

Engineering Development Model

Directional Coupler

DBTC-ED12526/1

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 : AT790-1

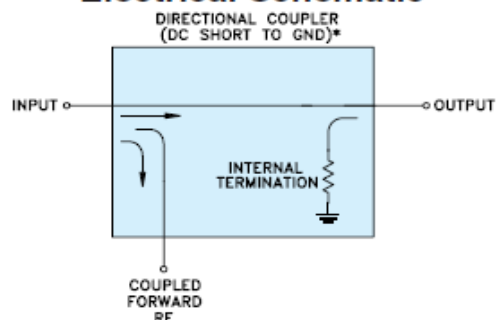
ELECTRICAL SPECIFICATIONS 50Ω @ +25°C				
Parameter		Min.	Typ.	Max. Units
Frequency		10		800 MHz
Coupling	Nominal		7±0.2	dB
	Flatness		±0.04	dB
Mainline Loss **	10-100 MHz		2.12	dB
	100-400 MHz		2.17	dB
	400-800 MHz		2.18	dB
Directivity	10-100 MHz		33	dB
	100-400 MHz		32	dB
	400-800 MHz		25	dB
VSWR	10-800 MHz		1.25	(:1)
RF Power Input	10-100 MHz			0.5 W
	100-800 MHz			1.0

Note: **Mainline loss includes theoretical coupled power loss of 0.966 dB at 7 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.

Directional Coupler

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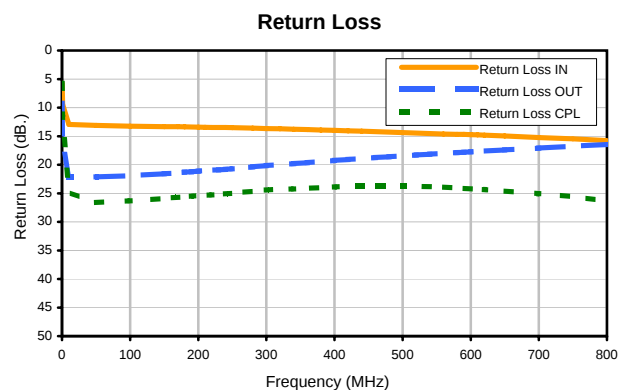
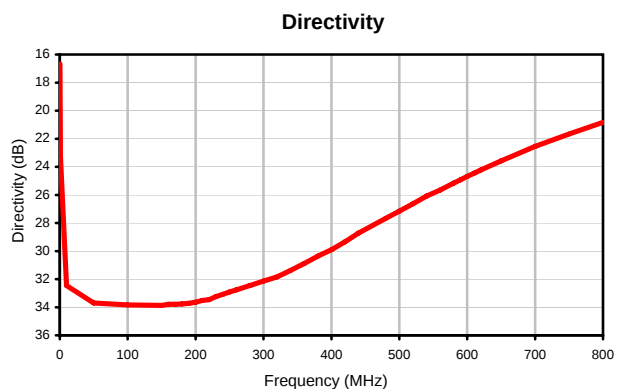
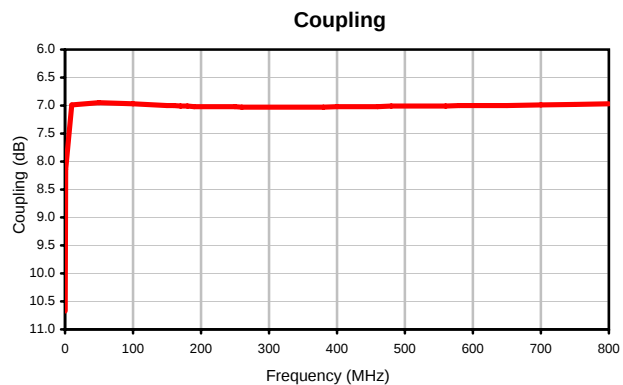
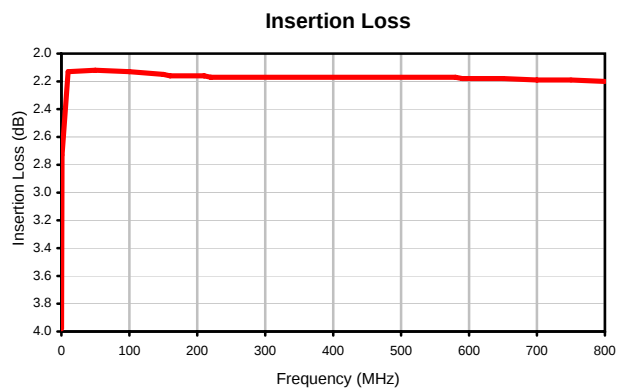
Typical Performance Data

