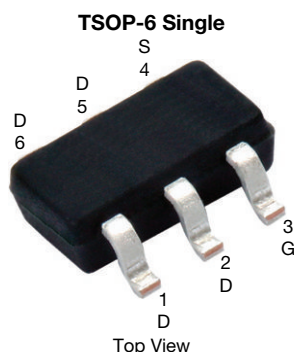


P-Channel 20 V (D-S) MOSFET

PRODUCT SUMMARY			
V _{DS} (V)	R _{DS(on)} (Ω) MAX.	I _D (A) ^{a, e}	Q _g (TYP.)
-20	0.0210 at V _{GS} = -4.5 V	-8	43.2 nC
	0.0240 at V _{GS} = -2.5 V	-8	
	0.0380 at V _{GS} = -1.8 V	-8	



Marking Code: BM

Ordering Information:

Si3429EDV-T1-GE3 (lead (Pb)-free and halogen-free)

FEATURES

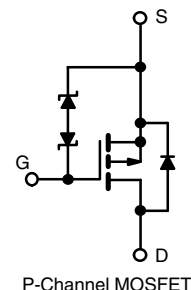
- TrenchFET® power MOSFET
- 100 % R_g tested
- Built-in ESD protection
 - Typical ESD performance 3000 V
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912



RoHS
COMPLIANT
HALOGEN
FREE

APPLICATIONS

- Power management for portable and consumer
 - Load switches
 - DC/DC converters



ABSOLUTE MAXIMUM RATINGS (T _A = 25 °C, unless otherwise noted)				
PARAMETER		SYMBOL	LIMIT	UNIT
Drain-Source Voltage		V _{DS}	-20	V
Gate-Source Voltage		V _{GS}	± 8	
Continuous Drain Current (T _J = 150 °C)	T _C = 25 °C	I _D	-8 ^e	A
	T _C = 70 °C		-8 ^e	
	T _A = 25 °C		-8 ^{b, c, e}	
	T _A = 70 °C		-6.4 ^{b, c}	
Pulsed Drain Current (t = 300 μs)		I _{DM}	-40	
Continuous Source-Drain Diode Current	T _C = 25 °C	I _S	-3.5	A
	T _A = 25 °C		-1.7 ^{b, c}	
Maximum Power Dissipation	T _C = 25 °C	P _D	4.2	W
	T _C = 70 °C		2.7	
	T _A = 25 °C		2 ^{b, c}	
	T _A = 70 °C		1.3 ^{b, c}	
Operating Junction and Storage Temperature Range		T _J , T _{stg}	-55 to 150	°C

THERMAL RESISTANCE RATINGS					
PARAMETER		SYMBOL	TYPICAL	MAXIMUM	UNIT
Maximum Junction-to-Ambient ^{b, d}	t ≤ 5 s	R _{thJA}	45	62.5	°C/W
Maximum Junction-to-Foot (Drain)	Steady State	R _{thJF}	25	30	

Notes

- T_C = 25 °C.
- Surface mounted on 1" x 1" FR4 board.
- t = 5 s.
- Maximum under steady state conditions is 110 °C/W.
- Package limited.



