Surface Mount

Bandpass Filter

50Ω 800 to 1000 MHz

SYBP-92+

CASE STYLE: TT1423

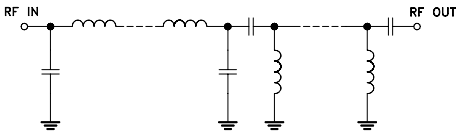
Features

- High power handling, 7W
- Small size
- Temperature stable
- Excellent rejection

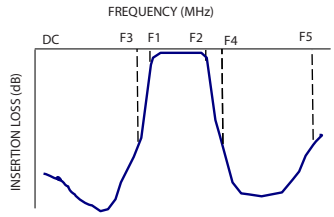
Applications

- Military radio
- Cellular
- GSM
- ISM

Functional Schematic



Typical Frequency Response



+RoHS Compliant

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

Electrical Specifications at 25°C

Parameter		F#	Frequency (MHz)	Min.	Typ.	Max.	Unit
Pass Band	Center Frequency	—	—	—	900	—	MHz
	Insertion Loss	F1-F2	800 - 1000	—	1.9	2.8	dB
	VSWR	F1-F2	800 - 1000	—	1.6	2.1	:1
Stop Band, Lower	Insertion Loss	DC-F3	DC - 530	20	23	—	dB
	VSWR	DC-F3	DC - 530	—	12	—	:1
Stop Band, Upper	Insertion Loss	F4-F5	1550 - 3000	20	27	—	dB
	VSWR	F4-F5	1550 - 3000	—	10	—	:1

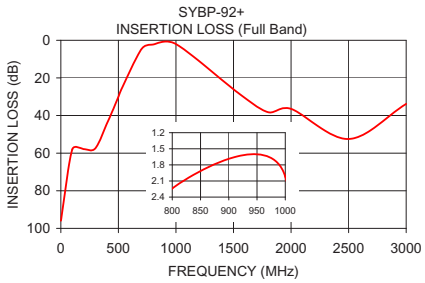
Maximum Ratings	
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power Input	7W* max. at 25°C

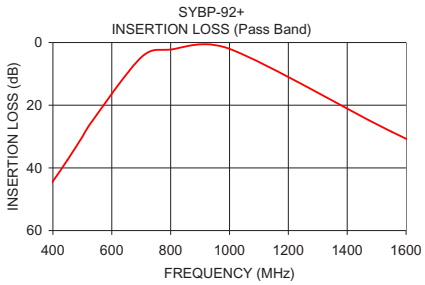
*Passband rating, derate linearly to 3W at 85°C ambient

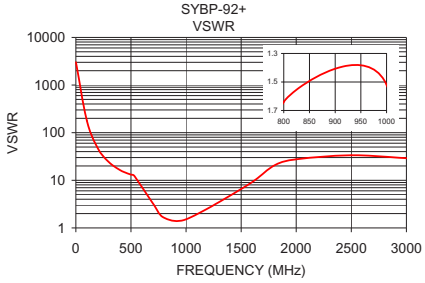
Permanent damage may occur if any of these limits are exceeded.

Typical Performance Data at 25°C

Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)
1.00	95.93	3014.56
100.00	57.95	179.36
200.00	57.87	46.52
300.00	57.43	24.06
400.00	44.24	16.44
450.00	37.39	14.52
500.00	30.07	13.16
530.00	25.54	12.43
700.00	4.73	3.24
800.00	2.24	1.64
1000.00	2.02	1.52
1550.00	28.43	7.73
1800.00	38.24	20.47
2000.00	36.48	27.60
2500.00	52.46	33.50
3000.00	33.80	29.13







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

REV. A
M151107
SYBP-92+
ED-13680/1
WZ/CP/AM
151005

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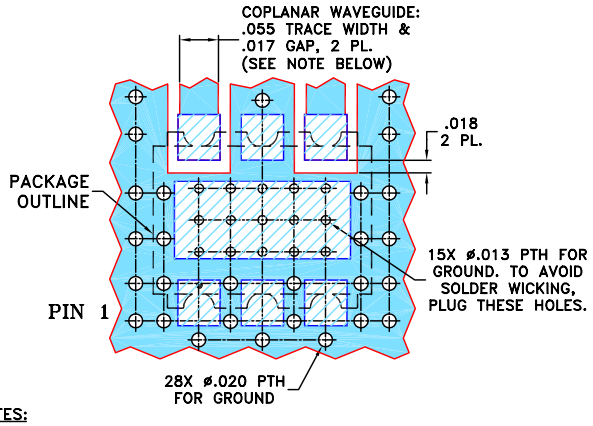
Pin Connections

