

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

Reel Size	Devices/Reel
7"	10, 20, 50, 100, 200
13"	500

Maximum Ratings

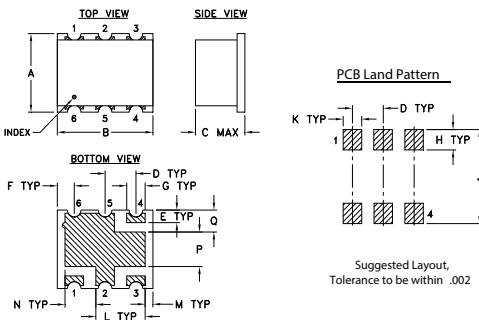
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power	30dBm max.
Voltage at DC port	25V max.
Input Current	500mA

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

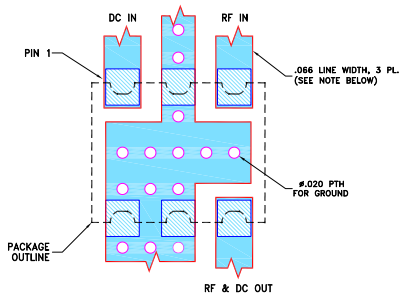
Outline Drawing



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

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.
 2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.
 3. DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER).
 4. DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK.

Notes

- 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.
- Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
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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

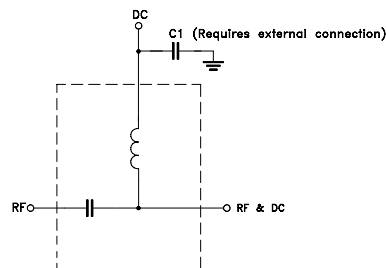
Electrical Specifications at 25°C

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

Typical Performance Data

FREQUENCY (MHz)	INSERTION LOSS (dB)	VSWR (:1)	ISOLATION (dB)
	0mA RF & DC-RF	0mA RF-DC	0mA 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

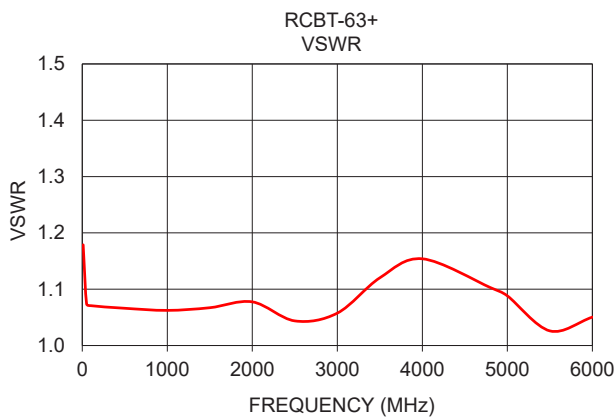
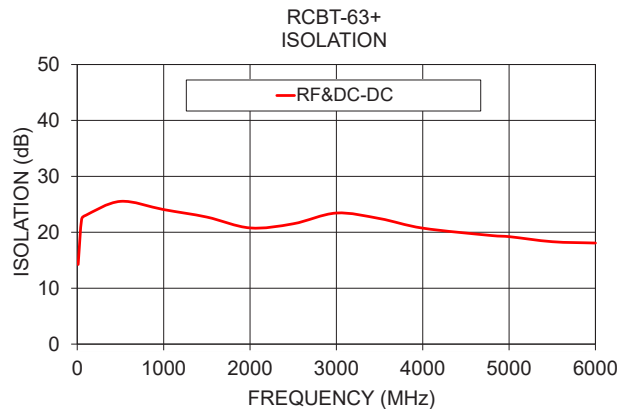
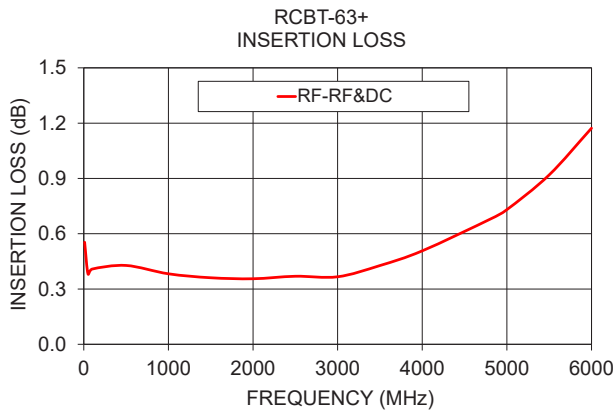
Functional Schematic