SPECIFICATIONS (T _J = 25 °C, unless otherwise noted)							
PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT	
Static							
Drain-Source Breakdown Voltage	V _{DS}	V _{GS} = 0 V, I _D = -250 μA	-20	-	-	V	
V _{DS} Temperature Coefficient	ΔV _{DS} /T _J	I _D = -250 μA	-	-12	-	mV/°C	
V _{GS(th)} Temperature Coefficient	ΔV _{GS(th)} /T _J		-	2.4	-		
Gate-Source Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250 μA	-0.4	-	-1	V	
Gate-Source Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ± 8 V	-	-	± 10	μA	
		V _{DS} = 0 V, V _{GS} = ± 4.5 V	-	-	± 1		
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -20 V, V _{GS} = 0 V	-	-	-1		
		V _{DS} = -20 V, V _{GS} = 0 V, T _J = 55 °C	-	-	-10		
On-State Drain Current ^a	I _{D(on)}	V _{DS} ≤ -5 V, V _{GS} = -4.5 V	-15	-	-	A	
Drain-Source On-State Resistance ^a	R _{DS(on)}	V _{GS} = -4.5 V, I _D = -4 A	-	0.0175	0.0210	Ω	
		V _{GS} = -2.5 V, I _D = -4 A	-	0.0200	0.0240		
		V _{GS} = -1.8 V, I _D = -2 A	-	0.0250	0.0380		
Dynamic ^b							
Input Capacitance	C _{iss}	V _{DS} = -10 V, V _{GS} = 0 V, f = 1 MHz	-	4083	-	pF	
Output Capacitance	C _{oss}		-	395	-		
Reverse Transfer Capacitance	C _{rss}		-	365	-		
Total Gate Charge	Q _g	V _{DS} = -10 V, V _{GS} = -8 V, I _D = -8 A	-	78.2	118	nC	
		V _{DS} = -10 V, V _{GS} = -4.5 V, I _D = -8 A	-	43.2	65		
Gate-Source Charge	Q _{gs}		-	6.3	-		
Gate-Drain Charge	Q _{gd}		-	4.3	-		
Gate Resistance	R _g	f = 1 MHz	1.8	9.4	18.8	Ω	
Turn-On Delay Time	t _{d(on)}	V _{DD} = -10 V, R _L = 1.56 Ω I _D ≡ -6.4 A, V _{GEN} = -4.5 V, R _g = 1 Ω	-	35	53	ns	
Rise Time	t _r		-	30	45		
Turn-Off Delay Time	t _{d(off)}		-	174	261		
Fall Time	t _f		-	58	87		
Turn-On Delay Time	t _{d(on)}	V _{DD} = -10 V, R _L = 1.56 Ω I _D ≡ -6.4 A, V _{GEN} = -8 V, R _g = 1 Ω	-	10	20		
Rise Time	t _r		-	17	26		
Turn-Off Delay Time	t _{d(off)}		-	210	315		
Fall Time	t _f		-	64	96		
Drain-Source Body Diode Characteristics							
Continuous Source-Drain Diode Current	I _S	T _C = 25 °C	-	-	-3.5	A	
Pulse Diode Forward Current	I _{SM}		-	-	-40		
Body Diode Voltage	V _{SD}	I _S = -6.4 A, V _{GS} = 0 V	-	-0.8	-1.2	V	
Body Diode Reverse Recovery Time	t _{rr}	I _F = -6.4 A, dI/dt = 100 A/μs, T _J = 25 °C	-	28	42	ns	
Body Diode Reverse Recovery Charge	Q _{rr}		-	16	24	nC	
Reverse Recovery Fall Time	t _a		-	13	-	ns	
Reverse Recovery Rise Time	t _b		-	15	-		

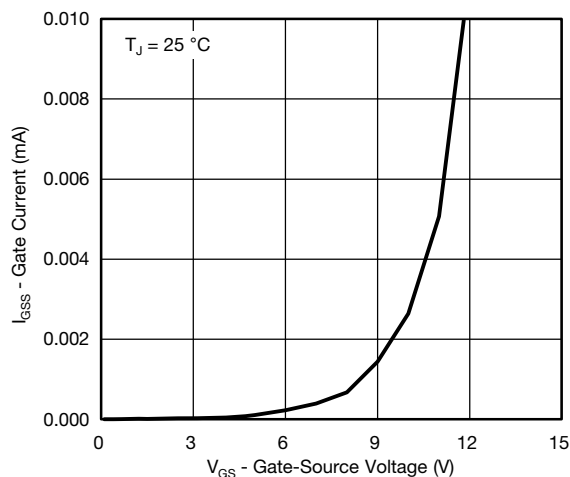
Notes

- a. Pulse test; pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$.
b. Guaranteed by design, not subject to production testing.

