

Bandpass Filter

50Ω 230 to 297 MHz

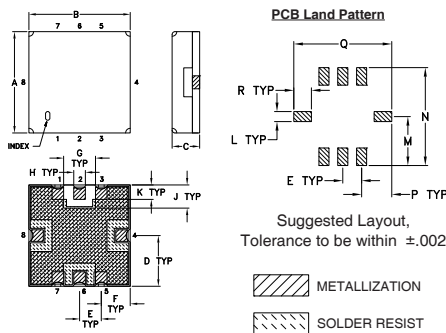
Maximum Ratings

Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power Input	0.5W at 25°C
Permanent damage may occur if any of these limits are exceeded.	

Pin Connections

RF IN	2
RF OUT	6
GROUND	1,3,4,5,7,8

Outline Drawing

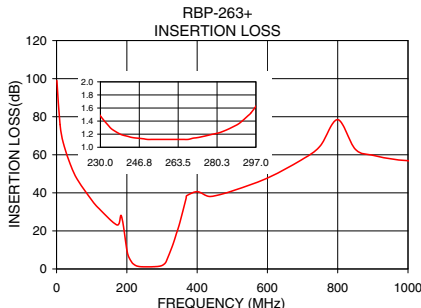
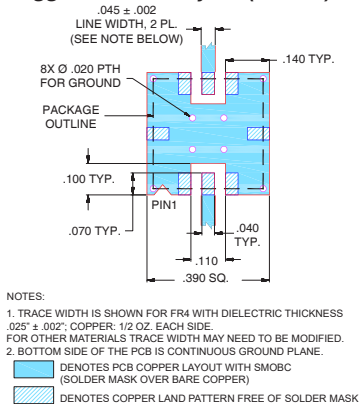


Outline Dimensions (inch/mm)

A	B	C	D	E	F	G	H	J
.350	.350	.100	.175	.075	.100	.110	.040	.080
8.89	8.89	2.54	4.45	1.91	2.54	2.79	1.02	2.03
K	L	M	N	P	Q	R	wt	
.050	.040	.195	.390	.120	.390	.070		
1.27	1.02	4.95	9.91	3.05	9.91	1.78		
							grams	
							0.25	

Note: Please refer to case style drawing for details

Demo Board MCL P/N: TB-332 Suggested PCB Layout (PL-176)



Features

- linear phase, up to ±8deg typ. @ Fc ±43MHz
- good VSWR, 1.2:1 typ. @ passband
- small size 0.35" x 0.35"
- shielded case
- aqueous washable

Applications

- harmonic rejection
- transmitters / receivers
- navigation



Generic photo used for illustration purposes only
CASE STYLE: GP731

+RoHS Compliant

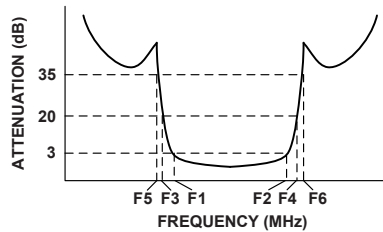
The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications

Reel Size	Devices/Reel
7"	10, 20, 50, 100, 200
13"	500, 1000

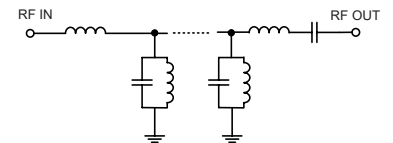
Bandpass Filter Electrical Specifications (T_{AMB} = 25°C)

CENTER FREQ. (MHz)	PASSBAND (MHz) (Loss < 3dB)	STOPBANDS (MHz)				MAXIMUM DEVIATION FROM LINEAR PHASE (deg.)	VSWR (:1)	
		Loss > 20dB		Loss > 35dB			Passband	Stopband
		F3	F4	F5	F6		Fc ± 43MHz	Max.
Fc	F1 - F2							
263.5	230 - 297	140	360	80	500-1000	±12	1.7	18

