SURFACE MOUNT top hat

Directional Coupler

DBTC-20-4X+

50Ω 20 dB 20 to 1000 MHz

FEATURES

- Very Flat Coupling
- Very Broadband, Multi Octave
- Temperature Stable, LTCC Base
- All Welded Construction
- Leads Attached for Better Solderability
- Micro Miniature Coupler
- Aqueous Washable
- Protected by US Patents 6,140,887 & 6,784,521



Generic photo used for illustration purposes only

CASE STYLE: AT1667-1

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

APPLICATIONS

- VHF/UHF Receivers/Transmitters
- Cellular

ELECTRICAL SPECIFICATIONS AT +25°C

Parameter	Condition (MHz)	Min.	Typ.	Max.	Unit
Frequency Range		20		1000	MHz
Mainline Loss[1]	20-200		0.3	1.0	dB
	200-500		0.4	1.0	
	500-1000		0.7	1.3	
Nominal Coupling	20-1000		20.4±0.5		dB
Coupling Flatness	20-1000			±0.8	dB
Directivity	20-200	13	21		dB
	200-500	14	21		
	500-1000		16		
VSWR[2]	20-1000		1.2		:1
Input Power	20-200			1.0	W
	200-500			1.0	
	500-1000			1.0	

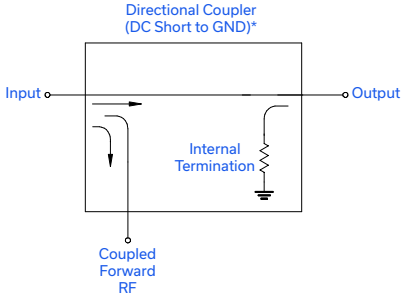
1. Includes theoretical coupled power loss of 0.04 dB at 20 dB coupling.
2. For coupled port VSWR above 500 MHz, 1.6:1 typ.

ABSOLUTE 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.

ELECTRICAL SCHEMATIC



* Electrical schematic is for directional coupler with internal transformer(s) that routes DC from RF ports to ground.

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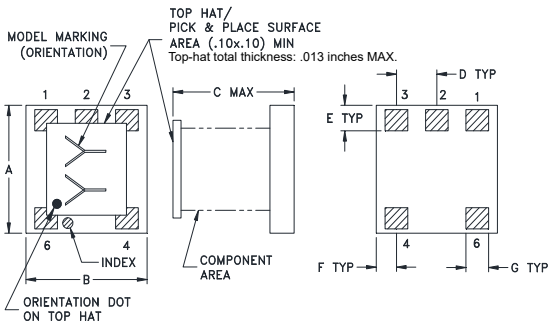
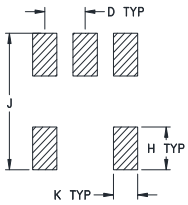
PIN CONNECTIONS

INPUT	3
OUTPUT	4
COUPLED	1
GROUND	2
ISOLATE (DO NOT USE)	6

OUTLINE DRAWING



PCB Land Pattern

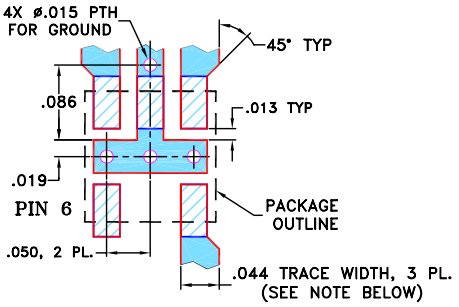


Suggested Layout,
Tolerance to be within±.002

PRODUCT MARKING: DN

DEMO BOARD MCL P/N: TB-DBTC-20-4X+

SUGGESTED PCB LAYOUT (PL-150)



NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS 0.020" ± 0.0015"; 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 DIMENSIONS (Inches / mm)

A	B	C	D	E	F
.150	.150	.150	.050	.030	.025
3.81	3.81	3.81	1.27	0.76	0.64

G	H	J	K	wt
.028	.050	.160	.030	grams
0.71	1.27	4.06	0.76	0.10

TAPE & REEL INFORMATION: F15

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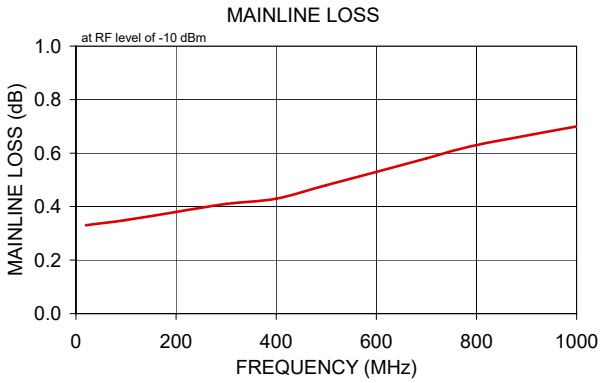
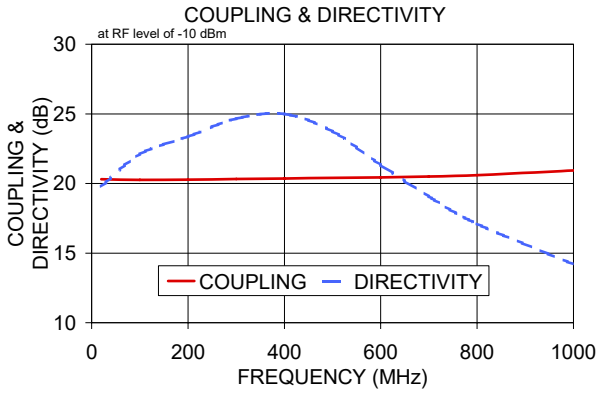
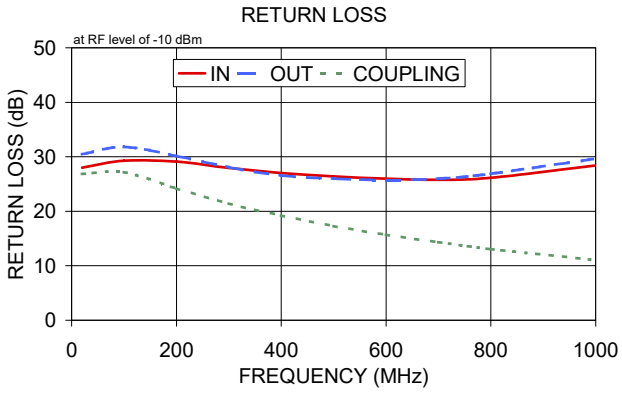
TYPICAL PERFORMANCE DATA

Frequency (MHz)	Mainline Loss (dB) In-Out	Coupling (dB) In-Cpl	Directivity (dB)	Return Loss (dB) In	Out	Cpl
20	0.33	20.30	19.79	28.00	30.48	26.85
100	0.35	20.25	22.11	29.28	31.80	27.18
200	0.38	20.28	23.36	29.12	30.13	24.16
300	0.41	20.32	24.66	27.95	28.09	21.44
400	0.43	20.36	25.00	27.01	26.54	19.23
500	0.48	20.40	23.74	26.41	25.97	17.30
600	0.53	20.43	21.33	25.99	25.74	15.69
700	0.58	20.50	19.06	25.78	26.00	14.31
800	0.63	20.59	17.10	26.16	26.88	13.07
1000	0.70	20.94	14.20	28.41	29.64	11.03







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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