SURFACE MOUNT

Bias Tee

RCBT-63H+

50Ω Wideband 900 to 6000 MHz

THE BIG DEAL

- Low Insertion Loss, 0.3 dB Typ.
- 2.5 A DC Current
- Good Isolation, 20 dB Typ.
- Good Return Loss, 18 dB Typ.
- Miniature Surface Mount, 0.31x0.25"
- Aqueous Washable

Generic photo used for illustration purposes only

CASE STYLE: TT1224-2

+RoHS Compliant
The +Suffix identifies RoHS Compliance.
See our website for methodologies and qualifications

APPLICATIONS

- Biasing Amplifiers
- Biasing of Laser Diodes
- Biasing of Active Antennas

PRODUCT OVERVIEW

Mini-Circuits' RCBT-63H+ is a surface mount bias tee providing high DC voltage/current handling and low insertion loss for applications over a very wide frequency range from 900 to 6000 MHz. This model is capable of handling up to +30 dBm (1 W) RF input power, +50 V DC voltage and 2.5 A DC current. RCBT-63H+ is enclosed in a small package of 0.31x0.25", saving significant space on customers' PCB.

KEY FEATURES

Feature	Advantages
Wideband, 900 to 6000 MHz	Supports a wide range of applications with a single device, including biasing broadband amplifier, laser diodes, active antennas and more.
Low Insertion Loss, 0.3 dB Typ.	Preserves signal strength from input to output and minimizes overall system loss.
Excellent Return Loss, 18 dB Typ.	Provides excellent matching for 50Ω systems, with minimal signal reflection.
RF Power Handling Up to 1 W	This model supports applications with a variety of power requirements.
High DC Current Handling, 2.5 A	RCBT-63H+ supports systems/applications with high DC current requirements.

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ELECTRICAL SPECIFICATIONS AT +25°C

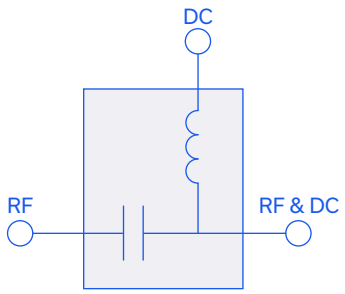
Parameter	Frequency (MHz)	Min.	Typ.	Max.	Unit
Frequency Range		900		6000	MHz
Insertion Loss	900-1200		0.3	0.6	dB
	1200-5700		0.2	0.5	
	5700-6000		0.4	0.7	
Isolation	900-4800	20	23		dB
	4800-6000	14	17		
VSWR	900-1200		1.5	1.8	:1
	1200-5700		1.3	1.5	
	5700-6000		1.4	1.7	

ABSOLUTE MAXIMUM RATINGS

Operating Temperature	-40°C to +85°C
Storage Temperature	-55°C to +100°C
RF Power	+30 dBm max.
Voltage at DC Port	+50 V max.
Input Current	2.5 A max.