Typical Frequency Response

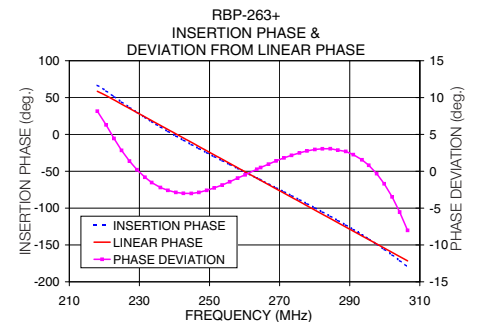
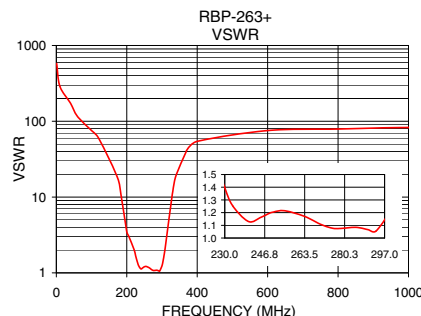


Functional Schematic



Typical Performance Data at 25°C

Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)	Frequency (MHz)	Deviation from Linear Phase (deg)
1.0	99.02	579.06	220.5	6.30
10.0	75.88	289.53	224.0	2.83
80.0	41.13	96.51	230.0	0.21
120.0	31.89	59.91	235.0	-2.20
140.0	27.77	43.44	240.0	-2.87
200.0	9.98	3.48	246.0	-2.87
220.5	2.35	2.04	251.0	-2.26
230.0	1.47	1.40	255.0	-1.43
263.5	1.12	1.17	263.5	0.27
297.0	1.63	1.12	266.0	0.96
306.5	2.66	1.81	271.0	1.82
325.0	9.58	7.94	275.0	2.49
350.0	23.83	27.59	284.0	3.06
360.0	30.23	34.75	291.0	2.26
400.0	40.61	54.29	297.0	-0.32
500.0	41.00	72.39	302.0	-3.47
1000.0	56.91	82.73	306.5	-8.02



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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Metal Shield Band Pass Filter

