Surface Mount

Bias-Tee

50Ω Wideband 10 MHz to 6 GHz

RCBT-63+



Generic photo used for illustration purposes only

CASE STYLE: TT1224-2

+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"	10, 20, 50, 100, 200
13"	500

Maximum Ratings

Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power	30dBm max.
Voltage at DC port	25V max.
Input Current	500mA

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

Pad Terminations

RF	3
RF&DC	4
DC	1
NOT USED	2,5,6

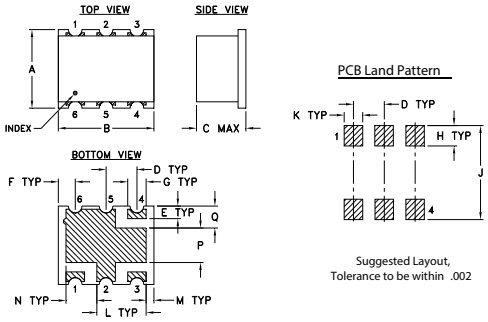
Features

- wideband, 10 to 6000 MHz
- 500mA DC current
- good isolation, 20dB typ.
- miniature surface mount 0.31"x0.25"
- aqueous washable

Applications

- biasing amplifiers
- biasing of laser diodes
- biasing of active antennas

Outline Drawing



Outline Dimensions (inch / mm)

A	B	C	D	E	F	G	H
.25	.31	.16	.100	.040	.055	.060	.065
6.35	7.87	4.06	2.54	1.02	1.40	1.52	1.65

J	K	L	M	N	P	Q	wt.
.300	.060	.160	.025	.100	.110	.070	grams
7.62	1.52	4.06	0.64	2.54	2.79	1.78	0.16

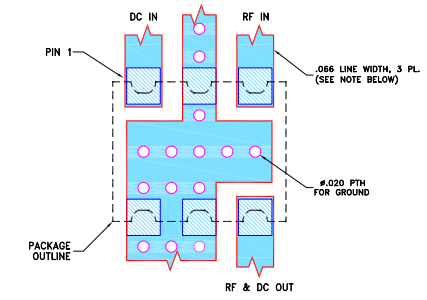
Electrical Specifications at 25°C

Parameter	Frequency (MHz)	Min.	Typ.	Max.	Unit
Frequency Range		10		6000	MHz
Insertion Loss	10-3500 3500-4800 4800-6000	— — —	0.6 1.0 1.4	1.2 1.5 2.0	dB
Isolation	10-30 30-4800 4800-6000	13 16 14	17 20 18	— — —	dB
VSWR	10-4800 4800-6000	— —	1.2 1.3	1.33 1.5	:1

Typical Performance Data

FREQUENCY (MHz)	INSERTION LOSS (dB) 0mA	VSWR (:1) 0mA	ISOLATION (dB) 0mA
	RF & DC-RF	RF-DC	RF & DC - DC
10	0.55	1.18	14.25
50	0.38	1.07	22.29
100	0.41	1.07	23.05
500	0.43	1.07	25.53
1000	0.38	1.06	24.06
1500	0.36	1.07	22.72
2000	0.36	1.08	20.78
2500	0.37	1.04	21.52
3000	0.37	1.06	23.44
3500	0.43	1.12	22.46
4000	0.51	1.15	20.74
4800	0.68	1.10	19.41
5000	0.73	1.09	19.22
5500	0.92	1.03	18.32
6000	1.17	1.05	18.08

Demo Board MCL P/N: TB-907+
Suggested PCB Layout (PL-577)

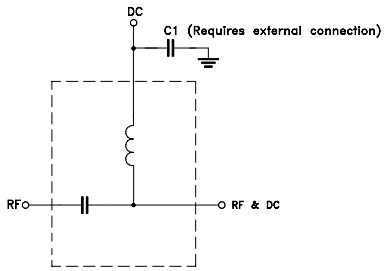


NOTES:
1. LINE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .030"±.002". COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS LINE WIDTH MAY NEED TO BE MODIFIED.
3. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

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

DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK.