RF IN	4
RF OUT	6
GROUND	1,2,3,5

Demo Board MCL P/N: TB-517+
Suggested PCB Layout (PL-308)

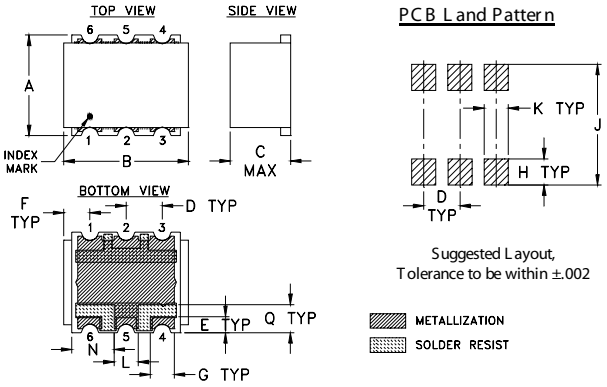


NOTES:
1. COPLANAR WAVEGUIDE PARAMETERS ARE SHOWN FOR ROGERS RO4350B WITH THICKNESS .030" ± .002"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH AND GAP MAY NEED TO BE MODIFIED.
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

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

DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

Outline Drawing



Outline Dimensions (inch / mm)

A	B	C	D	E	F	G	H
.25	.31	.15	.090	.040	.065	.060	.065
6.35	7.87	3.81	2.29	1.02	1.65	1.52	1.65

J	K	L	N	Q	wt.
.300	.060	.060	.105	.070	grams
7.62	1.52	1.52	2.67	1.78	0.50

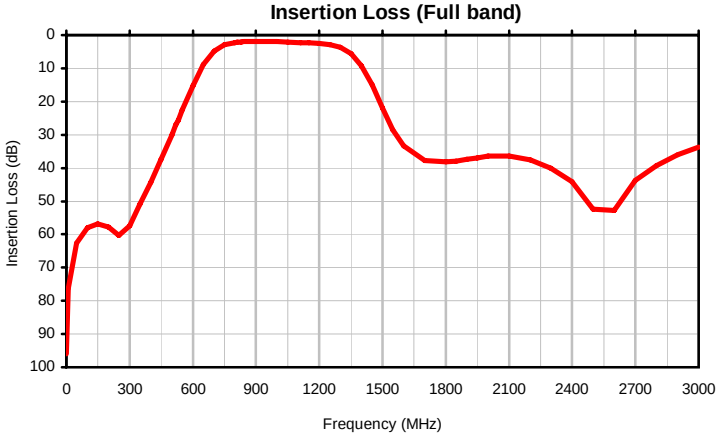
Typical Performance Data

FREQ. (MHz)	INSERTION LOSS (dB)	INPUT RETURN LOSS (dB)	OUTPUT RETURN LOSS (dB)
1.0	95.93	0.01	0.00
10.0	76.37	0.00	0.00
50.0	62.61	0.03	0.02
100.0	57.95	0.10	0.06
150.0	56.80	0.22	0.14
200.0	57.87	0.37	0.24
250.0	60.40	0.55	0.36
300.0	57.43	0.72	0.52
350.0	50.79	0.90	0.70
400.0	44.24	1.06	0.90
450.0	37.39	1.20	1.15
500.0	30.07	1.32	1.43
510.0	28.57	1.35	1.49
520.0	27.05	1.37	1.56
530.0	25.54	1.40	1.64
540.0	24.03	1.43	1.72
550.0	22.53	1.47	1.80
600.0	15.26	1.80	2.35
650.0	8.93	2.86	3.58
700.0	4.73	5.54	6.02
750.0	2.88	9.34	9.01