RBP-263+

Typical Performance Data

FREQ. (MHz)	INSERTION LOSS (dB)			INPUT RETURN LOSS (dB)			OUTPUT RETURN LOSS (dB)		
	@ -40° C	@ +25° C	@ +85° C	@ -40° C	@ +25° C	@ +85° C	@ -40° C	@ +25° C	@ +85° C
1	87.44	88.60	89.60	0.03	0.05	0.04	0.00	0.00	0.00
10	78.53	79.30	77.80	0.05	0.07	0.06	0.00	0.00	0.00
50	50.42	50.40	50.34	0.14	0.16	0.15	0.00	0.00	0.01
80	41.34	41.32	41.28	0.20	0.23	0.22	0.01	0.01	0.01
90	38.86	38.83	38.81	0.22	0.25	0.24	0.01	0.02	0.02
100	36.54	36.51	36.48	0.24	0.28	0.27	0.01	0.03	0.03
120	32.17	32.14	32.11	0.31	0.35	0.35	0.03	0.04	0.05
140	28.10	28.07	28.04	0.41	0.46	0.47	0.06	0.08	0.09
150	26.22	26.20	26.17	0.48	0.54	0.56	0.09	0.11	0.12
200	10.85	10.74	10.50	4.52	5.05	5.57	1.31	1.44	1.56
230	1.45	1.58	1.67	14.68	15.25	15.66	14.39	14.81	15.32
250	1.05	1.19	1.28	21.30	21.03	20.30	20.86	20.19	19.71
297	1.52	1.71	1.88	21.81	22.00	22.09	19.92	20.10	19.55
300	1.70	1.91	2.10	17.56	17.52	17.43	16.43	16.54	16.13
325	9.41	9.80	10.25	2.12	2.18	2.19	2.09	2.22	2.27
350	23.93	24.30	24.79	0.62	0.69	0.71	0.59	0.68	0.75
360	30.60	30.99	31.57	0.49	0.55	0.57	0.45	0.53	0.59
400	39.93	39.87	39.68	0.31	0.36	0.37	0.23	0.29	0.33
500	40.78	40.80	40.83	0.23	0.27	0.27	0.11	0.15	0.19
600	47.48	47.50	47.57	0.21	0.25	0.25	0.09	0.13	0.17
700	56.61	56.53	56.93	0.20	0.24	0.24	0.09	0.13	0.17
800	80.20	81.13	77.97	0.19	0.24	0.23	0.10	0.14	0.19
900	61.36	61.40	60.42	0.19	0.24	0.24	0.11	0.16	0.21
1000	58.00	57.90	57.08	0.19	0.24	0.24	0.12	0.17	0.23
1200	58.47	58.67	57.06	0.18	0.23	0.24	0.15	0.21	0.27
1400	58.97	57.99	58.99	0.28	0.34	0.37	0.18	0.26	0.32
1500	36.79	36.46	35.84	7.78	8.07	9.34	0.20	0.28	0.35
1600	47.41	46.15	45.39	0.34	0.39	0.43	0.22	0.30	0.38
1800	58.23	55.78	53.00	0.14	0.21	0.24	0.25	0.32	0.42
2000	67.75	68.08	60.03	0.14	0.21	0.25	0.26	0.33	0.41
2200	56.37	56.46	71.27	0.15	0.24	0.29	0.25	0.33	0.39
2400	48.24	49.51	54.14	0.17	0.27	0.33	0.21	0.34	0.39
2500	45.45	47.12	50.15	0.17	0.29	0.34	0.21	0.34	0.39
2600	44.72	45.50	49.63	0.19	0.32	0.37	0.20	0.34	0.39
2800	43.17	42.70	50.08	0.24	0.37	0.44	0.23	0.35	0.45
3000	39.00	40.02	42.74	0.30	0.45	0.53	0.21	0.37	0.44
3200	37.40	37.54	40.47	0.36	0.51	0.60	0.28	0.36	0.48
3400	34.72	35.82	37.32	0.42	0.58	0.68	0.20	0.36	0.48
3500	33.72	34.89	36.35	0.43	0.62	0.72	0.22	0.36	0.48
3600	33.27	33.98	35.67	0.47	0.67	0.78	0.24	0.37	0.50
3800	32.84	33.40	35.30	0.77	0.98	1.12	0.28	0.44	0.59
4000	31.82	32.79	34.25	0.60	0.83	1.00	0.34	0.51	0.66
4200	30.26	31.07	32.39	0.44	0.66	0.86	0.51	0.58	0.73
4400	29.18	29.85	31.62	0.36	0.60	0.83	0.59	0.71	0.75
4500	28.87	29.20	30.23	0.33	0.59	0.82	0.57	0.80	0.96
4600	27.24	28.32	29.46	0.31	0.59	0.82	0.67	0.88	1.08
4800	25.77	26.28	27.11	0.35	0.60	0.88	1.30	0.98	1.44
5000	23.59	24.17	24.67	0.40	0.67	1.02	0.98	1.14	1.20
5200	21.35	21.86	22.03	0.56	0.87	1.29	1.08	1.31	1.43
5400	18.23	18.52	17.96	1.03	1.41	1.91	1.32	1.56	1.51
5500	16.72	16.82	16.58	1.51	1.97	2.59	1.52	1.75	1.75
5600	15.07	14.76	14.35	2.15	3.02	3.95	1.77	2.14	2.35
5800	10.92	11.13	11.22	8.36	10.33	11.00	3.20	4.07	4.25
6000	12.62	14.61	16.25	5.31	5.71	6.44	7.45	6.11	4.68

REV. X2

RBP-263+

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Metal Shield Band Pass Filter

