

Surface Mount Bandpass Filter

BPHI-332+

50Ω 329 to 335 MHz



CASE STYLE: HQ1157

Features

- Very sharp rejection
- Low passband IL
- Shielded case

Applications

- Aviation/Aeronautical
- Radio communications
- Defense systems

Electrical Specifications at 25°C

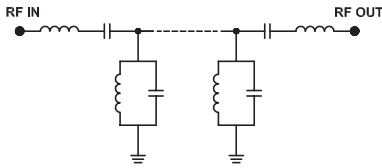
Parameter	F#	Frequency (MHz)	Min.	Typ.	Max.	Unit	
Pass Band	Center Frequency	—	—	332	—	MHz	
	Insertion Loss	F1-F2	329-335	—	4.5	5.0	dB
	VSWR	F1-F2	329-335	—	1.5	2.0	:1
Stop Band, Lower	Insertion Loss	DC-F3	DC-300	40	50	—	dB
	VSWR	F3-F4	300-313	20	30	—	dB
	VSWR	DC-F3	DC-313	—	20	—	:1
Stop Band, Upper	Insertion Loss	F5-F6	343-370	20	25	—	dB
	VSWR	F6-F7	370-2600	40	50	—	dB
	VSWR	F5-F7	343-2600	—	20	—	:1

Maximum Ratings

Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power Input	1.5 W

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

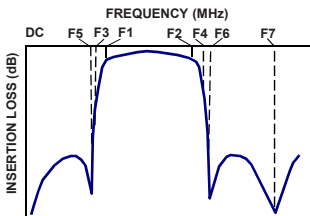
Functional Schematic



Typical Performance Data at 25°C

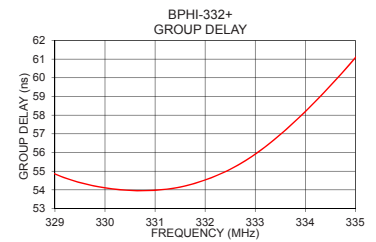
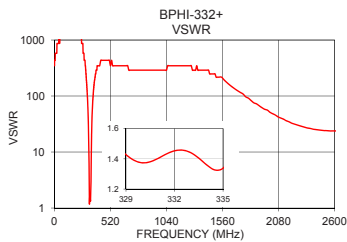
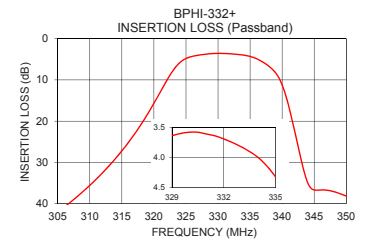
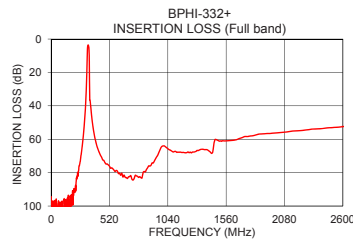
Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)	Frequency (MHz)	Group Delay (nsec)
1.0	94.42	347.44	329.0	54.85
100.0	110.76	1737.18	329.5	54.39
300.0	47.38	157.93	330.0	54.11
313.0	30.84	44.55	330.5	53.97
318.0	20.79	17.22	331.0	53.98
322.0	10.17	4.10	331.5	54.15
325.0	4.82	1.17	332.0	54.53
329.0	3.64	1.43	332.5	55.10
332.0	3.69	1.45	333.0	55.91
335.0	4.32	1.34	333.5	56.96
338.0	6.77	2.40	334.0	58.19
340.0	11.19	3.27	334.5	59.57
341.5	19.33	6.58	335.0	61.07
342.0	22.68	8.31		
343.0	29.53	12.18		
343.5	32.62	14.26		
370.0	51.01	173.72		
500.0	74.83	434.30		
1500.0	61.17	217.15		
2600.0	52.47	23.81		

Typical Frequency Response



+RoHS Compliant

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



Notes

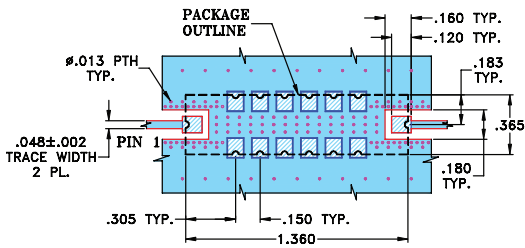
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Pad Connections