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REV. OR
M166443
RCBT-63+
ED-16112106
ZL/CP/AM
200924
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Notes

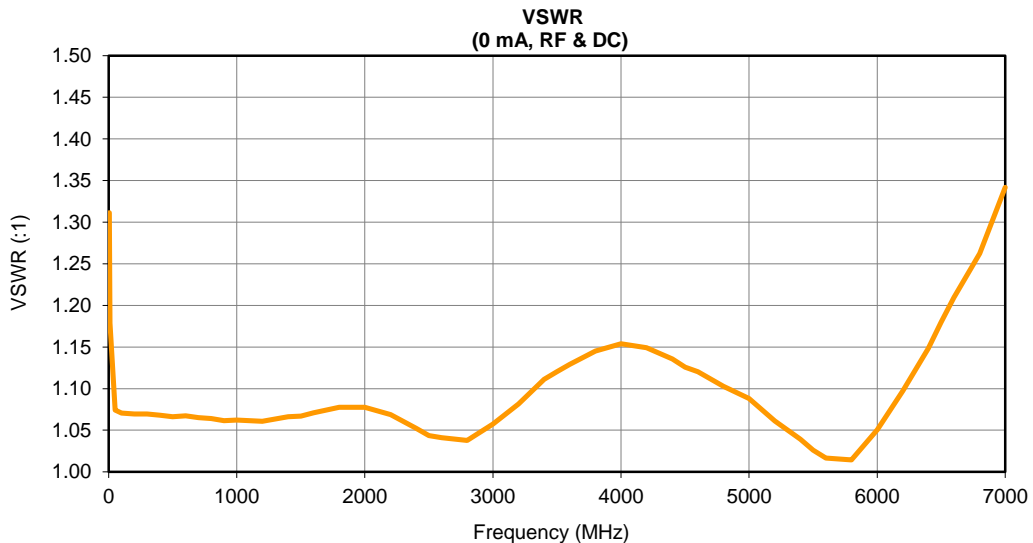
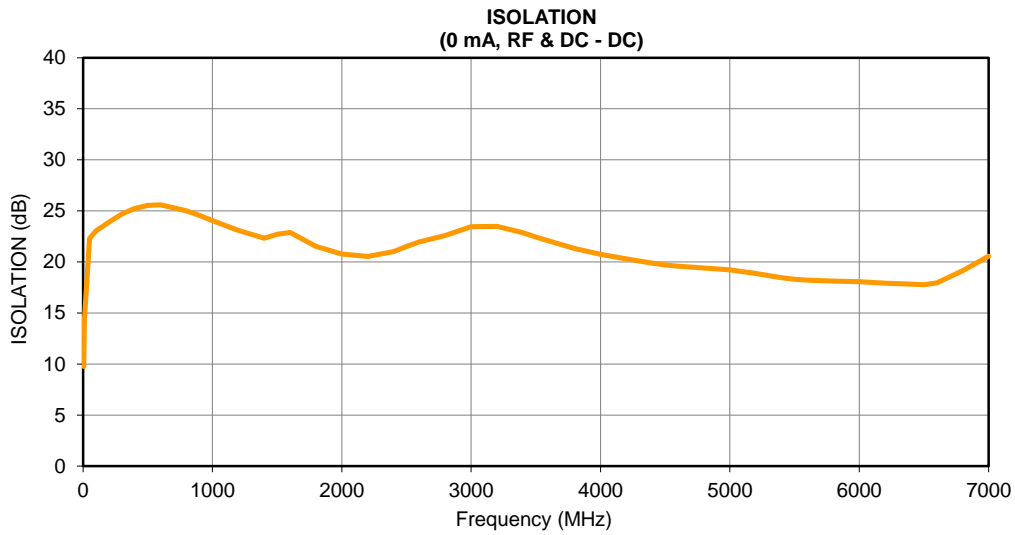
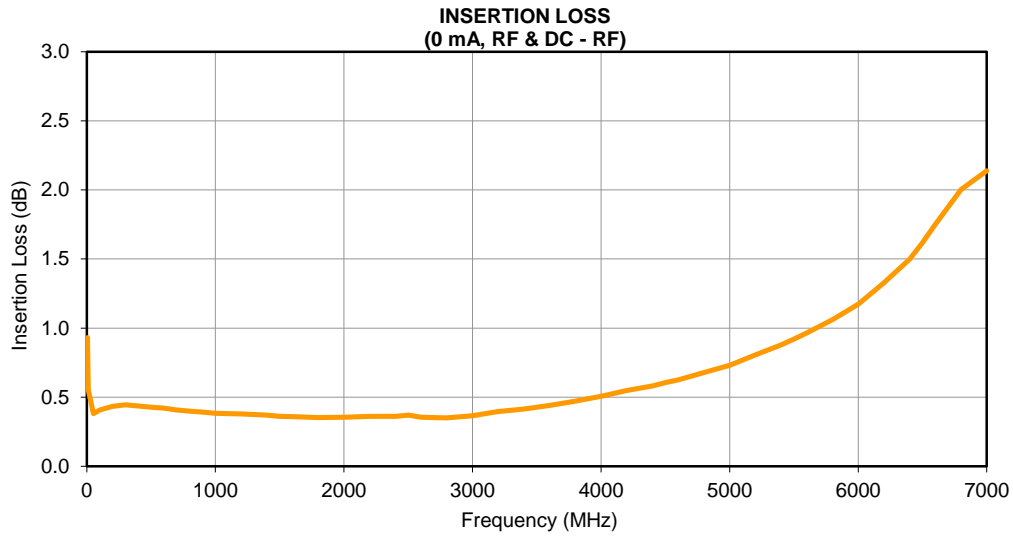
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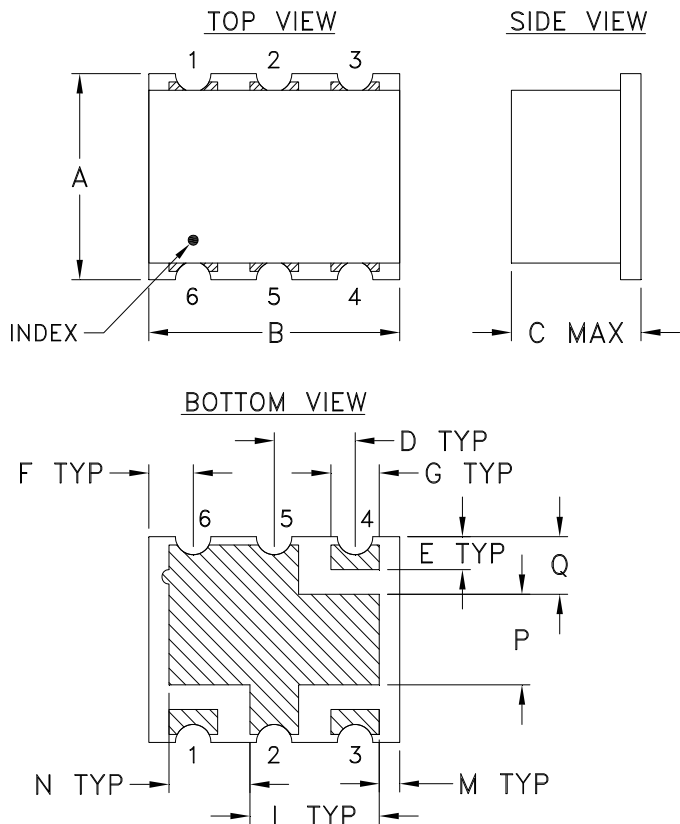
Typical Performance Data

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

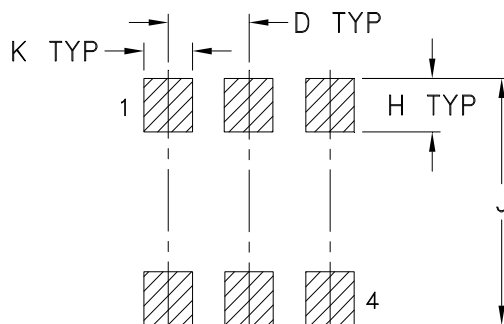
Typical Performance Curves



Outline Dimensions



PCB Land Pattern



Suggested Layout,
Tolerance to be within ± 0.002

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. $\pm .01$; 3 Pl. $\pm .005$