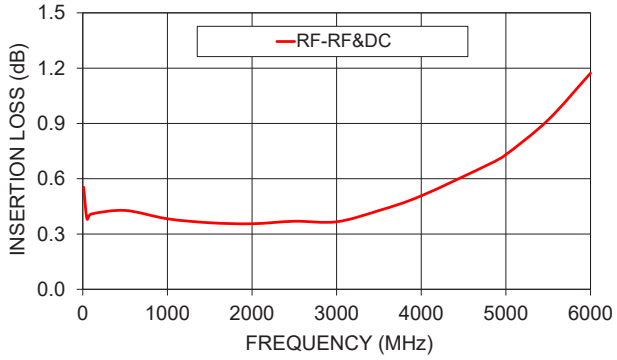
Functional Schematic



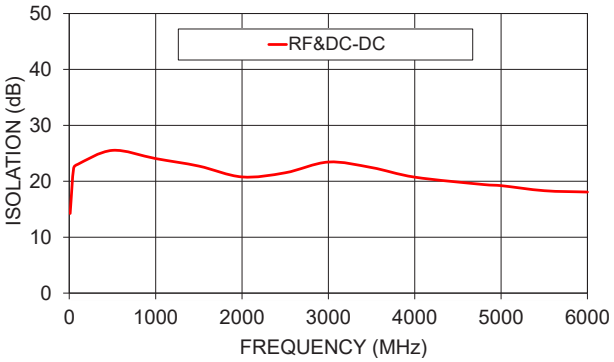
Notes

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.
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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

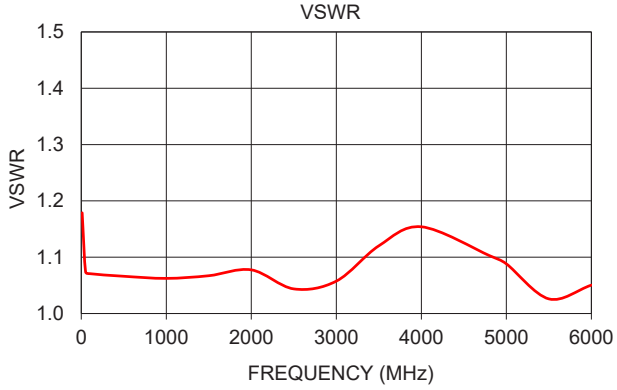
RCBT-63+
INSERTION LOSS



RCBT-63+
ISOLATION



RCBT-63+
VSWR



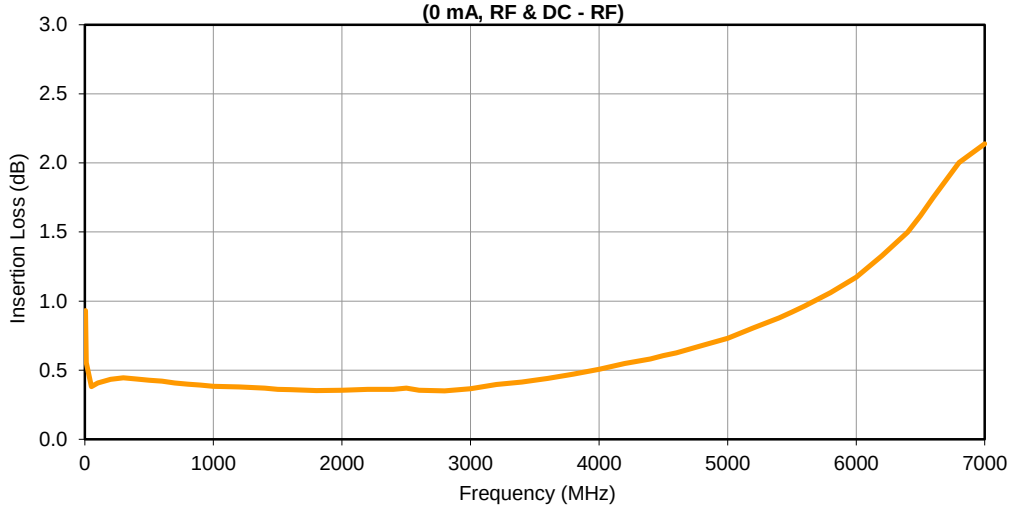
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Typical Performance Data