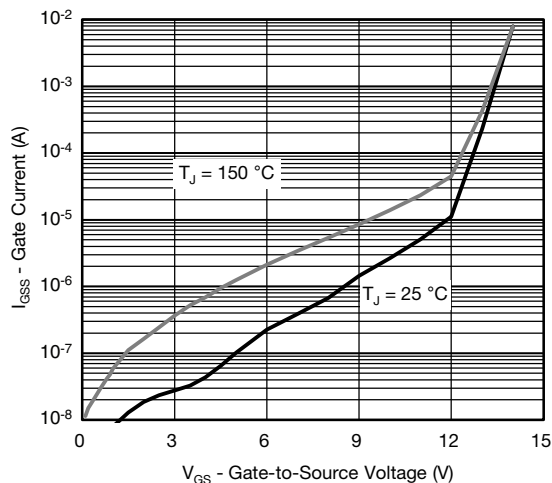
Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.



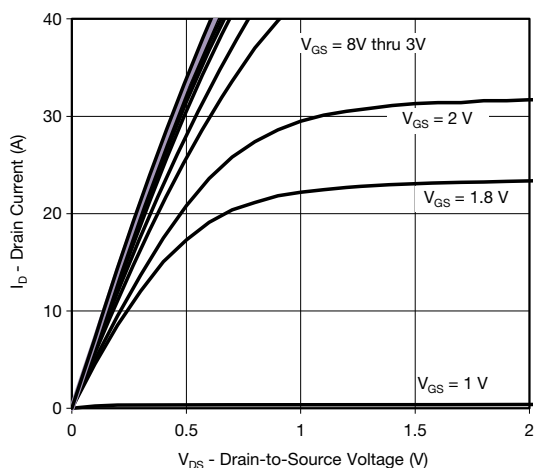
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