Notes:

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



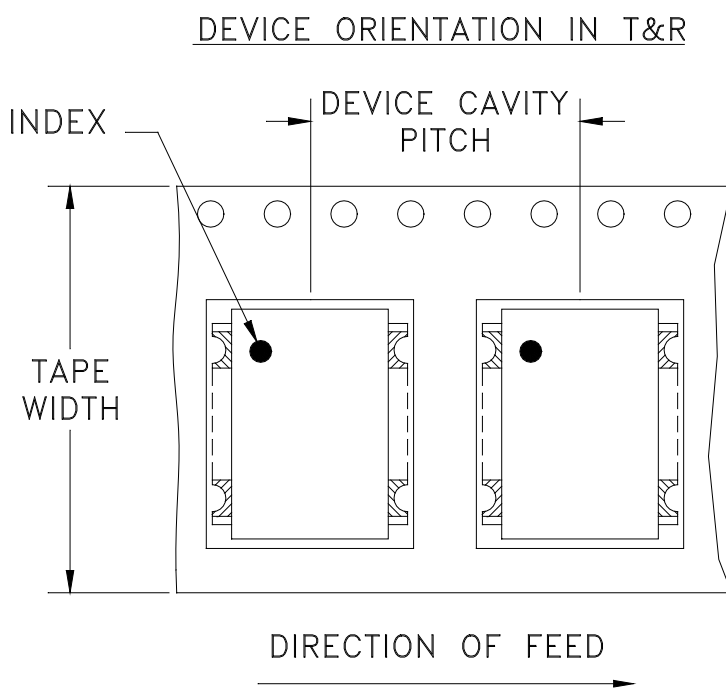
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RF/IF MICROWAVE COMPONENTS

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

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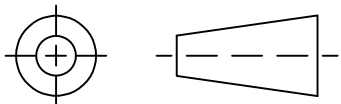
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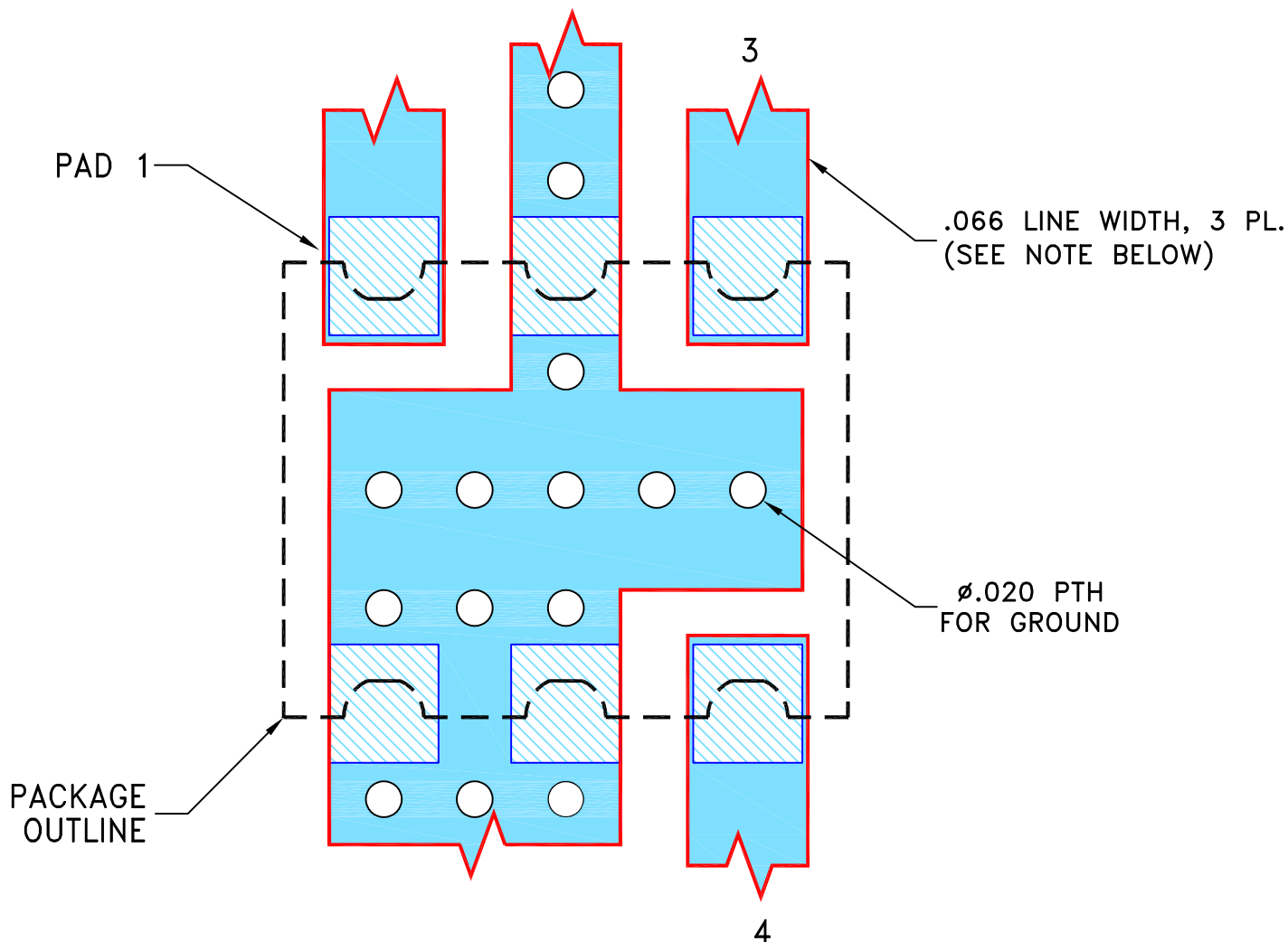
THIRD ANGLE PROJECTION