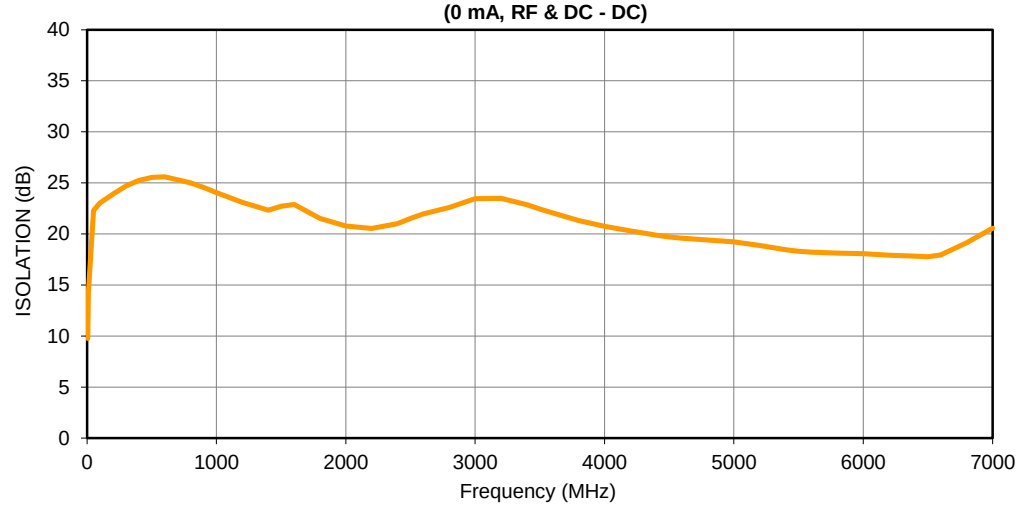
FREQ	INSERTION LOSS RF & DC-RF 0 mA	ISOLATION RF & DC-DC 0 mA	VSWR RF & DC 0 mA
(MHz)	(dB)	(dB)	(:1)
5	0.93	9.76	1.31
10	0.55	14.25	1.18
50	0.38	22.29	1.07
100	0.41	23.05	1.07
200	0.43	23.91	1.07
300	0.44	24.70	1.07
400	0.44	25.23	1.07
500	0.43	25.53	1.07
600	0.42	25.60	1.07
700	0.41	25.29	1.07
800	0.40	24.99	1.06
900	0.39	24.56	1.06
1000	0.38	24.06	1.06
1200	0.38	23.10	1.06
1400	0.37	22.33	1.07
1500	0.36	22.72	1.07
1600	0.36	22.90	1.07
1800	0.35	21.51	1.08
2000	0.36	20.78	1.08
2200	0.36	20.53	1.07
2400	0.36	21.02	1.05
2500	0.37	21.52	1.04
2600	0.36	21.97	1.04
2800	0.35	22.60	1.04
3000	0.37	23.44	1.06
3200	0.40	23.48	1.08
3400	0.41	22.87	1.11
3500	0.43	22.46	1.12
3600	0.44	22.07	1.13
3800	0.47	21.31	1.15
4000	0.51	20.74	1.15
4200	0.55	20.29	1.15
4400	0.58	19.87	1.14
4500	0.61	19.70	1.13
4600	0.63	19.59	1.12
4800	0.68	19.41	1.10
5000	0.73	19.22	1.09
5200	0.81	18.87	1.06
5400	0.88	18.46	1.04
5500	0.92	18.32	1.03
5600	0.96	18.22	1.02
5800	1.06	18.13	1.01
6000	1.17	18.08	1.05
6200	1.33	17.91	1.10
6400	1.50	17.83	1.15
6500	1.62	17.77	1.18
6600	1.75	17.93	1.21
6800	2.00	19.13	1.26
7000	2.14	20.56	1.34

