

Engineering Development Model

Directional Coupler

DBTC-ED12884/1

Important Note

This model has been designed, built and tested in our engineering department. Performance data represents model capability. At present it is a non-catalog model. On request, we can supply a final specification sheet, part number and price/delivery information.



Please click "Back", and then click "Contact Us" for Applications support.

CASE STYLE : AT1030

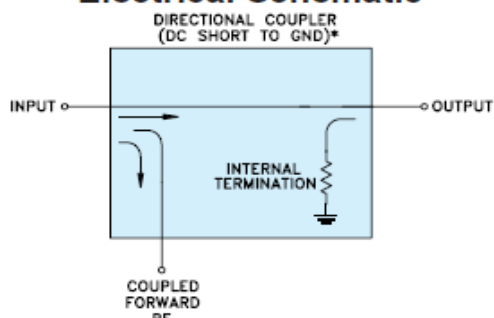
ELECTRICAL SPECIFICATIONS 50Ω @ +25°C				
Parameter		Min.	Typ.	Max. Units
Frequency		1		1000 MHz
Coupling	Nominal		10.2 ± 0.5	dB
	Flatness		± 1	dB
Mainline Loss *	1-10 MHz		1.45	dB
	10-500 MHz		1.35	dB
	500-1000 MHz		1.45	dB
Directivity	1-10 MHz		22	dB
	10-500 MHz		21	dB
	500-1000 MHz		17	dB
VSWR			1.3	(:1)
RF Power Input	1-50 MHz			.5 W
	50-1000 MHz			1

Note: * Mainline loss includes theoretical coupled power loss of 0.435 dB at 10.2 dB coupling.

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
ISOLATE (DO NOT USE)	6

Electrical Schematic



* ELECTRICAL SCHEMATIC IS FOR DIRECTIONAL COUPLER WITH INTERNAL TRANSFORMER(S) THAT ROUTES DC FROM RF PORTS TO GROUND.



P.O. Box 350188, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4651 For detailed performance specs & shopping online see Mini-Circuits web site



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IF/RF MICROWAVE COMPONENTS



REV. X1

DBTC-ED12884/1

3/11/2009

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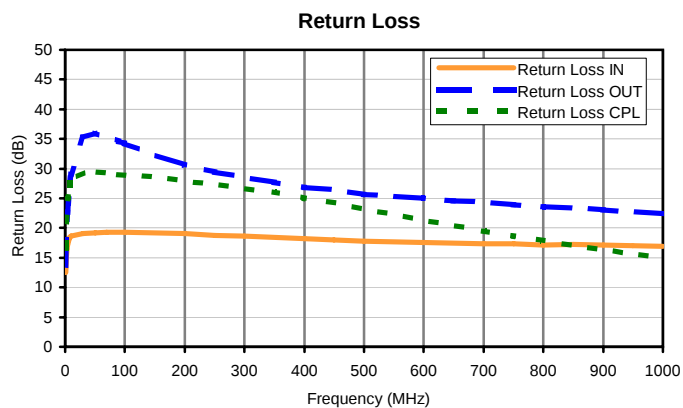
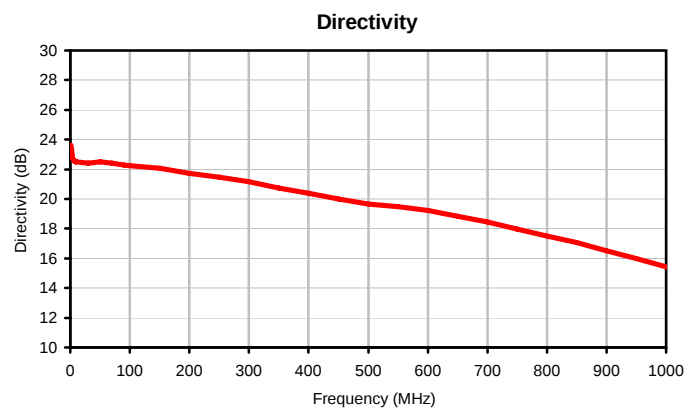
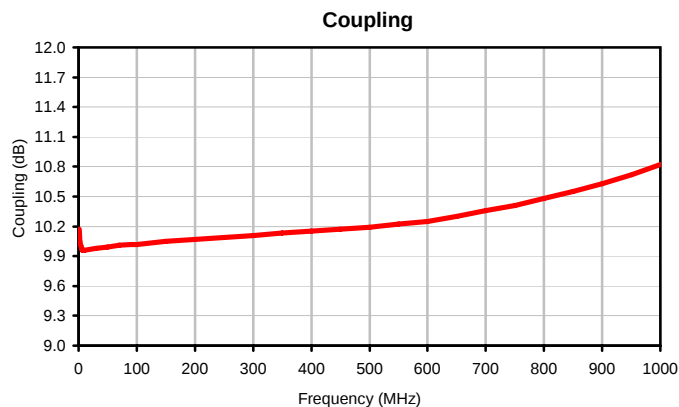
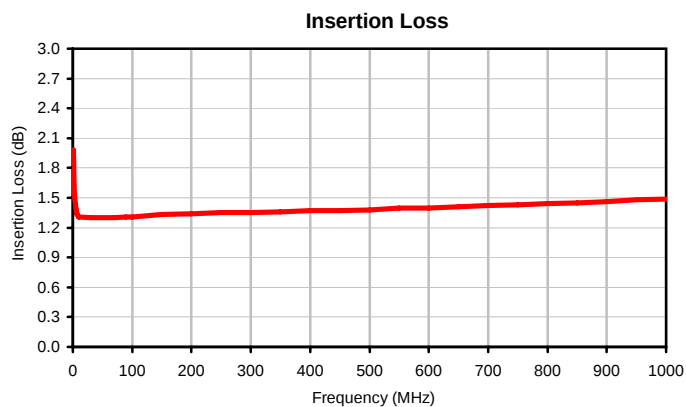
Directional Coupler