800.0	2.24	12.35	10.84
810.0	2.16	12.80	11.12
820.0	2.11	13.19	11.36
830.0	2.06	13.50	11.56
840.0	2.02	13.73	11.70
850.0	1.99	13.91	11.79
860.0	1.97	14.03	11.84
870.0	1.95	14.11	11.87
880.0	1.94	14.13	11.89
890.0	1.93	14.12	11.90
900.0	1.92	14.05	11.92
910.0	1.91	13.94	11.94
920.0	1.91	13.79	11.95
930.0	1.92	13.58	11.95
940.0	1.93	13.35	11.93
950.0	1.94	13.10	11.88
960.0	1.95	12.84	11.82
970.0	1.97	12.59	11.74
980.0	1.99	12.36	11.66
990.0	2.00	12.15	11.60
1000.0	2.02	11.97	11.57
1050.0	2.13	11.39	11.81
1110.0	2.26	11.39	12.26
1150.0	2.35	11.99	13.07
1200.0	2.53	13.01	13.68
1250.0	2.90	13.69	13.32
1300.0	3.71	12.28	10.85
1350.0	5.51	9.27	7.19
1400.0	9.22	6.49	4.03
1450.0	15.04	4.51	2.36
1500.0	21.98	3.15	1.73
1550.0	28.43	2.26	1.53
1600.0	33.34	1.70	1.57
1700.0	37.69	1.11	1.82
1800.0	38.24	0.85	2.22
1850.0	37.91	0.77	2.38
1900.0	37.43	0.71	2.64
1950.0	36.94	0.67	2.75
2000.0	36.48	0.63	2.82
2100.0	36.36	0.58	2.48
2200.0	37.52	0.55	1.86
2300.0	40.02	0.53	1.39
2400.0	44.04	0.52	1.13
2500.0	52.46	0.52	1.02
2600.0	52.71	0.52	1.00
2700.0	43.78	0.54	0.99
2800.0	39.29	0.55	1.00
2900.0	36.11	0.57	1.04
3000.0	33.80	0.60	1.13

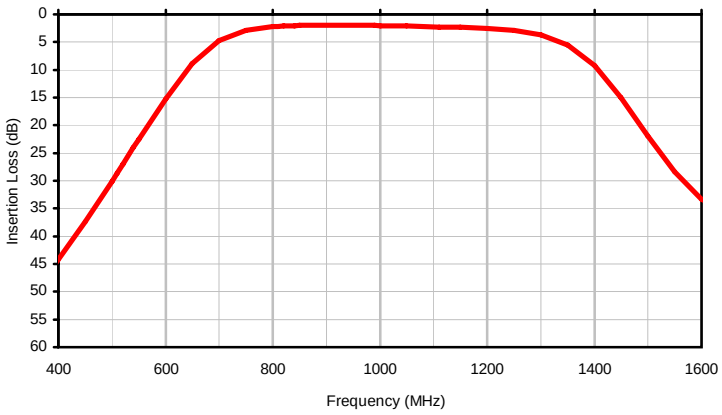
Surface Mount Band Pass Filter SYBP-92+

Typical Performance Curves

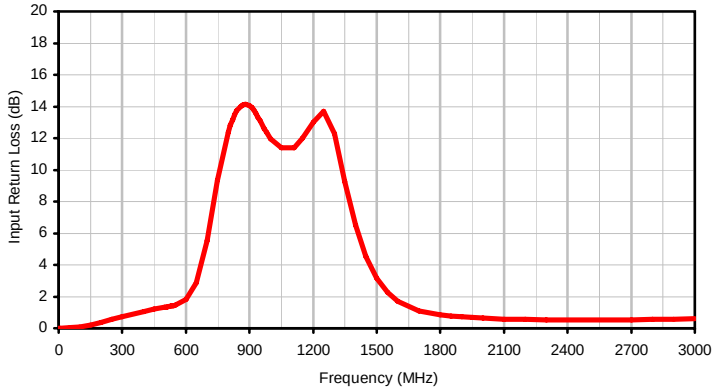
Insertion Loss (Full band)



