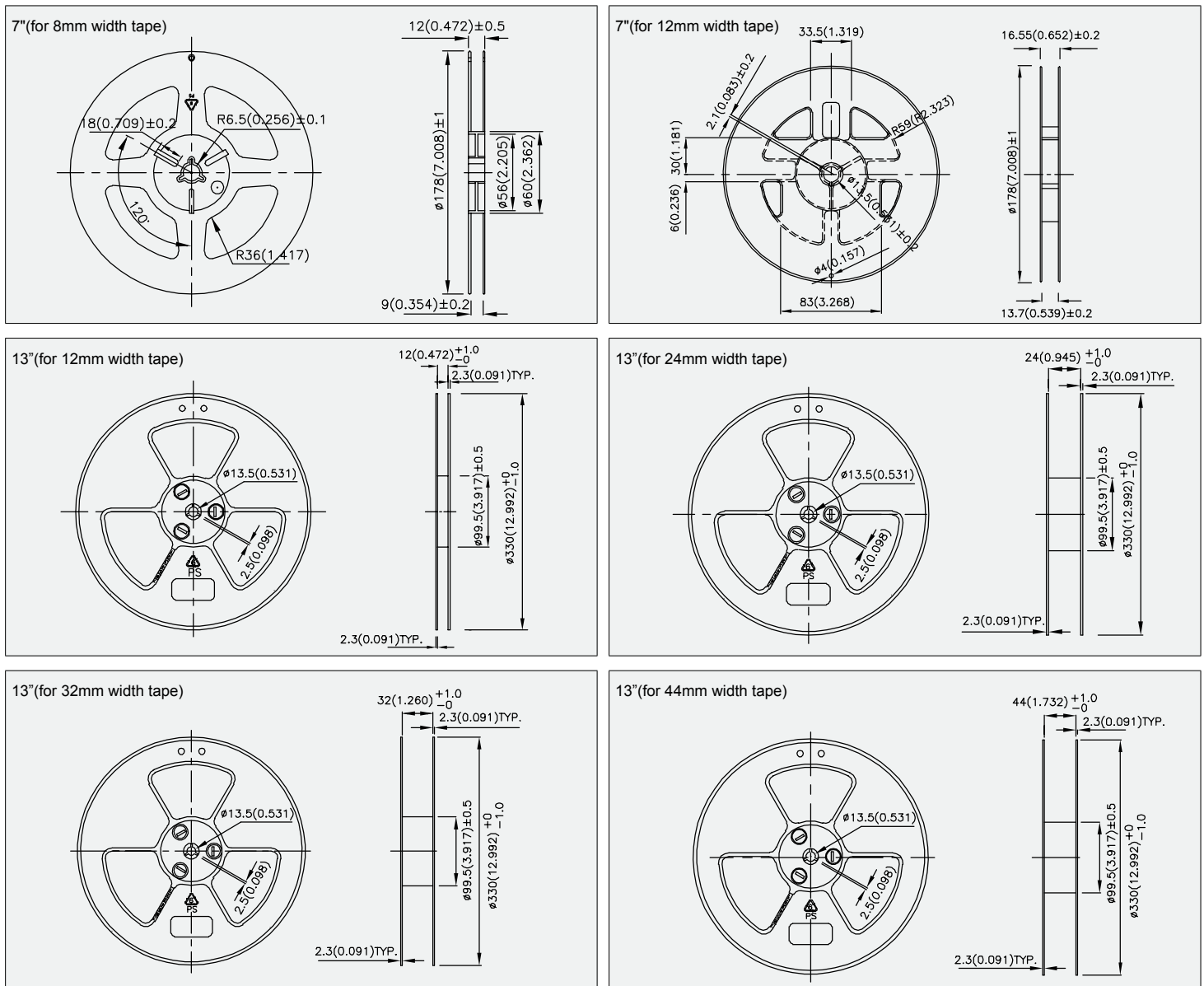
Optoelectronic Components

TECHNICAL NOTES

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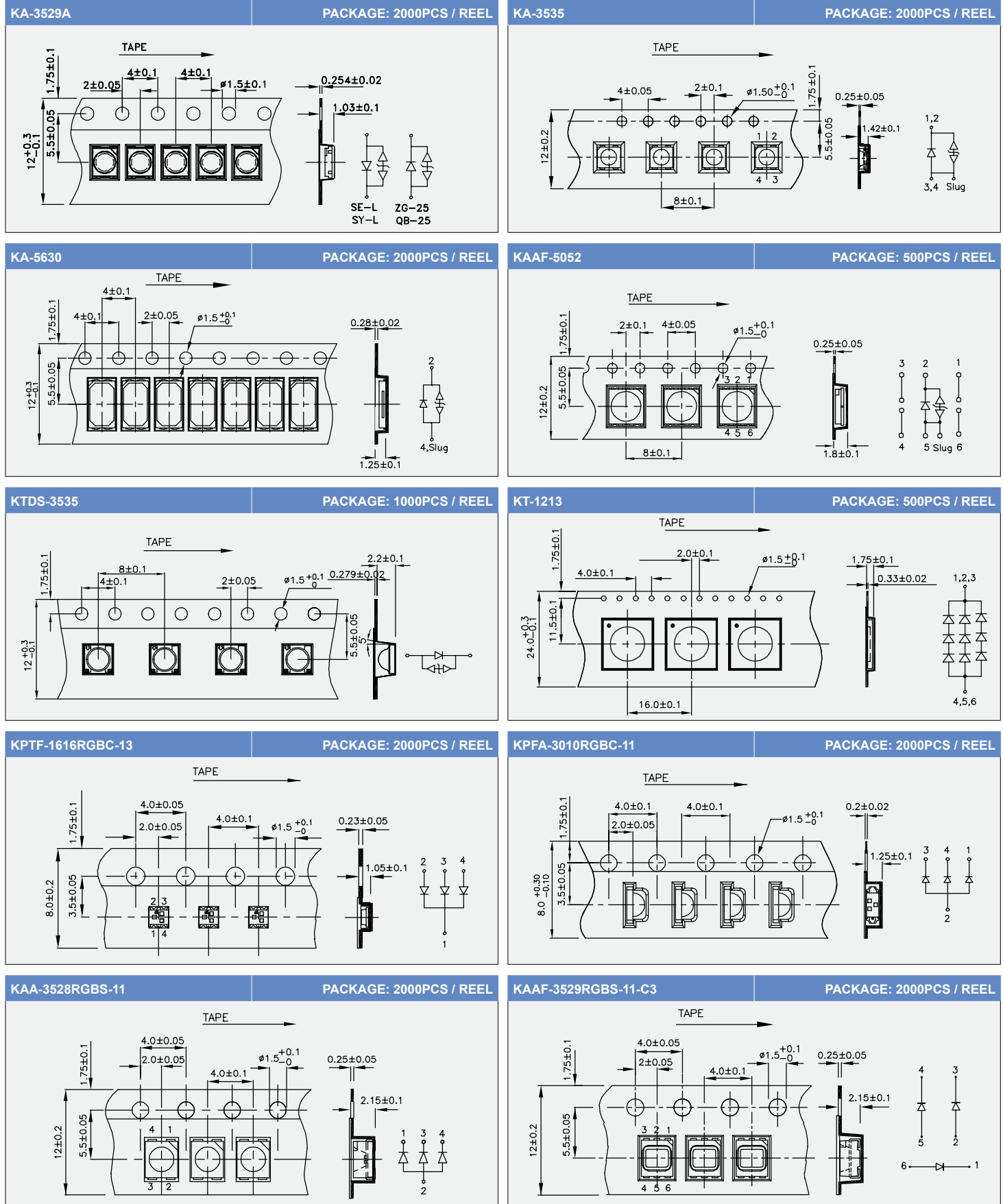
SMD TAPE SPECIFICATIONS

Reel Dimensions	Part Number		Reel Dimensions	Part Number	Reel Dimensions	Part Number
7" (for 8mm width tape)	KA-2214	KPG-1608	7" (for 12mm width tape)	KA-2735	13" (for 12mm width tape)	KA-3535
	KA-2810A	KPH-1608		KA-3022-4.5SF		
	KA-3021	KPHBM-2012		KA-3528	13" (for 24mm width tape)	KCDX02
	KM-23-F	KPHCM-2012		KA-3529A		KCDX03
	KM-23xxx	KPHHS-1005		KA-4008		KCSX02
	KP-1608	KPJA-2107		KA-4040		KCSX03
	KP-2012	KPL-3015		KA-5630		KCSX04
	KP-23-F	KPS-3227SP1C		KAA-3528	13" (for 32mm width tape)	KT-1213
	KP-23xxx	KPT-1608		KAA-3528-11		
	KP-3216	KPT-2012		KAAF-3529-11-C3		
	KPA-1606	KPT-3216		KAAF-5050-13		KCDX04
	KPA-2106	KPTB-1612		KAAF-5052		KCDX39
	KPA-3010	KPTB-1615		KM2520xxx03		KCDX51
	KPA-3210	KPTD-1608		KM2520xxx08		KCPDX04
	KPB-3025	KPTD-3216		KM2520xxx09		KCPSX04
	KPBA-3010	KPTF-1616-13		KM-27xxx-03	13" (for 44mm width tape)	KCSX39
	KPBD-3224	KPTL-3216		KM-27xxx-09		KCSX51
	KPBDA-3020-PF	KPTR-3216		KPED-3528		KCSX56
	KPBL-3025			KPED-3820		
	KPD-3224			KPS-5130PD7C		
	KPFA-3010-11			KTDS-3535		KCDX56



NOTE: 1. All dimensions are in millimeters(inches).

SMD TAPE SPECIFICATIONS



NOTE: 1. All dimensions are in millimeters.

SMD TAPE SPECIFICATIONS

KAAF-5050RGB-13	PACKAGE: 500PCS / REEL	KA-2214	PACKAGE: 2000PCS / REEL
KA-3021	PACKAGE: 2000PCS / REEL	KA-3022-4.5SF	PACKAGE: 1500PCS / REEL
KA-3528	PACKAGE: 2000PCS / REEL	KPHS-1005	PACKAGE: 2000PCS / REEL
KPG-1608	PACKAGE: 2000PCS / REEL	KPH-1608	PACKAGE: 2000PCS / REEL
KPT-1608	PACKAGE: 2000PCS / REEL	KP-1608	PACKAGE: 2000PCS / REEL

NOTE: 1. All dimensions are in millimeters.

SMD TAPE SPECIFICATIONS

KPTD-1608	PACKAGE: 2000PCS / REEL	KPHCM-1212	PACKAGE: 2000PCS / REEL
KPT-1212	PACKAGE: 2000PCS / REEL	KP-1212	PACKAGE: 2000PCS / REEL
KP-23-F	PACKAGE: 2000PCS / REEL	KPL-3015	PACKAGE: 2000PCS / REEL
KPT-3216	PACKAGE: 2000PCS / REEL	KP-3216	PACKAGE: 2000PCS / REEL
KPTL-3216	PACKAGE: 2000PCS / REEL	KPTD-3216	PACKAGE: 2000PCS / REEL

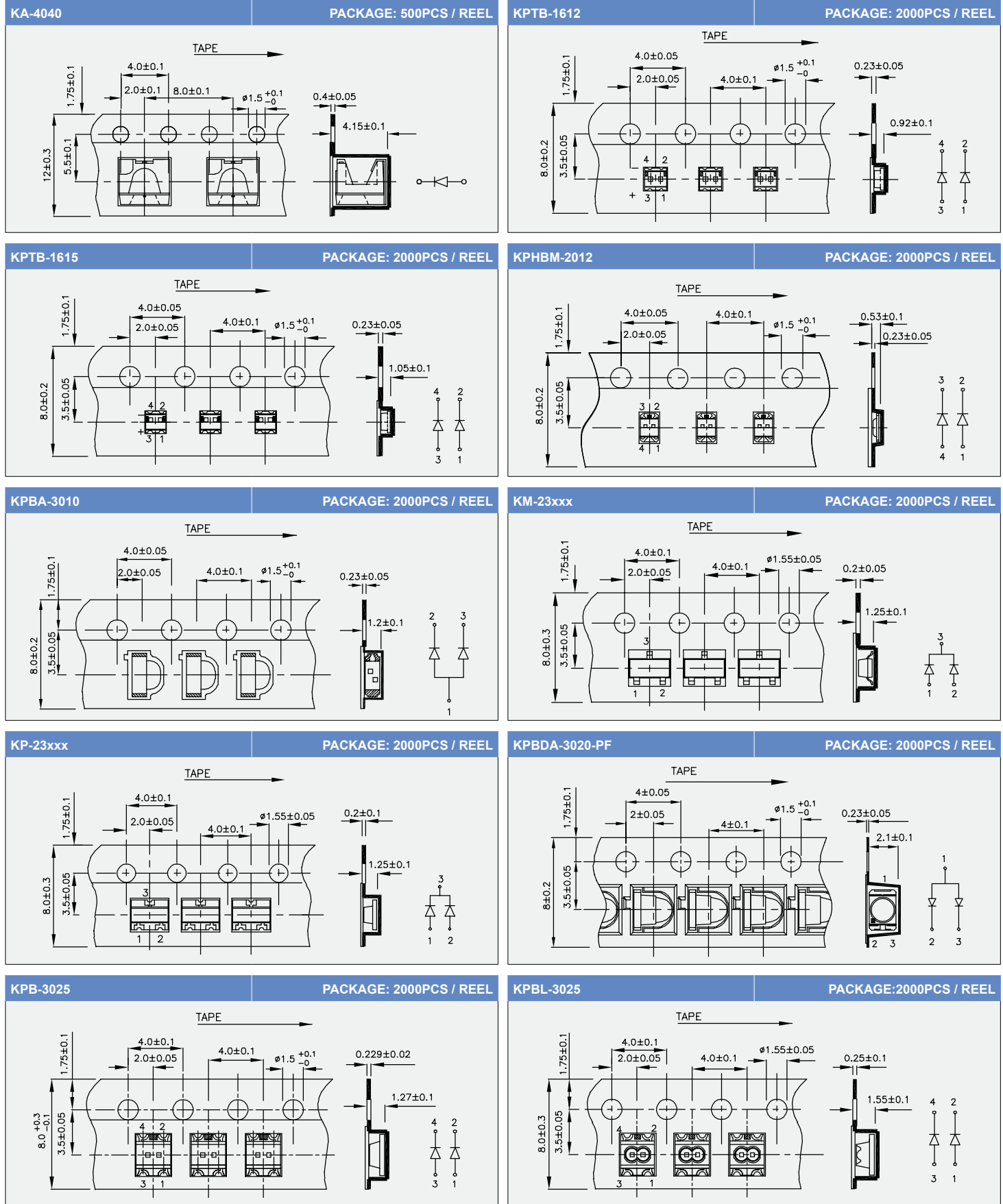
NOTE: 1. All dimensions are in millimeters.

SMD TAPE SPECIFICATIONS

KPD-3224	PACKAGE: 1500PCS / REEL	KPED-3528	PACKAGE: 500PCS / REEL
KPED-3820	PACKAGE: 500PCS / REEL	KPA-1606	PACKAGE: 2000PCS / REEL
KPA-2106	PACKAGE: 2000PCS / REEL	KPJA-2107	PACKAGE: 2000PCS / REEL
KPA-3010	PACKAGE: 2000PCS / REEL	KPA-3210	PACKAGE: 2000PCS / REEL
KA-2810A	PACKAGE: 2000PCS / REEL	KA-4008	PACKAGE: 2000PCS / REEL

NOTE: 1. All dimensions are in millimeters.

