SURFACE MOUNT top hat

Directional Coupler

TCD-20-4-75X+

75Ω 40 to 1200 MHz

FEATURES

- Wideband, 40 to 1200 MHz
- Excellent Flatness, ±0.8 dB Typ. Each Band
- Aqueous Washable



Generic photo used for illustration purposes only

CASE STYLE: DB1627

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

APPLICATIONS

- CATV

ELECTRICAL SPECIFICATIONS AT +25°C

Parameter	Frequency (MHz)	Min.	Typ.	Max.	Unit
Frequency Range		40		1200	MHz
Mainline Loss[1]	40-500		0.5	0.9	dB
	500-870		0.6	1.0	
	870-1200		0.6	1.1	
Coupling	40-500		21±0.5		dB
	500-870		20±0.5		
	870-1200		19.5±0.5		
Coupling Flatness (±)	40-1200		±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

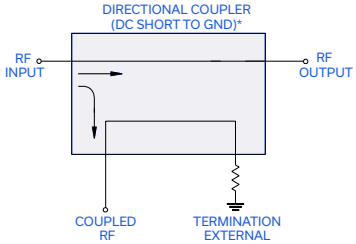
1. Mainline loss includes theoretical power loss at coupled port.

ABSOLUTE MAXIMUM RATINGS

Parameter	Ratings
Operating Temperature	-40°C to +85°C[2]
Storage Temperature	-55°C to +100°C

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

ELECTRICAL SCHEMATIC



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

REV. B
ECO-014204
TCD-20-4-75X+
MCL NY
251112

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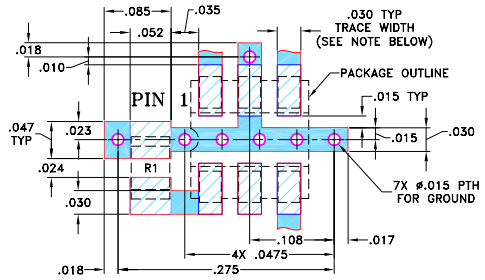
PIN CONNECTIONS

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

PRODUCT MARKING: DJ

DEMO BOARD MCL P/N: TB-TCD20-4-75X+

SUGGESTED PCB LAYOUT (PL-010)



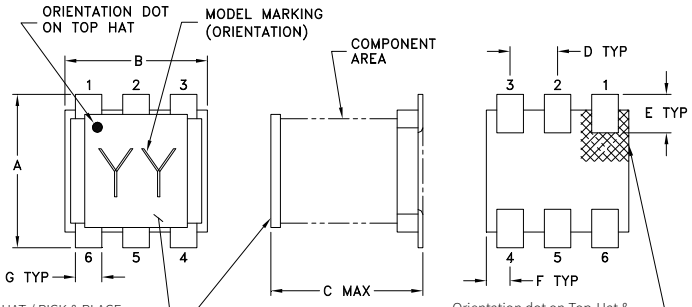
RESISTOR R1: 75 ± 1% Ohm, 0805 SIZE

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

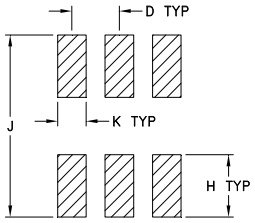
OUTLINE DRAWING



TOP-HAT / PICK & PLACE SURFACE AREA (.10X.10) MIN
TOP-HAT TOTAL THICKNESS: .013 inches MAX.

Orientation dot on Top-Hat & orientation feature on substrate corresponds to pin #1.

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

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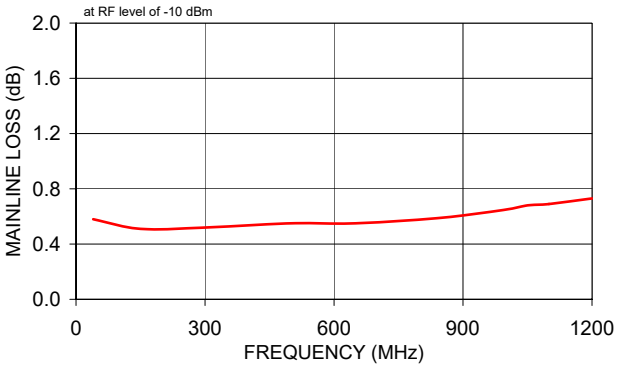
TCD-20-4-75X+

75Ω 40 to 1200 MHz

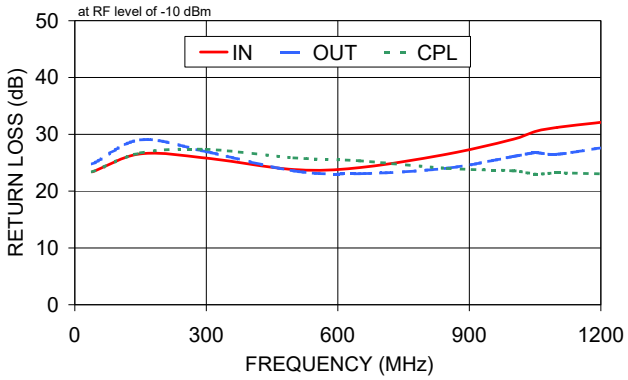
TYPICAL PERFORMANCE DATA

Frequency (MHz)	Mainline Loss (dB) In-Out	Coupling (dB) In-Cpl	Directivity (dB)	Return Loss (dB) In	Out	Cpl
40	0.58	21.64	17.52	23.40	24.77	23.38
150	0.51	21.32	22.55	26.56	29.03	26.72
300	0.52	21.04	27.40	25.81	26.94	27.36
500	0.55	20.52	34.93	23.79	23.55	25.86
650	0.55	20.11	25.14	24.15	23.07	25.34
850	0.59	19.53	23.06	26.52	24.05	24.00
1000	0.65	19.12	23.38	29.12	26.11	23.57
1050	0.68	18.96	21.95	30.51	26.75	22.99
1100	0.69	18.81	21.82	31.20	26.49	23.19
1200	0.73	18.51	20.42	32.12	27.62	23.06

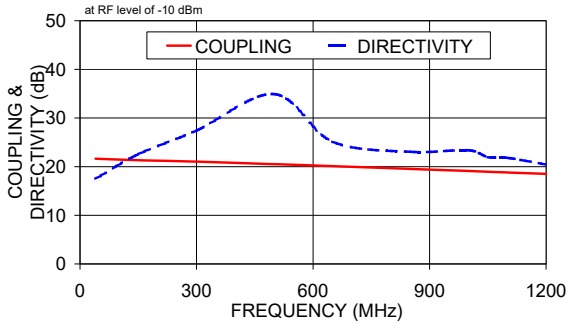
MAINLINE LOSS



RETURN LOSS



COUPLING & DIRECTIVITY



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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