INPUT	1
OUTPUT	8
GROUND	2,3,4,5,6,7,9,10,11,12,13,14

Demo Board MCL P/N: TB-363+
Suggested PCB Layout (PL-227)

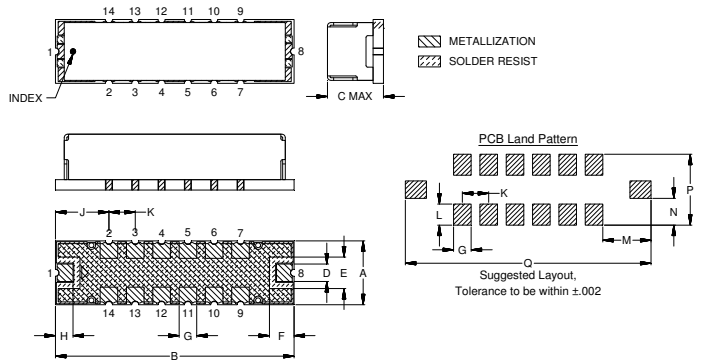


NOTE:

- TRACE WIDTH IS SHOWN FOR FR4 WITH DIELECTRIC THICKNESS .025"±.002". COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
- 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 SOLDERMASK

Outline Drawing



Outline Dimensions (inch / mm)

A	B	C	D	E	F	G	H
.365	1.360	.35	.100	.180	.140	.100	.100
9.27	34.54	8.89	2.54	4.57	3.56	2.54	2.54
J	K	L	M	N	P	Q	Wt.
.305	.150	.120	.275	.152	.405	1.400	grams
7.75	3.81	3.05	6.99	3.86	10.29	35.56	4.0

Notes

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Typical Performance Data

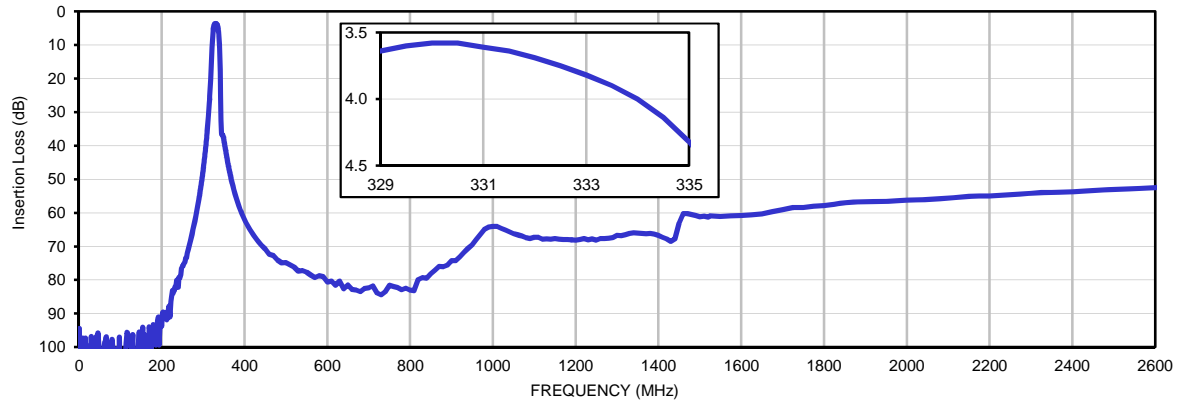
FREQUENCY (MHz)	Insertion Loss (dB)	Input Return Loss (dB)	Output Return Loss (dB)
1.0	94.42	0.04	0.05
10.0	101.55	0.03	0.03
20.0	101.48	0.02	0.03
50.0	116.02	0.01	0.01
100.0	110.76	0.01	0.01
150.0	102.17	0.01	0.01
200.0	93.73	0.01	0.01
250.0	75.88	0.02	0.01
270.0	68.02	0.04	0.03
280.0	62.52	0.05	0.04
290.0	55.78	0.07	0.06
296.0	51.05	0.10	0.09
300.0	47.38	0.12	0.11
304.0	43.18	0.16	0.15
310.0	35.55	0.26	0.27
312.0	32.49	0.32	0.34
313.0	30.84	0.37	0.39
315.0	27.21	0.48	0.54
320.0	15.69	1.45	1.84
322.0	10.17	3.12	4.32
326.0	4.30	10.96	15.59
328.0	3.79	14.53	13.68
329.0	3.64	19.37	15.08
330.0	3.58	26.37	16.06
331.0	3.61	20.67	15.49
332.0	3.69	17.04	14.67
333.0	3.82	16.24	14.86
334.0	4.00	17.24	16.35
335.0	4.32	17.12	16.79
336.0	4.86	13.33	13.19
338.0	6.77	8.34	7.72
340.0	11.19	7.18	5.48
341.0	16.19	4.41	3.43
341.5	19.33	3.36	2.66
342.0	22.68	2.61	2.10
343.0	29.53	1.72	1.43
343.5	32.62	1.45	1.22
344.0	34.96	1.25	1.06
345.0	36.67	0.96	0.83
350.0	38.15	0.42	0.37
355.0	41.77	0.25	0.23
360.0	45.25	0.18	0.16
370.0	51.01	0.11	0.10
376.0	53.83	0.10	0.08
380.0	55.48	0.09	0.07
390.0	59.14	0.08	0.06
400.0	62.04	0.07	0.05
500.0	74.83	0.08	0.04
750.0	81.62	0.12	0.06
800.0	83.03	0.12	0.06
1000.0	64.02	0.13	0.06
1200.0	68.11	0.13	0.05
1400.0	66.68	0.13	0.06
1500.0	61.17	0.14	0.08
1600.0	60.78	0.15	0.10
1750.0	58.39	0.21	0.16
2000.0	56.27	0.43	0.34
2250.0	54.65	0.69	0.57
2500.0	53.08	0.84	0.72
2600.0	52.47	0.83	0.73

