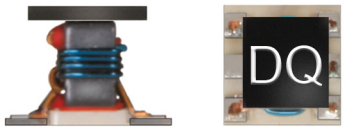
Surface Mount top hat® Directional Coupler

TCD-16-23-75X+

75Ω 5 to 2000 MHz



CASE STYLE: DB1627

+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

Maximum Ratings

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

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

Pin Connections

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

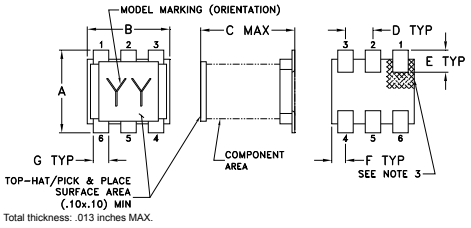
Features

- wideband, 5 to 2000 MHz
- low mainline loss, 1.3 dB typ.
- aqueous washable
- leads for excellent solderability
- protected by US Patent 6,140,887

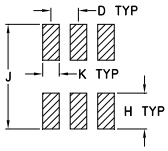
Applications

- VHF/UHF
- CATV
- cellular

Outline Drawing



PCB Land Pattern



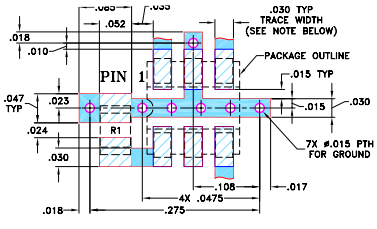
Suggested Layout, Tolerance to be within .002

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)



RESISTOR R1: 75 ± 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

Electrical Specifications at 25°C

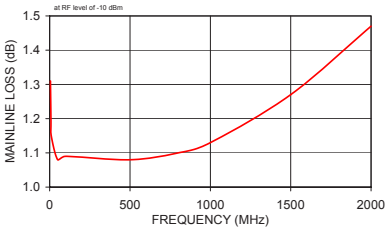
Parameter	Condition (MHz)	Min.	Typ.	Max.	Unit
Frequency Range		5		2000	MHz
Mainline Loss[1] (above theoretical 0.1 dB)	5 950 2000	— — —	1.5 1.3 1.7	2.0 1.8 2.3	dB
Nominal Coupling	5-2000	—	16.5±1	—	dB
Coupling Flatness(±)	5-2000	—	0.6	1.0	dB
Directivity	5 950 2000	12 15 10	14 22 14	— — —	dB
Return Loss (Input)	5 950 2000	11 18 15	13 25 20	— — —	dB
Return Loss (Output)	5 950 2000	12 18 15	14 23 20	— — —	dB
Return Loss (Coupling)	5 950 2000	8 18 15	11 23 20	— — —	dB
Input Power	5-50 50-2000	— —	— —	0.5 1.0	W

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

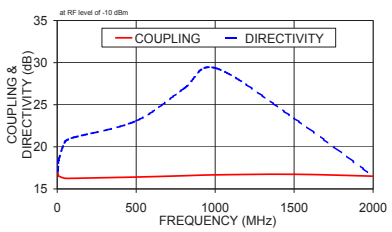
Typical Performance Data

Frequency (MHz)	Mainline Loss (dB) In-Out	Coupling (dB) In-Cpl	Directivity (dB)	Return Loss (dB) In	Return Loss (dB) Out	Return Loss (dB) Cpl
5.00	1.31	16.87	17.05	15.63	17.21	13.09
8.00	1.19	16.60	18.07	17.04	19.14	14.46
10.00	1.15	16.51	18.49	17.61	19.89	14.97
50.00	1.08	16.26	20.61	19.12	22.11	16.37
100.00	1.09	16.26	21.09	19.31	22.34	16.49
500.00	1.08	16.41	23.08	22.62	25.13	19.03
800.00	1.10	16.56	26.89	28.13	28.97	22.73
1000.00	1.13	16.67	29.36	34.94	33.95	25.16
1500.00	1.27	16.74	23.38	25.05	28.04	26.12
2000.00	1.47	16.51	16.53	24.59	24.08	26.53

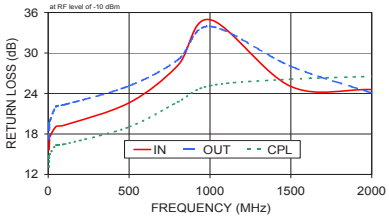
TCD-16-23-75X+
MAINLINE LOSS



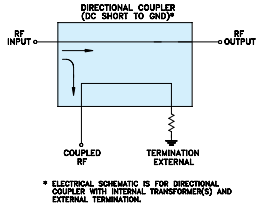
TCD-16-23-75X+
COUPLING & DIRECTIVITY



TCD-16-23-75X+
RETURN LOSS



Electrical Schematic



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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