SMD TAPE SPECIFICATIONS



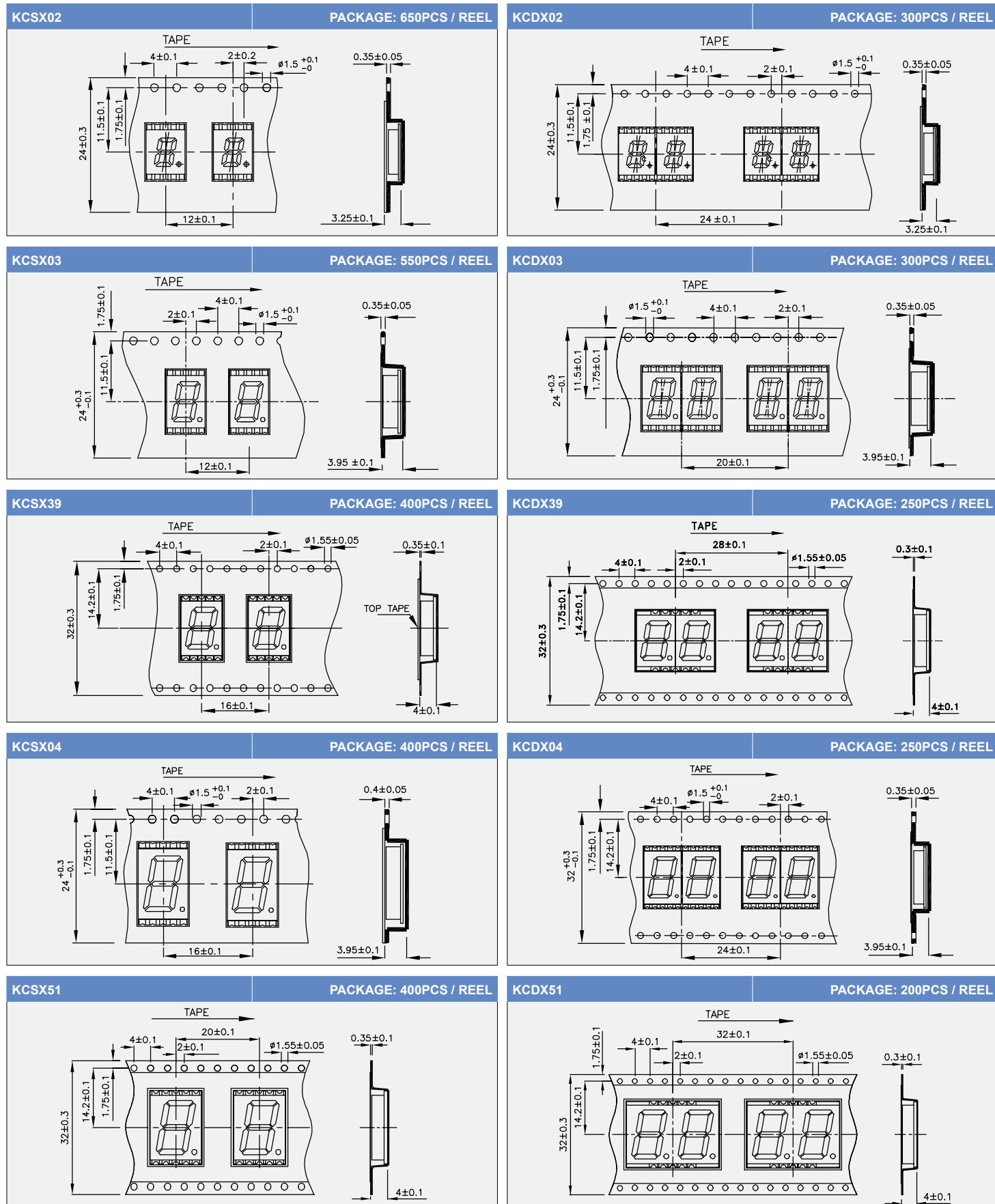
NOTE: 1. All dimensions are in millimeters.

SMD TAPE SPECIFICATIONS

KPBD-3224	PACKAGE: 1500PCS / REEL	KA-2735	PACKAGE: 1000PCS / REEL
KAA-3528	PACKAGE: 2000PCS / REEL	KM2520xxx03	PACKAGE: 1000PCS / REEL
KM2520xxx08	PACKAGE: 1000PCS / REEL	KM2520xxx09	PACKAGE: 1000PCS / REEL
KPTR-3216	PACKAGE: 2000PCS / REEL	KM-23-F	PACKAGE: 2000PCS / REEL
KPS-3227	PACKAGE: 2000PCS / REEL	KPS-5130	PACKAGE: 1500PCS / REEL

NOTE: 1. All dimensions are in millimeters.

SMD TAPE SPECIFICATIONS

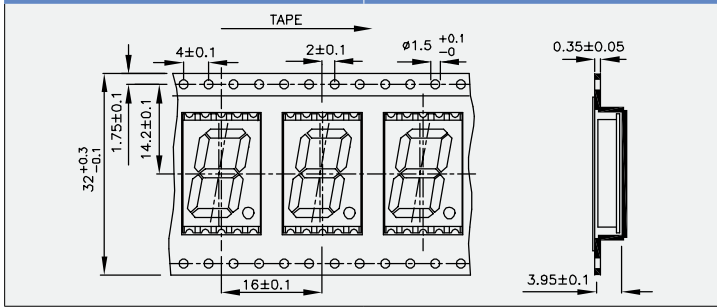


NOTE: 1. All dimensions are in millimeters.

SMD TAPE SPECIFICATIONS

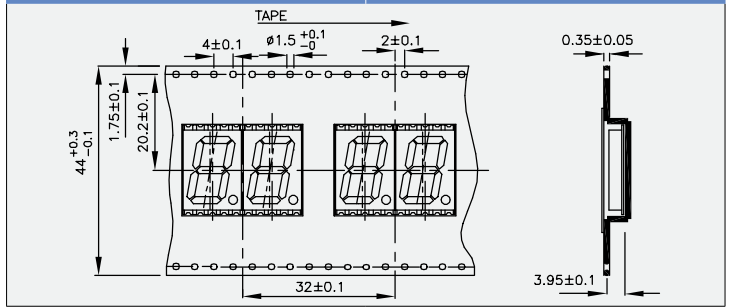
KCSX56

PACKAGE: 400PCS / REEL



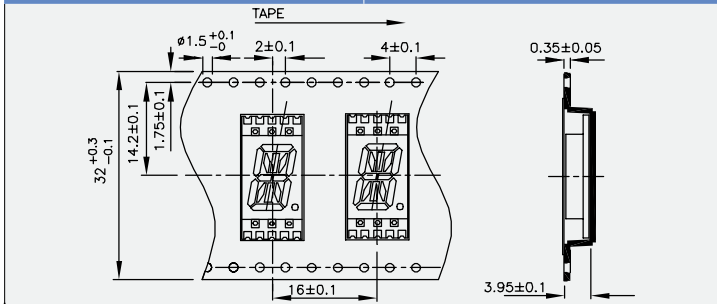
KCDX56

PACKAGE: 200PCS / REEL



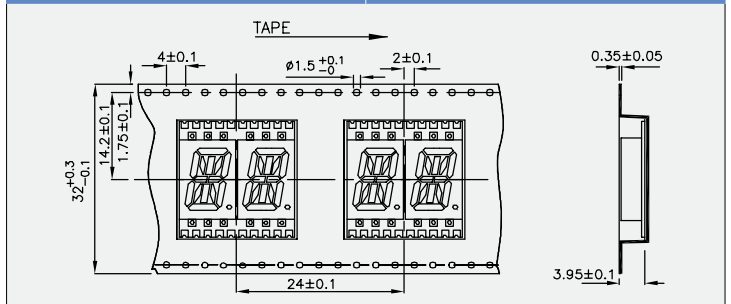
KCPSX04

PACKAGE: 400PCS / REEL



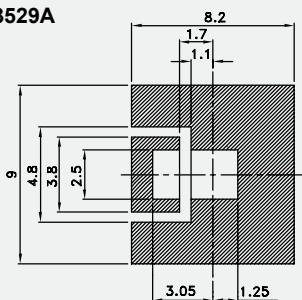
KCPDX04

PACKAGE: 250PCS / REEL

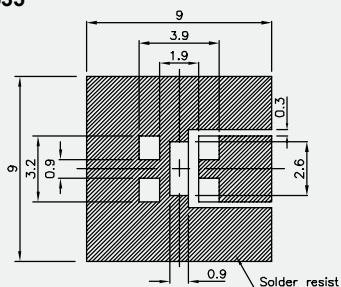


RECOMMENDED SOLDERING PATTERN

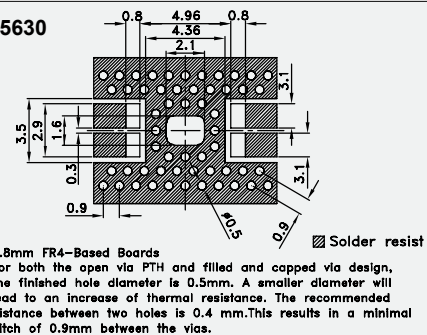
KA-3529A



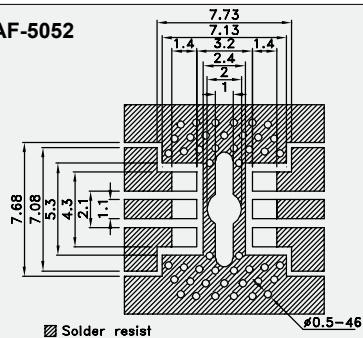
KA-3535



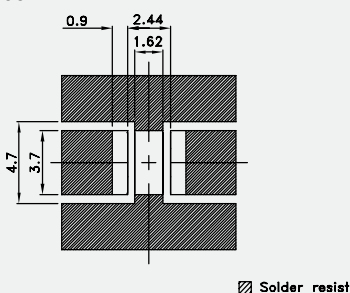
KA-5630



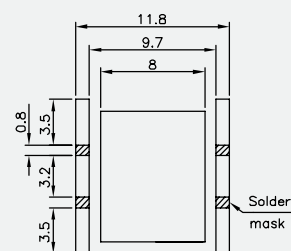
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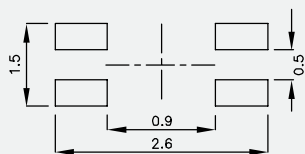
KTDS-3535



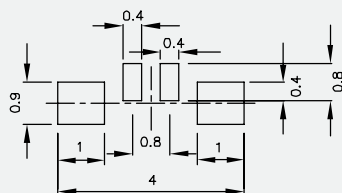
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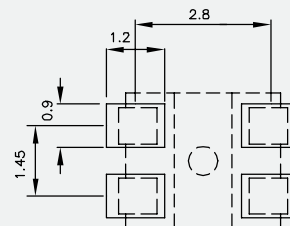
KPTF-1616RGB-13



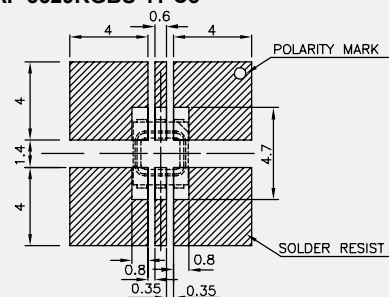
KPFA-3010RGB-11



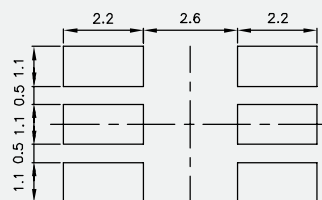
KAA-3528RGB-11



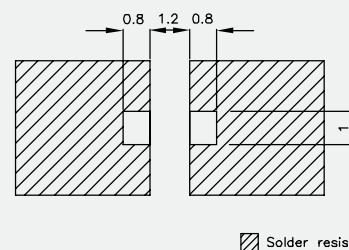
KAAF-3529RGB-11-C3



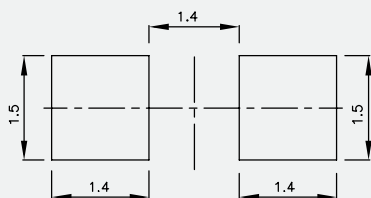
KAAF-5050RGB-13



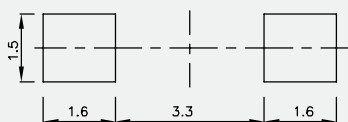
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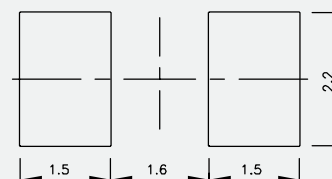
KA-3021



KA-3022-4.5SF

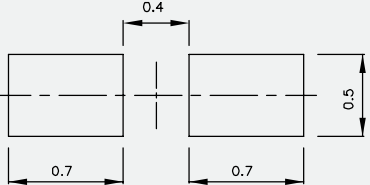
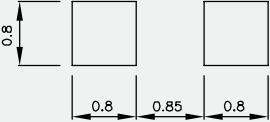
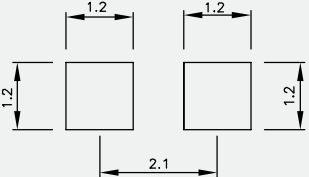
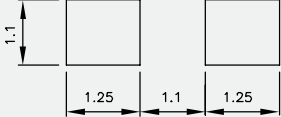
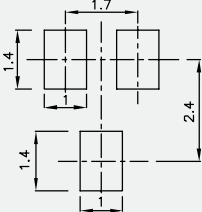
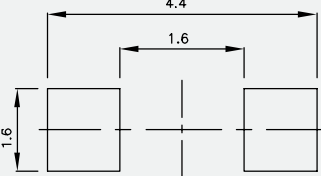
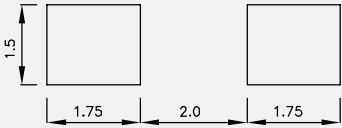
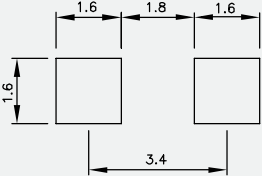
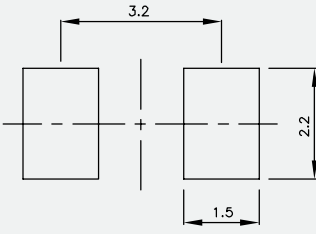
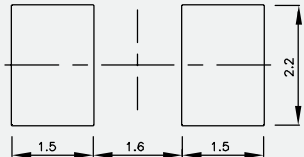
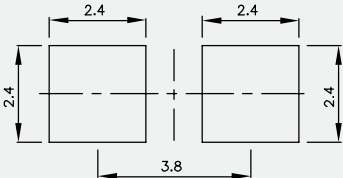
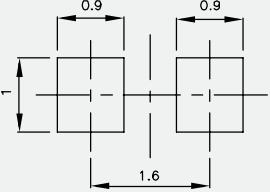
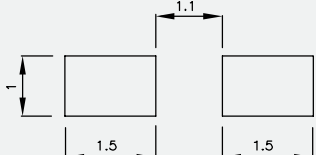
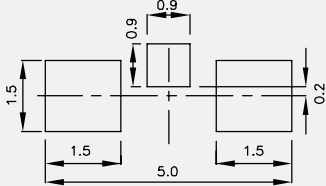


KA-3528



NOTES:
1. All dimensions are in millimeters.
2. Tolerance is $\pm 0.1\text{mm}$ unless otherwise noted.

RECOMMENDED SOLDERING PATTERN

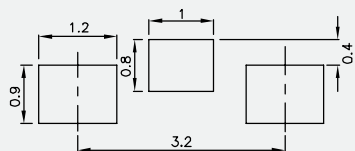
KPHHS-1005 	KPG-1608, KPH-1608, KP-1608, KPT-1608, KPTD-1608 	KPHCM-2012 
KPT-2012, KP-2012 	KP-23-F, KP-23xxx 	KPL-3015 
KPT-3216, KP-3216, KPTD-3216 	KPTL-3216 	KPD-3224 
KPED-3528 	KPED-3820 	KPA-1606 
KPA-2106 	KPJA-2107 	KPA-3010, KPBA-3010 

NOTES:

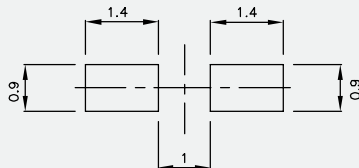
1. All dimensions are in millimeters.
2. Tolerance is $\pm 0.1\text{mm}$ unless otherwise noted.