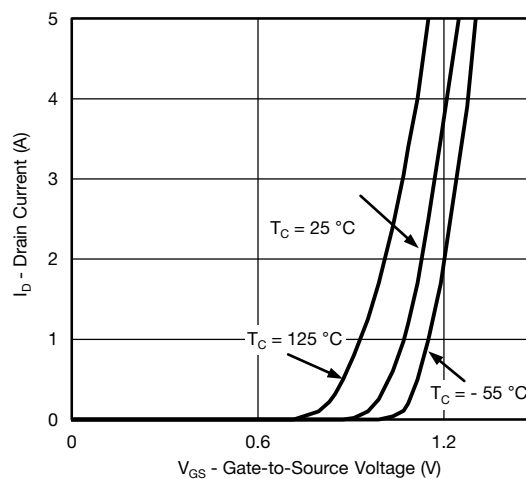
Gate Current vs. Gate-Source Voltage



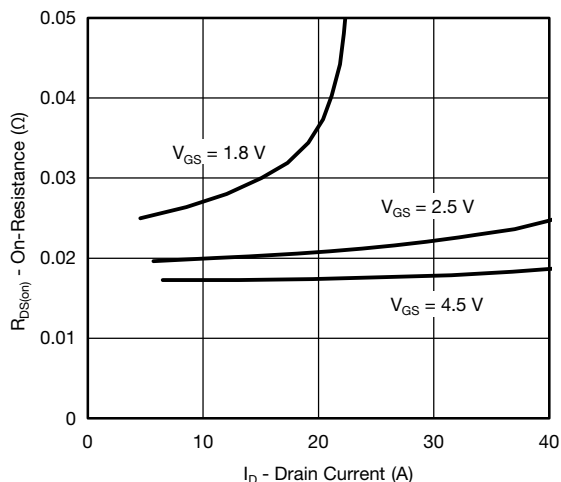
Gate Current vs. Gate-Source Voltage



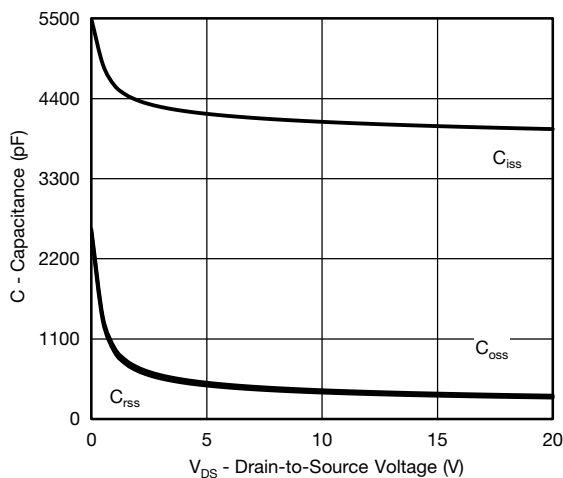
Output Characteristics



Transfer Characteristics



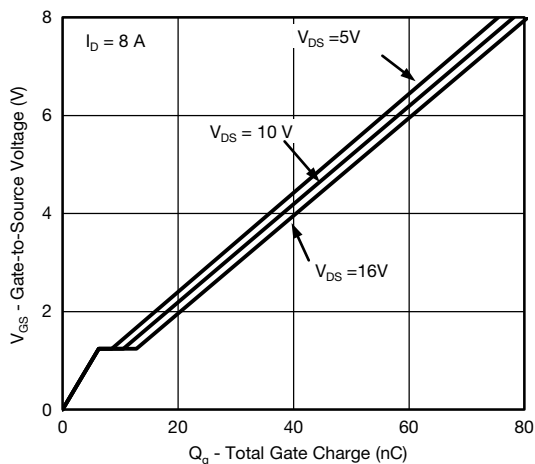
On-Resistance vs. Drain Current



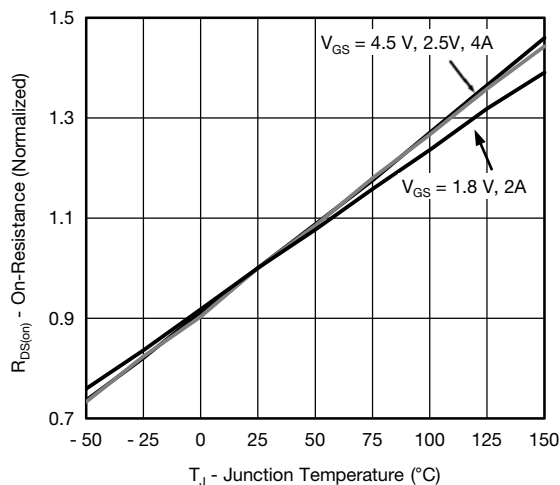
Capacitance



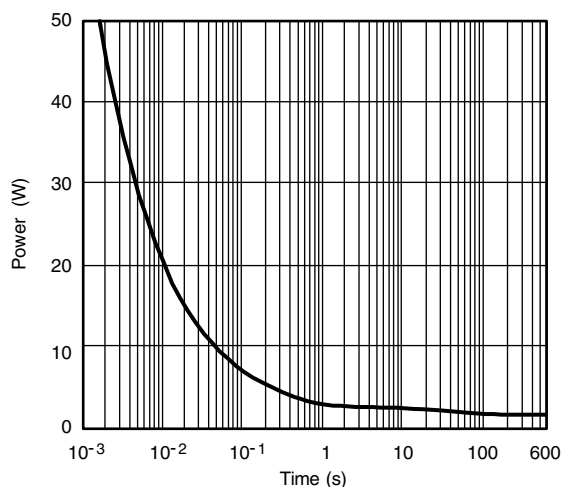
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