Typical Performance Data

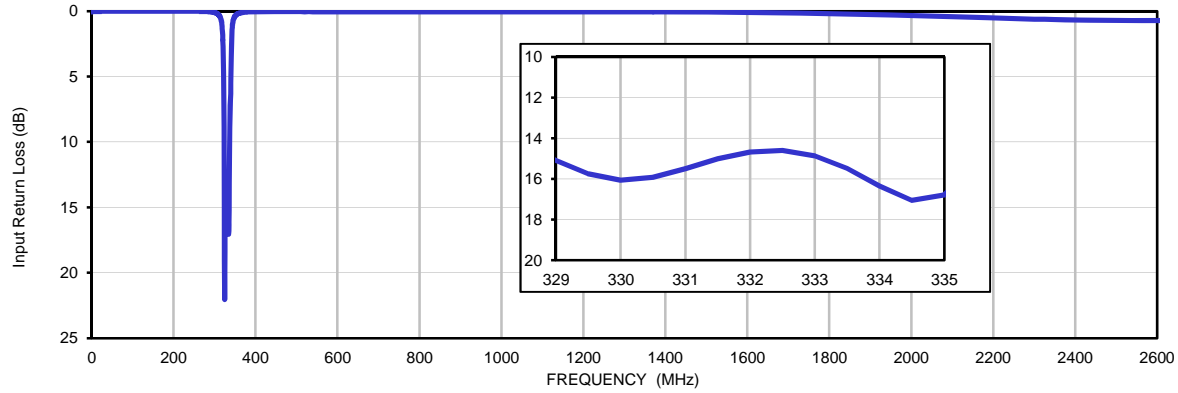
FREQ. (MHz)	GROUP DELAY (ns)
329.0	54.85
329.5	54.39
330.0	54.11
330.5	53.97
331.0	53.98
331.5	54.15
332.0	54.53
332.5	55.10
333.0	55.91
333.5	56.96
334.0	58.19
334.5	59.57
335.0	61.07