DBTC-ED12884/1

Typical Performance Data

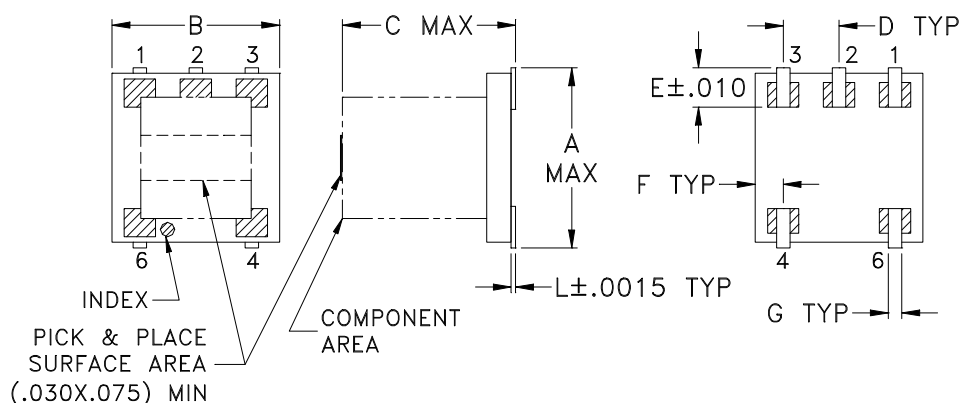
FREQUENCY (MHz)	INSERTION LOSS (dB)	COUPLING (dB)	DIRECTIVITY (dB)	RETURN LOSS		
				IN	OUT	CPL
1.0	1.98	10.17	23.61	12.51	13.66	16.62
2.0	1.62	10.05	23.36	15.24	18.02	20.98
3.0	1.50	10.02	22.92	16.50	20.67	23.36
4.0	1.44	10.00	22.73	17.23	22.58	24.92
5.0	1.39	9.98	22.65	17.72	24.12	25.96
6.0	1.36	9.97	22.57	18.04	25.40	26.68
7.0	1.34	9.96	22.54	18.27	26.47	27.19
8.0	1.33	9.96	22.55	18.44	27.48	27.58
9.0	1.32	9.96	22.52	18.57	28.35	27.87
10.0	1.31	9.96	22.50	18.66	28.97	28.11
30.0	1.30	9.98	22.43	19.09	35.26	29.32
50.0	1.30	9.99	22.49	19.21	35.99	29.42
70.0	1.30	10.01	22.40	19.25	35.35	29.26
90.0	1.31	10.02	22.29	19.27	34.64	29.00
100.0	1.31	10.02	22.25	19.27	34.22	28.89
150.0	1.33	10.05	22.06	19.18	32.38	28.65
200.0	1.34	10.07	21.73	19.04	30.64	27.87
250.0	1.35	10.09	21.47	18.74	29.47	27.40
300.0	1.35	10.11	21.18	18.61	28.51	26.63
350.0	1.36	10.13	20.75	18.43	27.66	26.04
400.0	1.37	10.15	20.39	18.22	26.86	25.03
450.0	1.37	10.17	20.01	18.01	26.37	24.22
500.0	1.38	10.19	19.67	17.76	25.67	23.15
550.0	1.40	10.22	19.50	17.67	25.36	22.30
600.0	1.40	10.25	19.22	17.56	24.97	21.33
650.0	1.41	10.30	18.85	17.44	24.61	20.46
700.0	1.42	10.36	18.43	17.38	24.33	19.53
750.0	1.43	10.41	17.97	17.31	23.95	18.68
800.0	1.44	10.48	17.51	17.17	23.59	17.92
850.0	1.45	10.55	17.08	17.21	23.42	17.06
900.0	1.46	10.63	16.49	17.08	23.03	16.39
950.0	1.48	10.72	16.00	17.01	22.70	15.62
1000.0	1.49	10.82	15.45	16.89	22.42	15.06