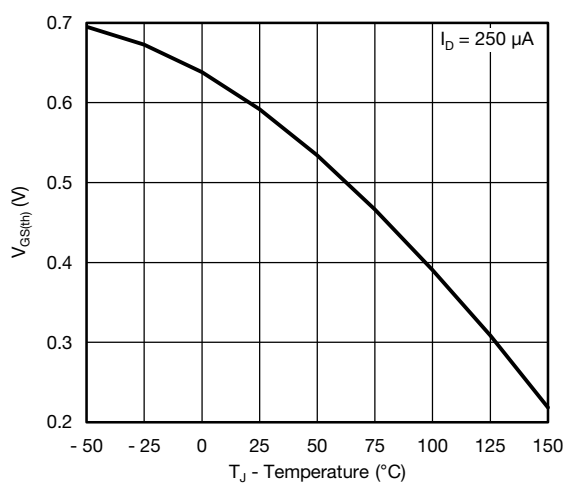
Gate Charge



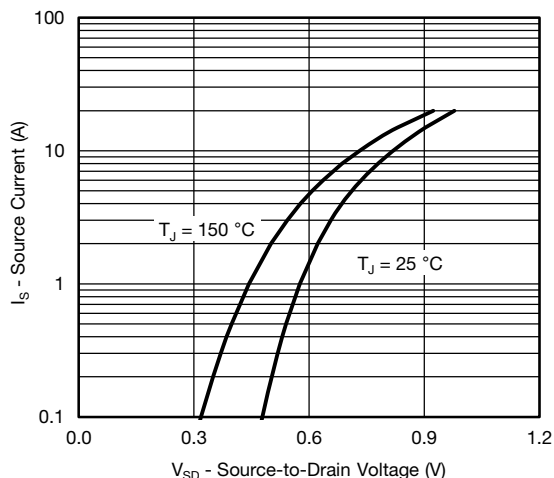
On-Resistance vs. Junction Temperature



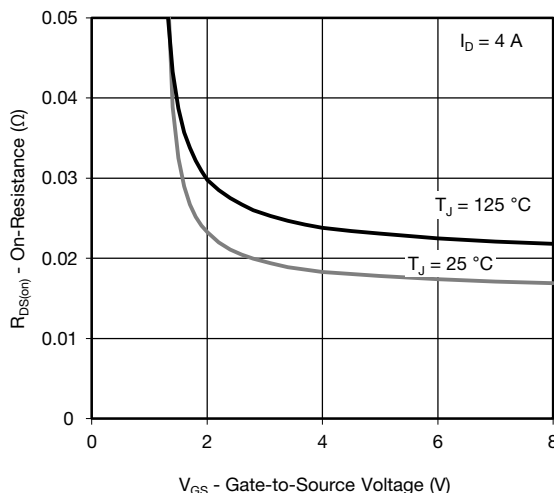
Single Pulse Power, Junction-to-Ambient



Threshold Voltage



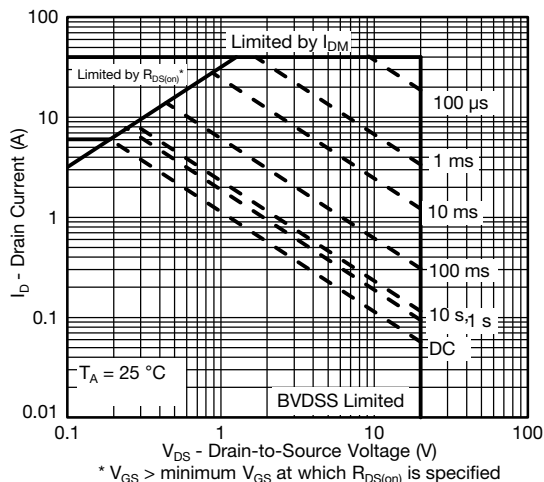
