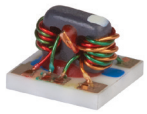
Impedance Matching

Power Splitter/Combiner

SBTC-2-10-5075+

2 Way-0° 50/75Ω 50 to 1000 MHz



Generic photo used for illustration purposes only

CASE STYLE: AT790

+RoHS Compliant

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

Available Tape and Reel at no extra cost

Reel Size	Devices/Reel
7"	20, 50, 100, 200
13"	500, 1000, 2000

Features

- 50 ohm input, 75 ohm output
- excellent isolation, 20 dB typ.
- very good phase unbalance, 1.0 deg. typ.
- small size, 0.15”x0.15”x0.15”
- temperature stable LTCC base
- small size
- low cost
- aqueous washable
- protected by US patent 6,963,255

Applications

- cable
- 50-75 ohm amplifier splitter

Electrical Specifications

Parameter	Frequency (MHz)	Min.	Typ.	Max.	Unit
Frequency Range		50		1000	MHz
Insertion Loss Above 3.0 dB	50 - 500	—	0.7	1.2	dB
	500 - 1000	—	1.0	1.6	
Isolation	50 - 500	16	25	—	dB
	500 - 1000	15	20	—	
Phase Unbalance	50 - 500	—	—	3	Degree
	500 - 1000	—	—	5	
Amplitude Unbalance	50 - 500	—	—	0.6	dB
	500 - 1000	—	—	0.5	

Maximum Ratings

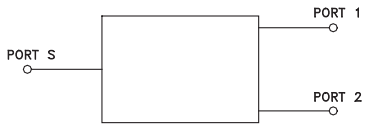
Parameter	Ratings
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
Power Input (as a splitter)	0.5W max.
Internal Dissipation	0.125W max

Permanent damage may occur if any of these limits are exceeded.

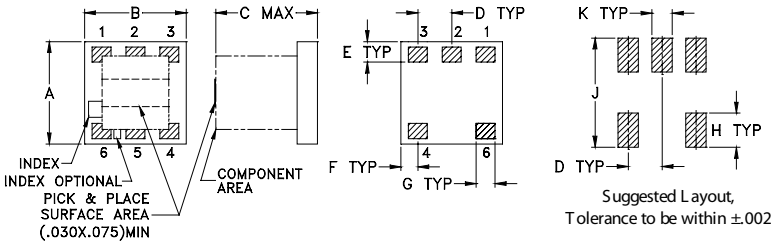
Pin Connections

Function	Pin Number
SUM PORT	6 (50 ohms)
PORT 1	3 (75 ohms)
PORT 2	4 (75 ohms)
GROUND	1,2
NOT USED	5

Electrical Schematic



Outline Drawing

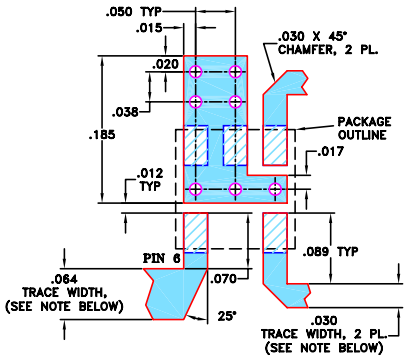


Outline Dimensions (inch / mm)

A	B	C	D	E	F
.150	.150	.150	.050	.030	.025
3.81	3.81	3.81	1.27	0.76	0.64

G	H	J	K	wt
.028	.050	.160	.030	grams
0.71	1.27	4.06	0.76	0.10

Demo Board MCL P/N: TB-146
Suggested PCB Layout (PL-093)



NOTE: TRACE WIDTH IS SHOWN FOR ROGERS RO4350 WITH DIELECTRIC THICKNESS 0.030" ± 0.002", COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.

DENOTES PCB COPPER LAYOUT

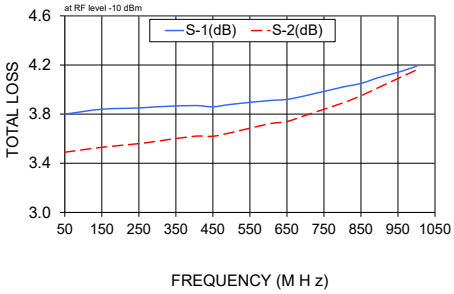
DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