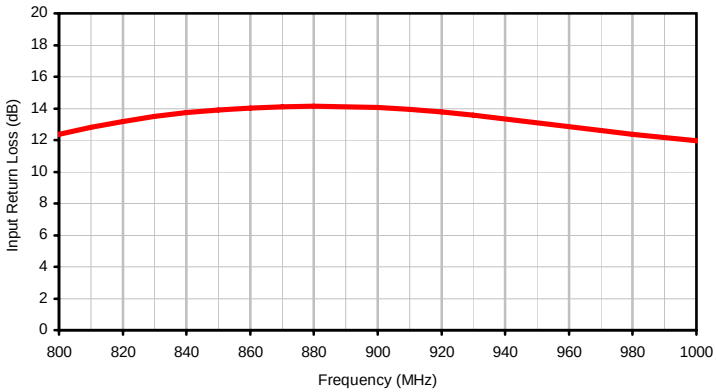
Insertion Loss (Pass band)



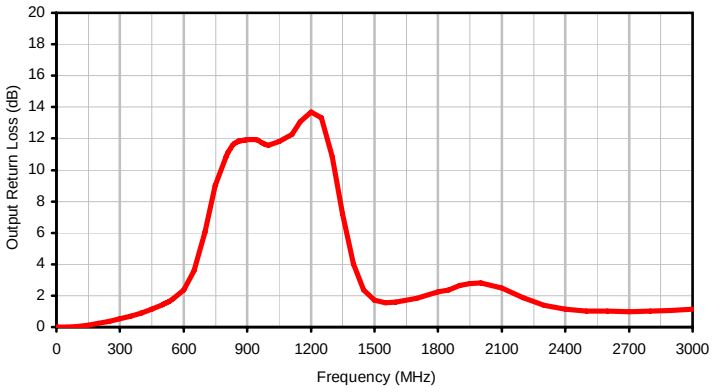
Input Return Loss



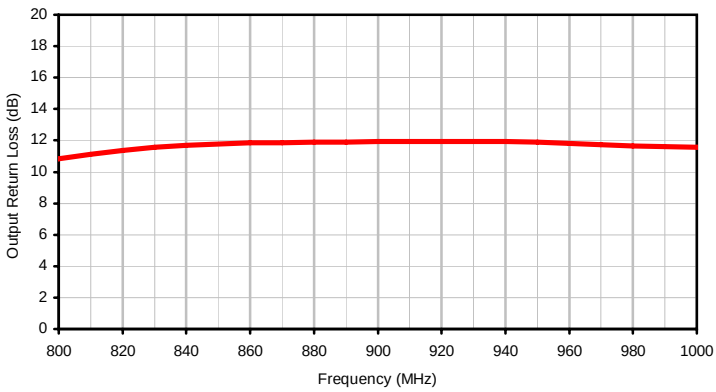
Input Return Loss



Output Return Loss



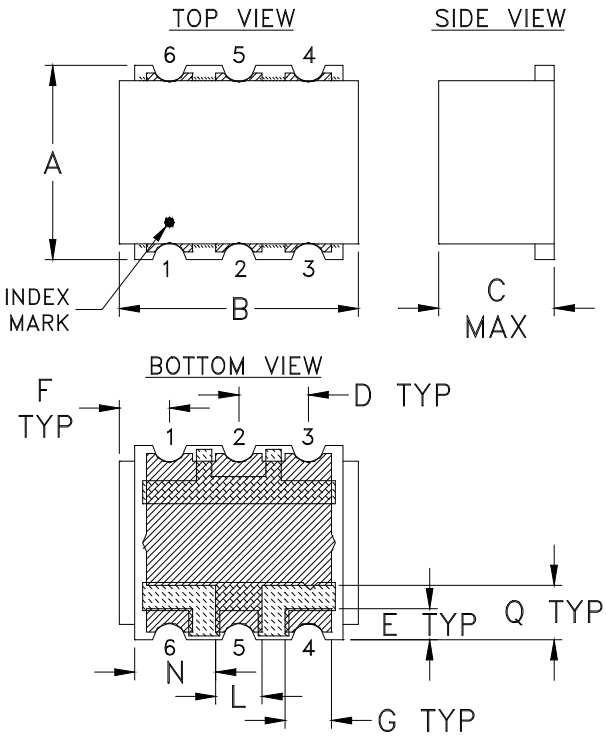
Ouput Return Loss



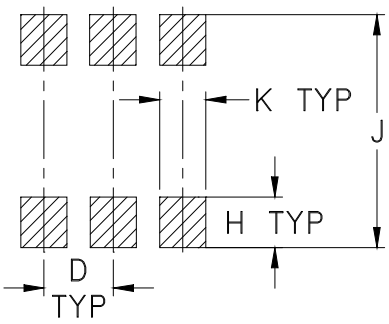
Case Style TT

TT1423

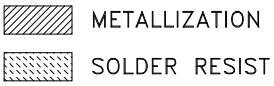
Outline Dimensions



PCB Land Pattern



Suggested Layout,
Tolerance to be within ±.002



CASE #	A	B	C	D	E	F	G	H	J	K	L	M
TT1423	.25 (6.35)	.31 (7.87)	.15 (3.81)	.090 (2.29)	.040 (1.02)	.065 (1.65)	.060 (1.52)	.065 (1.65)	.300 (7.62)	.060 (1.52)	.060 (1.52)	- -