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

FUNCTIONAL SCHEMATIC



SURFACE MOUNT

Bias Tee

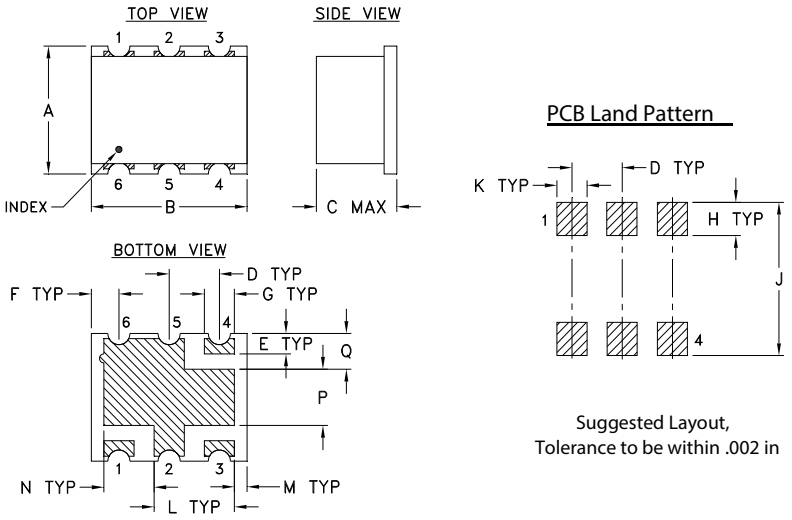
RCBT-63H+

50Ω Wideband 900 to 6000 MHz

PAD CONNECTIONS

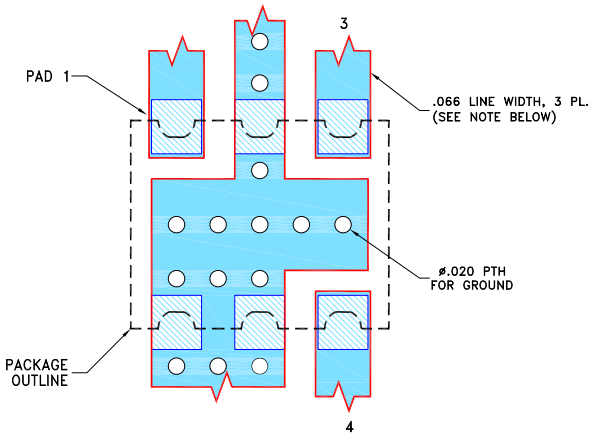
RF	4
RF & DC	3
DC	1
NOT USED	2,5,6

OUTLINE DRAWING



PRODUCT MARKING: RCBT-63H+

DEMO BOARD MCL P/N: TB-RCBT-63H+
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.

OUTLINE DIMENSIONS (Inches / 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

TAPE & REEL INFORMATION: F2

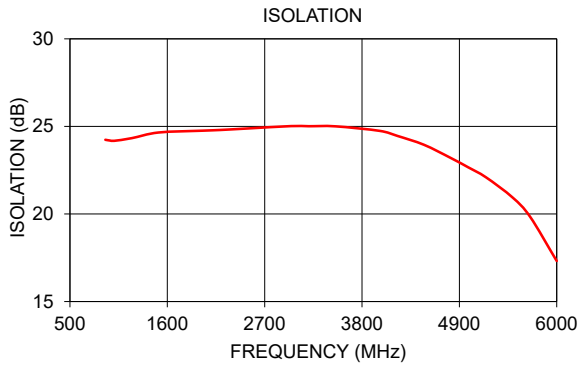
Bias Tee

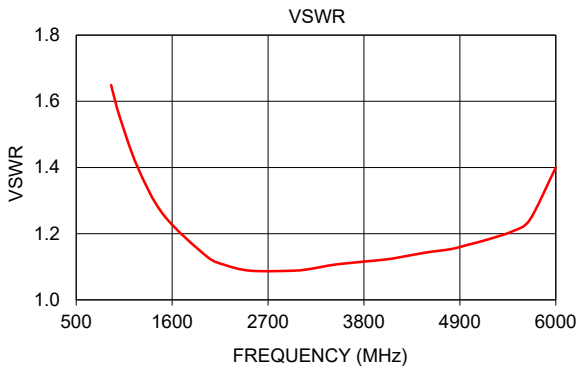
RCBT-63H+

50Ω Wideband 900 to 6000 MHz

TYPICAL PERFORMANCE DATA

Frequency (MHz)	Insertion Loss (dB) RF & DC-RF	Isolation (dB) RF	VSWR (:1) RF & DC - DC
900	0.42	24.24	1.65
950	0.39	24.20	1.60
1000	0.37	24.18	1.55
1200	0.30	24.33	1.40
1500	0.22	24.65	1.26
2000	0.17	24.76	1.13
2200	0.16	24.80	1.11
2500	0.17	24.88	1.09
3000	0.15	25.02	1.09
3200	0.15	25.01	1.09
3500	0.14	25.00	1.11
4000	0.14	24.75	1.12
4200	0.14	24.46	1.13
4500	0.14	23.95	1.14
4800	0.15	23.21	1.15
5000	0.16	22.66	1.17
5200	0.17	22.10	1.18
5500	0.20	20.95	1.21
5700	0.25	19.84	1.24
6000	0.43	17.32	1.40