REVISIONS

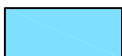
REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	M166583	NEW RELEASE	03/28/18	ITG	ZL
A	ECO-016514	CORRECTED TYPO	01/19/23	ITG	TN

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

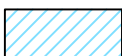


NOTES:

1. LINE WIDTH IS SHOWN FOR ROGERS R04350B WITH DIELECTRIC THICKNESS $.030 \pm .002$ ".
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 \pm	APPROVED	ZL	03/28/18
3 PL DECIMALS \pm .005			
ANGLES \pm			
FRACTIONS \pm			



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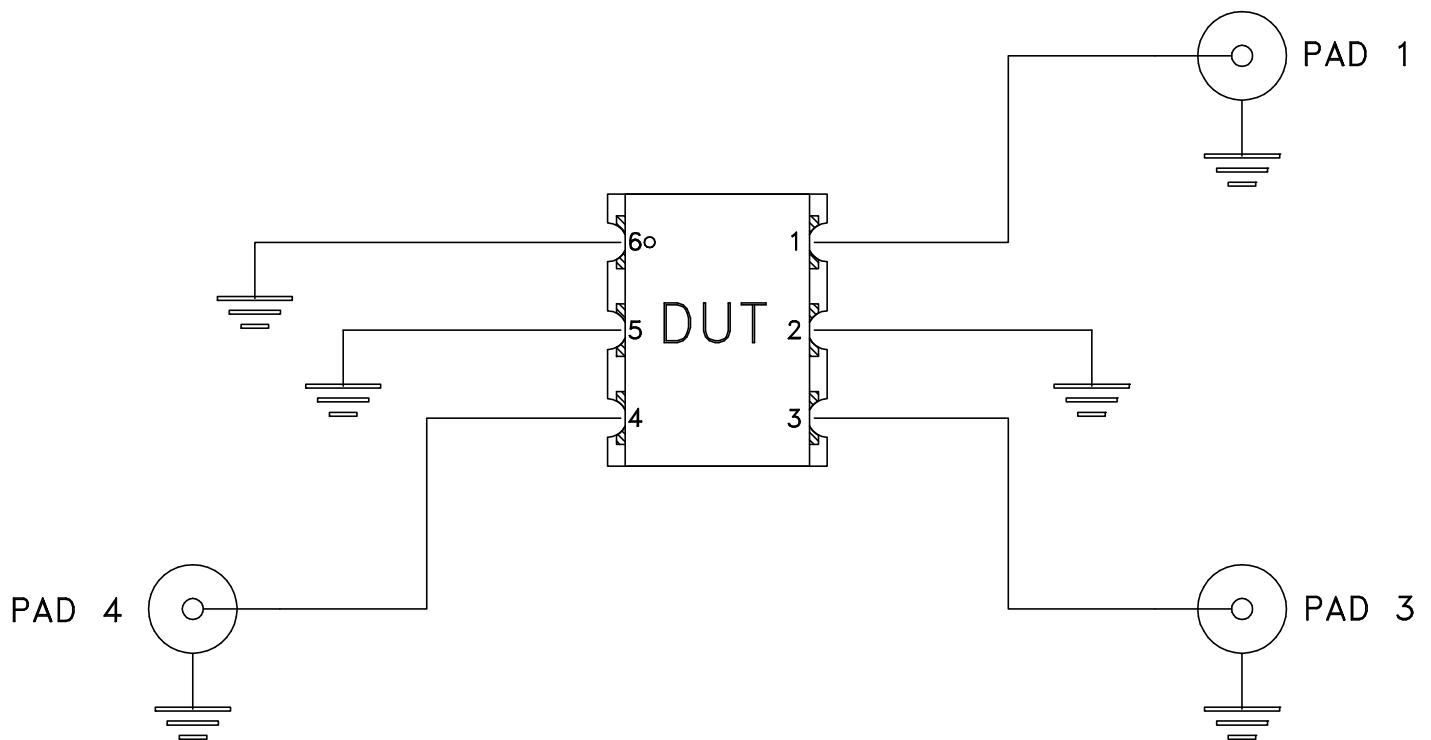