Typical Performance Curves

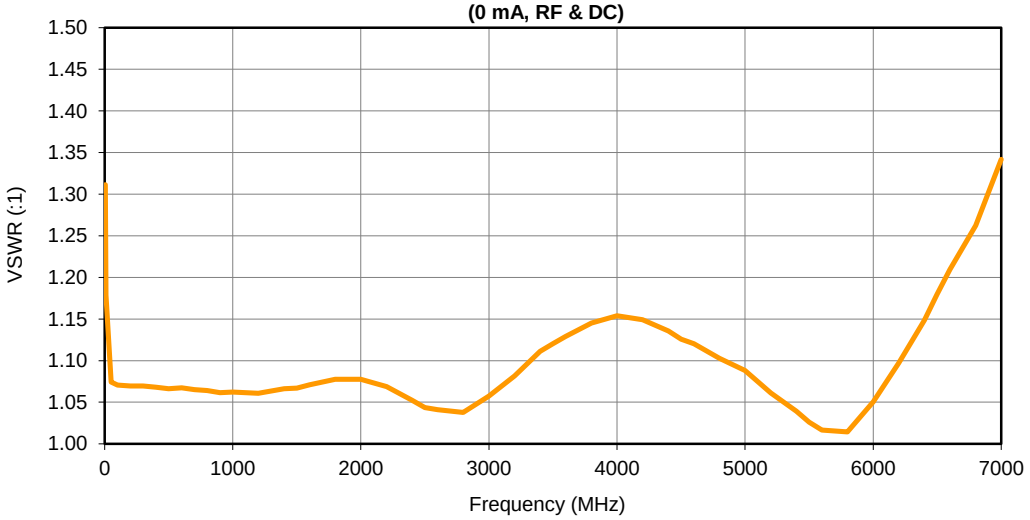
INSERTION LOSS
(0 mA, RF & DC - RF)



ISOLATION
(0 mA, RF & DC - DC)



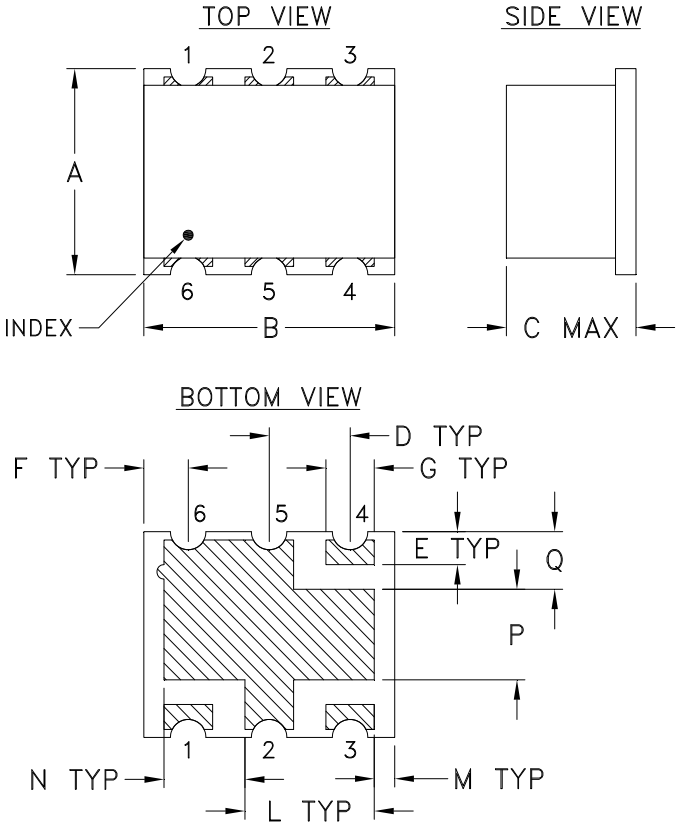
VSWR
(0 mA, RF & DC)



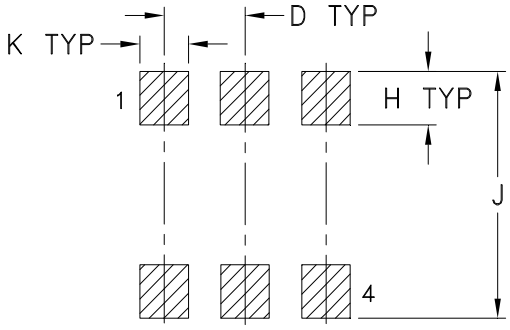
Case Style TT

TT1224-2

Outline Dimensions



PCB Land Pattern



Suggested Layout,
Tolerance to be within ±.002

CASE #	A	B	C	D	E	F	G	H	J	K	L
TT1224-2	.25 (6.35)	.31 (7.87)	.16 (4.06)	.100 (2.54)	.040 (1.02)	.055 (1.40)	.060 (1.52)	.065 (1.65)	.300 (7.62)	.060 (1.52)	.160 (4.06)