Typical Performance Curves

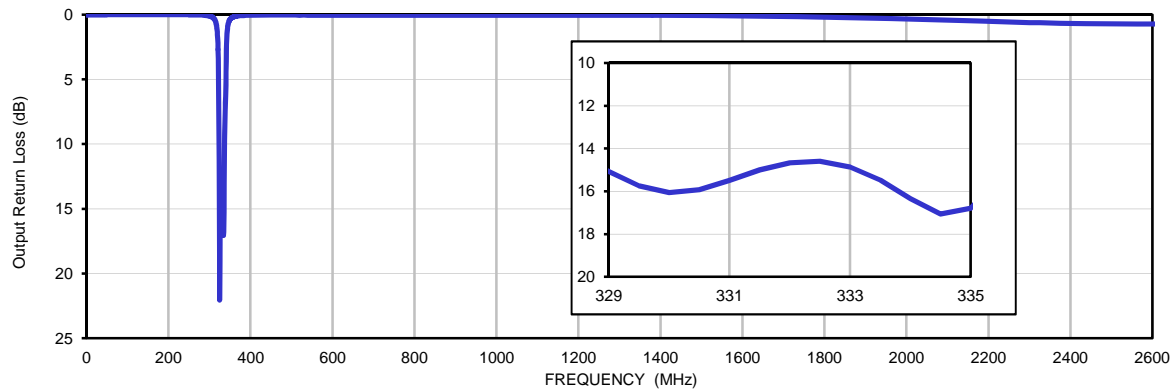
Insertion Loss



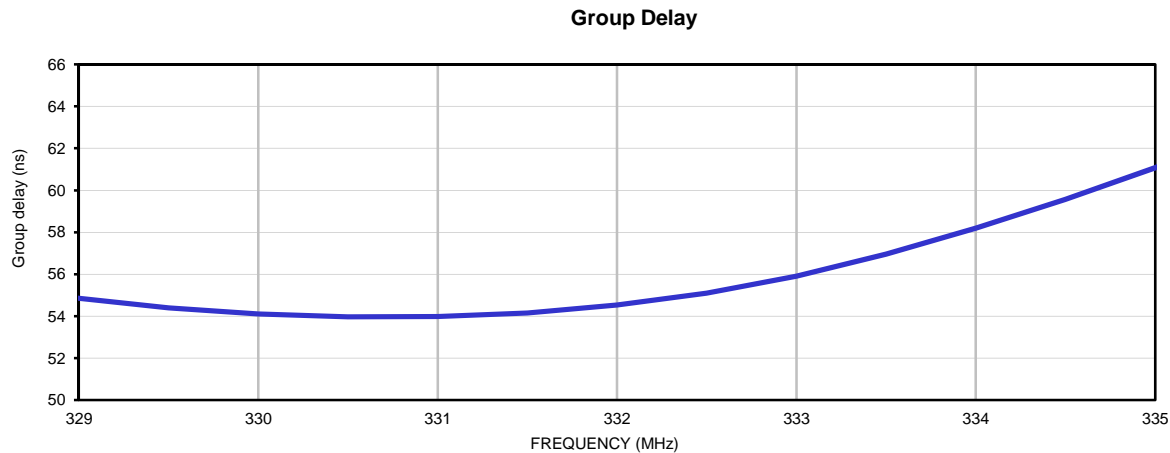
Input Return Loss



Output Return Loss



Typical Performance Curves

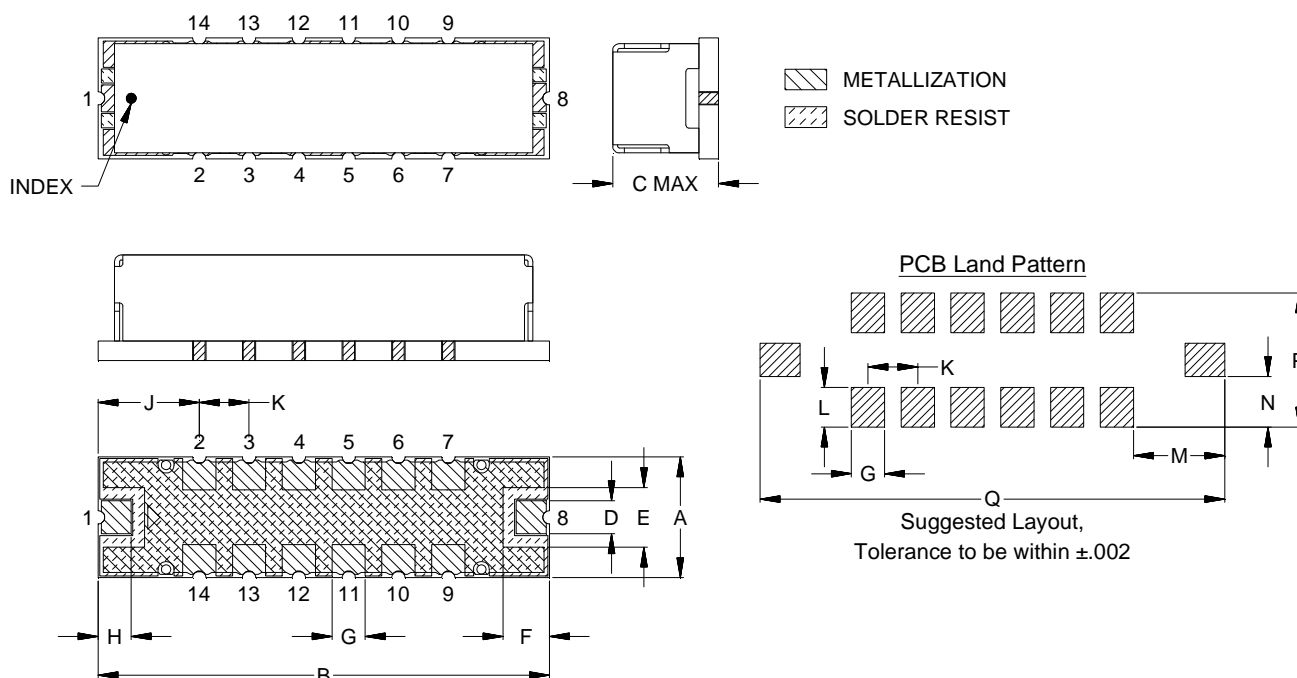


Case Style

HQ

Outline Dimensions

HQ1157



CASE#	A	B	C	D	E	F	G	H	J	K	L	M
HQ1157	.365 (9.27)	1.360 (34.54)	.350 (8.89)	.100 (2.54)	.180 (4.57)	.140 (3.56)	.100 (2.54)	.100 (2.54)	.305 (7.75)	.150 (3.81)	.120 (3.05)	.275 (6.99)

CASE#	N	P	Q	WT.GRAM
HQ1157	.152 (3.87)	.405 (10.29)	1.400 (35.56)	4.0

