

# Surface Mount Directional Couplers

**NEW!**  
DBTC-9-4 DBTC-9-4L

50Ω 5 to 1000 MHz

### Maximum Ratings

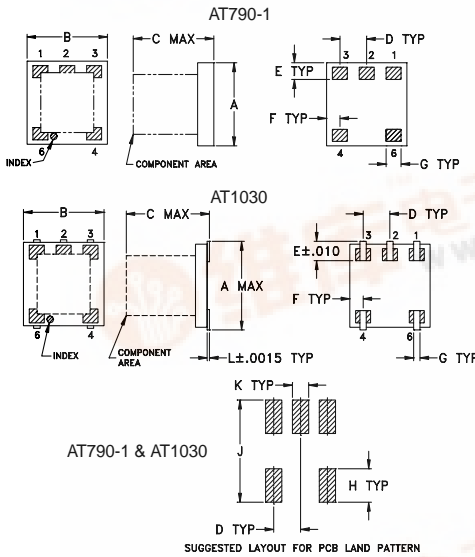
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C

### Pin Connections

INPUT	3
OUTPUT	4
COUPLED	1
GROUND	2
NOT USED*	5,6

\*pins 5&6 must be isolated

### Outline Drawing



### Outline Dimensions (inch/mm)

AT790-1	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	.10

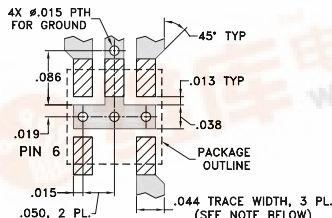
  

AT1030	A	B	C	D	E	F	G	H	J	K	L	wt.
	.166	.150	.155	.050	.037	.025	.012	.060	.184	.030	.004	grams
	4.22	3.81	3.94	1.27	0.94	0.64	0.30	1.52	4.67	0.76	0.10	.10

### Reflow Solder Assembly

Silver-bearing solder (Sn/Pb/Ag 62/36/2%) is recommended; however, tin-lead eutectic (Sn/Pb 63/37%) may be used. For temperature profiles, see Application Note AN-40-004

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



NOTE: 1. TRACE WIDTH IS SHOWN FOR ROGERS R04350 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.

PDF DENOTES PCB COPPER LAYOUT  
PDF DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

### Features

- very flat coupling
- very broadband, multi octave
- temperature stable, BLUE CELL™ base
- all welded construction
- loads attached for better solderability
- micro-miniature coupler
- protected by U.S. Patent 6,140,887 & 6,784,521

### Applications

- VHF/UHF receivers/transmitters
- cellular



Case Style: AT790-1  
Price: \$1.99 ea. QTY (25)  
\$1.69 ea. QTY (1000)



Case Style: AT1030  
Price: \$2.14 ea. QTY (25)  
\$1.84 ea. QTY (1000)

### Directional Coupler Electrical Specifications

FREQ. RANGE (MHz)	COUPLING (dB)		MAINLINE LOSS* (dB)			DIRECTIVITY (dB)			VSWR** (-:1)	POWER INPUT, W							
	Nom.	Max. Flatness	L Typ.	M Typ.	U Typ.	L Typ.	M Typ.	U Typ.		L Max.	MU Max.						
f <sub>c</sub> -f <sub>u</sub>																	
5-1000	9.0±0.5	±0.5	1.2	2.0	1.2	1.8	1.5	2.0	21	17	18	13	15	—	1.20	0.5	1.0

\* Includes theoretical coupled power loss of 0.58 dB at 9 dB coupling. L = low range [f<sub>c</sub> to 10 f<sub>c</sub>] M = mid range [10 f<sub>c</sub> to f<sub>u</sub>/2] U = upper range [f<sub>u</sub>/2 to f<sub>u</sub>]  
\*\* For coupled port VSWR above 500 MHz, 1.6:1 typ.

### Typical Performance Data

Frequency (MHz)	Insertion Loss (dB) In-Out	Coupling (dB) In-Cpl	Directivity (dB)	Return Loss (dB)		
				In	Out	Cpl
5.00	1.18	8.93	21.62	17.90	24.67	18.40
10.00	1.10	8.89	21.70	19.15	29.04	19.50
50.00	1.07	8.87	21.50	20.07	32.70	20.22
100.00	1.09	8.90	20.99	20.12	31.81	20.27
300.00	1.16	8.93	19.47	20.49	30.43	18.93
500.00	1.20	8.90	17.60	21.02	30.62	16.66
600.00	1.23	8.88	16.50	20.89	30.39	15.36
800.00	1.31	8.86	14.74	20.45	30.31	12.91
900.00	1.37	8.85	14.07	20.06	29.26	11.86
1000.00	1.43	8.86	13.44	19.34	27.16	10.86