Typical Performance Curves

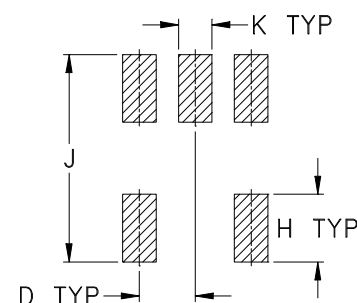


Outline Dimensions

AT1030



PCB Land Pattern



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

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

Dimensions are in inches (mm). Tolerances: 2 Pl. $\pm .01$; 3 Pl. $\pm .005$

Notes:

- Open style, ceramic base.
- Termination finish:
For RoHS Case Styles: Tin plate.
For RoHS-5 Case Styles: Tin-Lead plate.



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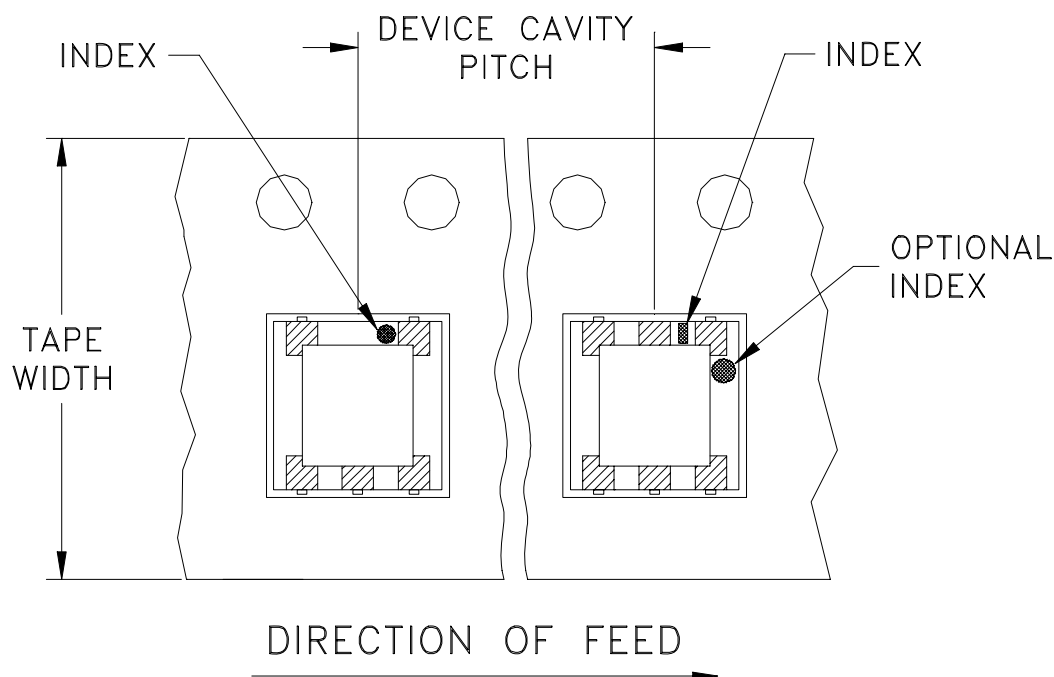


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RF/IF MICROWAVE COMPONENTS

Tape & Reel Packaging TR-F76

DEVICE ORIENTATION IN T&R



Tape Width, mm	Device Cavity Pitch, mm	Reel Size, inches	Devices per Reel
12	8	7	20
			50
			100
			200
			500
		13	1000
			2000

Note: Please consult individual model data sheet to determine device per reel availability.

Mini-Circuits carrier tape materials provide protection from ESD (Electro-Static Discharge) during handling and transportation. Tapes are static dissipative and comply with industry standards EIA-481/EIA-541.

