# **DBTC-12-4X+**

12 dB 5 to 1000 MHz  $50\Omega$ 

#### **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

# **Applications**

- VHF/UHF receivers/transmitters
- cellular

Generic photo used for illustration purposes only CASE STYLE: AT1667-1

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



# Electrical Specifications at 25°C

Parameter	Condition (MHz)	Min. Typ.		Max.	Unit	
Frequency Range		5		1000	MHz	
	5-50		0.9	1.8		
Mainline Loss <sup>1</sup>	50-500		0.7	1.3	dB	
	500-1000		1.1	1.6		
Nominal Coupling	5-1000		12.2±0.5		dB	
Coupling Flatness(±)	5-1000			±0.9	dB	
	5-50	22	33			
Directivity	50-500	14	21		dB	
	500-1000	_	15			
VSWR <sup>2</sup>	5-1000		1.2		dB	
	5-50			0.5		
Input Power	50-500			1.0	W	
	500-1000			1.0		

<sup>1.</sup> Includes theoretical coupled power loss of 0.27 dB at 12 dB coupling

## **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.

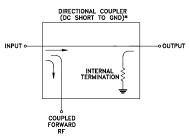
## **Pin Connections**

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

# **Product Marking**

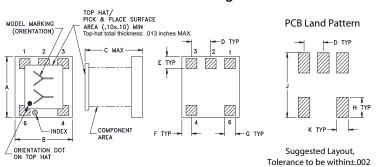


#### **Electrical Schematic**



<sup>2.</sup> For coupled port VSWR above 500 MHz, 1.5:1 typ.

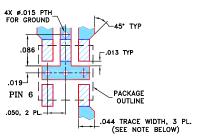
# **Outline Drawing**



# Outline Dimensions (inch )

F	Е	D	С	В	Α
.025	.030	.050	.150	.150	.150
0.64	0.76	1.27	3.81	3.81	3.81
wt		K	J	Н	G
grams		.030	.160	.050	.028
J 1 1 1		0.76	4.06	1 27	0.71

#### Demo Board MCL P/N: TB-278 Suggested PCB Layout (PL-150)



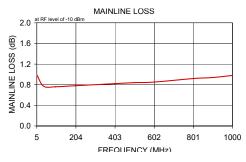
NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS 0.020" ± 0.0015"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED. 2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

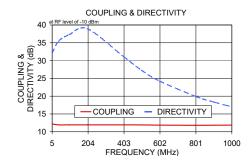
DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)

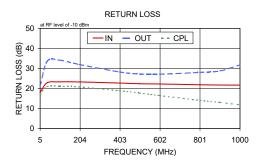
DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

# **Typical Performance Data**

Frequency (MHz)	Mainline Loss (dB)	Coupling (dB)	Directivity (dB)	ty Return (dB			
	In-Out	In-CpI		In	Out	Cpl	
5.00	0.88	12.07	34.34	19.19	23.31	17.81	
10.00	0.79	11.96	34.86	21.25	27.96	19.68	
50.00	0.73	11.90	35.53	22.99	35.09	21.01	
100.00	0.75	11.93	37.41	22.94	34.58	21.11	
500.00	0.85	11.99	25.82	22.00	26.19	18.96	
600.00	0.88	11.99	22.32	21.56	25.58	17.94	
800.00	0.95	12.03	17.75	20.94	25.46	15.62	
900.00	1.00	12.07	16.15	20.79	26.14	14.55	
1000.00	1.06	12.13	14.74	20.48	26.70	13.43	







#### **Additional 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.
- C. The parts covered by this specification document are subject to Mini-Circuits standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the Standard Terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at www.minicircuits.com/MCLStore/terms.jsp