CASE #	M	N	P	Q	WT. GRAM
TT1224-2	.025 (.64)	.100 (2.54)	.110 (2.79)	.070 (1.78)	.16

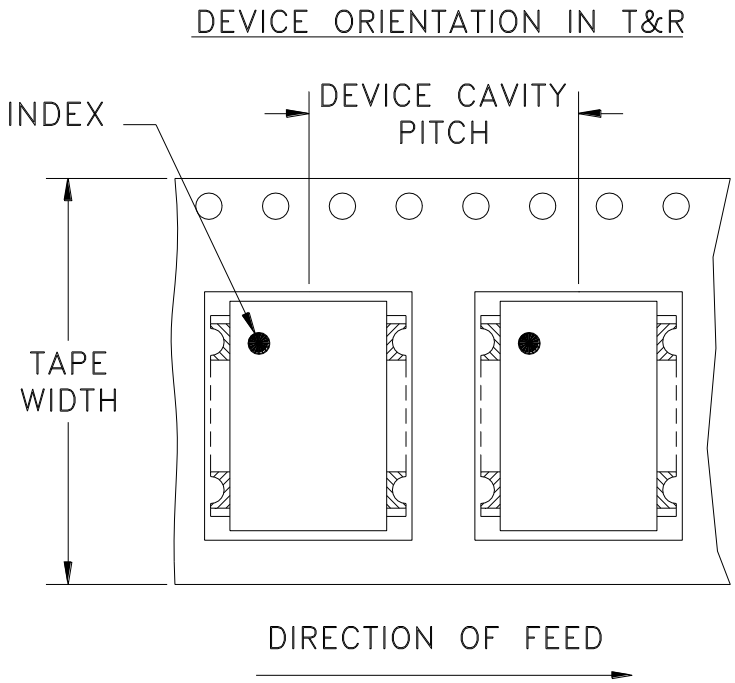
Dimensions are in inches (mm). Tolerances: 2Pl. ± .01; 3 Pl. ± .005

Notes:

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

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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