FREQUENCY (MHz)	INSERTION LOSS (dB)	COUPLING (dB)	DIRECTIVITY (dB)	RETURN LOSS		
				IN	OUT	CPL
0.3	3.98	10.67	16.67	5.75	9.24	5.75
1.0	2.73	8.14	23.26	9.45	16.00	11.70
10.0	2.13	6.99	32.46	12.94	22.13	24.79
50.0	2.12	6.95	33.70	13.10	22.12	26.62
100.0	2.13	6.97	33.84	13.25	21.90	26.29
150.0	2.15	7.00	33.87	13.32	21.57	25.90
160.0	2.16	7.00	33.79	13.33	21.49	25.79
170.0	2.16	7.01	33.79	13.34	21.39	25.69
180.0	2.16	7.01	33.77	13.36	21.29	25.59
190.0	2.16	7.02	33.72	13.38	21.22	25.51
200.0	2.16	7.02	33.64	13.41	21.13	25.42
210.0	2.16	7.02	33.52	13.44	21.05	25.34
220.0	2.17	7.02	33.46	13.46	20.96	25.26
230.0	2.17	7.02	33.24	13.47	20.89	25.18
240.0	2.17	7.02	33.08	13.48	20.80	25.10
250.0	2.17	7.02	32.91	13.50	20.70	24.99
260.0	2.17	7.03	32.76	13.53	20.60	24.87
280.0	2.17	7.03	32.46	13.59	20.36	24.65
300.0	2.17	7.03	32.14	13.66	20.14	24.43
320.0	2.17	7.03	31.84	13.71	19.96	24.29
340.0	2.17	7.03	31.37	13.78	19.81	24.22
360.0	2.17	7.03	30.88	13.85	19.63	24.13
380.0	2.17	7.03	30.36	13.92	19.45	24.01
400.0	2.17	7.02	29.90	13.99	19.24	23.88
420.0	2.17	7.02	29.34	14.06	19.07	23.79
440.0	2.17	7.02	28.72	14.12	18.92	23.76
460.0	2.17	7.02	28.19	14.20	18.75	23.74
480.0	2.17	7.01	27.67	14.28	18.60	23.76
500.0	2.17	7.01	27.16	14.36	18.45	23.77
520.0	2.17	7.01	26.63	14.45	18.29	23.78
540.0	2.17	7.01	26.09	14.53	18.15	23.83
560.0	2.17	7.01	25.65	14.61	17.99	23.92
580.0	2.17	7.00	25.16	14.67	17.88	24.07
590.0	2.18	7.00	24.92	14.69	17.81	24.15
600.0	2.18	7.00	24.68	14.73	17.74	24.22
610.0	2.18	7.00	24.46	14.77	17.67	24.28
620.0	2.18	7.00	24.23	14.81	17.61	24.35
650.0	2.18	7.00	23.58	14.97	17.40	24.58
700.0	2.19	6.99	22.54	15.24	17.09	25.06
750.0	2.19	6.98	21.66	15.47	16.75	25.60
800.0	2.20	6.97	20.83	15.78	16.44	26.32

Directional Coupler

Typical Performance Curves

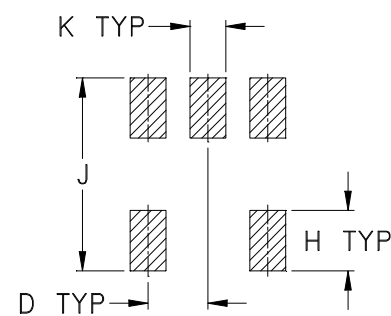
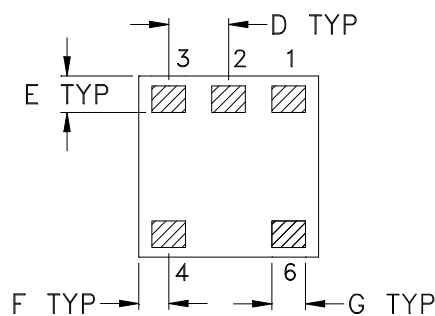
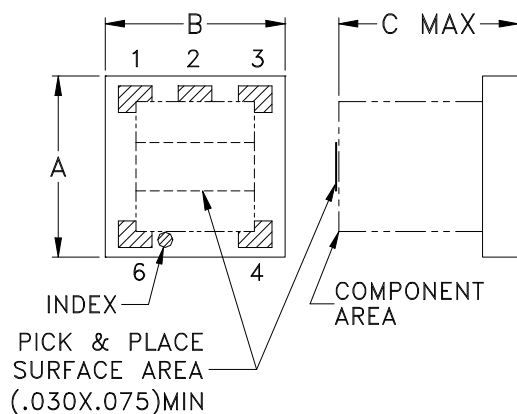
DBTC-ED12526/1