Dimensions are in inches (mm). Tolerances: 2Pl. ± .03; 3Pl. ± .015

Notes:

- Case material: Nickel-Silver alloy.
- Base: Printed wiring laminate.
- Termination finish:
 - For RoHS Case Styles: 3-5 μ inch (.08-.13 microns) Gold over 120-240 μ inch (3.05-6.10 microns) Nickel plate.
 - For RoHS-5 Case Styles: Tin-Lead plate.

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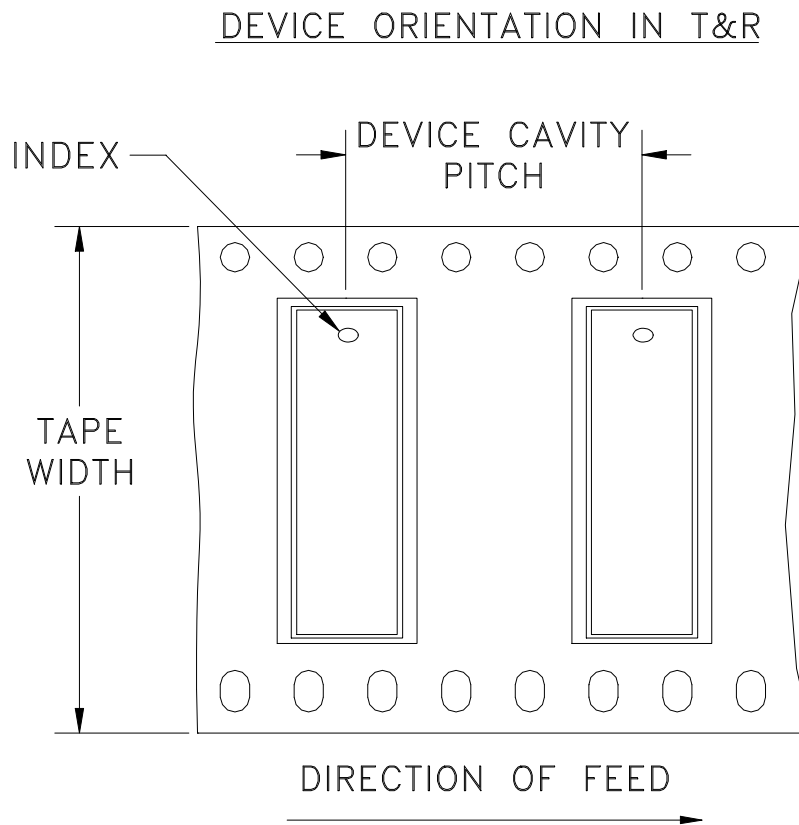
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Tape & Reel Packaging TR-F83