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/terms/viewterm.html

Surface Mount

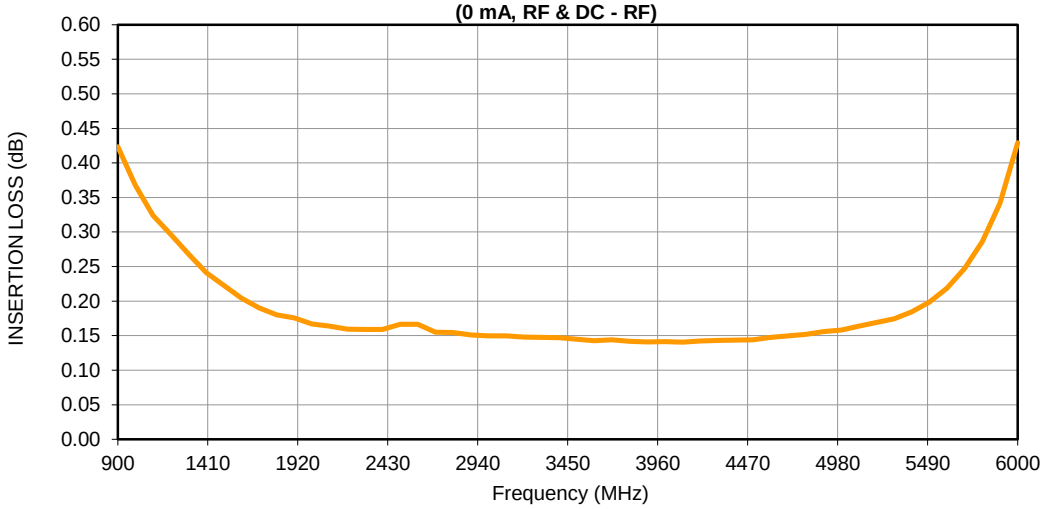
Bias-Tee **RCBT-63H+**

Typical Performance Data

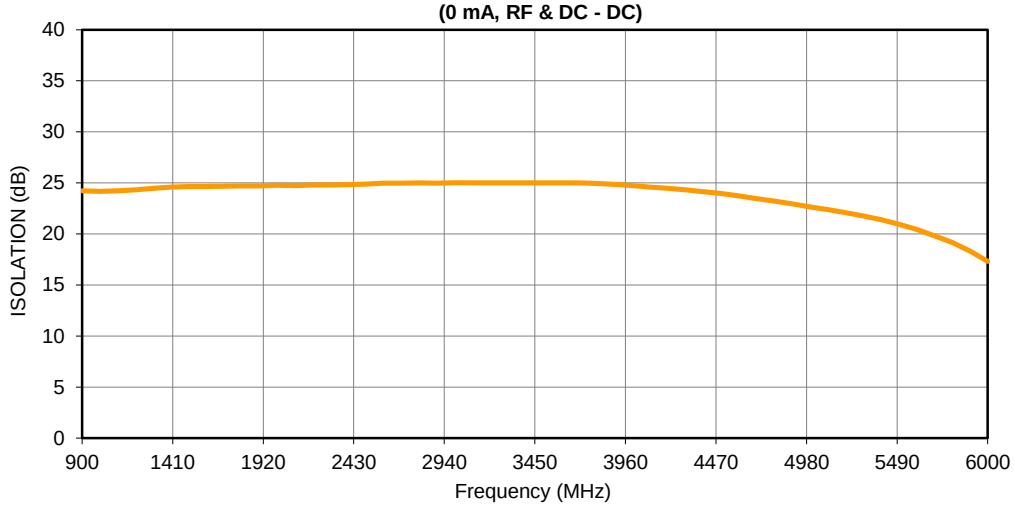
FREQ	INSERTION LOSS RF & DC-RF 0 mA	ISOLATION RF & DC-DC 0 mA	VSWR RF & DC 0 mA
(MHz)	(dB)	(dB)	(:1)
900	0.42	24.24	1.65
1000	0.37	24.18	1.55
1100	0.32	24.24	1.47
1200	0.30	24.33	1.40
1300	0.27	24.48	1.34
1400	0.24	24.58	1.29
1500	0.22	24.65	1.25
1600	0.20	24.65	1.22
1700	0.19	24.67	1.19
1800	0.18	24.72	1.17
1900	0.18	24.71	1.15
2000	0.17	24.76	1.13
2100	0.16	24.75	1.11
2200	0.16	24.80	1.10
2300	0.16	24.81	1.09
2400	0.16	24.83	1.09
2500	0.17	24.88	1.09
2600	0.17	24.99	1.09
2700	0.16	24.96	1.09
2800	0.15	24.99	1.09
2900	0.15	24.99	1.09
3000	0.15	25.02	1.10
3100	0.15	25.00	1.10
3200	0.15	25.01	1.11
3300	0.15	25.01	1.12
3400	0.15	25.00	1.13
3500	0.14	25.00	1.14
3600	0.14	25.01	1.14
3700	0.14	24.99	1.14
3800	0.14	24.95	1.15
3900	0.14	24.87	1.15
4000	0.14	24.75	1.16
4100	0.14	24.60	1.16
4200	0.14	24.46	1.17
4300	0.14	24.31	1.17
4400	0.14	24.13	1.17
4500	0.14	23.95	1.17
4600	0.15	23.73	1.17
4700	0.15	23.47	1.18
4800	0.15	23.21	1.18
4900	0.16	22.94	1.18
5000	0.16	22.66	1.18
5100	0.16	22.38	1.19
5200	0.17	22.10	1.19
5300	0.17	21.76	1.19
5400	0.18	21.40	1.19
5500	0.20	20.95	1.20
5600	0.22	20.44	1.20
5700	0.25	19.84	1.22
5800	0.29	19.17	1.25
5900	0.34	18.32	1.29
6000	0.43	17.32	1.37

