# Surface Mount Directional Coupler

# TCD-10-1W+

 $50\Omega$  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 web site for RoHS Compliance methodologies and qualifications

Available Tape and Reel at no extra cost						
Reel Size	Devices/Reel					
7"	20, 50, 100, 200, 500					
13"	1000, 2000					

# **Electrical Specifications**

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

<sup>1.</sup> Mainline loss includes theoretical power loss at coupled port.

# **Maximum Ratings**

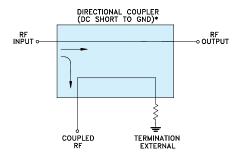
Parameter	Ratings		
Operating Temperature	-40°C to 85°C*		
Storage Temperature	-55°C to 100°C		

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

### **Pin Connections**

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

#### **Electrical Schematic**

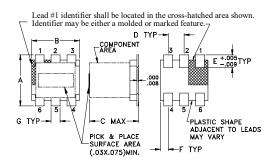


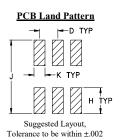
\* ELECTRICAL SCHEMATIC IS FOR DIRECTIONAL COUPLER WITH INTERNAL TRANSFORMER(S) AND EXTERNAL TERMINATION.



<sup>\*</sup> Case temperature is defined as temperature on ground leads.

## **Outline Drawing**

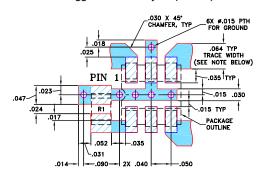




# Outline Dimensions (inch )

F	E	D	С	В	Α
.025	.040	.050	.160	.150	.160
0.64	1.02	1.27	4.06	3.81	4.06
wt		K	J	н	G
grams		.030	.190	.065	.028
0.15		0.76	4.83	1.65	0.71

#### Demo Board MCL P/N: TB-71 Suggested PCB Layout (PL-009)



RESISTOR R1: 49.9 ± 1% Ohm, 0805 SIZE

NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS 0.030" ± 0.002"; COPPER: 1/2 0Z. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.

TO BE MODIFIED.

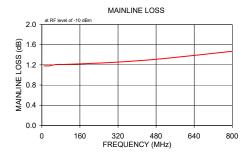
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

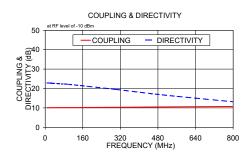
DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)

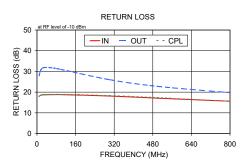
DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

# **Typical Performance Data**

Frequency (MHz)	Mainline Loss (dB)	Coupling Directivity (dB) (dB)		ı	Return Loss (dB)	
(11112)	In-Out	In-Cpl	(45)	In	Out	СрІ
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







#### **Additional 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.
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