Typical Performance Data

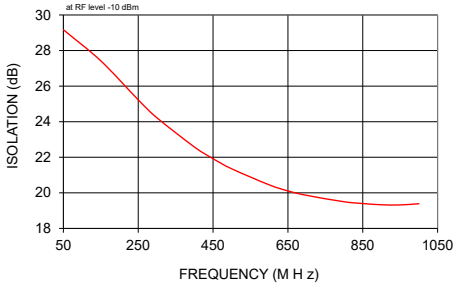
Frequency (MHz)	Total Loss[1] (dB)		Amplitude Unbalance (dB)	Isolation (dB)	Phase Unbalance (deg.)	VSWR S	VSWR 1	VSWR 2
	S-1	S-2						
50.00	3.80	3.49	0.31	29.17	0.08	1.20	1.38	1.30
150.00	3.84	3.53	0.30	27.42	0.28	1.20	1.34	1.27
250.00	3.85	3.56	0.29	25.23	0.57	1.18	1.29	1.25
300.00	3.86	3.58	0.28	24.22	0.67	1.17	1.26	1.23
400.00	3.87	3.62	0.25	22.58	0.95	1.14	1.19	1.20
450.00	3.86	3.62	0.24	21.92	1.08	1.12	1.17	1.19
500.00	3.88	3.65	0.23	21.35	1.21	1.10	1.14	1.18
600.00	3.91	3.72	0.19	20.45	1.47	1.06	1.13	1.18
650.00	3.92	3.74	0.18	20.11	1.53	1.04	1.14	1.19
700.00	3.95	3.79	0.16	19.86	1.66	1.03	1.17	1.21
800.00	4.02	3.89	0.13	19.50	1.80	1.05	1.24	1.25
850.00	4.05	3.95	0.10	19.40	1.84	1.07	1.27	1.27
900.00	4.10	4.02	0.09	19.33	1.93	1.09	1.30	1.29
950.00	4.14	4.09	0.05	19.32	2.00	1.10	1.32	1.30
1000.00	4.19	4.16	0.03	19.39	1.99	1.12	1.34	1.30

1. Total Loss = Insertion Loss + 3dB splitter loss.

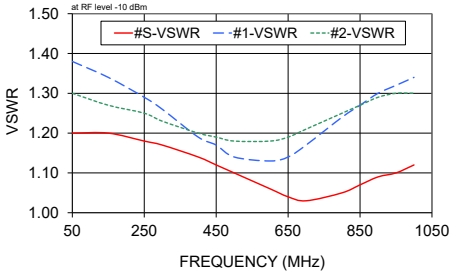
TOTAL LOSS



ISOLATION



VSWR



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.

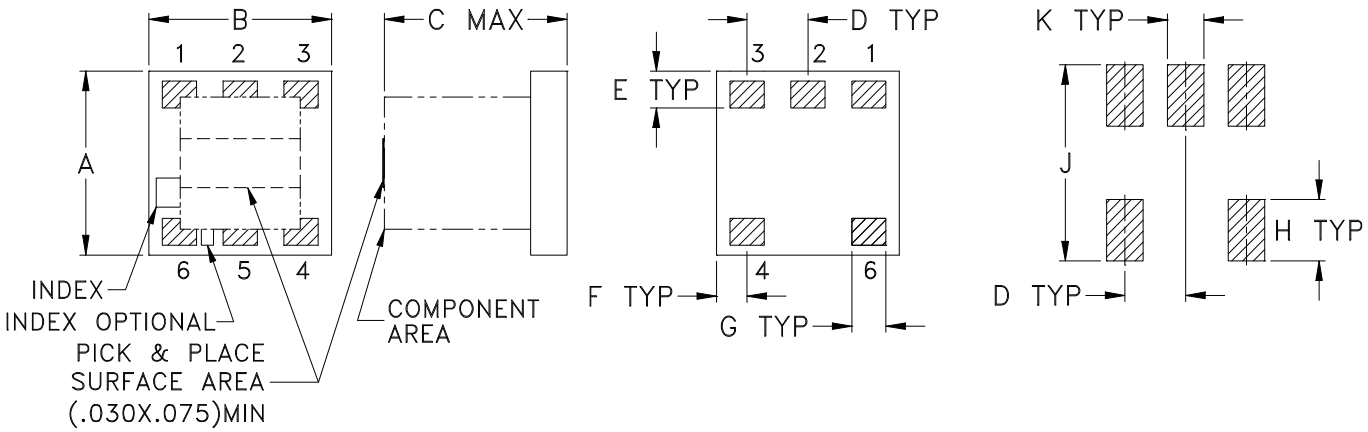
C. The parts covered by this specification document are subject to Mini-Circuits standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the Standard Terms and the exclusive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

Case Style AT

Outline Dimensions

AT790

PCB Land Pattern



Suggested Layout,
Tolerance to be within ±.002

CASE #	A	B	C	D	E	F	G	H	J	K	L	WT. GRAMS
AT790	.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