RECOMMENDED SOLDERING PATTERN

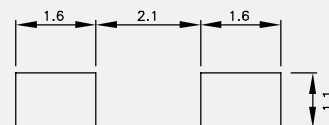
KPA-3210



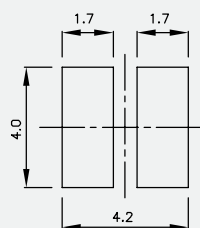
KA-2810A



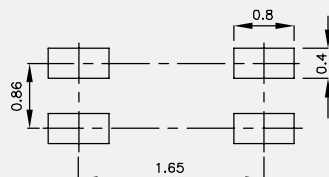
KA-4008



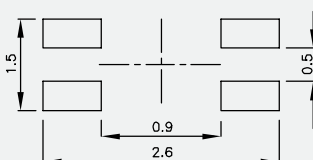
KA-4040



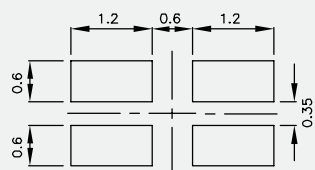
KPTB-1612



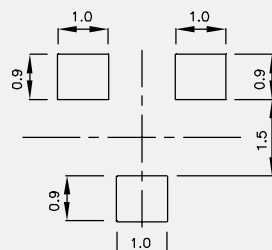
KPTB-1615



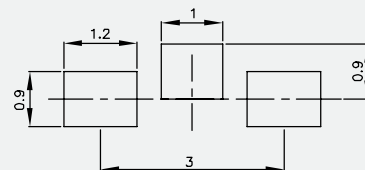
KPHBM-2012



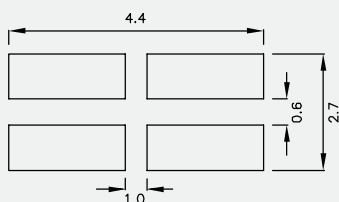
KM-23-F, KM-23xxx



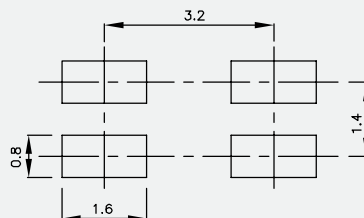
KPBDA-3020-PF



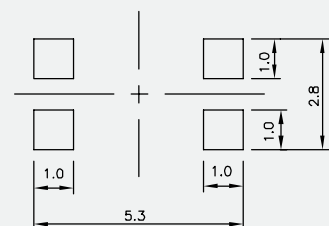
KPB-3025, KPBL-3025



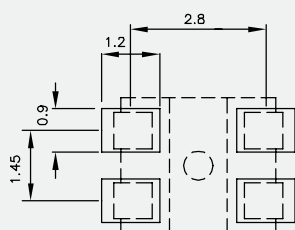
KPB-3224



KA-2735



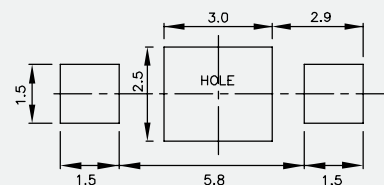
KAA-3528



KM2520xxx03



KM2520xxx08

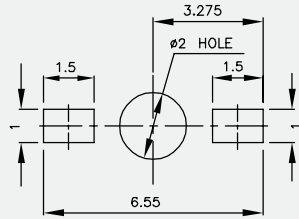


NOTES:

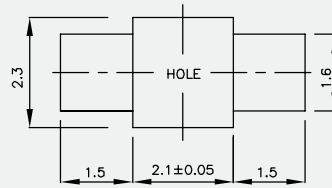
1. All dimensions are in millimeters.
2. Tolerance is ± 0.1 mm unless otherwise noted.

RECOMMENDED SOLDERING PATTERN

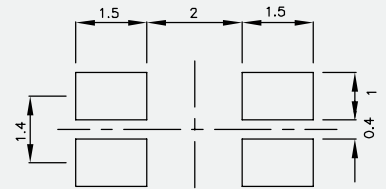
KM2520xxx09



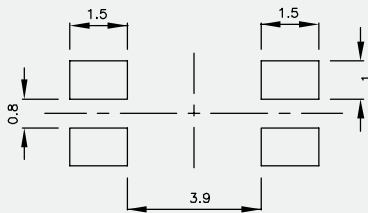
KPTR-3216



KPS-3227SP1C



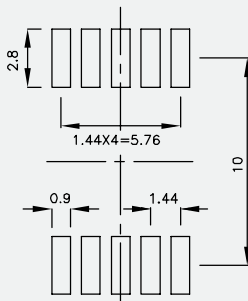
KPS-5130PD7C



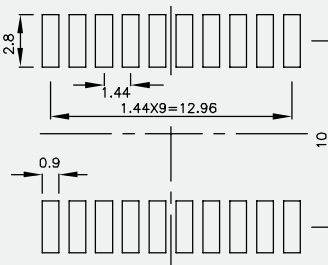
NOTES:

1. All dimensions are in millimeters.
2. Tolerance is $\pm 0.1\text{mm}$ unless otherwise noted.

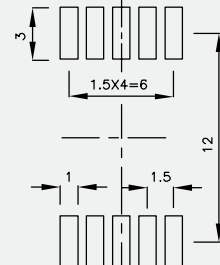
KCSX02



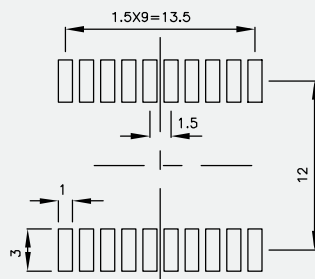
KCDX02



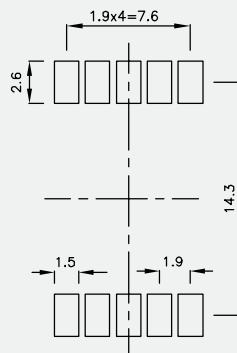
KCSX03



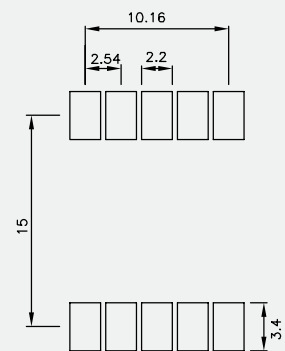
KCDX03



KCSX39



KCDX39

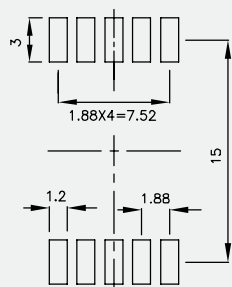


NOTES:

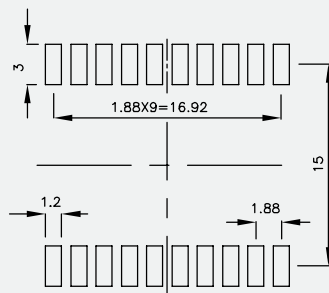
1. All dimensions are in millimeters.
2. Tolerance is $\pm 0.15\text{mm}$ unless otherwise noted.

RECOMMENDED SOLDERING PATTERN

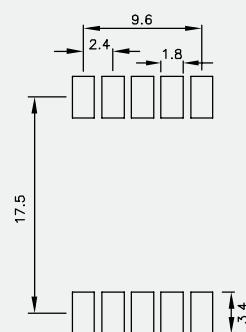
KCSX04



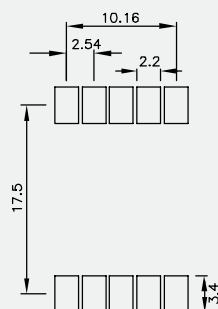
KCDX04



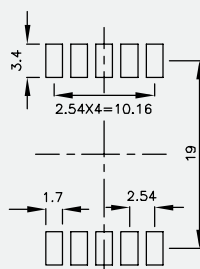
KCSX51



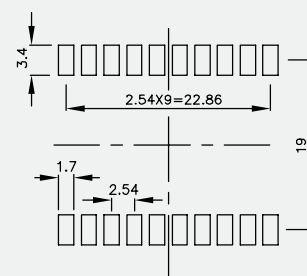
KCDX51



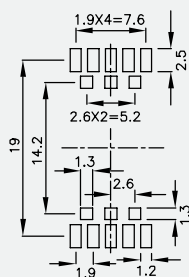
KCSX56



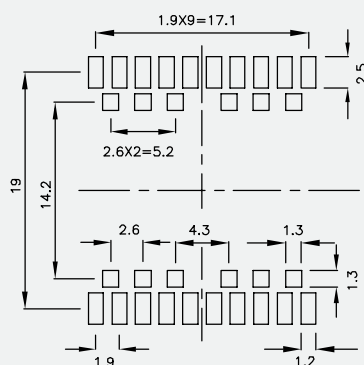
KCDX56



KCPSX04



KCPDX04



NOTES:

1. All dimensions are in millimeters.
2. Tolerance is ± 0.15 mm unless otherwise noted.

TECHNICAL DATA

Absolute maximum ratings (T _A =25°C)		E,I Hi.Eff.Red Orange (GaAsP/GaP)	H Bright Red (GaP)	SR Super Bright Red (GaAlAs)	SURK Hyper Red (AlGaInP)	SURK-T Hyper Red (AlGaInP)	SUR-E Hyper Red (AlGaInP)	Unit
Reverse voltage	V _R	5	5	5	5	5	5	V
Forward current	I _F	30	25	30	30	30	30	mA
Forward current (Peak) 1/10 Duty Cycle, 0.1ms Pulse Width	i _{FS}	160	130	155	185	150	200	mA
Power dissipation	P _D	75	62.5	75	75	75	75	mW
LED LAMPS:								
Operating temperature	T _A	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	°C
Storage temperature	T _{STG}	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	°C
LED DISPLAYS:								
Operating temperature	T _A	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	°C
Storage temperature	T _{STG}	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	°C

Operating Characteristics		E,I Hi.Eff.Red Orange (GaAsP/GaP)	H Bright Red (GaP)	SR Super Bright Red (GaAlAs)	SURK Hyper Red (AlGaInP)	SURK-T Hyper Red (AlGaInP)	SUR-E Hyper Red (AlGaInP)	Unit
Forward voltage (typ.) I _F =20mA	V _F	2.0	2.25	1.85	1.95	2.0	1.9	V
I _F =10mA		1.9	2.05	1.8	1.85	1.85	1.8	
I _F =2mA		1.7	1.85	1.65	1.75	1.75	1.7	
Forward voltage (max.) I _F =20mA, 10mA, 2mA	V _F	2.5	2.5	2.5	2.5	2.5	2.5	V
Reverse current V _R =5V	I _R	10	10	10	10	10	10	uA
Peak Emission Wavelength I _F =20mA, 10mA, 2mA	λ _p	627	700	655	645	645	645	nm
Dominant Wavelength I _F =20mA, 10mA, 2mA	λ _D	617	635	640	630	630	630	nm
Spectral line half-width I _F =20mA, 10mA, 2mA	Δλ _{1/2}	45	45	20	28	20	25	nm
Capacitance V _F =0V,f=1MHZ	C	15	40	45	35	35	45	pF

TECHNICAL DATA

Absolute maximum ratings (T _A =25°C)		SUR-G Hyper Red (AlGaInP)	N Pure Orange (GaAsP/GaP)	SEK Super Bright Orange (AlGaInP)	SEK-T Super Bright Orange (AlGaInP)	SE-H Hyper Orange (AlGaInP)	SE-J3 Hyper Red (AlGaInP)	Unit
Reverse voltage	V _R	5	5	5	5	5	5	V
Forward current	I _F	30	25	30	30	30	30	mA
Forward current (Peak) 1/10 Duty Cycle, 0.1ms Pulse Width	i _{FS}	150	145	195	150	150	150	mA
Power dissipation	P _D	75	62.5	75	75	84	84	mW
LED LAMPS:								
Operating temperature	T _A	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	°C
Storage temperature	T _{STG}	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	°C
LED DISPLAYS:								
Operating temperature	T _A	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	°C
Storage temperature	T _{STG}	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	°C

Operating Characteristics		SUR-G Hyper Red (AlGaInP)	N Pure Orange (GaAsP/GaP)	SEK Super Bright Orange (AlGaInP)	SEK-T Super Bright Orange (AlGaInP)	SE-H Hyper Orange (AlGaInP)	SE-J3 Hyper Red (AlGaInP)	Unit
Forward voltage (typ.) I _F =20mA	V _F	1.9	2.05	2.1	2.05	2.2	2.2	V
I _F =10mA		1.85	1.95	2.0	1.95	2.05	2.0	
I _F =2mA		1.75	1.85	1.85	1.8	1.85	1.8	
Forward voltage (max.) I _F =20mA, 10mA, 2mA	V _F	2.5	2.5	2.5	2.5	2.8	2.5	V
Reverse current V _R =5V	I _R	10	10	10	10	10	10	uA
Peak Emission Wavelength I _F =20mA, 10mA, 2mA	λ _p	645	607	610	610	635	640	nm
Dominant Wavelength I _F =20mA, 10mA, 2mA	λ _D	630	602	601	601	625	625	nm
Spectral line half-width I _F =20mA, 10mA, 2mA	Δλ _{1/2}	22	35	29	17	25	25	nm
Capacitance V _F =0V, f=1MHZ	C	45	15	15	15	27	27	pF

TECHNICAL DATA

Absolute maximum ratings (T _A =25°C)		G,SG Green, Super Bright Green (GaP)	PG Pure Green (GaP)	CGK Green (AlGaInP)	CGK-T Green (AlGaInP)	ZG Green (InGaIn)	ZG-E Green (InGaIn)	Unit
Reverse voltage	V _R	5	5	5	5	5	5	V
Forward current	I _F	25	25	30	30	25	30	mA
Forward current (Peak) 1/10 Duty Cycle, 0.1ms Pulse Width	i _{FS}	140	135	150	150	150	100	mA
Power dissipation	P _D	62.5	62.5	75	78	102.5	120	mW
LED LAMPS:								
Operating temperature	T _A	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	°C
Storage temperature	T _{STG}	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	°C
LED DISPLAYS:								
Operating temperature	T _A	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	°C
Storage temperature	T _{STG}	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	°C

Operating Characteristics		G,SG Green, Super Bright Green (GaP)	PG Pure Green (GaP)	CGK Green (AlGaInP)	CGK-T Green (AlGaInP)	ZG Green (InGaIn)	ZG-E Green (InGaIn)	Unit
Forward voltage (typ.) I _F =20mA	V _F	2.2	2.25	2.1	2.1	3.3	3.2	V
I _F =10mA		2.0	2.1	2.0	1.95	3.0	3.05	
I _F =2mA		1.9	1.9	1.9	1.8	2.65	2.8	
Forward voltage (max.) I _F =20mA, 10mA, 2mA	V _F	2.5	2.5	2.5	2.6	4.1	4.0	V
Reverse current V _R =5V	I _R	10	10	10	10	50	50	uA
Peak Emission Wavelength I _F =20mA, 10mA, 2mA	λ _p	565	557	574	574	515	520	nm
Dominant Wavelength I _F =20mA, 10mA, 2mA	λ _D	568	557	570	570	525	525	nm
Spectral line half-width I _F =20mA, 10mA, 2mA	Δλ _{1/2}	30	30	20	15	30	35	nm
Capacitance V _F =0V,f=1MHZ	C	15	45	15	15	45	100	pF

TECHNICAL DATA

Absolute maximum ratings (T _A =25°C)		ZG-G Green (InGaN)	Y Yellow (GaAsP/GaP)	SYK Super Bright Yellow (AlGaInP)	SYK-T Super Bright Yellow (AlGaInP)	SY-H Super Bright Yellow (AlGaInP)	SY-J3 Super Bright Yellow (AlGaInP)	Unit
Reverse voltage	V _R	5	5	5	5	5	5	V
Forward current	I _F	30	30	30	30	30	30	mA
Forward current (Peak) 1/10 Duty Cycle, 0.1ms Pulse Width	i _{FS}	100	140	175	150	140	140	mA
Power dissipation	P _D	120	75	75	75	84	75	mW
LED LAMPS:								
Operating temperature	T _A	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	°C
Storage temperature	T _{STG}	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	°C
LED DISPLAYS:								
Operating temperature	T _A	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	°C
Storage temperature	T _{STG}	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	°C

Operating Characteristics		ZG-G Green (InGaN)	Y Yellow (GaAsP/GaP)	SYK Super Bright Yellow (AlGaInP)	SYK-T Super Bright Yellow (AlGaInP)	SY-H Super Bright Yellow (AlGaInP)	SY-J3 Super Bright Yellow (AlGaInP)	Unit
Forward voltage (typ.) I _F =20mA		3.2	2.1	2.0	2.05	2.3	2.0	
I _F =10mA	V _F	3.05	1.95	1.95	1.95	2.2	1.95	V
I _F =2mA		2.8	1.85	1.85	1.8	2	1.85	
Forward voltage (max.) I _F =20mA, 10mA, 2mA	V _F	4.0	2.5	2.5	2.5	2.8	2.5	V
Reverse current V _R =5V	I _R	50	10	10	10	10	10	uA
Peak Emission Wavelength I _F =20mA, 10mA, 2mA	λ _p	520	590	590	590	590	590	nm
Dominant Wavelength I _F =20mA, 10mA, 2mA	λ _D	525	588	590	590	589	590	nm
Spectral line half-width I _F =20mA, 10mA, 2mA	Δλ _{1/2}	35	35	20	15	20	20	nm
Capacitance V _F =0V, f=1MHZ	C	100	20	20	25	45	45	pF