Go to: www.minicircuits.com/pages/pdfs/tape.pdf



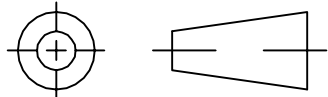
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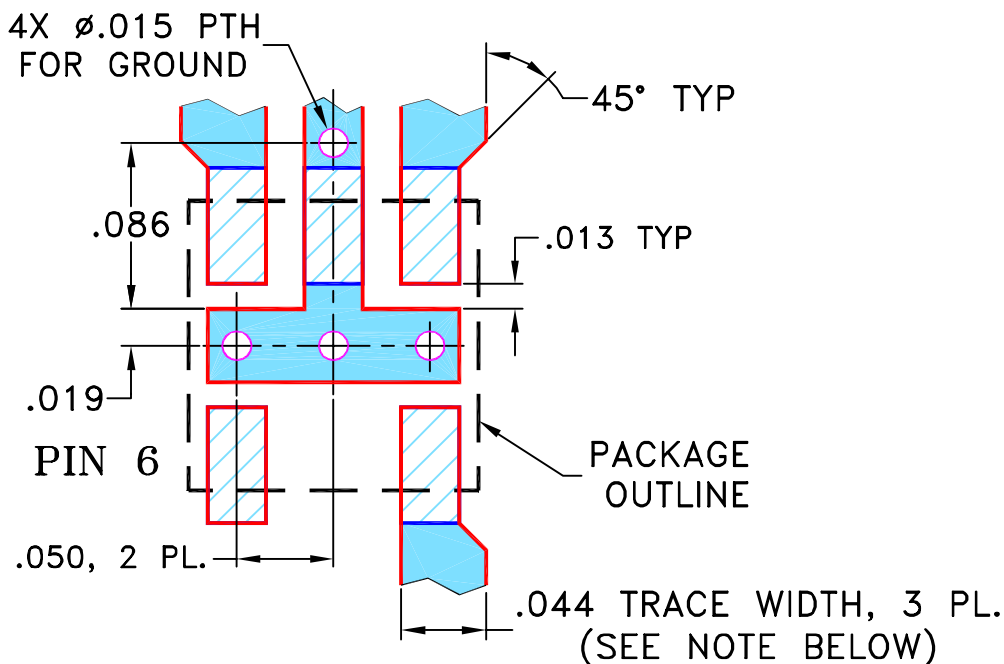
THIRD ANGLE PROJECTION



REVISIONS

REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	M90454	NEW RELEASE	01/16/04	AV	WP
A	M93049	AT1030 WAS AT1029	07/02/04	MMG	WP
B	M102713	ADDED "...WITH SMOBC"	01/17/06	MMG	IL

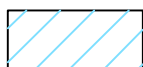
SUGGESTED MOUNTING CONFIGURATION FOR AT1030 CASE STYLE, "na" PIN CONNECTION



- NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS $0.020'' \pm 0.0015''$; 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

UNLESS OTHERWISE SPECIFIED

INITIALS

DATE

DIMENSIONS ARE IN INCHES

TOLERANCES ON:

2 PL DECIMALS $\pm$ 3 PL DECIMALS $\pm$.005ANGLES $\pm$ FRACTIONS $\pm$

DRAWN

AV

01/08/04

CHECKED

IL

01/16/04

APPROVED

WP

01/16/04



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Brooklyn NY 11235

PL, na, AT1030, DBTC, TB-278

SIZE

A

CODE IDENT

15542

DRAWING NO:

98-PL-150

REV:

B

FILE:

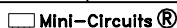
98PL150

SCALE:

10:1

SHEET:

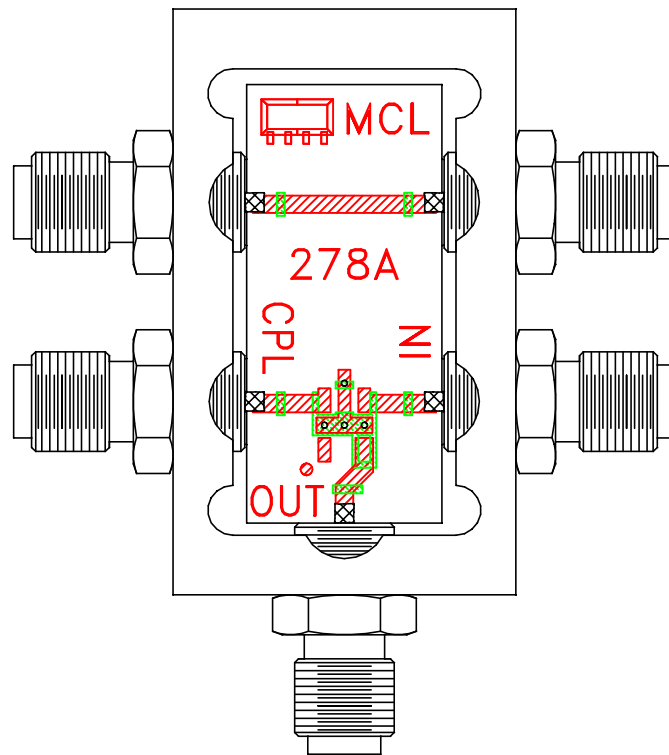
1 OF 1



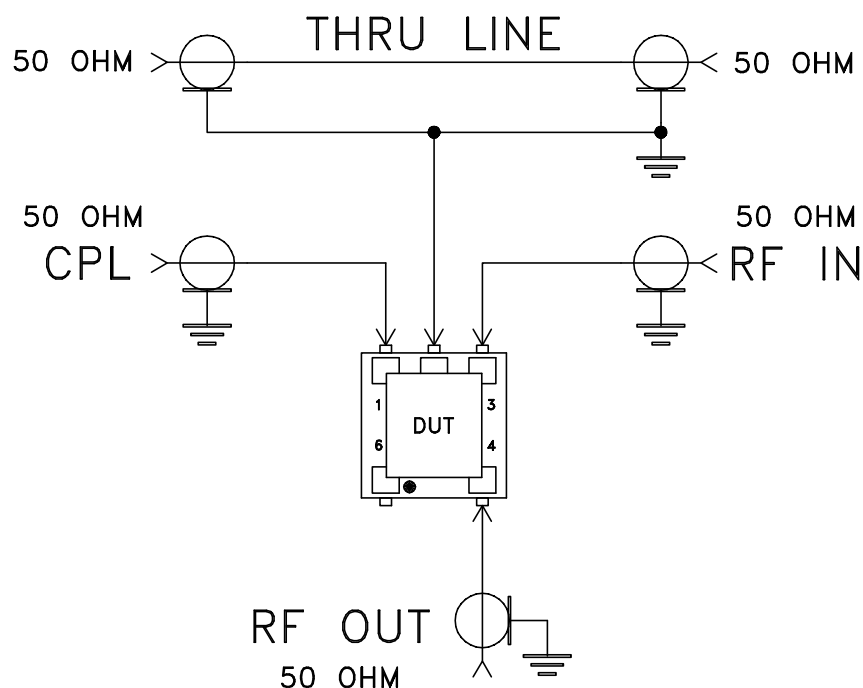
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ASHEETA1.DWG REV:A DATE:01/12/95

Evaluation Board and Circuit



TB-278



Schematic Diagram

Notes:

1. 50 Ohm SMA Female connectors.
2. PCB Material: Rogers R04350B or its equivalent, Dielectric Constant=3.5, Thickness=.020"

 **Mini-Circuits®**



All Mini-Circuits products are manufactured under exacting quality assurance and control standards, and are capable of meeting published specifications after being subjected to any or all of the following physical and environmental test.

Specification	Test/Inspection Condition	Reference/Spec
Operating Temperature	-40° to 85°C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-55° to 100° C Ambient Environment	Individual Model Data Sheet
Humidity	90 to 95% RH, 240 hours, 50°C	MIL-STD-202, Method 103, Condition A, Except 50°C and end-point electrical test done within 12 hours
Thermal Shock	-55° to 100°C, 100 cycles	MIL-STD-202, Method 107, Condition A-3, except +100°C
Solder Reflow Heat	Sn-Pb Eutetic Process: 225°C peak Pb-Free Process 245° - 250°C peak	J-STD-020, Table 4-1, 4-2 and 5-2, Figure 5-1
Solderability	10X Magnification	J-STD-002, 95% Coverage
Vibration (High Frequency)	20g peak, 10-2000 Hz, 12 times in each of three perpendicular directions (total 36)	MIL-STD-202, Method 204, Condition D
Mechanical Shock	50g, 11 ms, 1/2-sine, 18 shocks: 3 each direction, each of 3 axes	MIL-STD-202, Method 213, Condition A
Marking Resistance to Solvents	Isopropyl alcohol + mineral spirits at 25°C; terpene defluxer at 25°C; distilled water + proylene glycol monomethyl ether + monoethanolamine at 63°C to 70°C	MIL-STD-202, Method 215