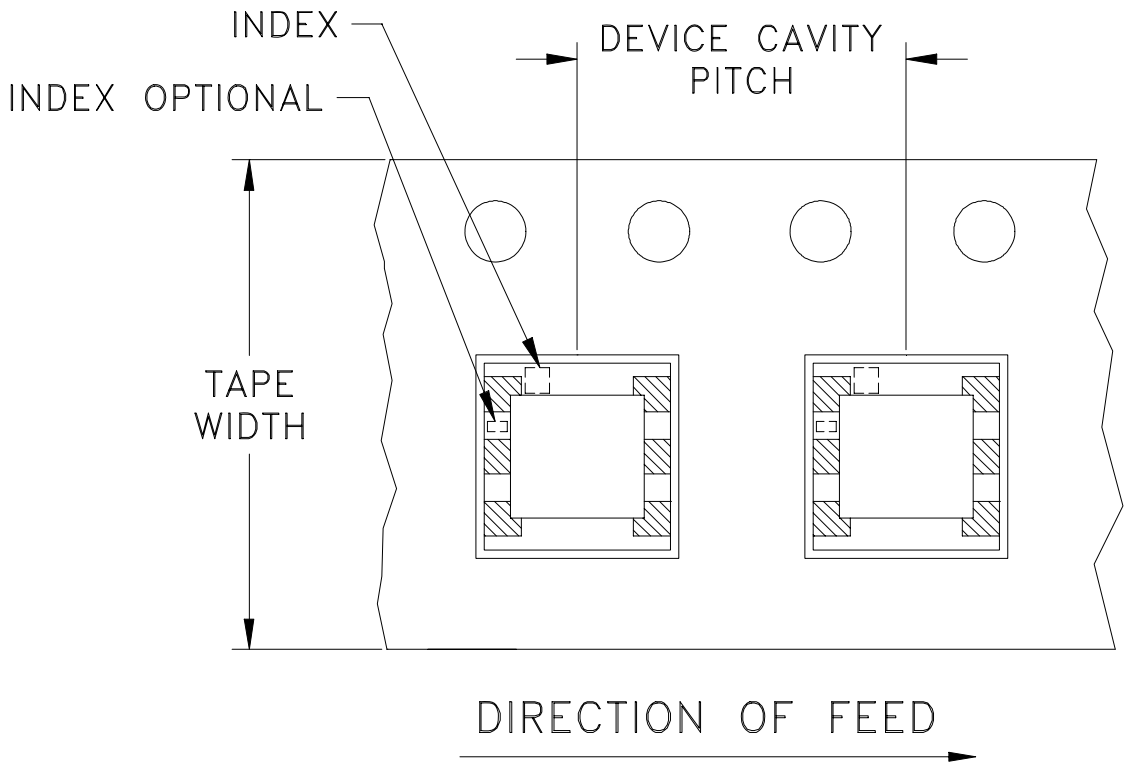
Dimensions are in inches (mm). Tolerances: 2 Pl. ± .01; 3 Pl. ± .005

Notes:

1. Open style, Ceramic base.
2. Termination finish: Palladium Silver.

Tape & Reel Packaging TR-F15

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
		13	500
			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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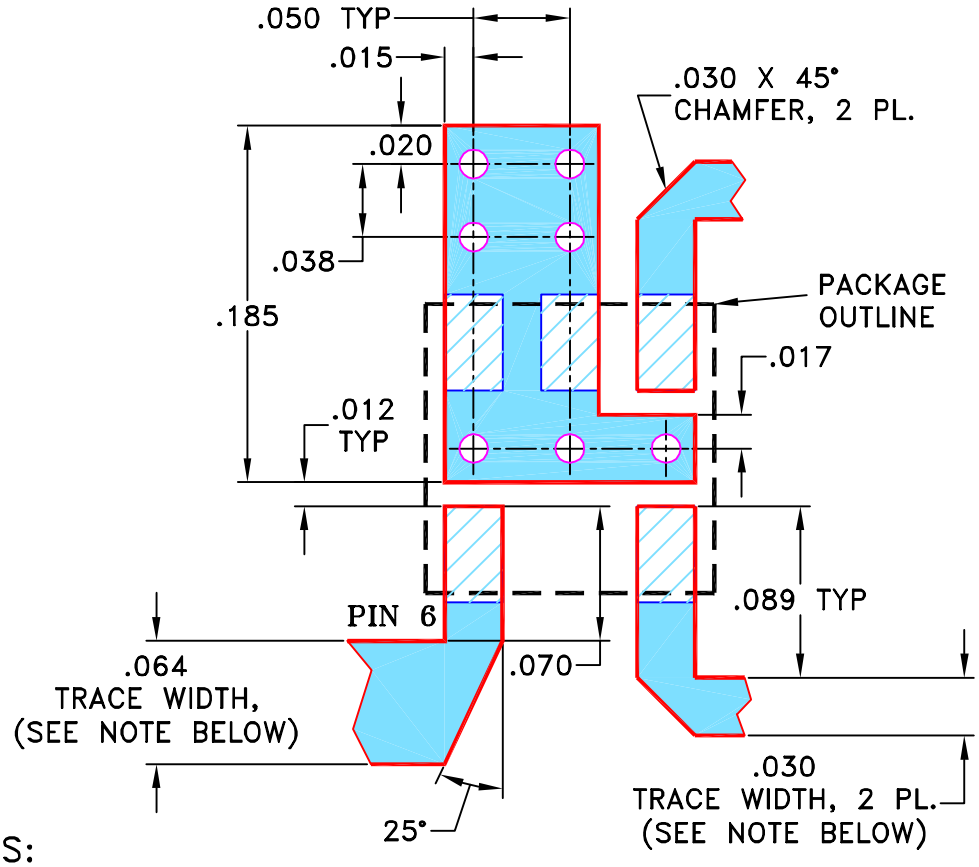
THIRD ANGLE PROJECTION