Typical Performance Curves

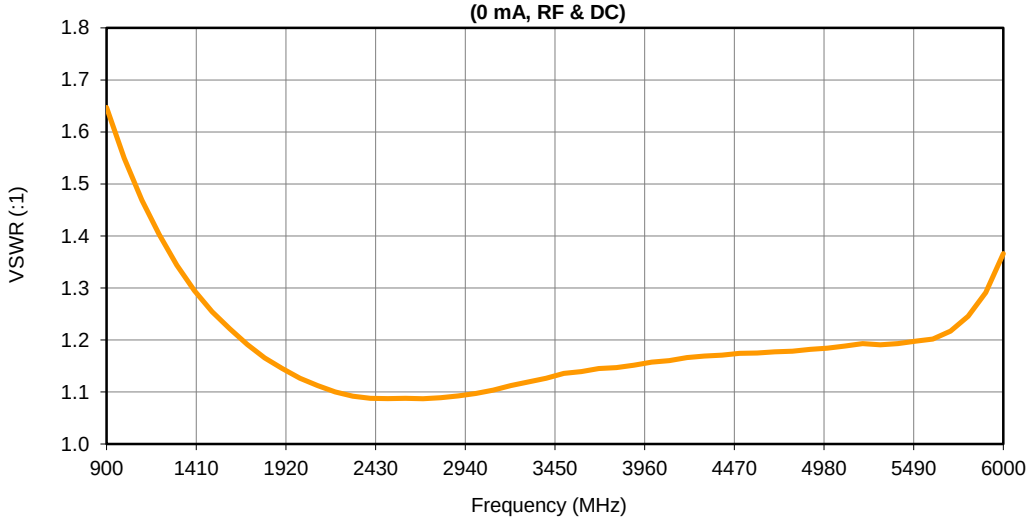
INSERTION LOSS
(0 mA, RF & DC - RF)



ISOLATION
(0 mA, RF & DC - DC)