TECHNICAL DATA

Absolute maximum ratings (T _A =25°C)		MB Blue	PB-A Blue	QB-D Blue	QB-F Blue	QB-G Blue	VB-D Blue	Unit
		(GaN)	(InGaN)	(InGaN)	(InGaN)	(InGaN)	(InGaN)	
Reverse voltage	V _R	5	5	5	5	5	5	V
Forward current	I _F	30	30	30	30	30	30	mA
Forward current (Peak) 1/10 Duty Cycle, 0.1ms Pulse Width	i _{FS}	150	100	150	150	150	100	mA
Power dissipation	P _D	135	120	120	120	120	120	mW
LED LAMPS:								
Operating temperature	T _A	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	°C
Storage temperature	T _{STG}	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	°C
LED DISPLAYS:								
Operating temperature	T _A	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	°C
Storage temperature	T _{STG}	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	°C

Operating Characteristics		MB Blue	PB-A Blue	QB-D Blue	QB-F Blue	QB-G Blue	VB-D Blue	Unit
		(GaN)	(InGaN)	(InGaN)	(InGaN)	(InGaN)	(InGaN)	
Forward voltage (typ.) I _F =20mA	V _F	3.8	3.2	3.3	3.3	3.3	3.3	V
I _F =10mA		3.6	3.05	3.0	3.0	3.0	3.0	
I _F =2mA		3.4	2.8	2.65	2.65	2.65	2.65	
Forward voltage (max.) I _F =20mA, 10mA, 2mA	V _F	4.5	4.0	4.0	4.0	4.0	4.0	V
Reverse current V _R =5V	I _R	10	10	50	50	50	50	uA
Peak Emission Wavelength I _F =20mA, 10mA, 2mA	λ _P	430	468	460	460	461	465	nm
Dominant Wavelength I _F =20mA, 10mA, 2mA	λ _D	466	465	465	465	465	470	nm
Spectral line half-width I _F =20mA, 10mA, 2mA	Δλ _{1/2}	60	21	25	25	25	22	nm
Capacitance V _F =0V, f=1MHZ	C	100	100	100	100	100	100	pF

TECHNICAL DATA 5V/14V WITH INTERNAL RESISTANCE

Absolute maximum ratings (T _A =25°C)		E,I Hi.Eff.Red (GaAsP/GaP)	SR Super Bright Red (GaAlAs)	G Green (GaP)	Y Yellow (GaAsP/GaP)	Unit
Reverse voltage	V _R	5	5	5	5	V
Forward voltage (Max.) for 5V	V _F	6	6	6	6	V
Forward voltage (Max.) for 14V	V _F	16	16	16	16	V
Power dissipation for 5V	P _D	85	85	85	85	mW
Power dissipation for 14V	P _D	160	160	160	160	mW
LED LAMPS:						
Operating temperature	T _A	- 40~+70	- 40~+70	- 40~+70	- 40~+70	°C
Storage temperature	T _{STG}	- 40~+85	- 40~+85	- 40~+85	- 40~+85	°C
LED DISPLAYS:						
Operating temperature	T _A	- 40~+70	- 40~+70	- 40~+70	- 40~+70	°C
Storage temperature	T _{STG}	- 40~+85	- 40~+85	- 40~+85	- 40~+85	°C

Operating Characteristics		E,I Hi.Eff.Red (GaAsP/GaP)	SR Super Bright Red (GaAlAs)	G Green (GaP)	Y Yellow (GaAsP/GaP)	Unit
Forward current (typ.) V _F =5V	I _F	13	13	11.5	13	mA
Forward current (typ.) V _F =14V	I _F	10.5	10.5	10.5	10.5	mA
Forward current (max.) V _F =5V	I _F	17.5	17.5	17.5	17.5	mA
Forward current (max.) V _F =14V	I _F	13.5	13.5	13.5	13.5	mA
Reverse current V _R =5V	I _R	10	10	10	10	uA
Peak Emission Wavelength V _F =5V,14V	λ _p	627	655	565	590	nm
Dominant Wavelength V _F =5V,14V	λ _D	617	640	568	588	nm
Spectral line half-width V _F =5V,14V	Δλ _{1/2}	45	20	30	35	nm

TECHNICAL DATA FOR BLINKING LED LAMPS

Absolute maximum ratings (T _A =25°C)		E,I Hi.Eff.Red (GaAsP/GaP)	H Bright Red (GaP)	SR Super Bright Red (GaAlAs)	G Green (GaP)	Y Yellow (GaAsP/GaP)	Unit
Reverse voltage	V _R	 0.5	 0.5	 0.5	 0.5	 0.5	V
Forward voltage (max.)	V _F	14	14	14	14	14	V
Total Power dissipation	P _D	310	310	310	310	310	mW
Operating temperature	T _A	- 40~+70	- 40~+70	- 40~+70	- 40~+70	- 40~+70	°C
Storage temperature	T _{STG}	- 40~+85	- 40~+85	- 40~+85	- 40~+85	- 40~+85	°C

Operating Characteristics		E,I Hi.Eff.Red (GaAsP/GaP)	H Bright Red (GaP)	SR Super Bright Red (GaAlAs)	G Green (GaP)	Y Yellow (GaAsP/GaP)	Unit
Forward current (min.) V _F =3.5V	I _F	 8	 8	 8	 8	 8	mA
Forward current (typ.) V _F =5V	I _F	22	22	22	22	22	mA
Supply current V _F =3.5V ~ 14V	I _{SON}	8 ~ 44	8 ~ 44	8 ~ 44	8 ~ 44	8 ~ 44	mA
Blink frequency V _F =3.5V ~ 14V	f	3 ~ 1.5	3 ~ 1.5	3 ~ 1.5	3 ~ 1.5	3 ~ 1.5	Hz
Peak Emission Wavelength	λ _p	627	700	655	565	590	nm
Dominant Wavelength	λ _D	617	635	640	568	588	nm
Spectral line half-width	Δλ _{1/2}	45	45	20	30	35	nm

TECHNICAL DATA FOR INFRARED

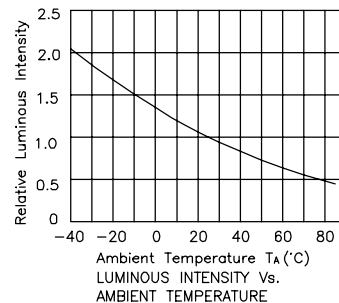
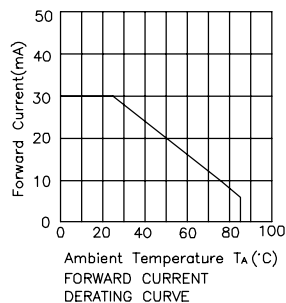
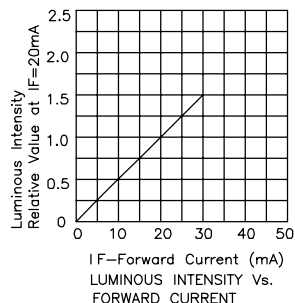
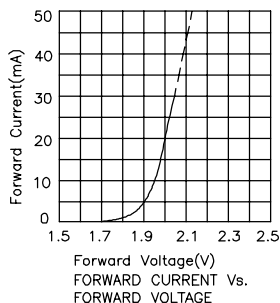
Absolute maximum ratings (T _A =25°C)		F3	SF4	SF6	SF7	Unit
		(GaAs)	(GaAlAs)	(GaAlAs)	(GaAlAs)	
Reverse voltage	V _R	5	5	5	5	V
Forward current	I _F	50	50	50	50	mA
Forward current (Peak) 1/100 Duty Cycle, 10μs Pulse Width	i _{FS}	1.2	1.2	1	1	A
Power dissipation	P _D	80	80	80	80	mW
LED LAMPS:						
Operating temperature	T _A	- 40~+85	- 40~+85	- 40~+85	- 40~+85	°C
Storage temperature	T _{STG}	- 40~+85	- 40~+85	- 40~+85	- 40~+85	°C
LED DISPLAYS:						
Operating temperature	T _A	- 40~+85	- 40~+85	- 40~+85	- 40~+85	°C
Storage temperature	T _{STG}	- 40~+85	- 40~+85	- 40~+85	- 40~+85	°C

Operating Characteristics		F3	SF4	SF6	SF7	Unit
		(GaAs)	(GaAlAs)	(GaAlAs)	(GaAlAs)	
Forward voltage (typ.) I _F =20mA	V _F	1.2	1.3	1.35	1.4	V
Forward voltage (max.) I _F =20mA	V _F	1.6	1.6	1.6	1.6	V
Reverse current V _R =5V	I _R	10	10	10	10	uA
Peak Emission Wavelength I _F =20mA	λ _p	940	880	860	850	nm
Spectral line half-width I _F =20mA	Δλ _{1/2}	50	50	50	50	nm
Capacitance V _F =0V, f=1MHZ	C	90	90	30	30	pF

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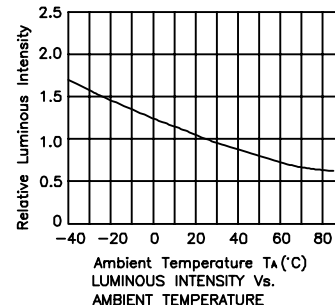
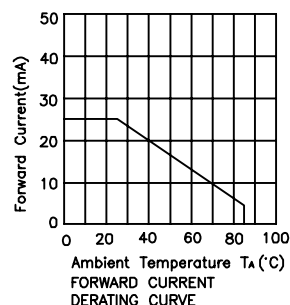
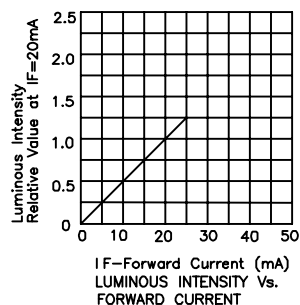
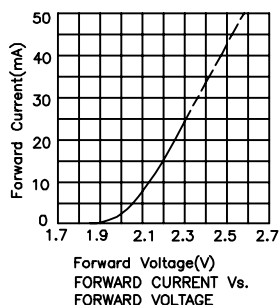
High Efficiency Red, Orange

E,I : GaAsP/GaP



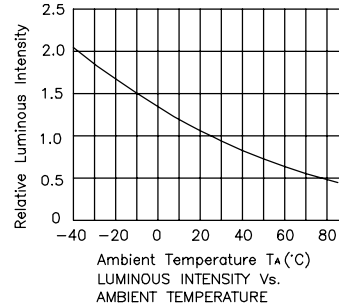
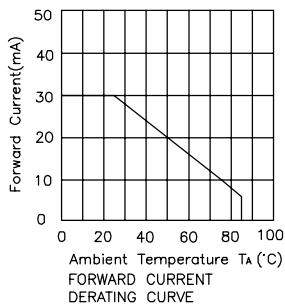
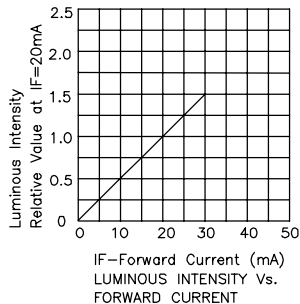
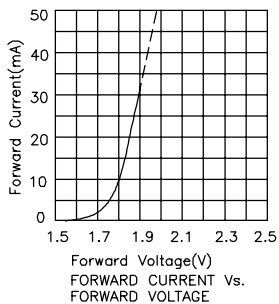
Bright Red

H : GaP



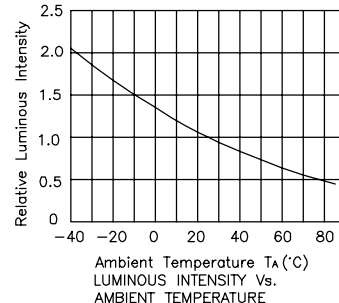
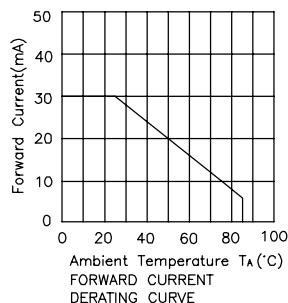
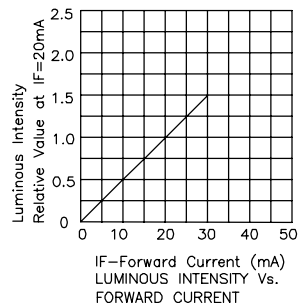
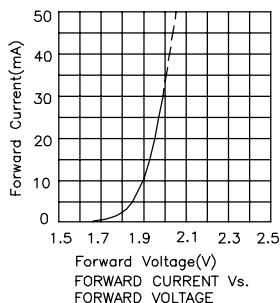
Super Bright Red

SR : GaAlAs



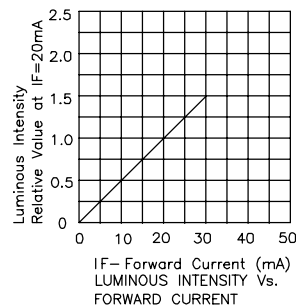
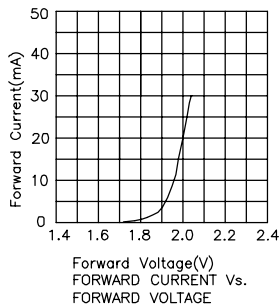
Hyper Red

SURK : AlGaInP

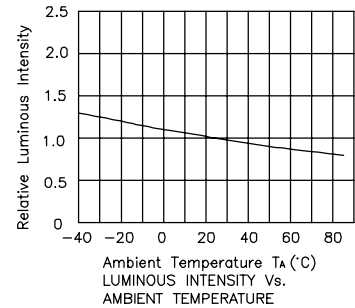
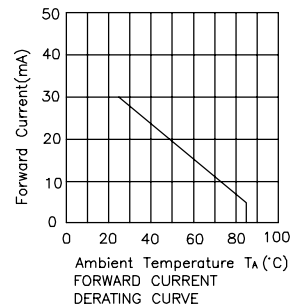


TECHNICAL DATA

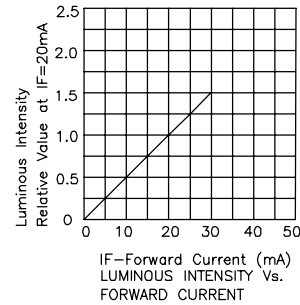
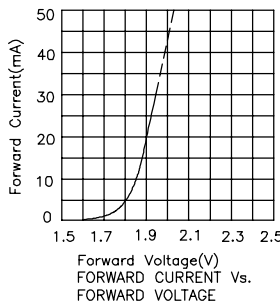
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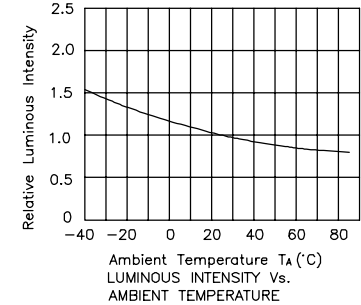
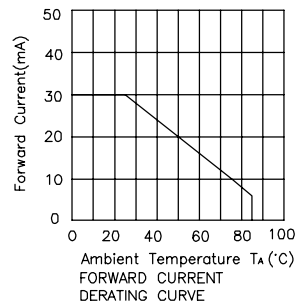
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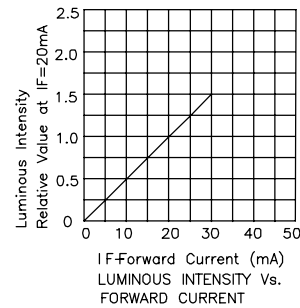
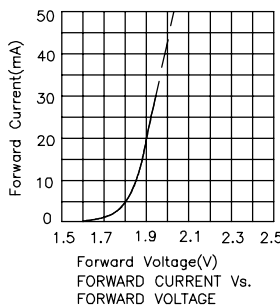
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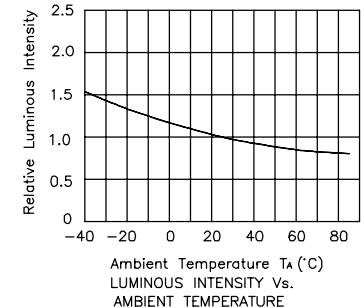
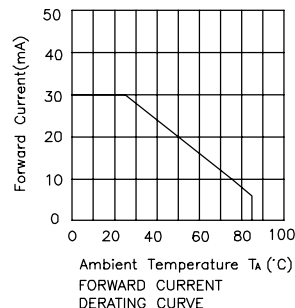
SUR-E : AlGaInP