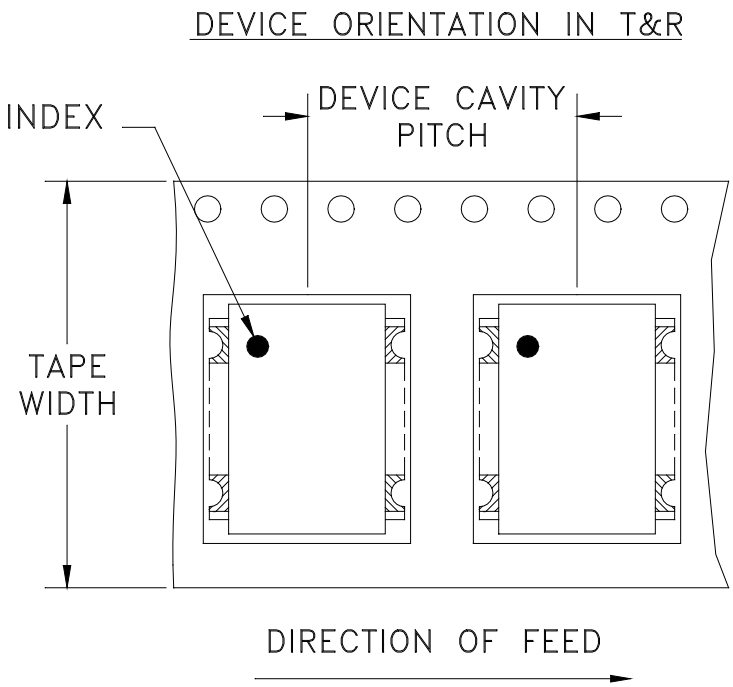
CASE #	N	P	Q	WT. GRAM
TT1423	.105 (2.67)	- -	.070 (1.78)	.50

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

Notes:

1. Case material: Plastic.
3. Terminations: 2-10 µ inch (.05-.25 microns) Gold over 100-300 µ inch (2.54-7.62 microns) Nickel plate.

Tape & Reel Packaging TR-F2



Tape Width, mm	Device Cavity Pitch, mm	Reel Size, inches	Devices per Reel See note
16	12	7	10
			20
			50
			100
			200
		13	500
			1000

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.