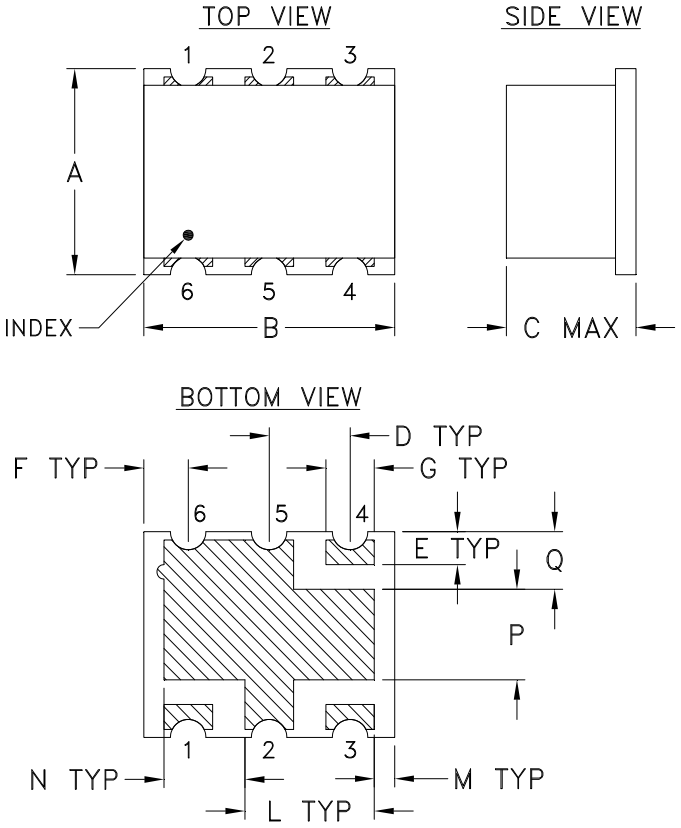
VSWR
(0 mA, RF & DC)



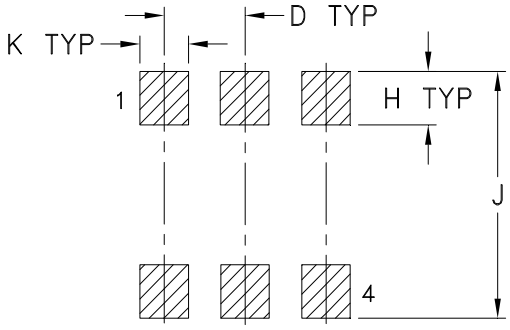
Case Style TT

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)

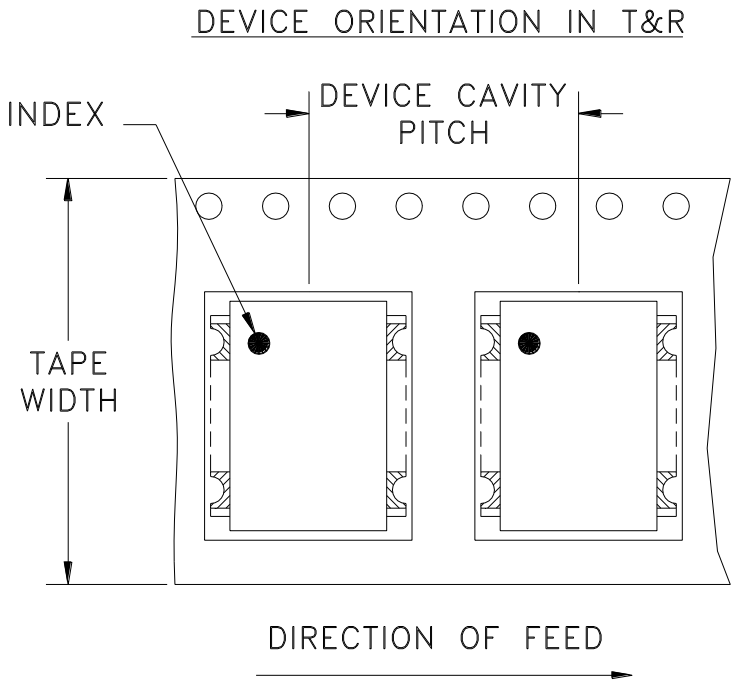
CASE #	M	N	P	Q	WT. GRAM
TT1224-2	.025 (.64)	.100 (2.54)	.110 (2.79)	.070 (1.78)	.16