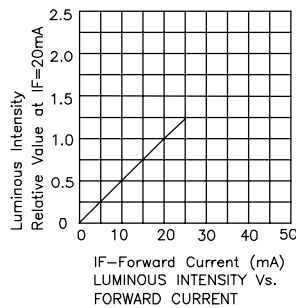
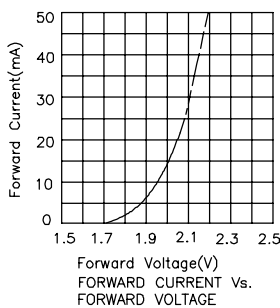
Hyper Red



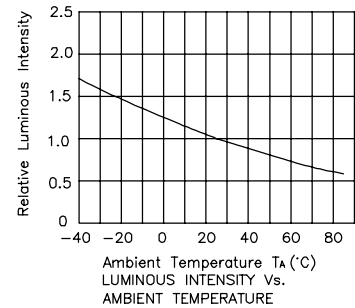
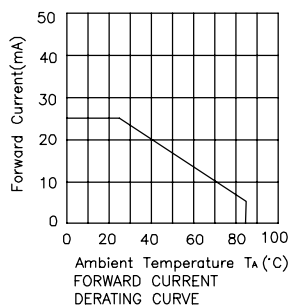
SUR-G : AlGaInP



Pure Orange



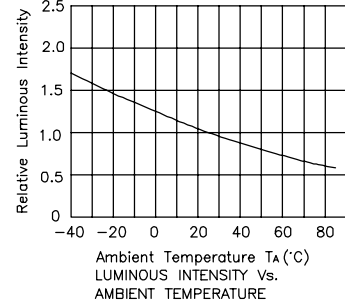
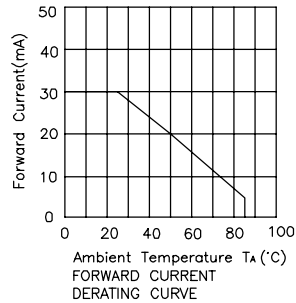
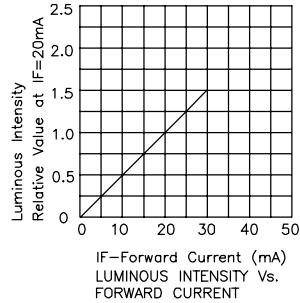
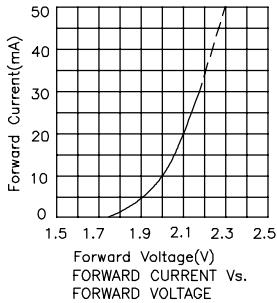
N : GaAsP/GaP



TECHNICAL DATA

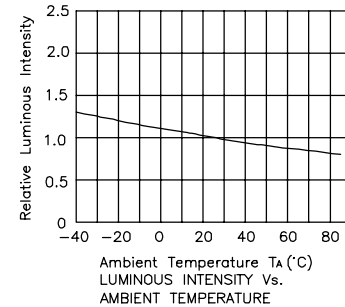
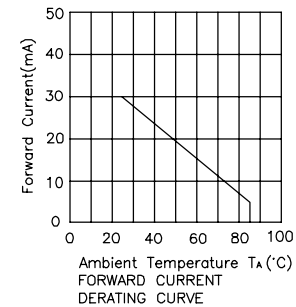
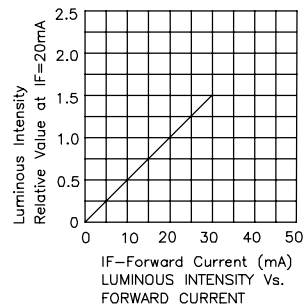
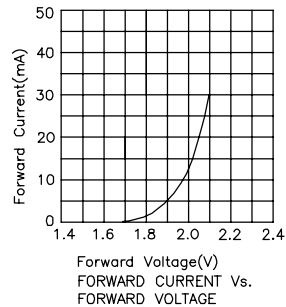
Super Bright Orange

SEK : AlGaInP



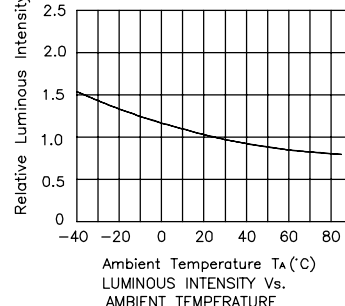
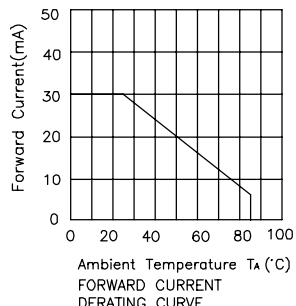
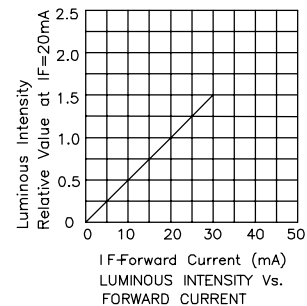
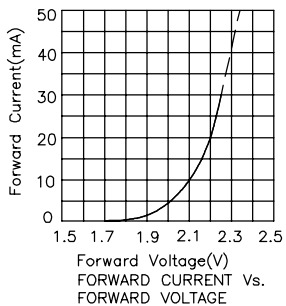
Super Bright Orange

SEK-T : AlGaInP



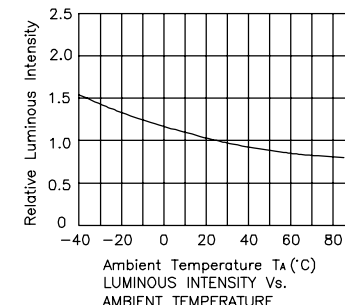
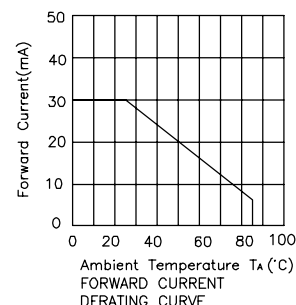
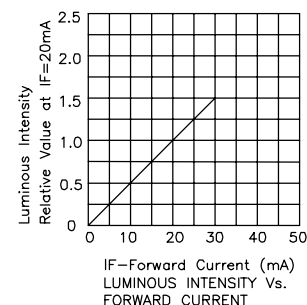
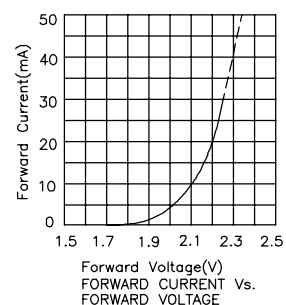
Hyper Orange

SE-H : AlGaInP



Hyper Red

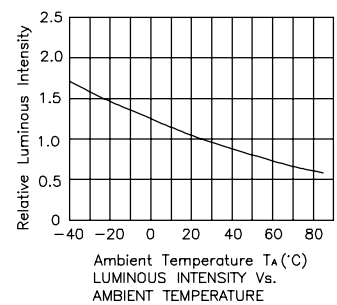
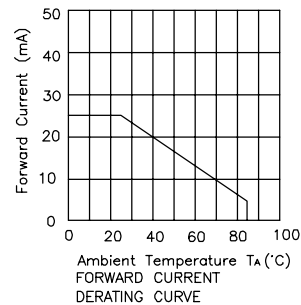
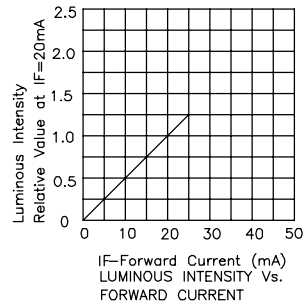
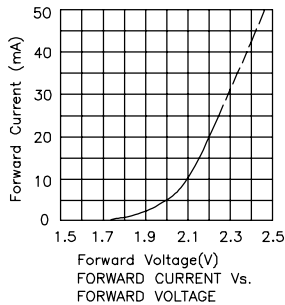
SE-J3 : AlGaInP



TECHNICAL DATA

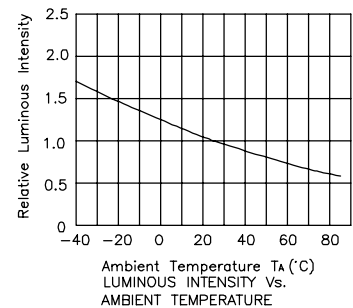
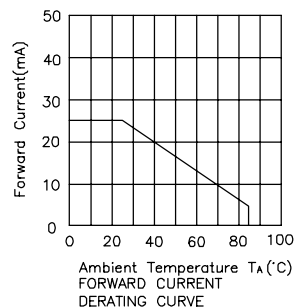
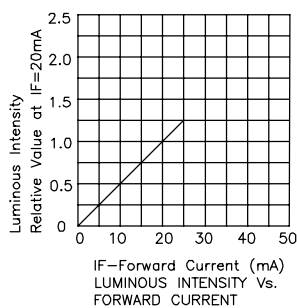
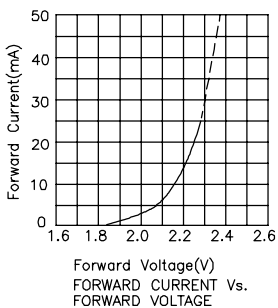
Green / Super Bright Green

G, SG : GaP



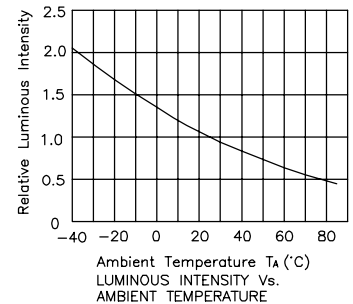
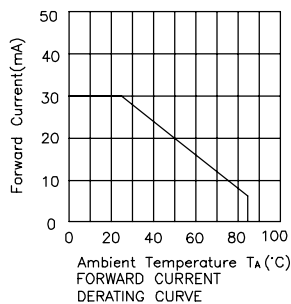
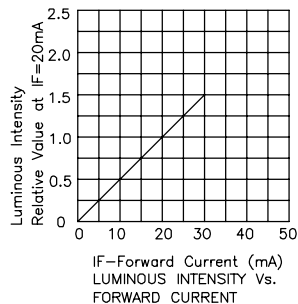
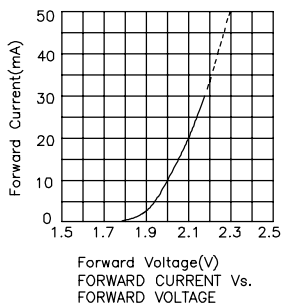
Pure Green

PG : GaP



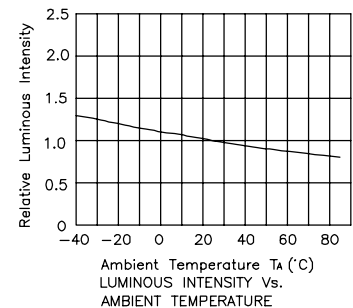
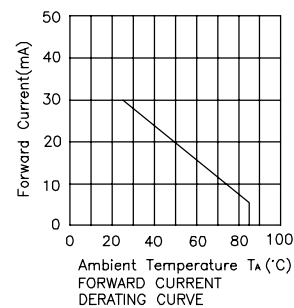
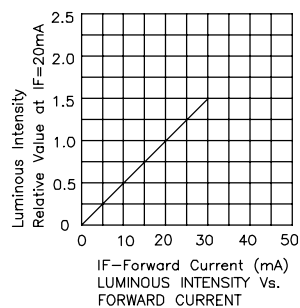
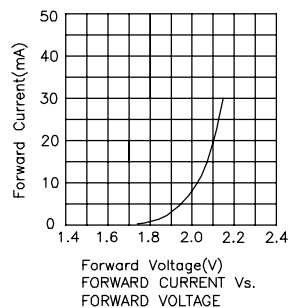
Green

CGK : AlGaInP



Green

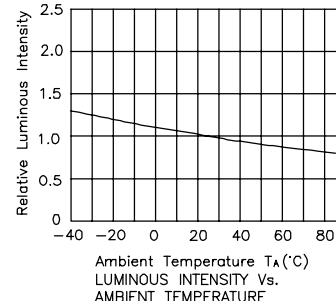
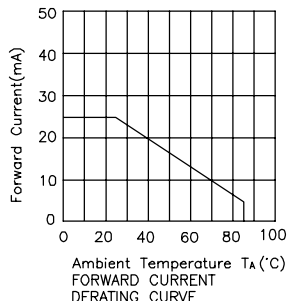
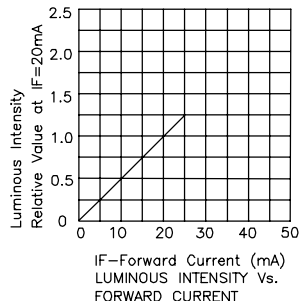
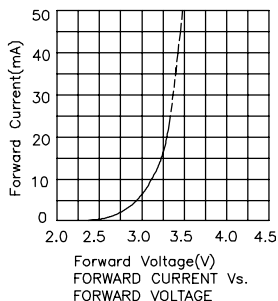
CGK-T : AlGaInP



TECHNICAL DATA

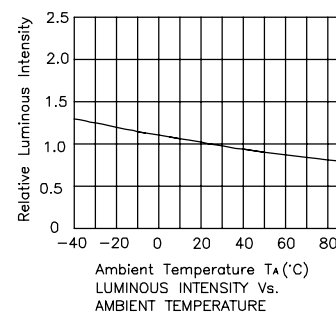
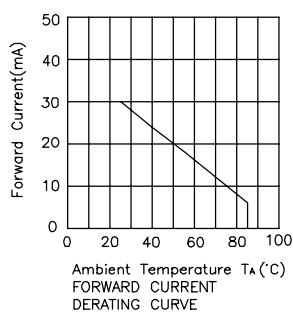
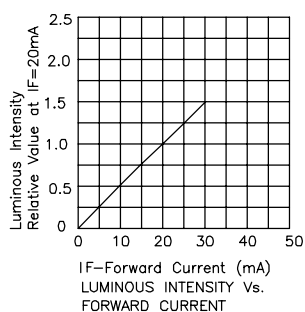
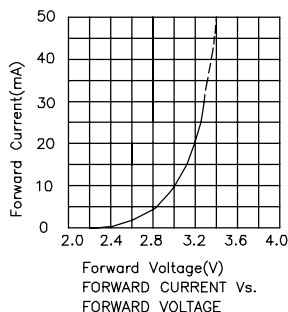
Green

ZG : InGaN



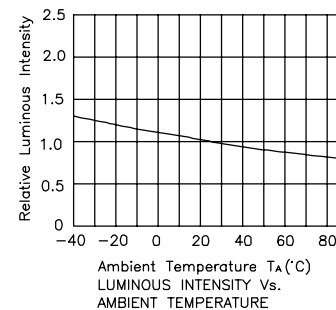
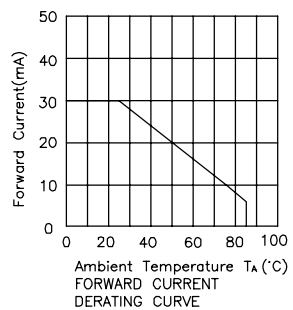
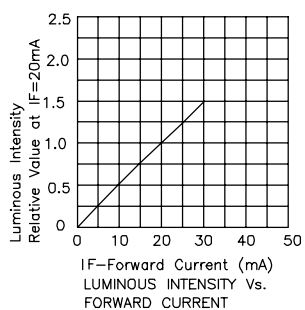
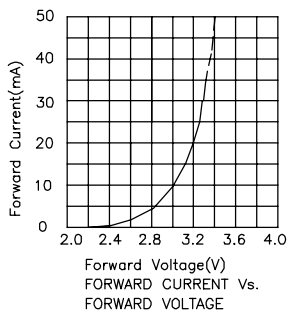
Green