Outline Dimensions

AT790-1

PCB Land Pattern



Suggested Layout,
Tolerance to be within ± 0.002

CASE #	A	B	C	D	E	F	G	H	J	K	L	WT. GRAMS
AT790-1	.150 (3.81)	.150 (3.81)	.150 (3.81)	.050 (1.27)	.030 (0.76)	.025 (0.64)	.028 (0.71)	.050 (1.27)	.160 (4.06)	.030 (0.76)	-- --	.10

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

Notes:

1. Open style, Ceramic base.
2. Termination finish: Silver palladium or gold over nickel based on stock availability



P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661 For detailed performance specs & shopping online see Mini-Circuits web site

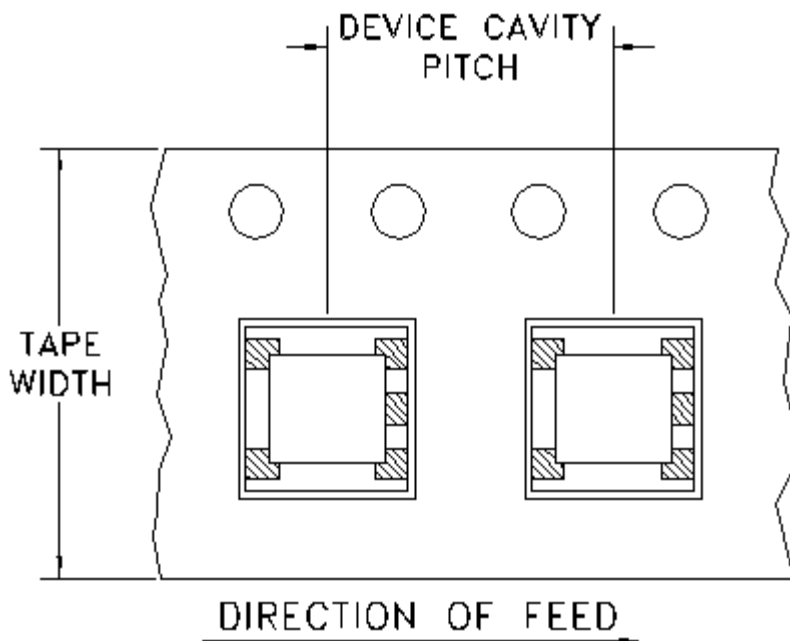


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RF/IF MICROWAVE COMPONENTS

Tape & Reel Packaging TR-F17

DEVICE ORIENTATION IN T&R



Tape Width, mm	Device Cavity Pitch, mm	Reel Size, inches	Devices per Reel	
12	8	7	Small quantity standards (see note)	20
				50
				100
				200
				500
		13	Standard	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



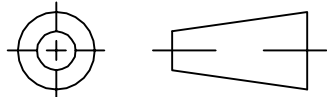
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RF/IF MICROWAVE COMPONENTS

