



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

APPLICATIONS

- VHF/UHF
- Signal sampling
- Communications



Generic photo used for illustration purposes only

CASE STYLE: DB714

+RoHS Compliant

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

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		—	10.3±0.5	—	dB
Coupling Flatness (±)		—	±0.8	—	dB
Directivity	10-100	17	22	—	dB
	100-350	14	18	—	
	350-750	—	15	—	
VSWR	10-750	—	13	—	:1
Input Power	10-100	—	—	0.5	W
	100-750	—	—	1.0	

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

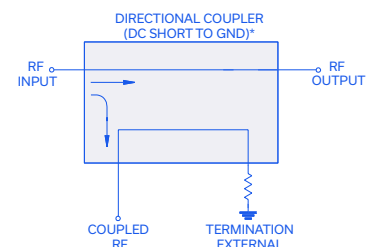
MAXIMUM RATINGS

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

Permanent damage may occur if any of these limits are exceeded.

* Case temperature is defined as temperature on ground leads.

ELECTRICAL SCHEMATIC



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

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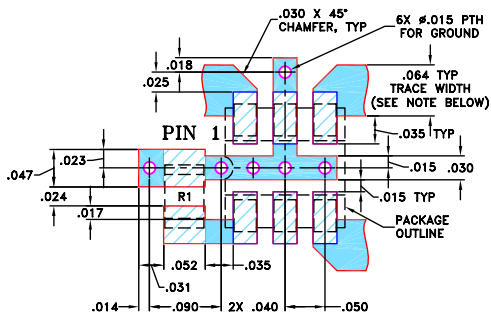
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INPUT	3
OUTPUT	4
COUPLED	1
GROUND	2
50Ω TERM EXTERNAL	6
NOT USED	5

DEMO BOARD MCL P/N: TB-71
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 the layout of a component with six leads. Leads 1, 2, and 3 are at the top, while leads 4, 5, and 6 are at the bottom. Lead 1 is specifically identified with a cross-hatched area. Dimensions include: A (height), B (width), C MAX (width of the central area), D TYP (lead height), E (+.005 / -.009 TYP) (lead width), G TYP (lead pitch), and F TYP (lead pitch). A central rectangular area is labeled 'PICK & PLACE SURFACE AREA (.03X.075)MIN.'. The top area is labeled 'COMPONENT AREA'. A note states 'PLASTIC SHAPE ADJACENT TO LEADS MAY VARY'. Tolerances of .000 and .008 are indicated for the central area.

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 . The layers are represented by hatched rectangles.

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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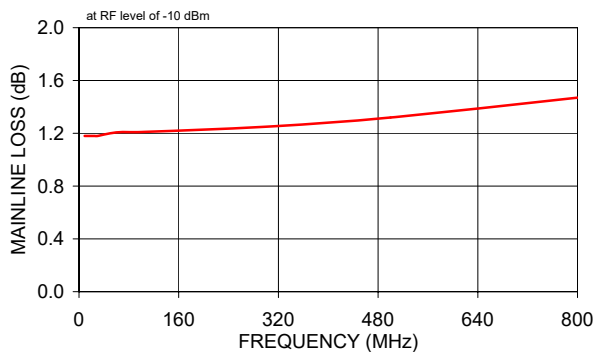
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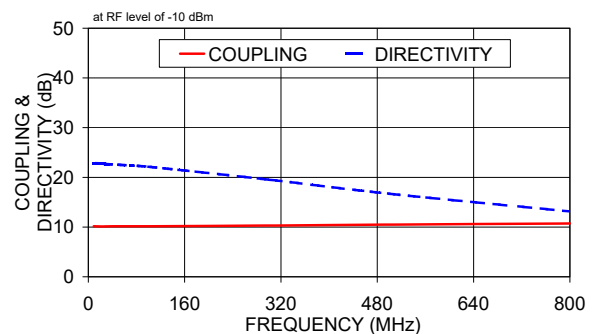
TYPICAL PERFORMANCE DATA

Frequency (MHz)	Mainline Loss (dB)	Coupling (dB)	Directivity (dB)	Return Loss (dB)		
	In-Out			In	Out	Cpl
9.00	1.18	10.17	22.87	17.95	27.94	17.96
15.00	1.18	10.14	22.85	18.48	30.46	18.53
24.00	1.18	10.13	22.75	18.67	31.68	18.74
30.00	1.18	10.14	22.68	18.71	31.90	18.79
50.00	1.20	10.16	22.53	18.77	31.89	18.87
70.00	1.21	10.16	22.38	18.78	31.59	18.90
100.00	1.21	10.17	22.13	18.78	30.97	18.93
300.00	1.25	10.31	19.54	18.13	26.04	18.34
500.00	1.32	10.49	16.70	17.08	22.79	17.34
800.00	1.47	10.73	13.13	15.61	19.73	15.58

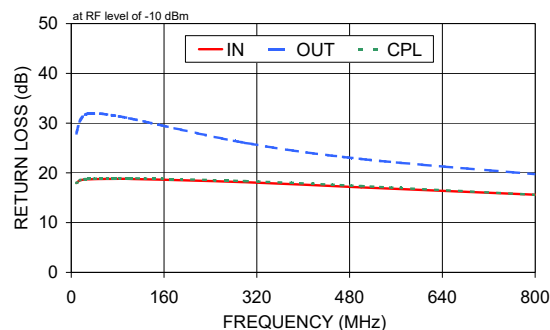
MAINLINE LOSS



COUPLING & DIRECTIVITY



RETURN LOSS



NOTES

- 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.
- Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
- 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