RBP-263+

Typical Performance Data

FREQ. (MHz)	GROUP DELAY (nsec)		
	@ -40° C	@ +25° C	@ +85° C
230	8.89	8.80	8.74
240	7.68	7.62	7.58
250	6.85	6.85	6.80
260	6.55	6.53	6.54
270	6.63	6.64	6.64
280	7.02	7.01	7.02
290	7.84	7.86	7.93
297	8.88	8.94	8.99
300	9.50	9.48	9.61
310	11.06	10.95	10.89
320	9.45	9.26	8.99
325	7.84	7.64	7.43
330	6.30	6.14	5.92
340	4.03	3.88	3.74
350	2.56	2.30	2.36
360	1.13	0.85	0.51
370	2.87	4.12	5.37
380	48.02	39.09	34.55
390	2.75	3.31	2.54
400	0.33	0.28	0.35
410	0.13	0.42	0.07
420	0.60	0.10	0.20
430	0.29	0.84	0.53
440	0.49	0.22	0.03
450	0.37	0.38	0.38
460	0.60	0.24	0.26
470	0.91	0.58	0.65
480	0.08	0.78	0.53
490	0.22	1.02	0.09
500	0.07	0.99	0.13
510	0.60	0.07	0.52
520	0.06	0.49	0.47
530	0.30	0.97	0.03
540	0.30	1.53	0.22
550	0.15	0.10	0.64
560	0.89	0.01	1.08
570	0.18	0.11	0.64
580	0.27	0.33	0.06
590	1.06	0.42	0.76
600	0.44	1.55	0.58
610	1.63	0.84	0.20
620	1.31	2.13	0.22
630	0.30	0.10	0.36
640	0.51	1.43	0.29
650	0.17	3.49	1.96
660	0.40	0.76	0.48
670	2.98	0.81	1.38
680	1.89	3.96	0.14
690	1.33	0.89	0.52
695	3.29	3.78	0.63
700	0.58	1.34	1.07
705	0.67	2.79	0.97
710	2.61	4.44	1.85
720	2.88	0.68	0.37

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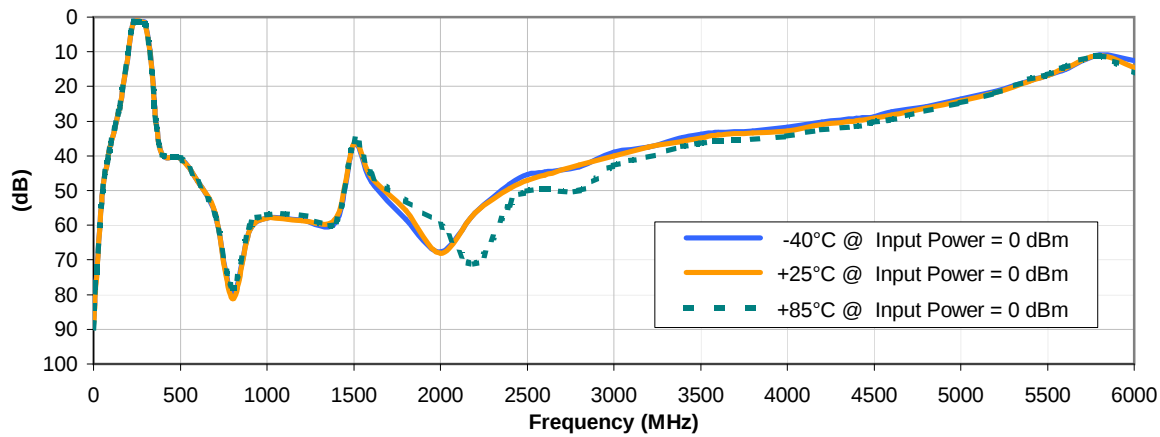