ZG-E : InGaN



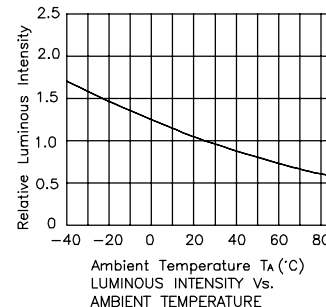
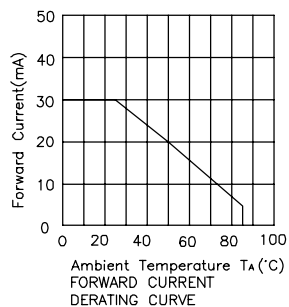
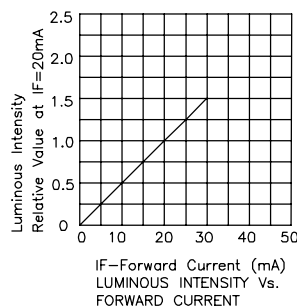
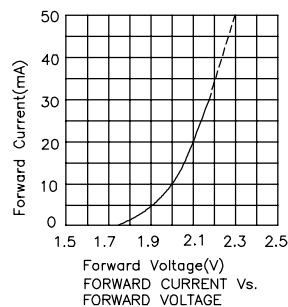
Green

ZG-G : InGaN



Yellow

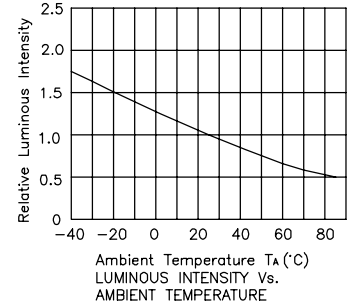
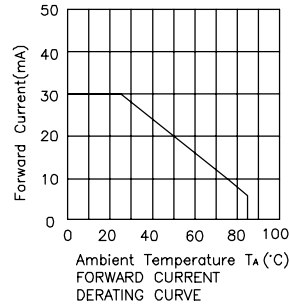
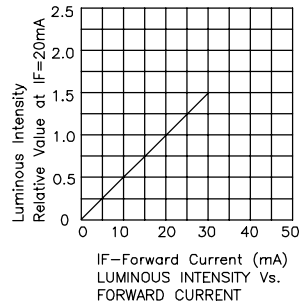
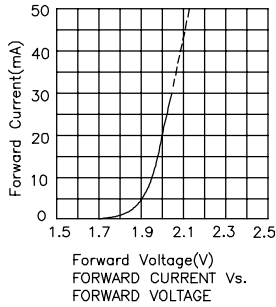
Y : GaAsP/GaP



TECHNICAL DATA

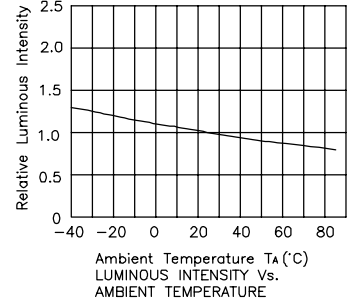
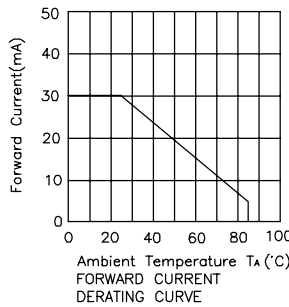
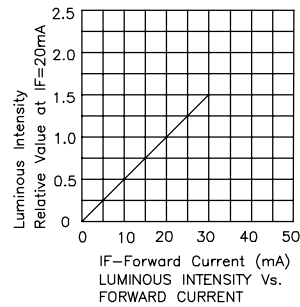
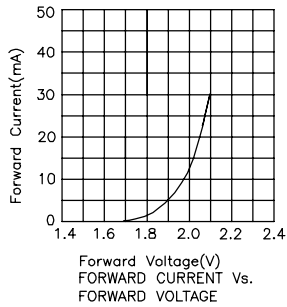
Super Bright Yellow

SYK : AlGaInP



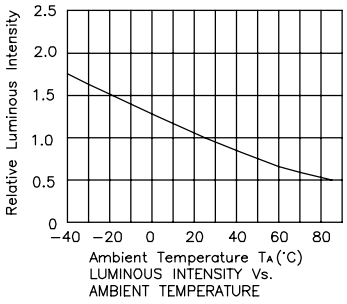
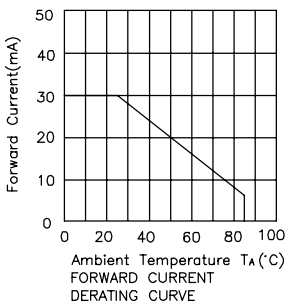
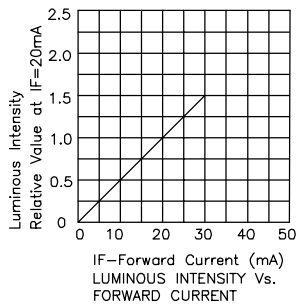
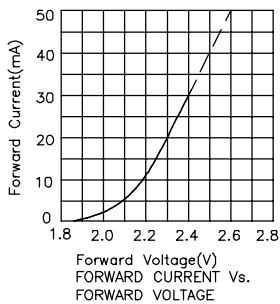
Super Bright Yellow

SYK-T : AlGaInP



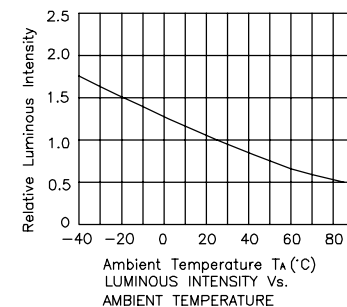
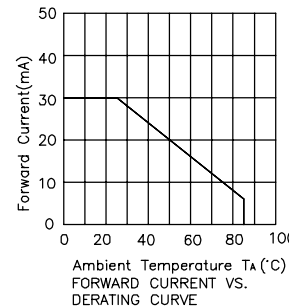
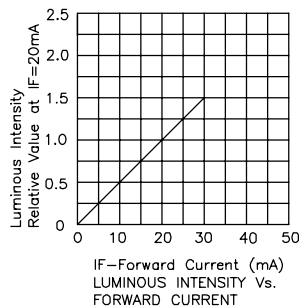
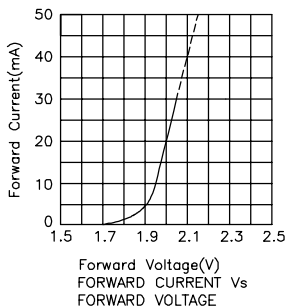
Super Bright Yellow

SY-H : AlGaInP



Super Bright Yellow

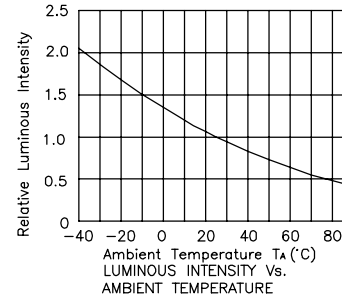
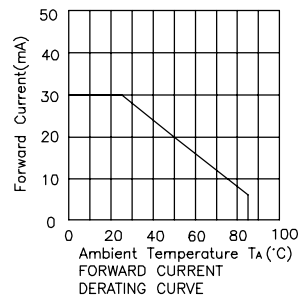
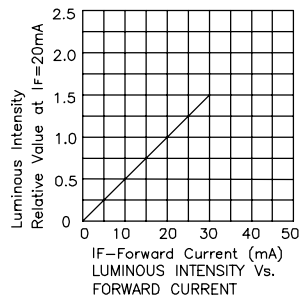
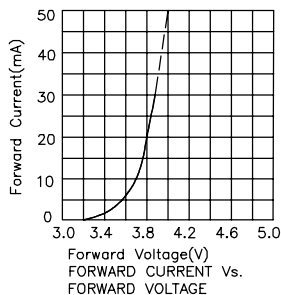
SY-J3 : AlGaInP



TECHNICAL DATA

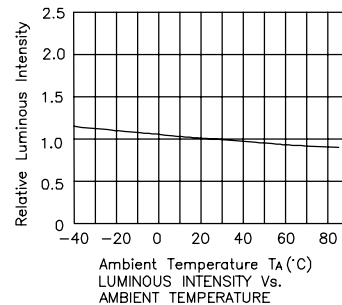
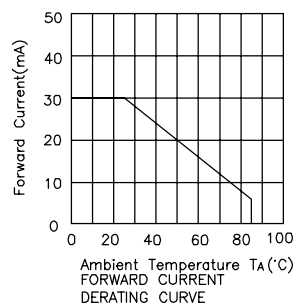
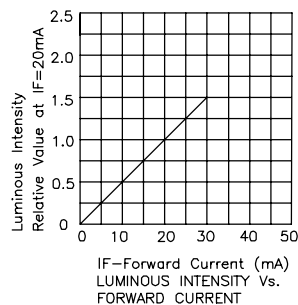
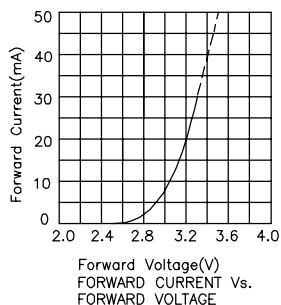
Blue

MB : GaN



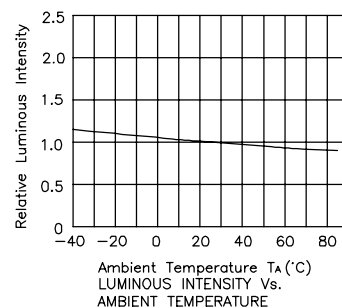
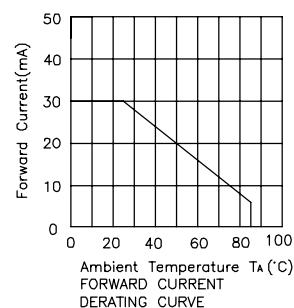
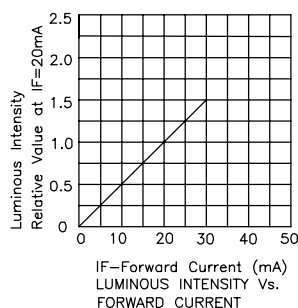
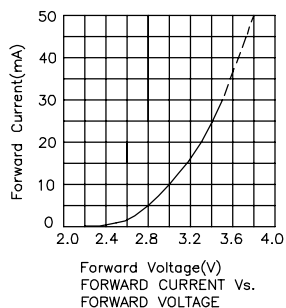
Blue

PB-A : InGaN



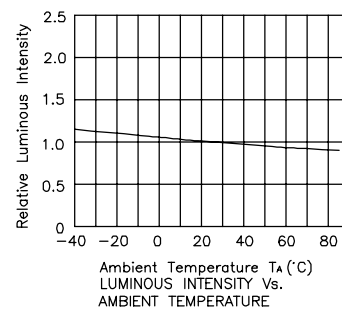
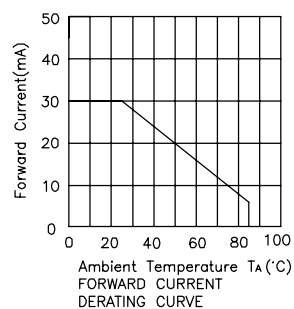
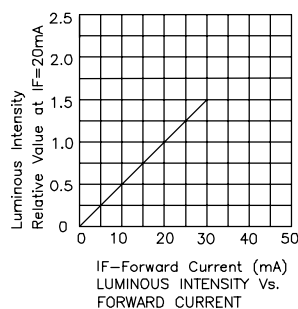
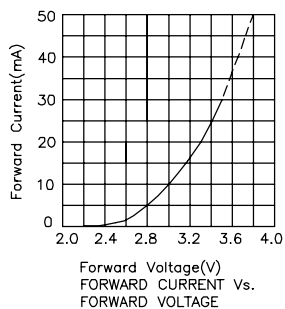
Blue

QB-D : InGaN



Blue

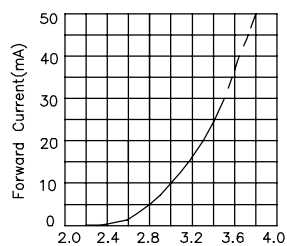
QB-F : InGaN



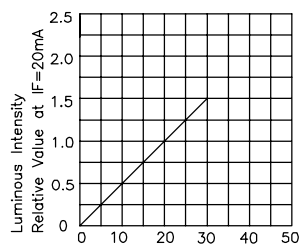
TECHNICAL DATA

Blue

QB-G : InGaN



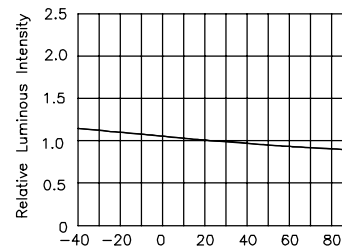
Forward Voltage(V)
FORWARD CURRENT Vs.
FORWARD VOLTAGE



IF-Forward Current (mA)
LUMINOUS INTENSITY Vs.
FORWARD CURRENT



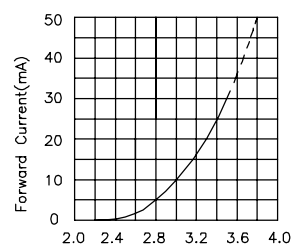
Ambient Temperature TA(°C)
FORWARD CURRENT
DERATING CURVE



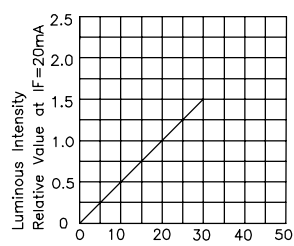
Ambient Temperature TA(°C)
LUMINOUS INTENSITY Vs.
AMBIENT TEMPERATURE

Blue

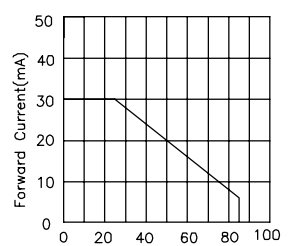
VB-D : InGaN



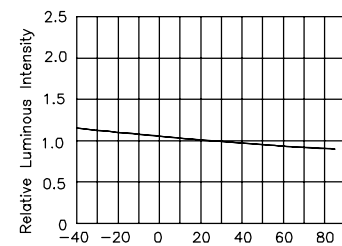
Forward Voltage(V)
FORWARD CURRENT Vs.
FORWARD VOLTAGE



IF-Forward Current (mA)
LUMINOUS INTENSITY Vs.
FORWARD CURRENT



Ambient Temperature TA(°C)
FORWARD CURRENT
DERATING CURVE



Ambient Temperature TA(°C)
LUMINOUS INTENSITY Vs.
AMBIENT TEMPERATURE

BIN CODE SYSTEMS

SELECTION CODE FOR STANDARD LEDS					
(T _A =25°C;Tolerance: +/-15%)					
Group	Light intensity in mcd(10mA)		Group	Light intensity in mcd(10mA)	
	Min.	Max.		Min.	Max.
F	0.1	0.2	W	120	180
G	0.2	0.35	X	180	250
H	0.35	0.5	Y	250	320
I	0.5	0.8	Z	320	450
K	0.8	1.2	ZA	450	550
L	1.2	2	ZB	550	700
M	2	4	ZC	700	1000
N	4	6	ZD	1000	1600
P	6	10	ZE	1600	2200
Q	10	15	ZF	2200	2800
R	15	20	ZG	2800	3400
S	20	30	ZH	3400	4300
T	30	50	ZM	4300	5200
U	50	80	ZN	5200	6300
V	80	120	ZP	6300	7400

SELECTION CODE FOR NPN PHOTOTRANSISTORS					
(T _A =25°C;Tolerance: +/-15%)					
Group	Photocurrent(mA)		Group	Photocurrent(mA)	
	Min.	Max.		Min.	Max.
F	0.1	0.2	L	1.2	2
G	0.2	0.35	M	2	4
H	0.35	0.5	N	4	6
I	0.5	0.8	P	6	10
K	0.8	1.2	-	-	-

SELECTION CODE FOR INFRARED EMITTING DIODES					
(T _A =25°C;Tolerance: +/-15%)					
Group	Radiant intensity in mW/sr(20mA)		Group	Radiant intensity in mW/sr(20mA)	
	Min.	Max.		Min.	Max.
AK	0.8	1.2	D	8	12
AL	1.2	2	E	12	20
A	2	3	F	20	40
B	3	5	G	40	55
C	5	8	H	55	80