Source-Drain Diode Forward Voltage



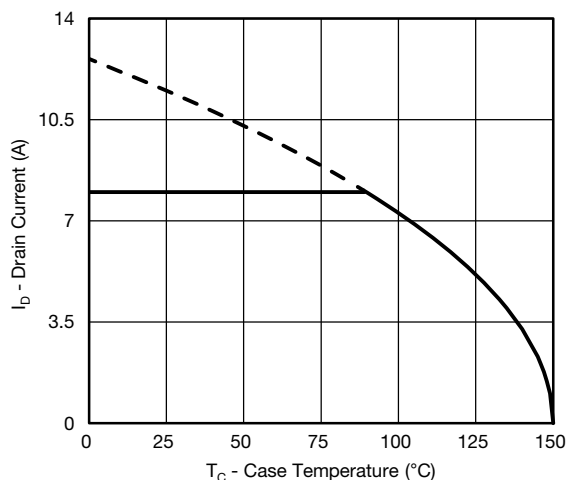
On-Resistance vs. Gate-to-Source Voltage



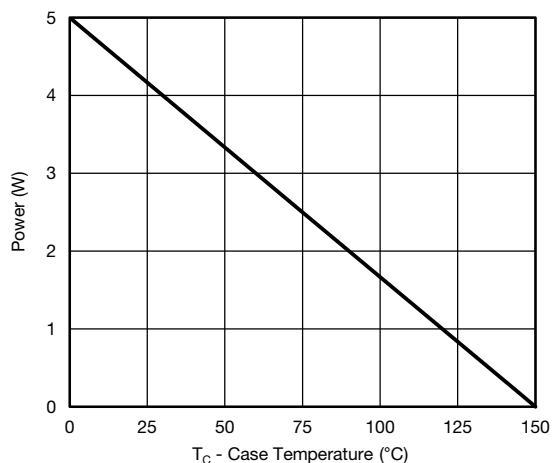
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



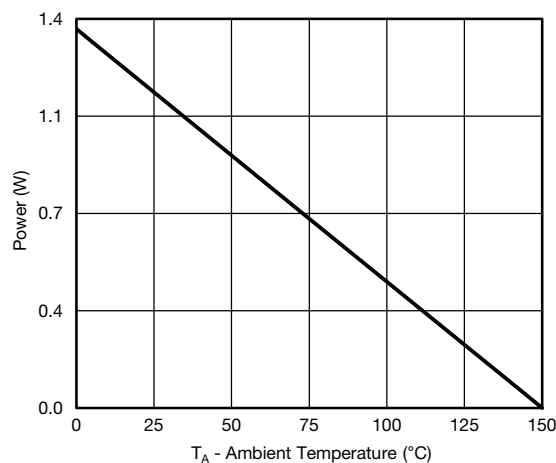
Safe Operating Area, Junction-to-Ambient