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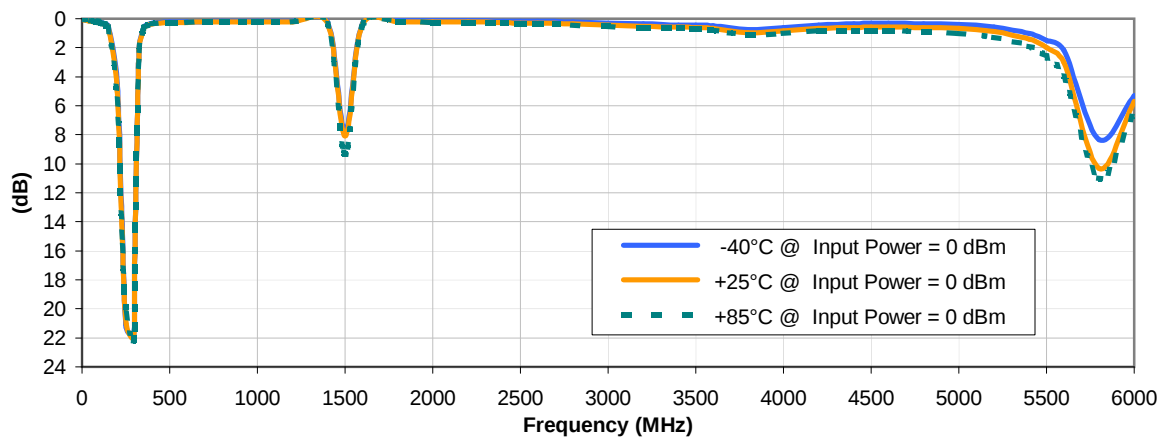