REVISIONS					
REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	M82272	NEW RELEASE	08/05/02	GF	DJ
A	M102713	UPDATED NOTES, ADDED "...WITH SMOBC"	01/16/06	GT	IL

SUGGESTED MOUNTING CONFIGURATION FOR AT790 CASE STYLE, "nc" PIN CONNECTION



NOTES:

1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS 0.030" ± 0.002"; 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	DRAWN	GF	07/23/02
TOLERANCES ON:	CHECKED	HY	08/01/02
2 PL DECIMALS ±	APPROVED	DJ	08/05/02
3 PL DECIMALS ± .005			
ANGLES ±			
FRACTIONS ±			

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

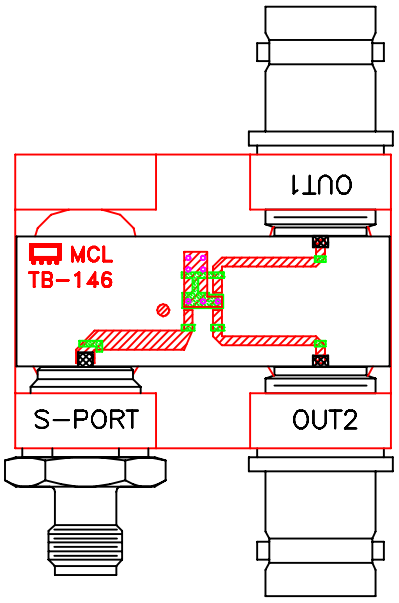
Mini-Circuits® 13 Neptune Avenue Brooklyn NY 11235

PL, nc, 5075, AT790, SBTC, TB-146

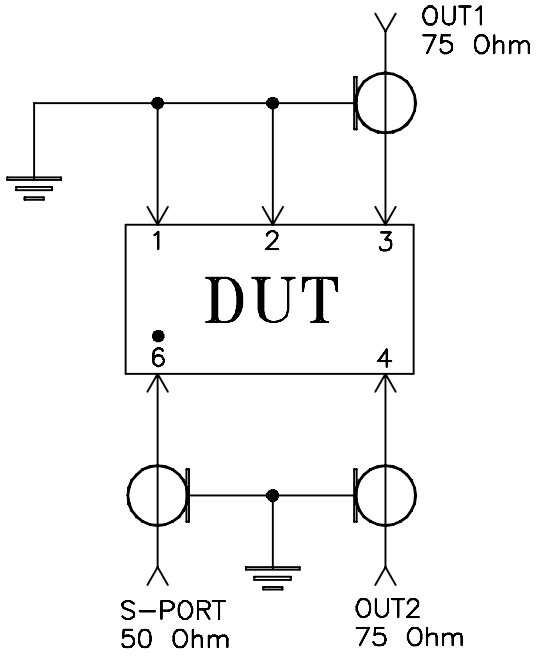
SIZE	CODE IDENT	DRAWING NO:	REV:
A	15542	98-PL-093	A

FILE:	SCALE:	SHEET:
98PL093	10:1	1 OF 1

Evaluation Board and Circuit



TB-146



Schematic Diagram

Notes:

1. 50 Ohm SMA AND 75 Ohm BNC Female connectors.
2. PCB Material: Rogers RO4350 or equivalent, Dielectric Constant=3.5, Thickness=.030 inch.

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Environmental Specifications ENV02T1

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