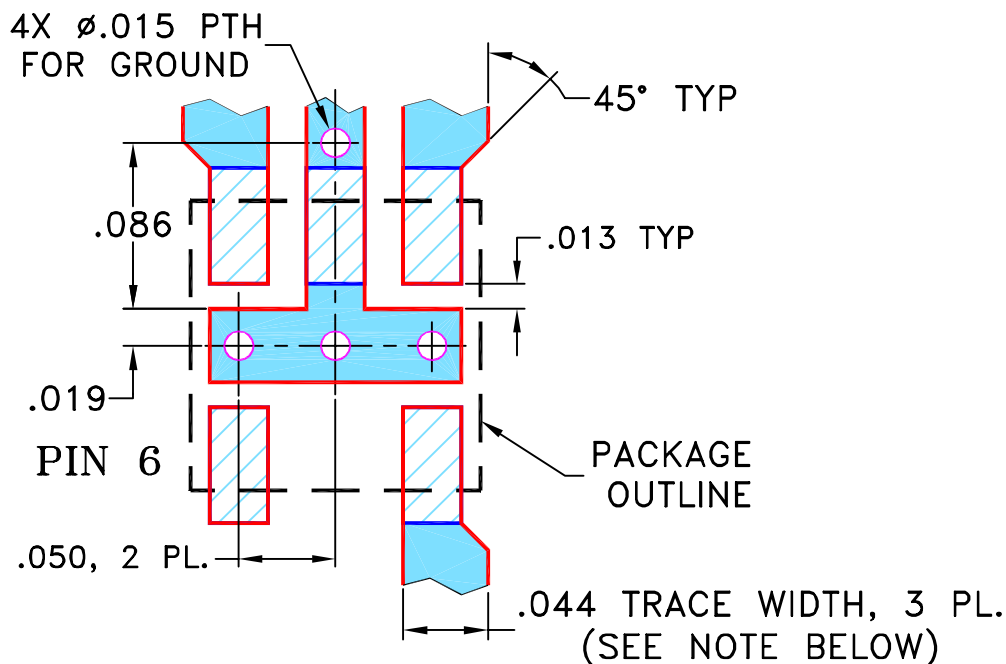
THIRD ANGLE PROJECTION



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

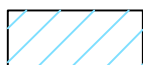
SUGGESTED MOUNTING CONFIGURATION FOR AT1030 CASE STYLE, "na" PIN CONNECTION



- 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



Mini-Circuits®

13 Neptune Avenue
Brooklyn NY 11235

PL, na, AT1030, DBTC, TB-278

SIZE

A

CODE IDENT

15542

DRAWING NO:

98-PL-150

REV:

B

FILE:

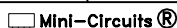
98PL150

SCALE:

10:1

SHEET:

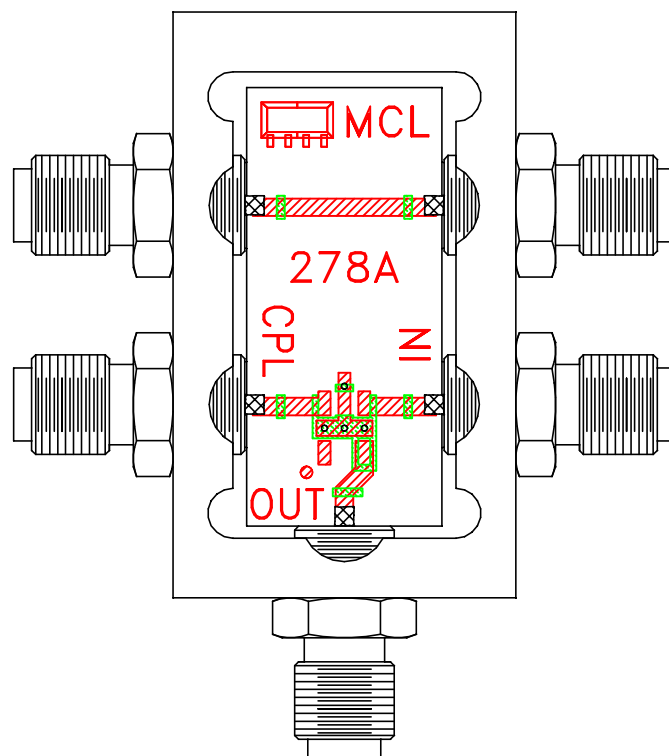
1 OF 1



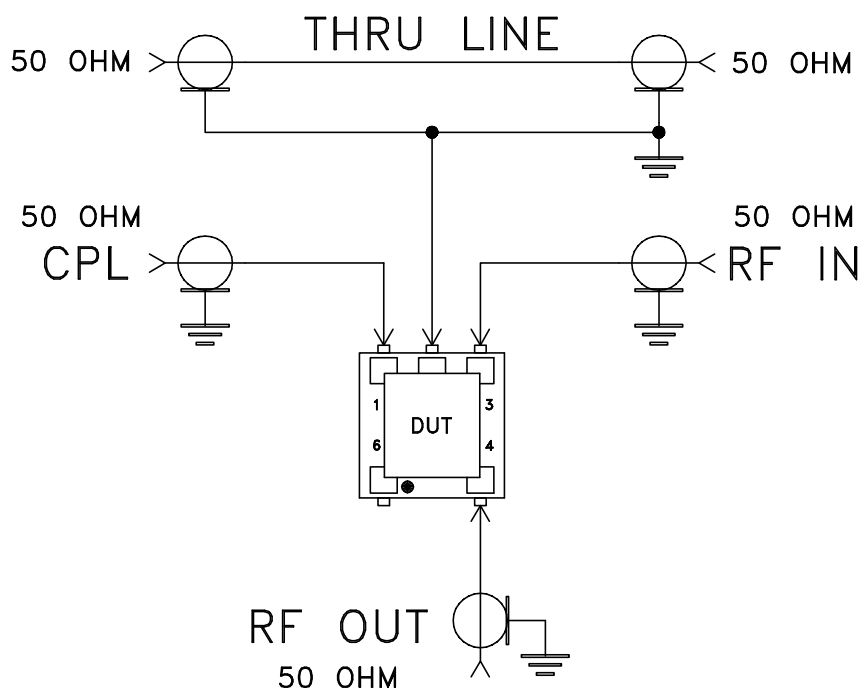
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ASHEETA1.DWG REV:A DATE:01/12/95

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