Typical Performance Curves

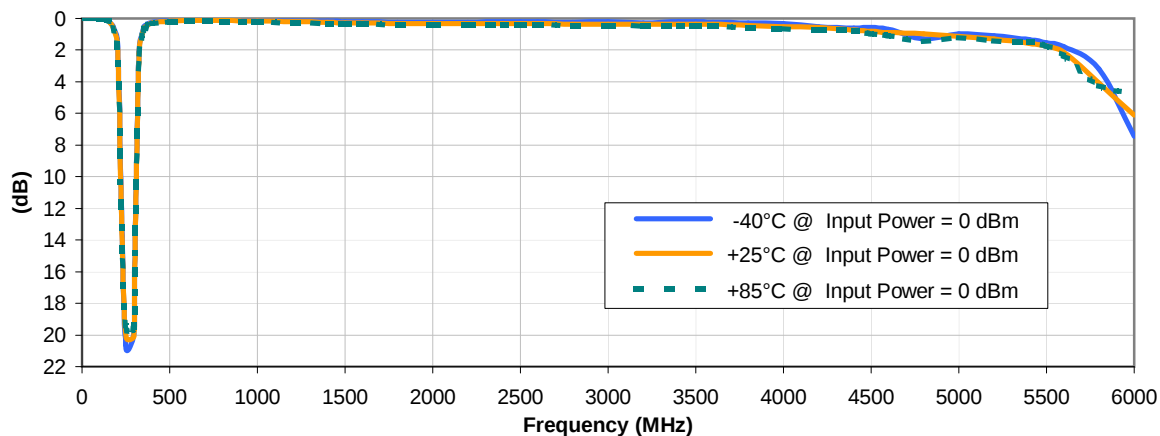
INSERTION LOSS vs. TEMPERATURE



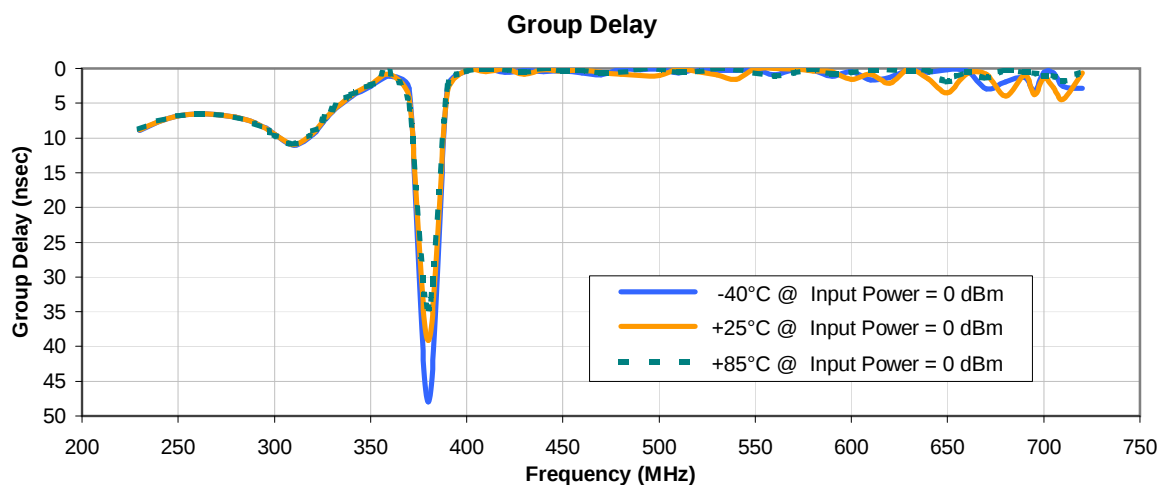
INPUT RETURN LOSS vs. TEMPERATURE



OUTPUT RETURN LOSS vs. TEMPERATURE



Typical Performance Curves



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Outline Dimensions

GP731



CASE #	A	B	C	D	E	F	G	H	J	K	L	M
GP731	.350 (8.89)	.350 (8.89)	.100 (2.54)	.175 (4.45)	.075 (1.91)	.100 (2.54)	.110 (2.79)	.040 (1.02)	.080 (2.03)	.050 (1.27)	.040 (1.02)	.195 (4.95)

CASE #	N	P	Q	R	WT. GRAM
GP731	.390 (9.91)	.120 (3.05)	.390 (9.91)	.070 (1.78)	.4 +0.3 -0.0

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

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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RF/IF MICROWAVE COMPONENTS

Tape & Reel Packaging TR-F78



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

Note: Please consult individual model data sheet to determine device per reel availability.

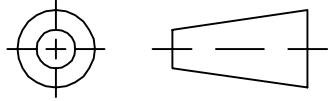
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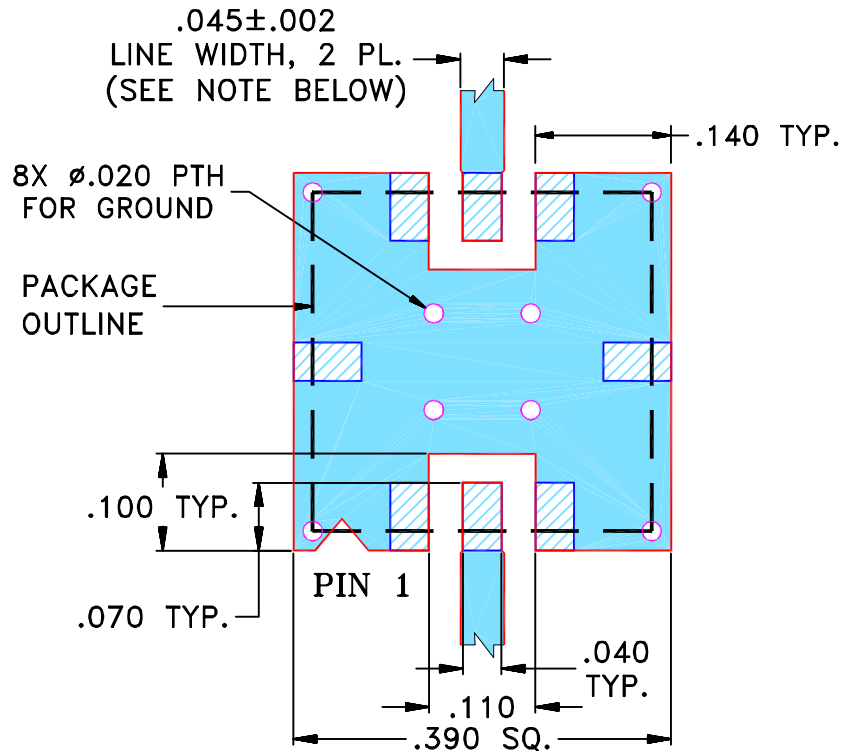
THIRD ANGLE PROJECTION