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

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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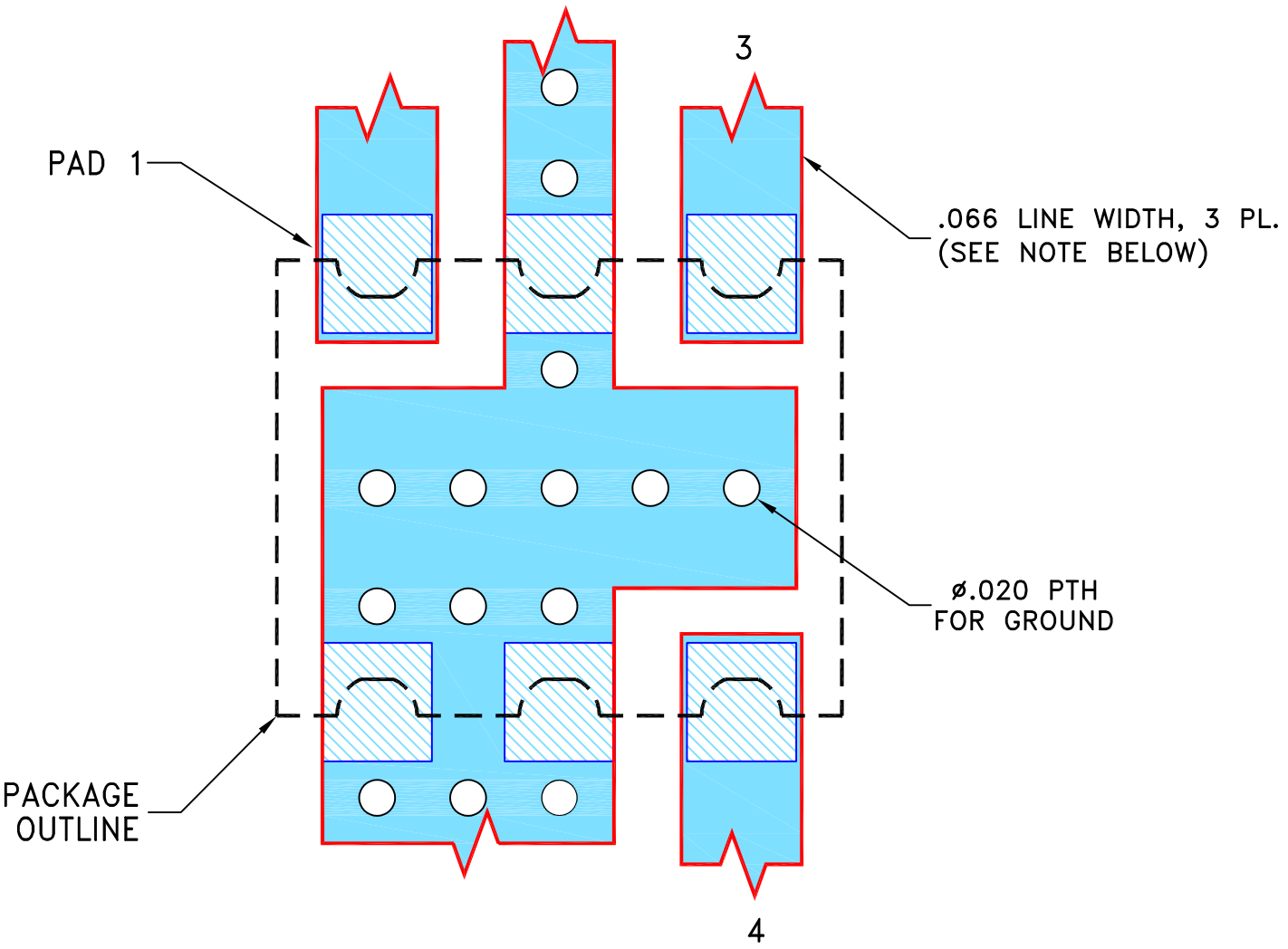
THIRD ANGLE PROJECTION