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

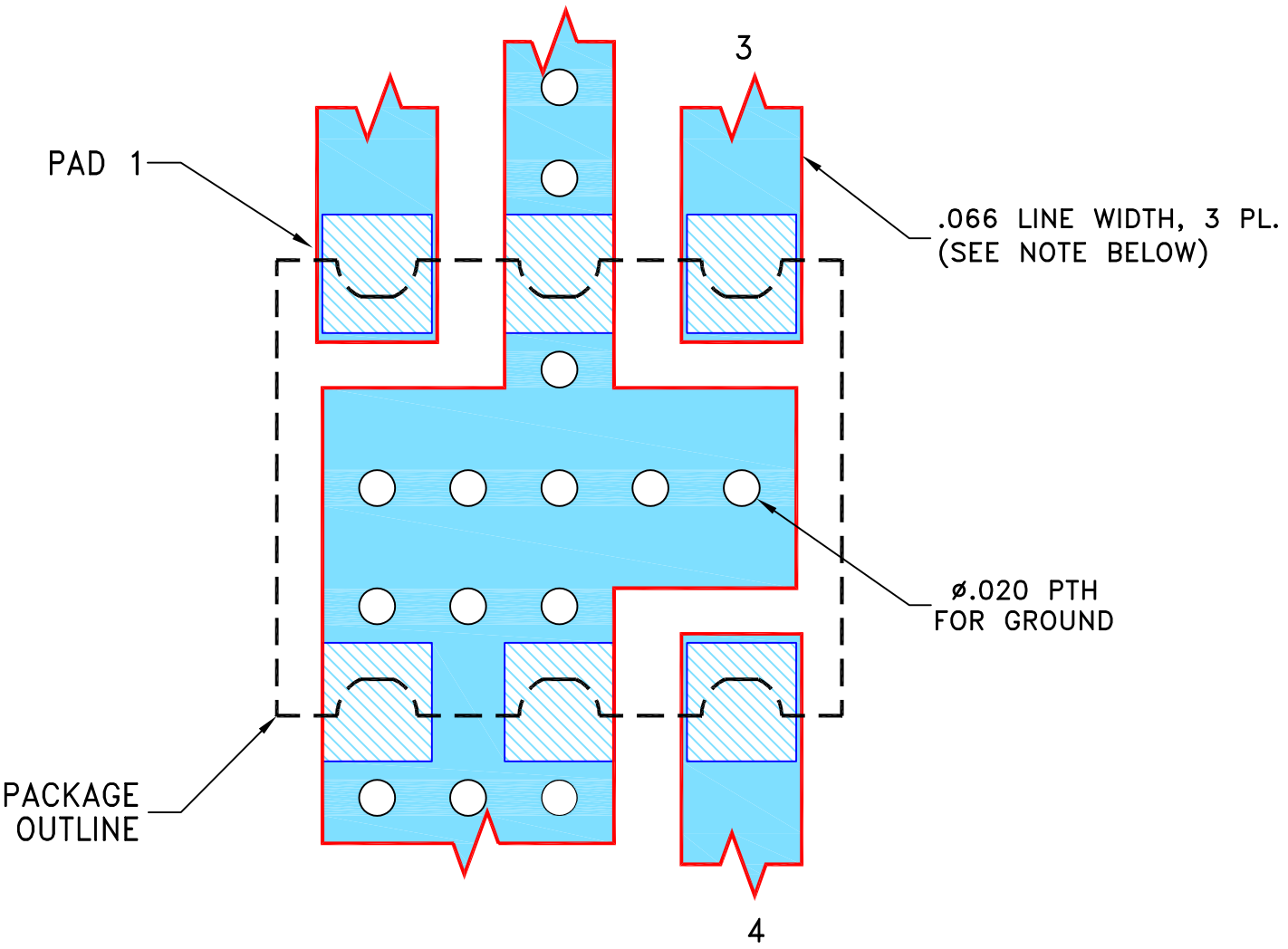
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THIRD ANGLE PROJECTION

REVISIONS					
REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	M166583	NEW RELEASE	03/28/18	ITG	ZL
A	ECO-016514	CORRECTED TYPO	01/19/23	ITG	TN

SUGGESTED MOUNTING CONFIGURATION
FOR TT1224-2 CASE STYLE, "06BT03" PIN CODE



NOTES:

1. LINE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .030±.002".
   COPPER: 1/2 OZ. EACH SIDE.
   FOR OTHER MATERIALS LINE WIDTH MAY NEED TO BE MODIFIED.
3. 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	ITG	03/19/18
TOLERANCES ON:	CHECKED	GF	03/28/18
2 PL DECIMALS ±	APPROVED	ZL	03/28/18
3 PL DECIMALS ± .005			
ANGLES ±			
FRACTIONS ±			

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

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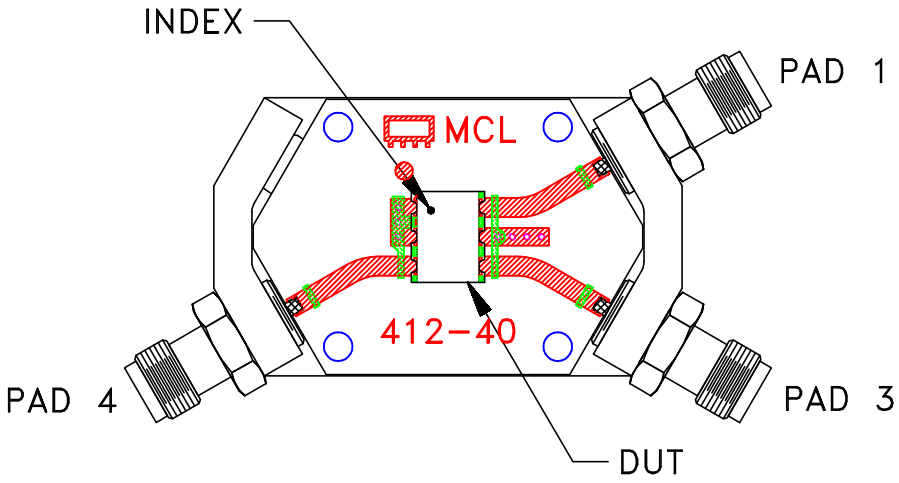
PL, 06BT03, TT1224-2, TB-907+

