



Mini-Circuits®

SURFACE MOUNT

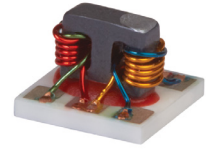
Directional Coupler

DBTC-17-5+

50Ω 17 dB 50 to 2000 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: AT790-1

+RoHS Compliant

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

APPLICATIONS

- Cellular
- PCS
- DECT/PHS
- GSM

ELECTRICAL SPECIFICATIONS AT +25°C

Parameter	Condition (MHz)	Min.	Typ.	Max.	Unit
Frequency Range		5		1500	MHz
Mainline Loss ¹	50-1000		0.9	1.4	dB
	1000-1500		1.0	1.5	
	1500-2000		1.1	1.6	
Nominal Coupling	50-1000		17.0±0.7		dB
	1000-1500		17.2±0.9		
	1500-2000		17.0±1.0		
Coupling Flatness	50-1000			±0.9	dB
	1000-1500			±1.0	
	1500-2000			±0.8	
Directivity	50-1000	13	20		dB
	1000-1500	10	20		
	1500-2000		14		
VSWR ²	50-1000		1.2		:1
	1000-1500		1.2		
	1500-2000		1.2		
Input Power	50-1000			2.0	W
	1000-1500			2.0	
	1500-2000			2.0	

1. Includes theoretical coupled power loss of 0.07 dB at 17 dB coupling.

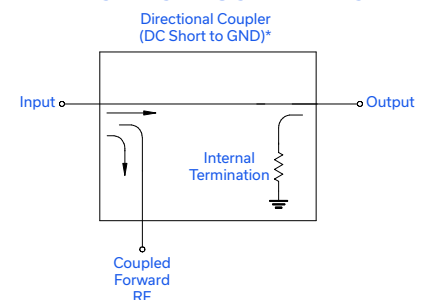
2. For coupled port VSWR above 500 MHz, 1.6:1 typ.

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

Diagram illustrating the layout of a component on a PCB. The component is rectangular with dimensions A, B, and C MAX. The layout includes a central component area and six pick & place surface areas (1-6) arranged around it. Dimensions D, E, F, and G are also indicated for the surface areas.

PICK & PLACE
SURFACE AREA
(.030X.075)MIN

Suggested Layout,
Tolerance to be within $\pm.002$

4X ϕ .015 PTH FOR GROUND

.086

.013 TYP

45° TYP

.019

PIN 6

PACKAGE OUTLINE

.050, 2 PL.

.044 TRACE WIDTH, 3 PL.
(SEE NOTE BELOW)

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

 DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

A	B	C	D	E	F	G	H	J	K	wt
.150	.150	.150	.050	.030	.025	.028	.050	.160	.030	grams
3.81	3.81	3.81	1.27	0.76	0.64	0.71	1.27	4.06	0.76	0.10



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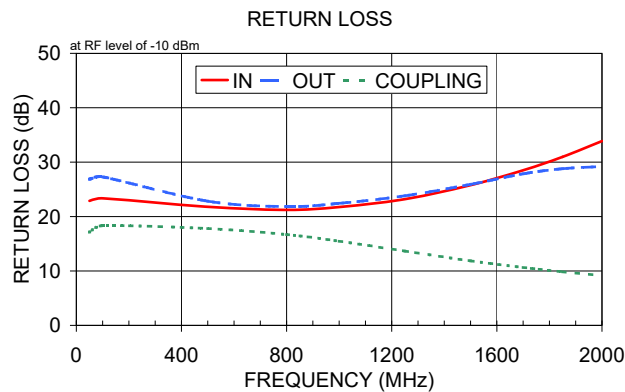
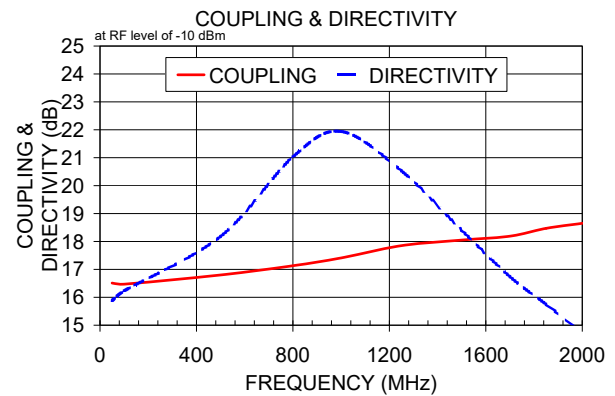
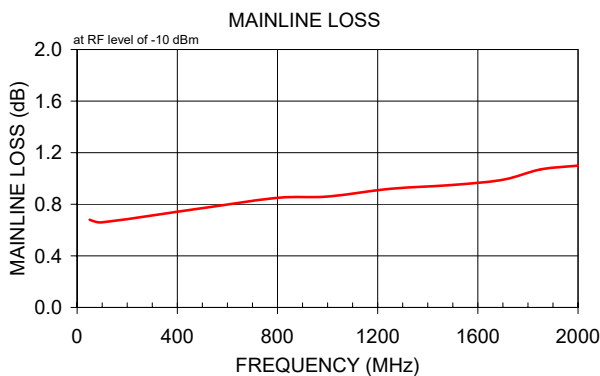
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TYPICAL PERFORMANCE DATA

Frequency (MHz)	Mainline Loss (dB)	Coupling (dB)	Directivity (dB)	Return Loss (dB)		
	In-Out			In	Out	Cpl
50	0.68	16.51	15.88	22.89	26.86	17.13
100	0.66	16.47	16.23	23.35	27.29	18.32
500	0.77	16.80	18.18	21.79	22.83	17.80
800	0.85	17.13	21.03	21.23	21.84	16.69
1000	0.86	17.41	21.94	21.75	22.43	15.47
1250	0.92	17.85	20.53	23.20	23.81	13.65
1500	0.95	18.05	18.40	25.78	25.92	11.86
1700	0.99	18.19	16.74	28.51	27.86	10.64
1850	1.07	18.47	15.75	30.97	28.79	9.85
2000	1.10	18.65	14.74	33.87	29.20	9.16



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/terms/viewterm.html