Current Derating*



Power Junction-to-Foot

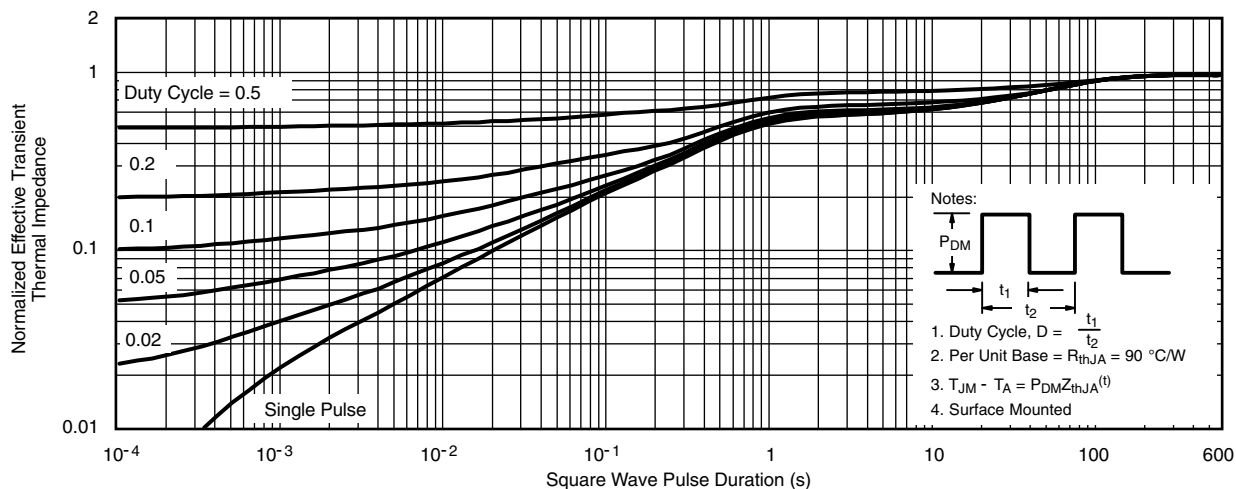


Power Junction-to-Ambient

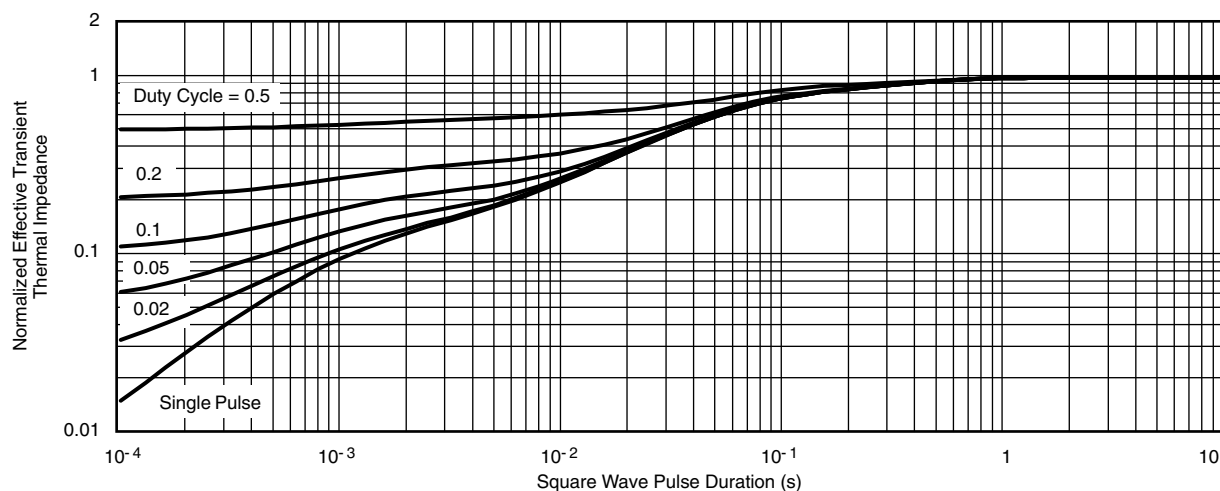
* The power dissipation P_D is based on $T_{J(max)} = 150^\circ\text{C}$, using junction-to-case thermal resistance, and is more useful in settling the upper dissipation limit for cases where additional heatsinking is used. It is used to determine the current rating, when this rating falls below the package limit.



TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



Normalized Thermal Transient Impedance, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Foot

