

# Surface Mount Directional Coupler

## TCD-20-4-75+

75Ω

40 to 1200 MHz



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

### Features

- wideband, 40-1200 MHz
- excellent flatness,  $\pm 0.5$  dB typ. each band
- better performance than MA-COM EMDC-20-2-75
- footprint compatible to EMDC-10-1-75
- aqueous washable

### Applications

- CATV

### Electrical Specifications

Parameter	Frequency (MHz)	Min.	Typ.	Max.	Unit
Frequency Range		40		1200	MHz
Mainline Loss <sup>1</sup>	40 - 500	—	0.5	0.9	dB
	500 - 870	—	0.6	1.0	
	870 - 1200	—	0.6	1.1	
Nominal Coupling	40 - 500		21 $\pm$ 0.5		dB
	500 - 870		20 $\pm$ 0.5		
	870 - 1200		19.5 $\pm$ 0.5		
Coupling Flatness( $\pm$ )	40 - 1200	—	$\pm 0.8$	—	dB
Directivity	40 - 500	15	20	—	dB
	500 - 870	16	23	—	
	870 - 1200	14	20	—	
VSWR	40 - 1200	—	1.15	—	:1
Input Power	40 - 1200	—	—	1.0	W

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

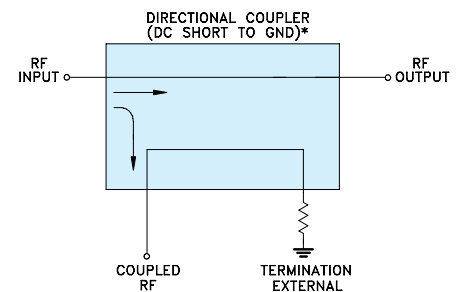
Permanent damage may occur if any of these limits are exceeded.

\* Case temperature is defined as temperature on ground leads.

### Pin Connections

Function	Pin Number
INPUT	3
OUTPUT	4
COUPLED	1
GROUND	2
75Ω TERM EXTERNAL	6
NOT USED	5

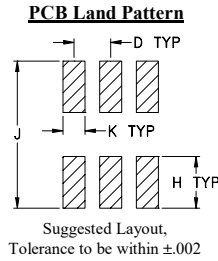
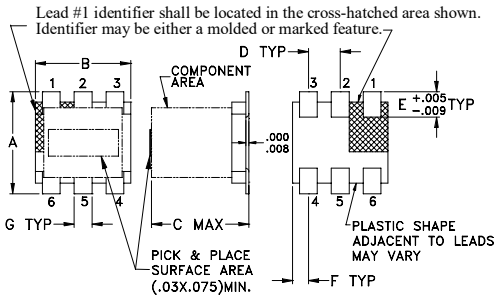
### Electrical Schematic



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



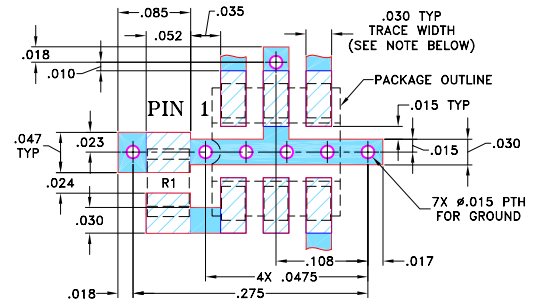
## Outline Drawing



## Outline Dimensions (inch/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	

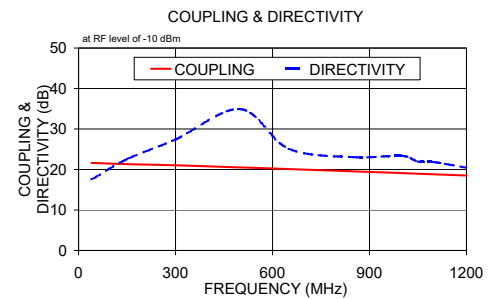
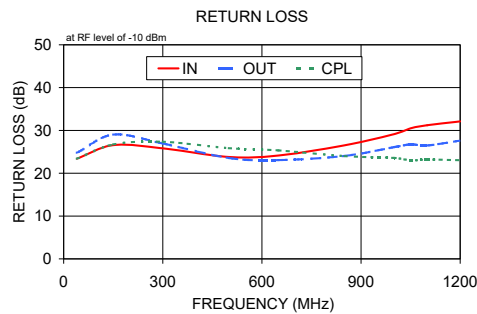
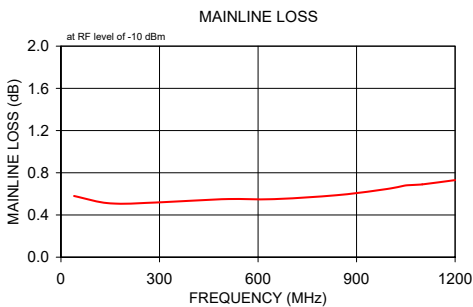
## Demo Board MCL P/N: TB-72 Suggested PCB Layout (PL-010)



- NOTES:**
- TRACE WIDTH IS SHOWN FOR ROGERS R04350B WITH DIELECTRIC THICKNESS  $0.030" \pm 0.002"$ ; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
  - 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) In-Out	Coupling (dB) In-Cpl	Directivity (dB)	Return Loss (dB)		
				In	Out	Cpl
40.00	0.58	21.64	17.52	23.40	24.77	23.38
150.00	0.51	21.32	22.55	26.56	29.03	26.72
300.00	0.52	21.04	27.40	25.81	26.94	27.36
500.00	0.55	20.52	34.93	23.79	23.55	25.86
650.00	0.55	20.11	25.14	24.15	23.07	25.34
850.00	0.59	19.53	23.06	26.52	24.05	24.00
1000.00	0.65	19.12	23.38	29.12	26.11	23.57
1050.00	0.68	18.96	21.95	30.51	26.75	22.99
1100.00	0.69	18.81	21.82	31.20	26.49	23.19
1200.00	0.73	18.51	20.42	32.12	27.62	23.06



## Additional 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.
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