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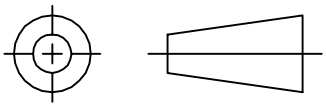
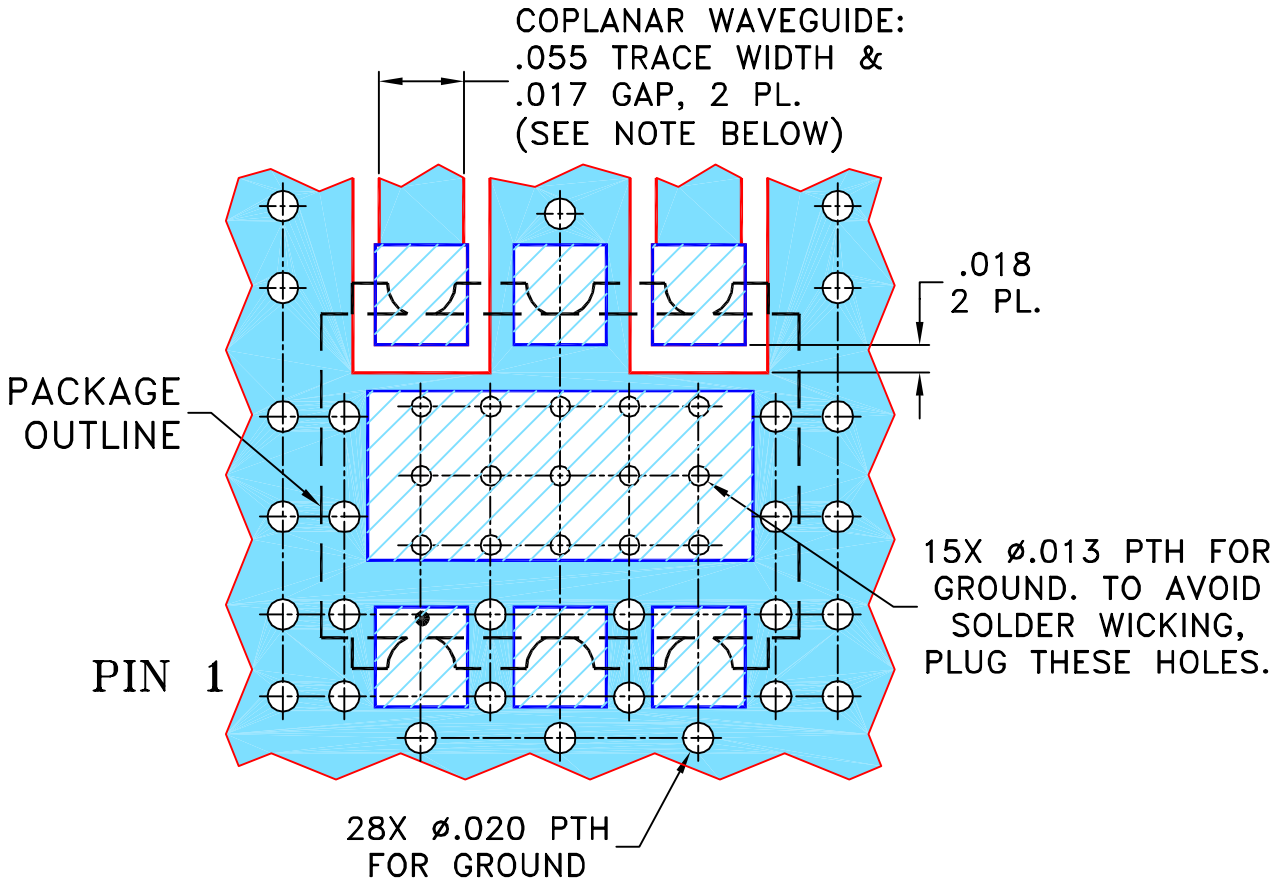
THIRD ANGLE PROJECTION



REVISIONS					
REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	M123346	NEW RELEASE	07/10/09	AV	DY

SUGGESTED MOUNTING CONFIGURATION FOR TT1423 CASE STYLE "06FL04" PIN CONNECTION



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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	AV	06/22/09
TOLERANCES ON:	CHECKED	IL	07/10/09
2 PL DECIMALS ±	APPROVED	DY	07/10/09
3 PL DECIMALS ± .005			
ANGLES ±			
FRACTIONS ±			