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 ±			

Mini-Circuits®

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

Mini-Circuits®
13 Neptune Avenue
Brooklyn NY 11235

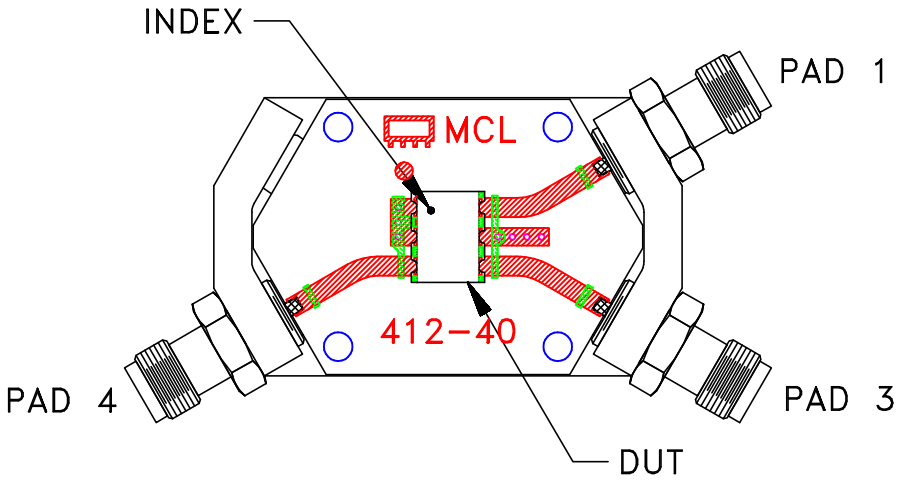
PL, 06BT03, TT1224-2, TB-907+

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

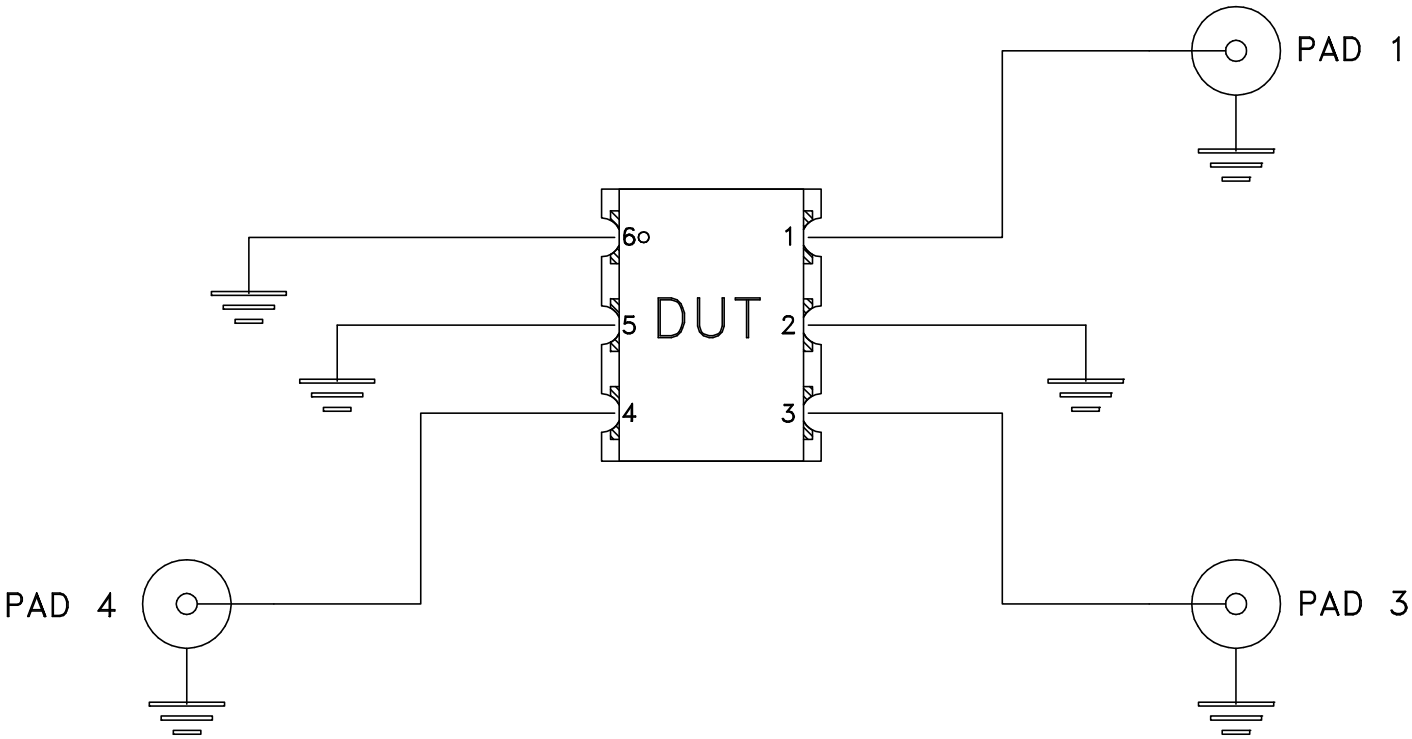
FILE:	SCALE:	SHEET:
98PL577	10:1	1 OF 1

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.

Mini-Circuits®

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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