SELECTION CODE FOR SUPER BRIGHT LEDS					
(T _A =25°C;Tolerance: +/-15%)					
Group	Light intensity in mcd(20mA)		Group	Light intensity in mcd(20mA)	
	Min.	Max.		Min.	Max.
A	2	3	ZA	3100	3600
B	3	5	ZB	3600	4200
C	5	8	ZC	4200	5000
D	8	12	ZD	5000	6000
E	12	20	ZE	6000	7000
F	20	40	ZF	7000	8000
G	40	55	ZG	8000	9000
H	55	80	ZH	9000	11000
M	80	120	ZM	11000	14000
N	120	200	ZN	14000	18000
P	200	300	ZP	18000	22000
Q	300	400	ZQ	22000	27000
R	400	500	ZR	27000	35000
S	500	700	ZS	35000	43000
T	700	1000	ZT	43000	55000
U	1000	1300	ZU	55000	75000
V	1300	1600	ZV	75000	130000
W	1600	1900	ZW	130000	200000
X	1900	2300	ZX	200000	320000
Y	2300	2700	ZY	320000	490000
Z	2700	3100	ZZ	490000	800000

SELECTION CODE FOR DISPLAYS					
(T _A =25°C;Tolerance: +/-15%)					
Group	Light intensity in ucd(10mA)		Group	Light intensity in ucd(10mA)	
	Min.	Max.		Min.	Max.
C	70	140	P	14000	21000
D	140	240	Q	21000	31000
E	240	360	R	31000	52000
F	360	560	S	52000	88000
G	560	900	T	88000	150000
H	900	1400	U	150000	255000
I	1400	2200	V	255000	433000
K	2200	3600	W	433000	736000
L	3600	5600	X	736000	1251000
M	5600	9000	Y	1251000	2126000
N	9000	14000	Z	2126000	3614000

BIN CODE SYSTEMS

SELECTION CODE FOR LUMINOUS FLUX (T _A =25°C; Tolerance: +/-15%)					
Group	Luminous Flux in lm		Group	Luminous Flux in lm	
	Min.	Max.		Min.	Max.
A1	0.5	0.6	B10	50	60
A2	0.6	0.7	B11	60	70
A3	0.7	0.8	B12	70	80
A4	0.8	1	B13	80	90
A5	1	1.2	B14	90	100
A6	1.2	1.4	C1	100	120
A7	1.4	1.7	C2	120	140
A8	1.7	2	C3	140	160
A9	2	2.4	C4	160	180
A10	2.4	2.9	C5	180	210
A11	2.9	3.5	C6	210	240
A12	3.5	4.2	C7	240	280
A13	4.2	5	C8	280	320
A14	5	6	C9	320	370
A15	6	7.2	C10	370	430
A16	7.2	8.6	C11	430	490
A17	8.6	10	C12	490	560
B1	10	12	C13	560	640
B2	12	14	C14	640	740
B3	14	17	C15	740	850
B4	17	20	C16	850	1000
B5	20	24	D1	1000	1200
B6	24	29	D2	1200	1400
B7	29	35	D3	1400	1600
B8	35	42	D4	1600	1800
B9	42	50	D5	1800	2100

COLOR CODE FOR GREEN LEDS + DISPLAYS (T _A =25°C; Tolerance: +/-1nm)				
Group	Dom. Wavelength (nm)			
	G/SG, CGK, MG/ MGK Chip		VG + ZG Chip	
	Min.	Max.	Min.	Max.
0	556	559	-	-
1	559	561	515	520
2	561	563	520	525
3	563	565	525	530
4	565	567	530	535
5	567	569	535	540
6	569	571	-	-
7	571	573	-	-
8	573	575	-	-

COLOR CODE FOR BLUE LEDS + DISPLAYS (T _A =25°C; Tolerance: +/-1nm)					
Group	Dom. Wavelength (nm)		Group	Dom. Wavelength (nm)	
	Min.	Max.		Min.	Max.
1	445	450	3A	471	473
2	450	455	3B	473	475
3	455	460	4A	475	477
1A	460	463	4B	477	479
1B	463	466	5A	479	481
2A	466	469	5B	481	483
2B	469	471	5C	483	486

COLOR CODE FOR YELLOW LEDS + DISPLAYS (T _A =25°C; Tolerance: +/-1nm)					
Group	Dom. Wavelength (nm)		Group	Dom. Wavelength (nm)	
	Min.	Max.		Min.	Max.
1	581	584	5	590	592
2	584	586	6	592	594
3	586	588	7	594	597
4	588	590	8	597	600

SOLDERING INSTRUCTIONS						
Types	Dip soldering / * wave soldering			Iron soldering (with 1.5mm iron tip)		
	Temperature of the soldering bath	Maximum soldering time	Distance from solder joint to package	Temperature of soldering iron	Maximum soldering time	Distance from solder joint to package
LEDS	<=260°C	3s	>=2mm	<=350°C	3s	>2mm
	<=260°C	5s	>=5mm	<=350°C	5s	>5mm
SMDS	-	-	-	<=350°C	3s (one time only)	-
DISPLAYS	*<=260°C	*3s	*>2mm	<=350°C	3s	>2mm
PHOTOCOUPLER	<=260°C	3s	>2mm	<=310°C	3s	-
	-	-	-	<=260°C	10s	-

Kingbright

Optoelectronic Components

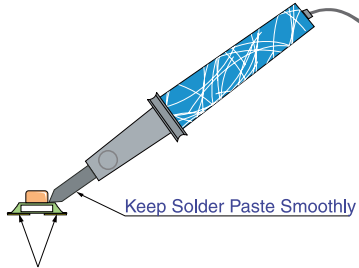
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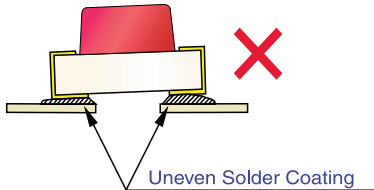
APPLICATION NOTES

General Notes

1. We recommend manual soldering operations only for repair and rework purposes. The soldering iron should not exceed 30W in power. The maximum soldering temperature is 300°C for Pb-Sn solder and 350°C for lead-free solder for normal lamps and displays. For blue (typical λ_d 465nm), blue-green (typical λ_d 525nm), and all white LEDs, the maximum soldering iron temperature is 280°C. Do not place the soldering iron on the component for more than 3 seconds.



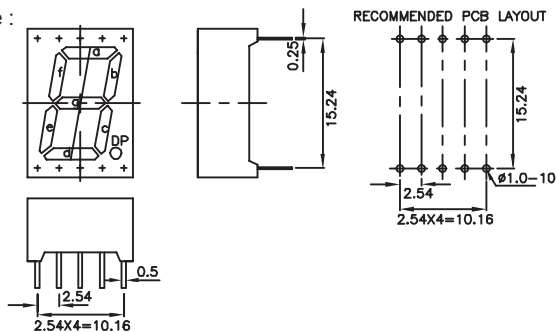
2. The tip of the soldering iron should never touch the epoxy lens.
3. Do not apply stress to the leads when the component is heated above 85°C, otherwise internal wire bonds may be damaged.
4. Through-Hole LEDs are incompatible with reflow soldering.
5. If the LED will undergo multiple soldering passes or face other processes where the part may be subjected to intense heat, please check with Kingbright for compatibility.
6. SMD products must be mounted according to specified soldering pad patterns. Refer to the product datasheet for details. Solder paste must be evenly applied to each soldering pad to insure proper bonding and positioning of the component.



7. After soldering, allow at least three minutes for the component to cool down to room temperature before further operations.
8. Recommended PCB pin hole diameters for display products are listed below :

Round pin type : 2 x pin diameters

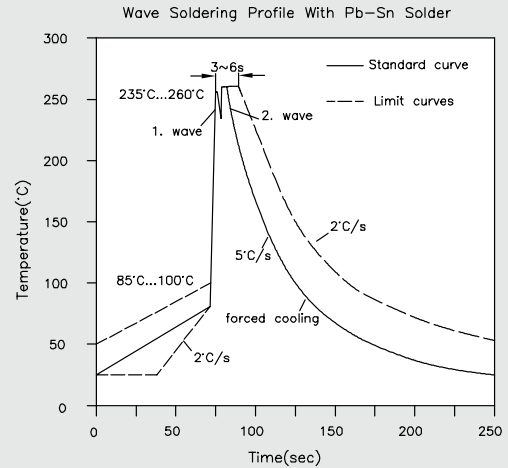
Square pin type :



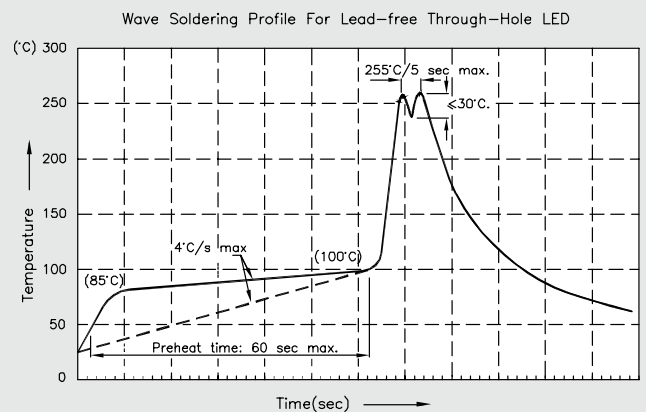
9. Data subject to change without notice. For additional detail of application notes, product information, and disclaimers, please visit our website at http://www.kingbright.com/application_notes.

Recommended Wave Soldering Profiles For Kingbright Through-Hole Products

1. Wave Soldering Profile With Pb-Sn Solder



2. Lead-Free Wave Soldering Profile



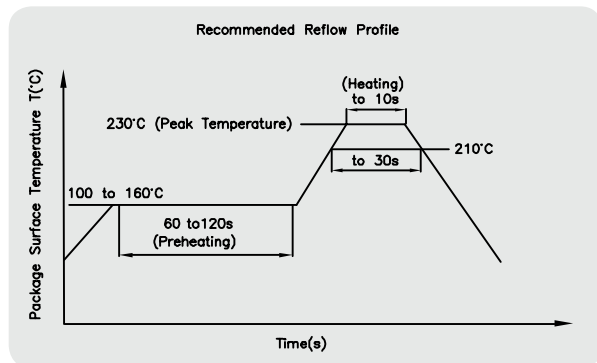
Notes:

1. Recommend pre-heat temperature of 105°C or less (as measured with a thermocouple attached to the LED pins) prior to immersion in the solder wave with a maximum solder bath temperature of 260°C.
2. Peak wave soldering temperature between 245°C ~ 255°C for 3 sec (5 sec max.).
3. Do not apply stress to the epoxy resin while the temperature is above 85°C.
4. Fixtures should not incur stress on the component when mounting and during soldering process.
5. SAC 305 solder alloy is recommended.
6. No more than one wave soldering pass.

Recommended Reflow Soldering Profiles For Kingbright SMD Products

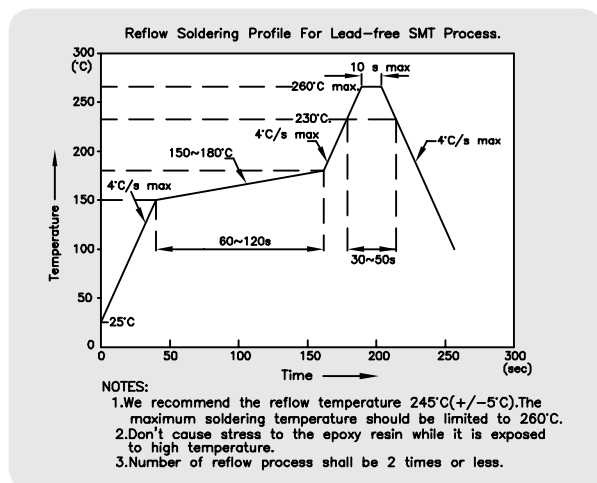
1. Reflow Soldering Profiles With Pb-Sn Solder

No more than two soldering passes with the recommended profile.



2. Lead-Free Reflow Soldering Profile

No more than two soldering passes with the recommended profile.



Static Electricity and Voltage Spikes in InGaN/GaN Products

InGaN/GaN products are sensitive to electrostatic discharge (ESD) and other transient voltage spikes. ESD and voltage spikes can affect the component's reliability, increase reverse current, and decrease forward voltage. This may result in reduced light intensity or cause component failure.

Kingbright InGaN/GaN products are stored in anti-static packaging for protection during transport and storage. Please note the anti-static measures below when handling Kingbright InGaN/GaN products.

Design Precautions

Products using InGaN/GaN components must incorporate protection circuitry to prevent ESD and voltage spikes from reaching the vulnerable component.

ESD Protection During Production

Static discharge can result when static-sensitive products come in contact with the operator or other conductors. The following procedures may decrease the possibility of ESD damage:

1. Minimize friction between the product and surroundings to avoid static buildup.
2. All production machinery and test instruments must be electrically grounded.
3. Operators must wear anti-static bracelets.
4. Wear anti-static suit when entering work areas with conductive machinery.
5. Set up ESD protection areas using grounded metal plating for component handling.
6. All workstations that handle IC and ESD-sensitive components must maintain an electrostatic potential of 150V or less.
7. Maintain a humidity level of 50% or higher in production areas.
8. Use anti-static packaging for transport and storage.
9. All anti-static equipment and procedures should be periodically inspected and evaluated for proper functionality.

LED Mounting Method

1. The lead pitch of the LED must match the pitch of the mounting holes on the PCB during component placement. Lead-forming may be required to insure the lead pitch matches the hole pitch. Refer to (Fig.1) for proper lead forming procedures.

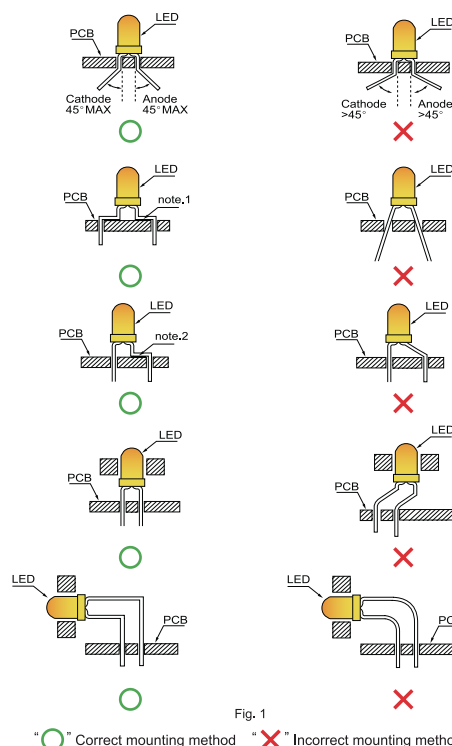


Fig. 1
"O" Correct mounting method "X" Incorrect mounting method

Note 1-2 : Do not route PCB trace in the contact area between the leadframe and the PCB to prevent short-circuits.

- When soldering wire to the LED, use individual heat-shrink tubing to insulate the exposed leads to prevent accidental contact short-circuit. (Fig.2)

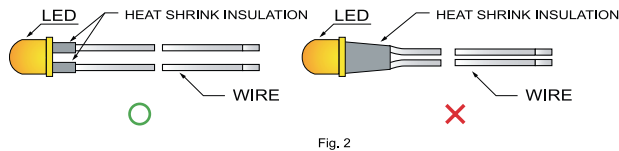


Fig. 2

- Use stand-offs (Fig.3) or spacers (Fig.4) to securely position the LED above the PCB.