SIZE	CODE IDENT	DRAWING NO:	REV:
A	15542	98-PL-577	A

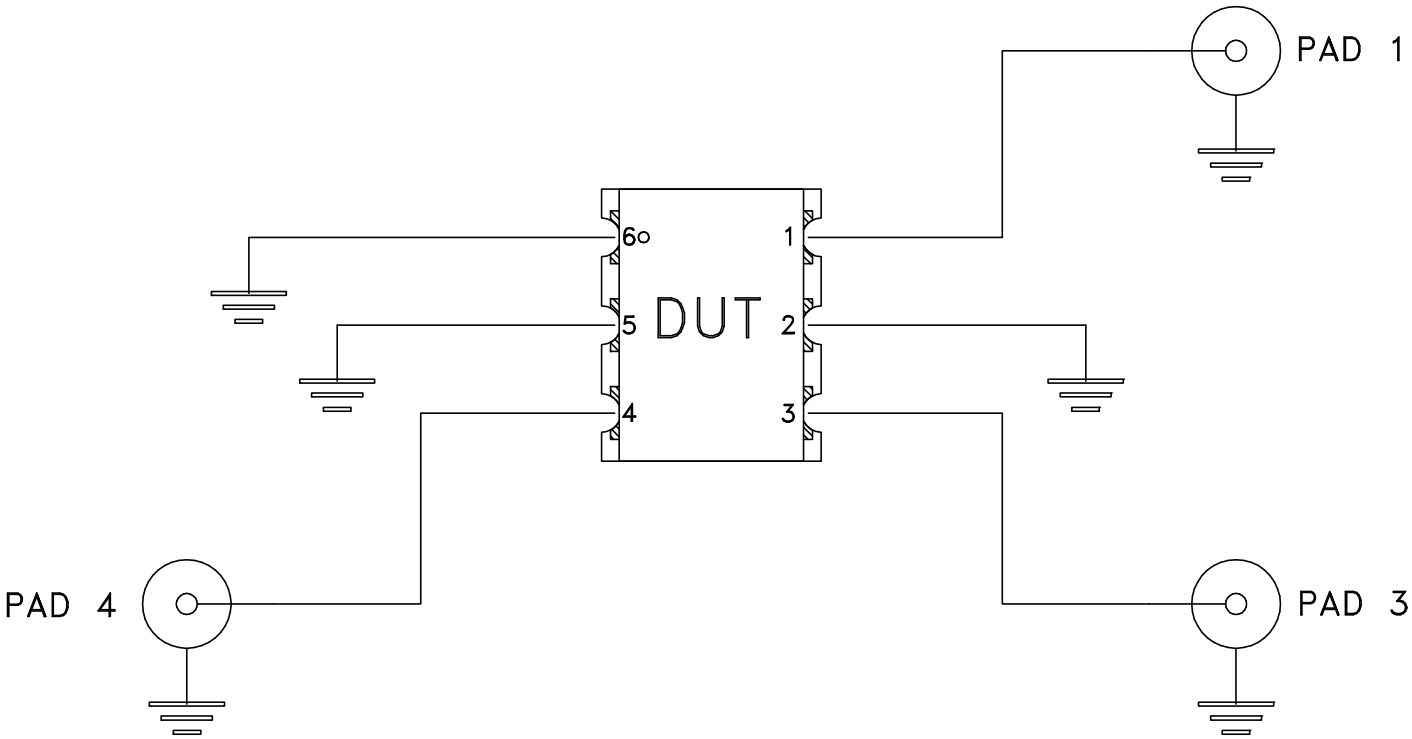
FILE:	SCALE:	SHEET:
98PL577	10:1	1 OF 1

Evaluation Board and Circuit

For Pad connection refer to Data Sheet of the DUT



TB-907+



Schematic Diagram

Notes:

1. 50 Ohm SMA Female connectors.
2. PCB Material: 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

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