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TSOP: 5/6-LEAD

JEDEC Part Number: MO-193C



5-LEAD TSOP

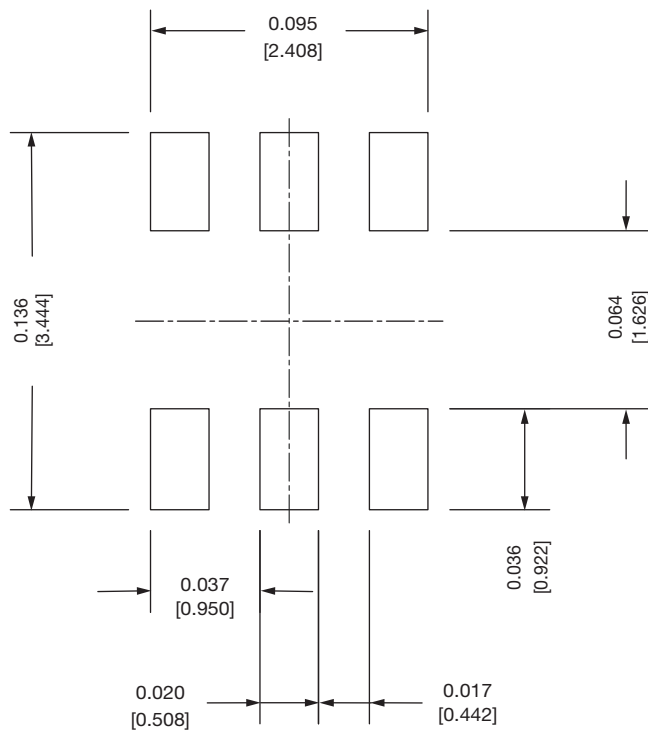
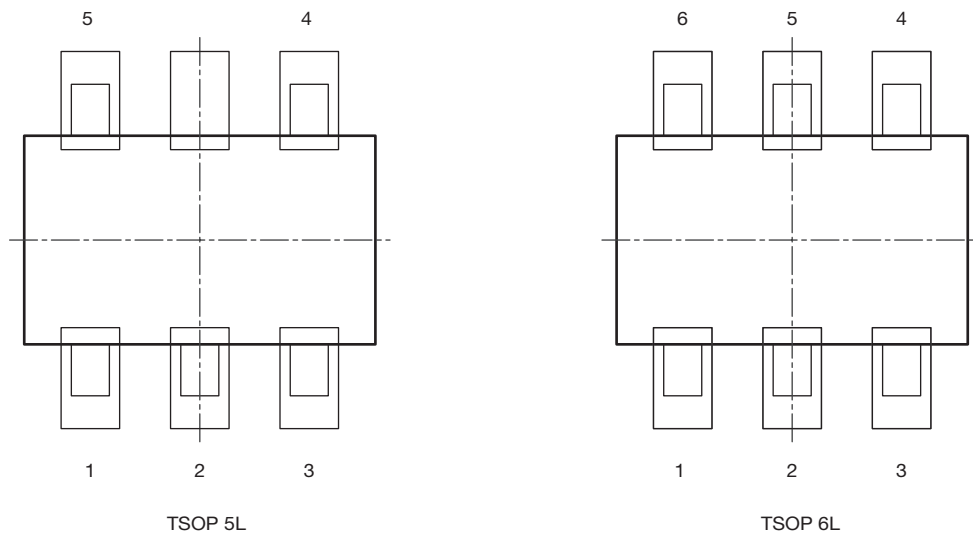


6-LEAD TSOP



Dim	MILLIMETERS			INCHES		
	Min	Nom	Max	Min	Nom	Max
A	0.91	-	1.10	0.036	-	0.043
A ₁	0.01	-	0.10	0.0004	-	0.004
A ₂	0.90	-	1.00	0.035	0.038	0.039
b	0.30	0.32	0.45	0.012	0.013	0.018
c	0.10	0.15	0.20	0.004	0.006	0.008
D	2.95	3.05	3.10	0.116	0.120	0.122
E	2.70	2.85	2.98	0.106	0.112	0.117
E ₁	1.55	1.65	1.70	0.061	0.065	0.067
e	0.95 BSC			0.0374 BSC		
e ₁	1.80	1.90	2.00	0.071	0.075	0.079
L	0.32	-	0.50	0.012	-	0.020
L ₁	0.60 Ref			0.024 Ref		
L ₂	0.25 BSC			0.010 BSC		
R	0.10	-	-	0.004	-	-
θ	0°	4°	8°	0°	4°	8°
θ ₁	7° Nom			7° Nom		
ECN: C-06593-Rev. I, 18-Dec-06						
DWG: 5540						

Recommended Land Pattern For TSOP-5L / TSOP-6L


Note

- All dimensions are in inches (millimeter)

ECN: C22-0860-Rev. B, 24-Oct-2022
DWG: 3010



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