



SURFACE MOUNT

# Directional Coupler

## TCD-13-4+

Mini-Circuits

50Ω 5 to 1000 MHz

### FEATURES

- Wideband, 5 to 1000 MHz
- Low mainline loss, 0.7 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

### APPLICATIONS

- VHF/UHF
- CATV
- Cellular

#### +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	—	5	—	1000	MHz
Mainline Loss <sup>1</sup>	5-50	—	0.7	1.3	dB
	50-500	—	0.7	1.3	
	500-1000	—	0.8	1.5	
Coupling	5-1000	—	13±0.5	—	dB
Coupling Flatness (±)	5-1000	—	±0.6	—	dB
Directivity	5-50	17	21	—	dB
	50-500	12	18	—	
	500-1000	—	15	—	
VSWR	5-1000	—	1.2	—	:1
Input Power	5-50	—	—	0.5	W
	50-1000	—	—	1.0	

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

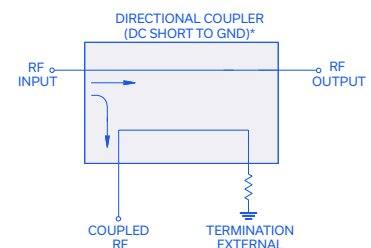
### MAXIMUM RATINGS

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

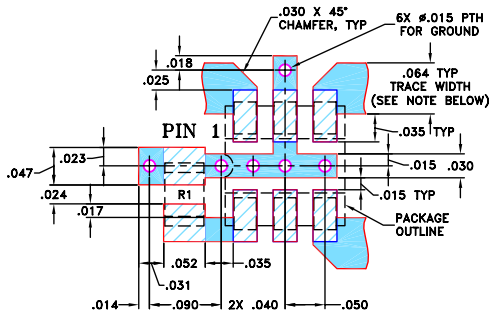


### PIN CONNECTIONS

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

PRODUCT MARKING: N/A

### DEMO BOARD MCL P/N: TB-71 SUGGESTED PCB LAYOUT (PL-009)



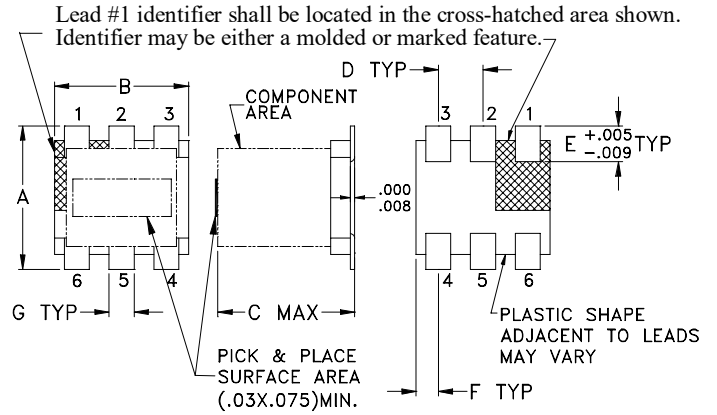
RESISTOR R1: 49.9 ± 1% Ohm, 0805 SIZE

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

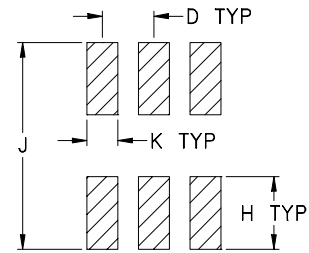
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

- DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)
- DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

### OUTLINE DRAWING



### PCB Land Pattern



Suggested Layout,  
Tolerance to be within ±.002

### OUTLINE DIMENSIONS (Inches mm)

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