REVISIONS

REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	R59289	NEW RELEASE (FROM RAVON)	02/05	DK	HH
A	M101151	ADDED "RBP" & CORRECTED PIN	10/10/05	MMG	DJ
		CONNECTION TO DESCRIPTION OF PL-DWG.			
B	M102713	UPDATED NOTES, ADDED "...WITH SMOBC"	01/20/06	GT	IL

**SUGGESTED MOUNTING CONFIGURATION
FOR GP731 CASE STYLE, "qf" PIN CONNECTION.**



- NOTES:** 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 SOLDER MASK

UNLESS OTHERWISE SPECIFIED

INITIALS

DATE

DIMENSIONS ARE IN INCHES

TOLERANCES ON:

2 PL DECIMALS ±

3 PL DECIMALS ± .005

ANGLES ±

FRACTIONS ±

DRAWN

DK (RAVON)

10 FEB 05

CHECKED

RZ (RAVON)

10 FEB 05

APPROVED

HH (RAVON)

10 FEB 05



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PL, qf, GP731, RBP, TB-332

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

SIZE

A

CODE IDENT

15542

DRAWING NO:

98-PL-176

REV:

B

FILE: 98PL176

SCALE:

5:1

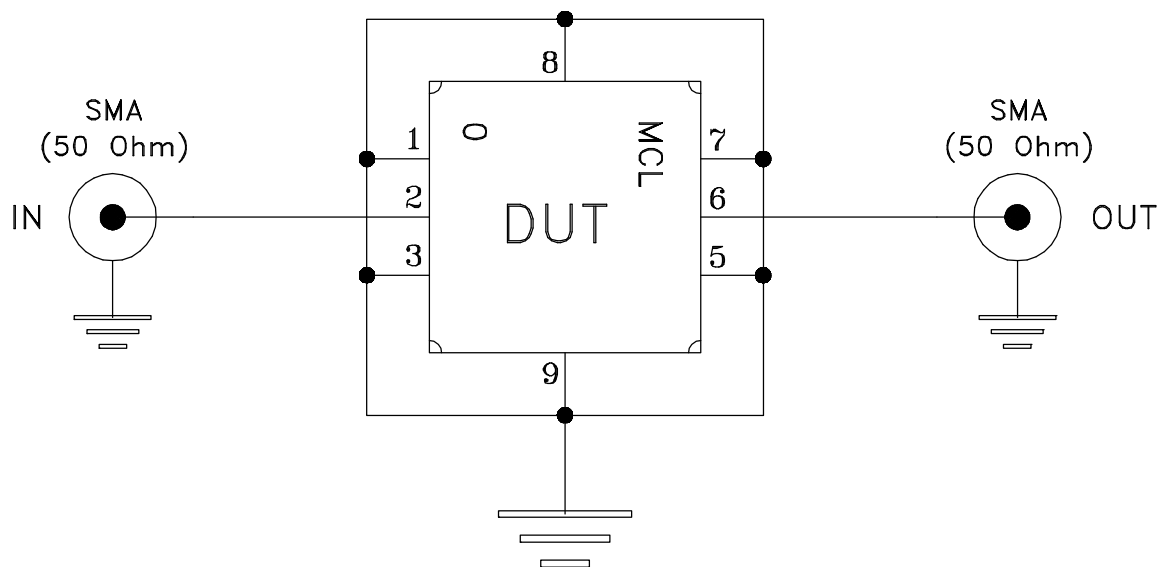
SHEET:

1 OF 1

Evaluation Board and Circuit



TB-332



Schematic Diagram

Notes:

1. 50 Ohm SMA Female connectors.
2. PCB Material: R04350 or equivalent,
Dielectric Constant=3.5, Thickness=.020 inch.

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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
HAST	130°C, 85% RH, 96 hours	JESD22-A110
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 Eutectic Process: 225°C peak Pb-Free Process, 245°C peak	J-STD-020, Table 4-1, 4-2 and 5-2, Figure 5-1
Solderability	10X Magnification	J-STD-002, Para 4.2.5, Test S, 95% Coverage
Vibration (High Frequency)	20g peak, 20-2000 Hz, 4 times in each of three axes (total 12)	MIL-STD-883, Method 2007.3, Condition A
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