Tape Width, mm	Device Cavity Pitch, mm	Reel Size, inches	Devices per Reel
56	16	13	100

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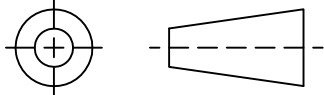
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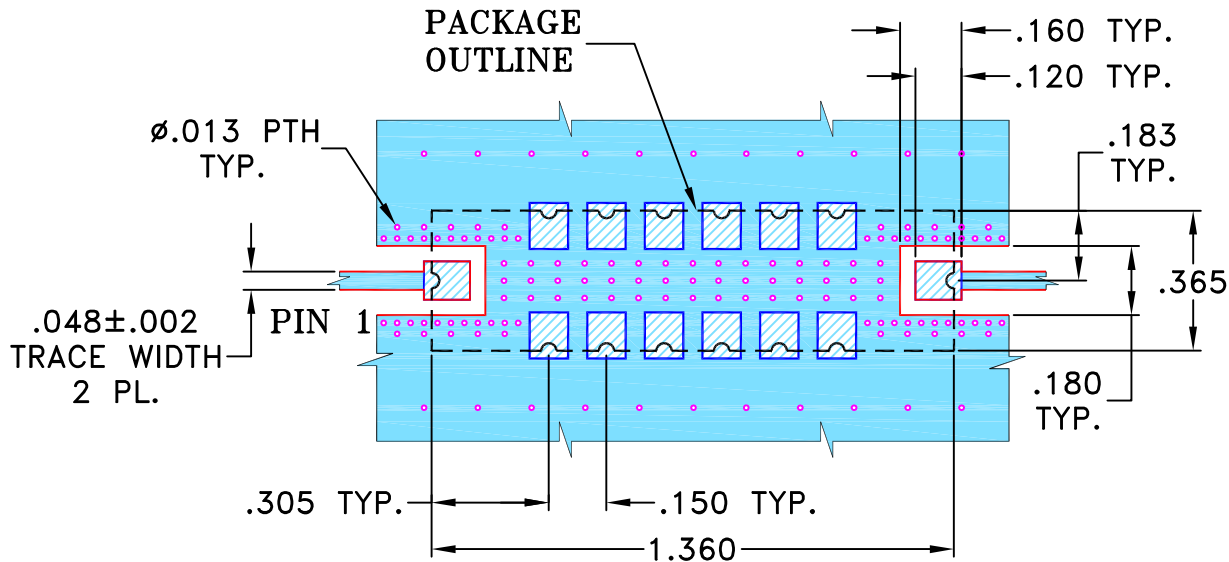
THIRD ANGLE PROJECTION



REVISIONS

REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	M101212	NEW RELEASE (FROM RAVON)	11/05	DK	YB
A	M108938	SWITCH HATCHES	12/06	DK	HH
B	M118075	CHANGE LINE PLACES	06/08	HB	HH
C	M173459	CORRECTED CASE STYLE & TB PART#	03/27/19	ITG	IL

**SUGGESTED MOUNTING CONFIGURATION
FOR HQ1157 CASE STYLE, rf PIN CONNECTION**



NOTE:

1. TRACE WIDTH IS SHOWN FOR FR4 WITH DIELECTRIC THICKNESS .025"±.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 SOLDERMASK

UNLESS OTHERWISE SPECIFIED	INITIALS		DATE
DIMENSIONS ARE IN INCHES TOLERANCES ON: 2 PL DECIMALS ± 3 PL DECIMALS ± .005 ANGLES ± FRACTIONS ±	DRAWN	HB (RAVON)	12 JUN 2008
	CHECKED	RZ (RAVON)	12 JUN 2008
	APPROVED	HH (RAVON)	12 JUN 2008