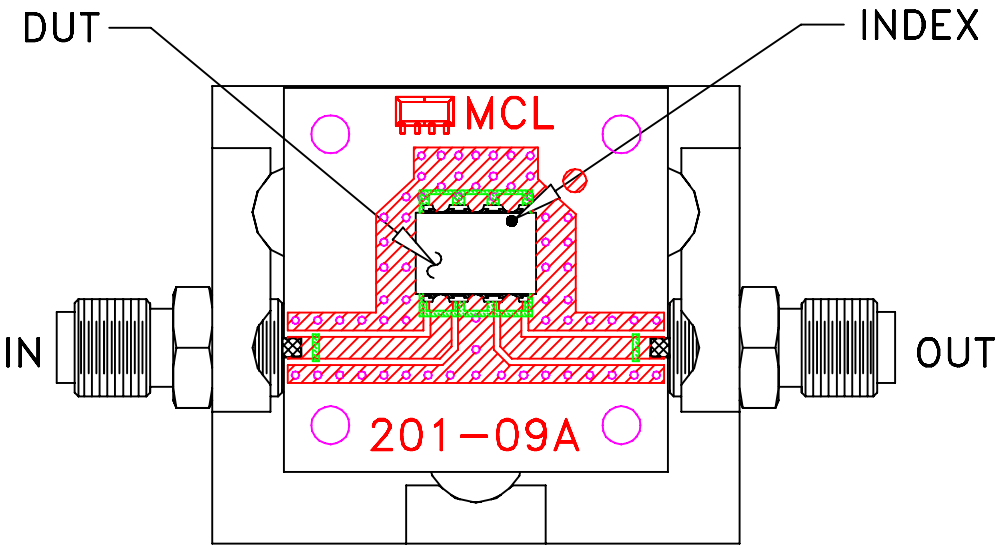
ASHEETA1.DWG REV:A DATE:01/12/95

Mini-Circuits® 13 Neptune Avenue Brooklyn NY 11235

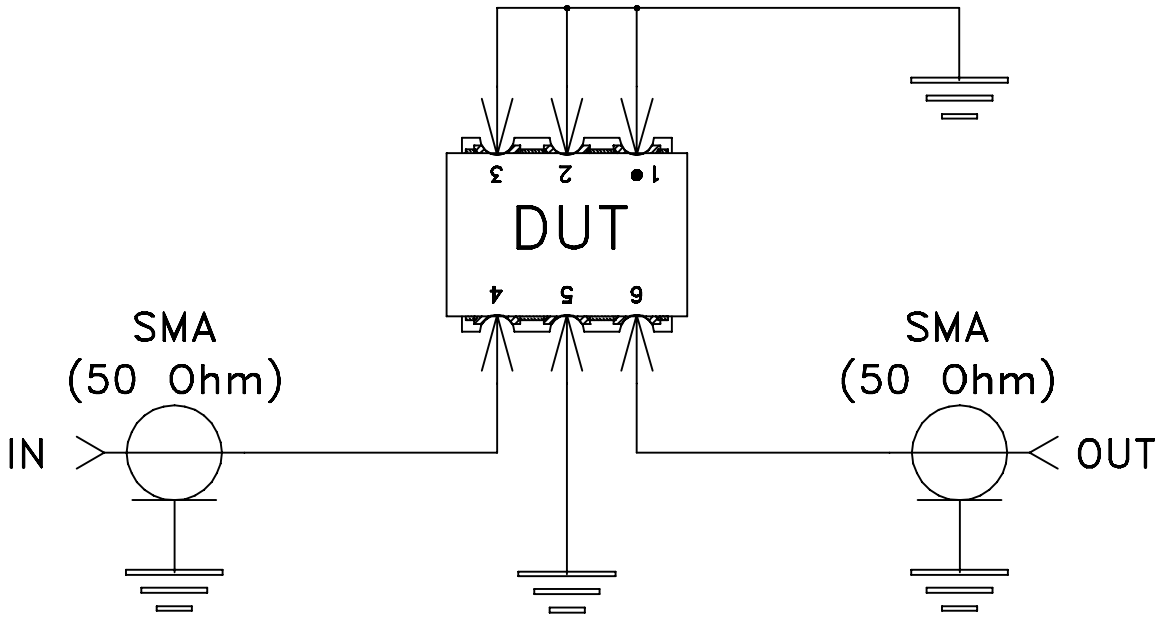
PL, 06FL04, TT1423, SYBP, TB-517+

SIZE	CODE IDENT	DRAWING NO:	REV:
A	15542	98-PL-308	OR
FILE: 98PL308	SCALE: 8:1	SHEET: 1 OF 1	

Evaluation Board and Circuit



TB-517+



Schematic Diagram

Notes:

1. 50 Ohm SMA Female connectors.
2. PCB Material: RO4350 or equivalent, Dielectric Constant=3.5, Thickness=.020 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