



Mini-Circuits®

SURFACE MOUNT

Directional Coupler

TCD-10-1W+

50Ω 10 to 750 MHz

FEATURES

- Wideband, 10 to 750 MHz
- Low Mainline Loss, 1.2 dB Typ.
- Aqueous Washable
- Leads for Excellent Solderability
- Protected by US Patent 6,140,887



Generic photo used for illustration purposes only

CASE STYLE: DB714

+RoHS Compliant

The +Suffix identifies RoHS Compliance.
See our website for methodologies and qualifications

APPLICATIONS

- VHF/UHF
- Signal Sampling
- Communications

ELECTRICAL SPECIFICATIONS AT +25°C

Parameter	Frequency (MHz)	Min.	Typ.	Max.	Unit
Frequency Range		10		750	MHz
Mainline Loss ¹	10-100		1.3	2.1	dB
	100-350		1.2	1.6	
	350-750		1.4	2.0	
Coupling	10-750		10.3±0.5		dB
Coupling Flatness (±)	10-750		±0.8		dB
Directivity	10-100	17	22		dB
	100-350	14	18		
	350-750		15		
VSWR	10-750		1.3		:1
Input Power	10-100			0.5	W
	100-750			1.0	

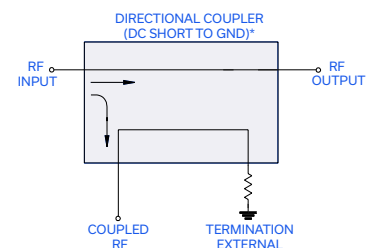
1. Mainline loss includes theoretical power loss at coupled port.

ABSOLUTE MAXIMUM RATINGS

Parameter	Ratings
Operating Temperature	-40°C to +85°C ²
Storage Temperature	-55°C to +100°C

2. Case temperature is defined as temperature on ground leads.
Permanent damage may occur if any of these limits are exceeded.

ELECTRICAL SCHEMATIC



*Electrical schematic is for Directional coupler with internal transformer(s) and external termination

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TCD-10-1W+
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260205

PAGE 1 OF 3



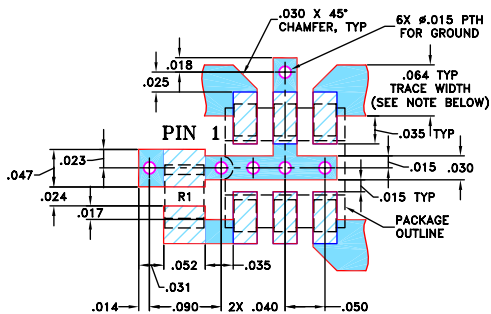
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INPUT	3
OUTPUT	4
COUPLED	1
GROUND	2
50Ω TERM EXTERNAL	6
NOT USED	5

DEMO BOARD MCL P/N: TB-TCD-10-1W+
SUGGESTED PCB LAYOUT (PL-009)

 DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

Lead #1 identifier shall be located in the cross-hatched area shown. Identifier may be either a molded or marked feature.

The diagram illustrates a component with six leads, numbered 1 through 6. Lead 1 is highlighted with a cross-hatched area. Dimensions and tolerances are specified as follows:

- A**: Overall height of the component.
- B**: Overall width of the component.
- C MAX**: Maximum length of the component.
- D TYP**: Typical distance from the top edge to the top of the leads.
- E**: Distance from the top edge to the top of lead 1, with a tolerance of $+0.005$ to -0.009 TYP.
- F TYP**: Typical distance from the bottom edge to the bottom of the leads.
- G TYP**: Typical distance between the leads.
- COMPONENT AREA**: The area of the component body.
- PICK & PLACE SURFACE AREA (.03X.075)MIN.**: The area of the component body used for pick and place.
- PLASTIC SHAPE ADJACENT TO LEADS MAY VARY**: A note indicating that the plastic shape adjacent to the leads may vary.

The diagram shows a three-layered structure. The top layer has a thickness labeled 'D TYP'. The middle layer has a thickness labeled 'K TYP'. The bottom layer has a thickness labeled 'H TYP'. The total height of the structure is labeled 'J'. Arrows indicate the dimensions for each layer and the total height.

OUTLINE DIMENSIONS (Inches)

A	B	C	D	E	F
.160	.150	.160	.050	.040	.025
4.06	3.81	4.06	1.27	1.02	0.64
G	H	J	K		wt
.028	.065	.190	.030		grams
0.71	1.65	4.83	0.76		0.15

TAPE & REEL INFORMATION: F47



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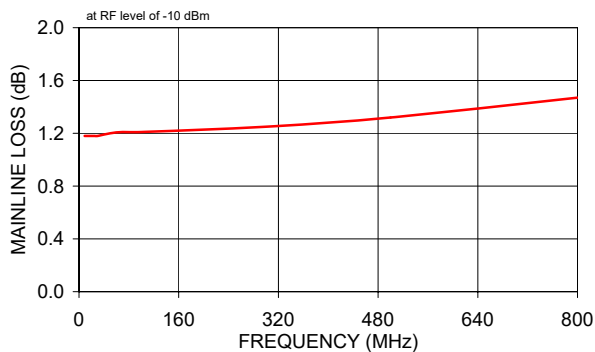
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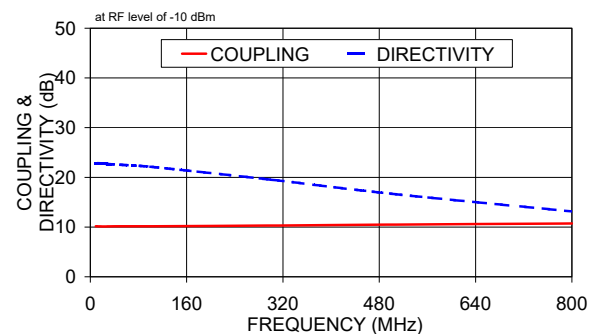
TYPICAL PERFORMANCE DATA

Frequency (MHz)	Mainline Loss (dB)	Coupling (dB)	Directivity (dB)	Return Loss (dB)		
	In-Out			In	Out	Cpl
9	1.18	10.17	22.87	17.95	27.94	17.96
15	1.18	10.14	22.85	18.48	30.46	18.53
24	1.18	10.13	22.75	18.67	31.68	18.74
30	1.18	10.14	22.68	18.71	31.90	18.79
50	1.20	10.16	22.53	18.77	31.89	18.87
70	1.21	10.16	22.38	18.78	31.59	18.90
100	1.21	10.17	22.13	18.78	30.97	18.93
300	1.25	10.31	19.54	18.13	26.04	18.34
500	1.32	10.49	16.70	17.08	22.79	17.34
800	1.47	10.73	13.13	15.61	19.73	15.58

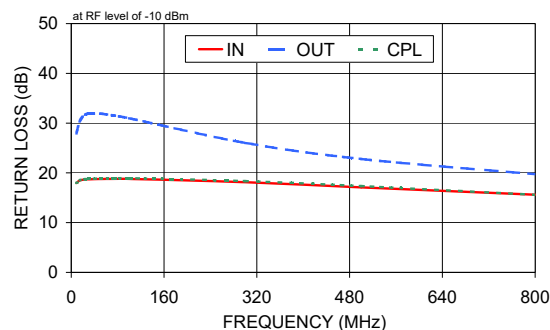
MAINLINE LOSS



COUPLING & DIRECTIVITY



RETURN LOSS



NOTES

- A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
- B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
- C. The parts covered by this specification document are subject to Mini-Circuits standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the standard. Terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at www.minicircuits.com/terms/viewterm.html