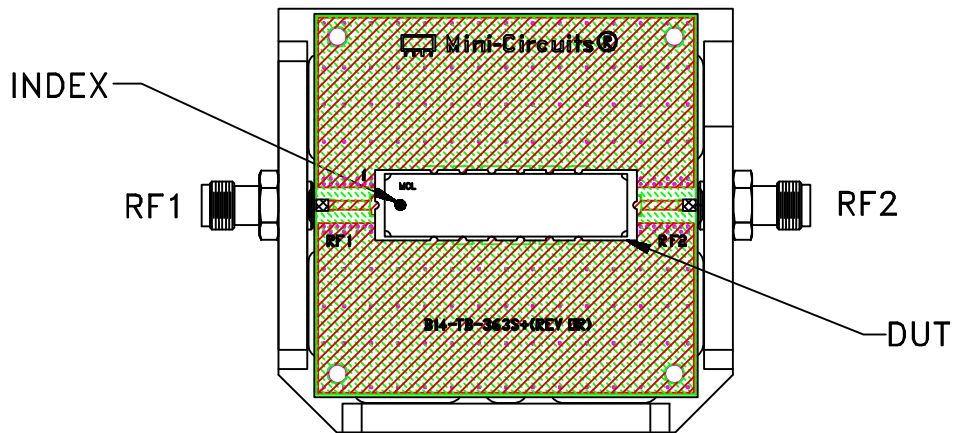
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Brooklyn NY 11235

PL, rf, HQ1157, TB-363+, 50 OHM

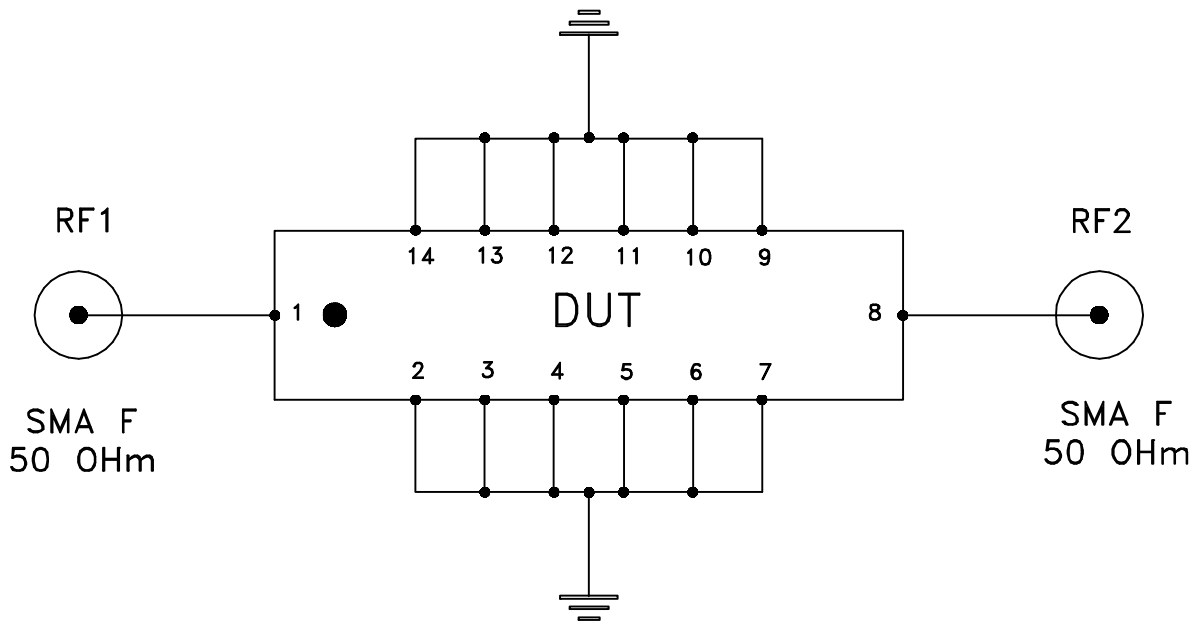
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SIZE	CODE IDENT	DRAWING NO:	REV:
A	15542	98-PL-227	C
FILE:	98PL227	SCALE:	2:1
		SHEET:	1 OF 1

Evaluation Board and Circuit




TB-363+



Schematic Diagram

Notes:

1. 50 Ohm SMA Female connectors.
2. PCB Material: ROGERS R04350 or equivalent,
Dielectric Constant=3.48, 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