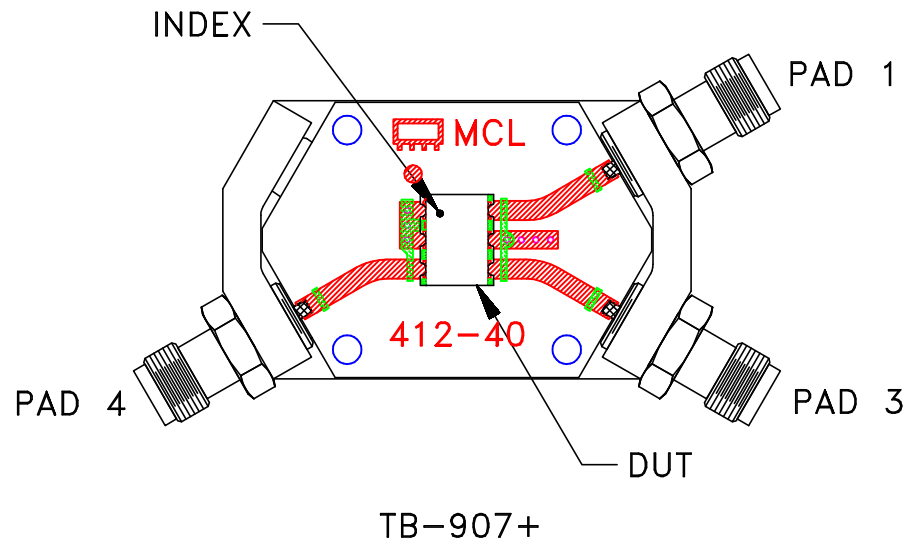
PL, 06BT03, TT1224-2, TB-907+

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SIZE	CODE IDENT	DRAWING NO:	REV:
A	15542	98-PL-577	A
FILE:	98PL577	SCALE:	10:1
SHEET:	1	OF	1

Evaluation Board and Circuit


For Pad connection refer to Data Sheet of the DUT



Schematic Diagram

Notes:

1. 50 Ohm SMA Female connectors.
2. PCB Material: R04350 or equivalent,
Dielectric Constant=3.5, Thickness=.030 inch.

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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