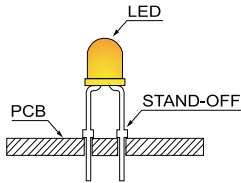


Fig. 3

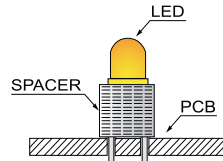


Fig. 4

Lead Forming Procedures

- Maintain a minimum of 2mm clearance between the base of the LED lens and the first lead bend. (Fig. 5 and 6)

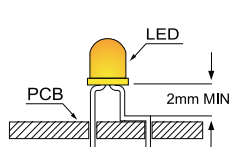


Fig. 5

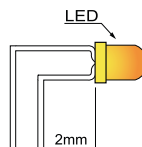


Fig. 6

- Lead forming or bending must be performed before soldering, never during or after soldering.
- Do not stress the LED lens during lead-forming in order to prevent fractures in the epoxy lens and damage the internal structures.
- During soldering, component covers and holders should leave clearance to avoid placing damaging stress on the LED during soldering. (Fig. 7)

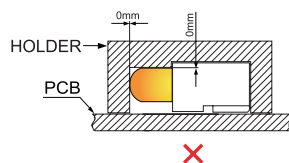
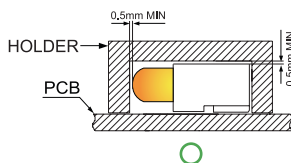
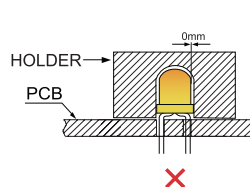
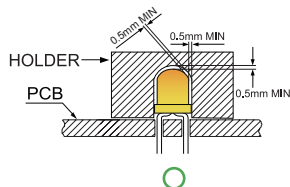


Fig. 7

- During lead forming, use tools or jigs to hold the leads securely so that the bending force will not be transmitted to the LED lens and its internal structures. Do not perform lead forming once the component has been mounted onto the PCB. (Fig. 8)

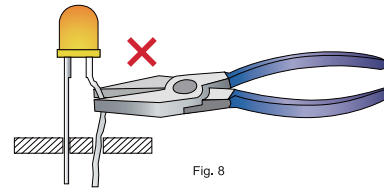


Fig. 8

- Do not bend the leads more than twice. (Fig. 9)

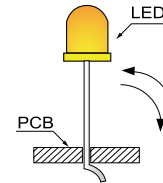


Fig. 9

- After soldering or other high-temperature assembly, allow the LED to cool down to 50°C before applying outside force (Fig. 10). In general, avoid placing excess force on the LED to avoid damage. For any questions please consult with Kingbright representative for proper handling procedures.

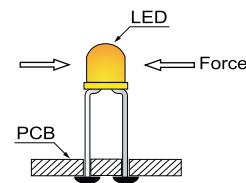


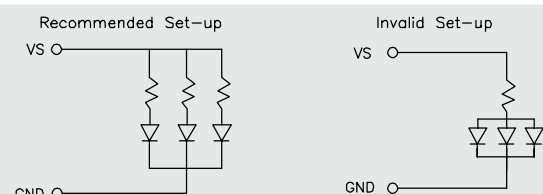
Fig. 10

Cleaning

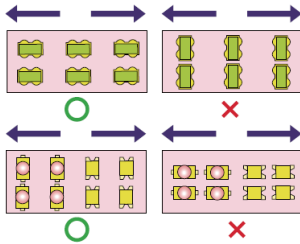
- Do not use harsh organic solvents such as trichloroethylene, acetone, Chlorosol, and Diflon S3MC for cleaning because they may cloud or damage the LED lens.
- Isopropyl alcohol or deionized water are recommended solvents for cleaning.
- Special attention should be taken if other chemicals are used for cleaning because other solvents may damage the epoxy in the lens or housing.
- The cleaning process should take place at room temperature and the devices should not be washed for more than one minute.
- When water is used for cleaning, immediately use forced-air drying to remove excess moisture from the LED.

Miscellaneous Design Notes

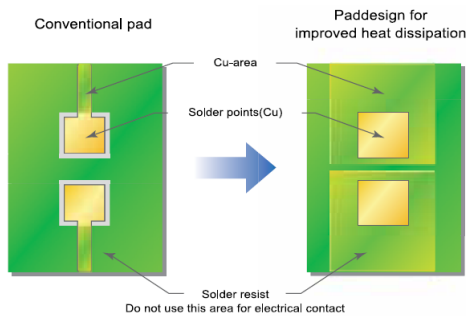
- Protective current-limiting resistors may be necessary to operate the LEDs within the specified range.
- LEDs mounted in parallel should each be placed in series with its own current-limiting resistor.



- The driving circuit should be designed to avoid reverse voltages and transient voltage spikes when the circuit is powered up or shut down.
- During soldering, SMD components should be mounted such that the leads are placed perpendicular to the direction of PCB travel to ensure the solder on each lead melts simultaneously during reflow.



- Optimal usage of high-power LED devices requires careful design by the end-user to optimize heat dissipation, such as increasing the size of the metal backing around the soldering pad. Refer to the product datasheet for specific design recommendations regarding heat dissipation.

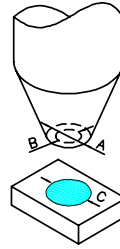


- High temperatures can reduce device performance and reliability. Keep LED devices away from heat source for best performance.
- The safe operation current should be chosen after considering the maximum ambient temperature of the operating environment.

Restrictions on Product Use

- Not all devices and product families are available in every country.
- The light output from UV, blue, white, and other high-power LEDs may cause injury to the human eye when viewed directly.
- LED devices may contain gallium arsenide (GaAs) material. GaAs is harmful if ingested. GaAs dust and fumes are toxic. Do not break, cut, or pulverize LED devices. Do not dissolve LEDs in chemical solvents.
- Semiconductor devices can fail or malfunction due to their sensitivity to electrical fluctuation and physical stress. It is the responsibility of the user to observe all safety standards when using Kingbright products, in order to avoid situations in which the malfunction or failure of a Kingbright product could cause injury, property damage, or the loss of human life. In developing designs, please ensure that Kingbright products are used within specified operating conditions as set forth in the most recent product specification datasheet.

- For LEDs with silicone encapsulation such as the KA and KT series, the outer diameter of the pick-up nozzle must be larger than that of the LED's light emitting area. i. e. $A > C$, and B shall be smaller than the width of the LED.



A is the outer diameter pick-up nozzle
B is the inner diameter of the nozzle
C is the diameter of lens.

- The size of the nozzle should be as large as possible if the tape is not involved.
- It is not recommended to assemble LEDs with different color bins or intensity bins together as there may be perceivable color or intensity variation. Each bag contains parts from the same bin code. The bin code is printed on the bag's label as shown below.

Kingbright	
P/NO: XXXX	
QTY: XXX pcs	Q.C. Q C XX-XX-XXXX PASSED
S/N: XXXX	
CODE: XXX	
LOT NO: 	
RoHS Compliant	

Storage Control

For SMD Products

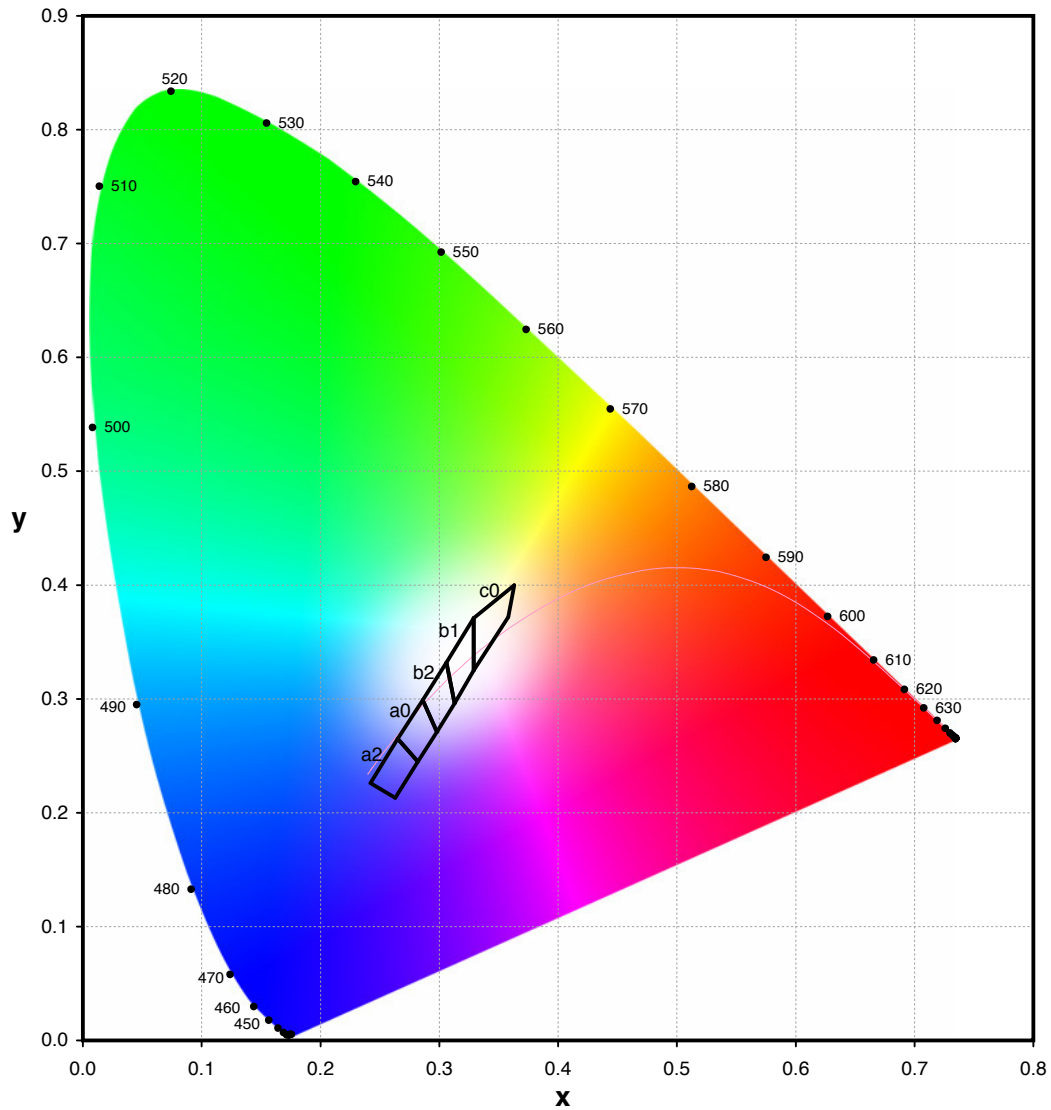
- Before a sealed moisture barrier bag (MBB) is opened, contained LEDs shall be kept in an environment with temperature below 40°C and humidity below 90% RH. MBB shall be kept sealed until LEDs contained in the bag are ready to be used. Once MBB is opened, it shall be stored in an environment with temperature range of 5°C~30°C and humidity below 60% RH.
- Once MBB is opened, all contained LEDs shall complete soldering process within the specified time frame according to the conditions labeled on Kingbright MBB.
- When the 10% spot of a humidity indicator card (HIC) from MBB indicates wet, the contained LEDs shall be baked according to the baking conditions labeled on Kingbright MBB before mounting.

For Through-Hole Products

- Avoid continued exposure to the condensing moisture environment and keep the product away from rapid transitions in ambient temperature.
- LEDs should be stored with temperature $\leq 30^\circ\text{C}$ and relative humidity $< 60\%$.
- Product in the original sealed package is recommended to be assembled within 72 hours of opening. Product in opened package for more than a week should be baked for 30 (+10/-0) hours at 85°C ~ 100°C.

CIE CHROMATICITY DIAGRAM

White Bin Code

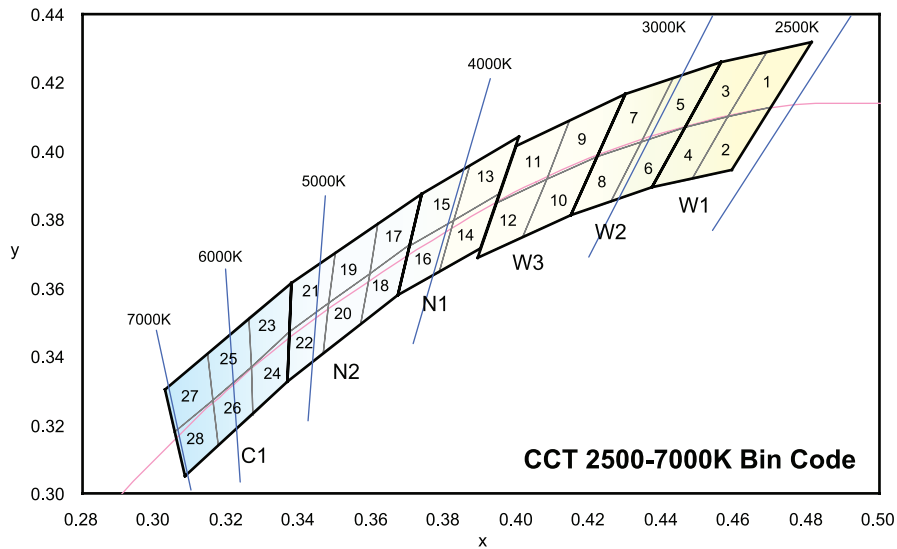


Bin	x	y
a2	0.263	0.213
	0.282	0.245
	0.265	0.265
	0.242	0.226
CCT: 15000K~		
Bin	x	y
a0	0.282	0.245
	0.298	0.271
	0.286	0.299
	0.265	0.265
CCT: 9000~15000K		

Bin	x	y
b2	0.298	0.271
	0.313	0.296
	0.306	0.332
	0.286	0.299
CCT: 6800~9000K		
Bin	x	y
b1	0.313	0.296
	0.329	0.325
	0.329	0.371
	0.306	0.332
CCT: 5600~6800K		

Bin	x	y
c0	0.329	0.325
	0.358	0.372
	0.363	0.400
	0.329	0.371
CCT: 4600~5600K		

CIE CHROMATICITY DIAGRAM



Group	Chromaticity Regions	CCT (K)			Group	Chromaticity Regions	CCT (K)		
		Min.	Typ.	Max.			Min.	Typ.	Max.
W1	1, 2, 3, 4	2580	2700	2870	N1	13, 14, 15, 16	3710	4000	4260
W2	5, 6, 7, 8	2870	3000	3220	N2	17, 18, 19, 20, 21, 22	4260	4700	5310
W3	9, 10, 11, 12	3220	3500	3710	C1	23, 24, 25, 26, 27, 28	5310	6000	7040

	x	y		x	y		x	y		x	y
1	0.4582	0.4099	8	0.4147	0.3814	15	0.3702	0.3722	22	0.3481	0.3557
	0.4687	0.4289		0.4221	0.3984		0.3736	0.3874		0.3370	0.3472
	0.4813	0.4319		0.4342	0.4028		0.3869	0.3958		0.3364	0.3328
	0.4700	0.4126		0.4259	0.3853		0.3825	0.3798		0.3466	0.3411
2	0.4483	0.3919	9	0.4080	0.3916	16	0.3670	0.3578	23	0.3376	0.3616
	0.4582	0.4099		0.4146	0.4089		0.3702	0.3722		0.3260	0.3512
	0.4700	0.4126		0.4299	0.4165		0.3825	0.3798		0.3265	0.3371
	0.4593	0.3944		0.4221	0.3984		0.3783	0.3646		0.3370	0.3472
3	0.4465	0.4071	10	0.4017	0.3751	17	0.3736	0.3874	24	0.3370	0.3472
	0.4562	0.4260		0.4080	0.3916		0.3616	0.3788		0.3265	0.3371
	0.4687	0.4289		0.4221	0.3984		0.3592	0.3641		0.3270	0.3230
	0.4582	0.4099		0.4147	0.3814		0.3703	0.3726		0.3364	0.3328
4	0.4373	0.3893	11	0.3941	0.3848	18	0.3703	0.3726	25	0.3260	0.3512
	0.4465	0.4071		0.3996	0.4015		0.3592	0.3641		0.3144	0.3408
	0.4582	0.4099		0.4146	0.4089		0.3568	0.3495		0.3160	0.3274
	0.4483	0.3919		0.4080	0.3916		0.3670	0.3578		0.3265	0.3371
5	0.4342	0.4028	12	0.3889	0.3690	19	0.3616	0.3788	26	0.3265	0.3371
	0.4430	0.4212		0.3941	0.3848		0.3496	0.3702		0.3160	0.3274
	0.4562	0.4260		0.4080	0.3916		0.3481	0.3557		0.3175	0.3139
	0.4465	0.4071		0.4017	0.3751		0.3592	0.3641		0.3270	0.3230
6	0.4259	0.3853	13	0.3825	0.3798	20	0.3592	0.3641	27	0.3144	0.3408
	0.4342	0.4028		0.3869	0.3958		0.3481	0.3557		0.3028	0.3304
	0.4465	0.4071		0.4006	0.4044		0.3466	0.3411		0.3055	0.3177
	0.4373	0.3893		0.3950	0.3875		0.3568	0.3495		0.3160	0.3274
7	0.4221	0.3984	14	0.3783	0.3646	21	0.3496	0.3702	28	0.3160	0.3274
	0.4299	0.4165		0.3825	0.3798		0.3376	0.3616		0.3055	0.3177
	0.4430	0.4212		0.3950	0.3875		0.3370	0.3472		0.3081	0.3049
	0.4342	0.4028		0.3898	0.3716		0.3481	0.3557		0.3175	0.3139

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