

Coaxial-Ceramic Resonator Filters and Multiplexers

75Ω

DC to 6 GHz

The Big Deal

- Low insertion loss with excellent power handling
- Passbands up to 6 GHz
- Fractional bandwidth from <1 to 25%
- Low profile designs with min. height of 0.120"
- Excellent temperature stability
- Rugged construction to handle demanding environmental conditions



Product Overview

Mini-Circuits' *Coaxial-Ceramic Resonator filters* offer low insertion loss in very small form factors, using ceramic material with high dielectric constant and superior Q factor. Bandpass and bandstop filters, diplexer and multiplexer designs can be constructed using this technology. Low insertion loss combined with excellent power handling makes these filters well suited for transmitter and receiver signal chains. Advanced filter design and construction can achieve stopband width greater than 3x the center frequency as high as 20 GHz.

All our coaxial-ceramic resonator filters are built with rugged construction, qualified to withstand multiple demanding reflow cycles. Excellent repeatability across units is achieved through precise tuning and process control.

Key Features

Feature	Advantages
Low insertion loss	Low signal loss results in better SNR in signal chain
Fast roll-off	Higher selectivity results in better adjacent channel rejection and dynamic range
Wide stop band	Wide spur-free stopband results in better receiver sensitivity
Excellent power handling	Well suited for transmitter applications
Rugged Construction	These filter assemblies have been qualified over a wide range of thermal, mechanical and environmental conditions including withstanding the stress of extensive solder reflow cycles
Small Size	Very well suited for high performance applications where size is a constraint.
Temperature stability	Very minimal change in electrical performance across temperature makes these filters suitable for a wide range of operating conditions.

Notes

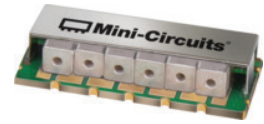
- A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's 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/MCLStore/terms.jsp



Bandpass Filter

75Ω 1210 to 1390 MHz

CSBP-B1300-75+



Generic photo used for illustration purposes only
CASE STYLE: KR1508

Features

- Low Insertion Loss, 0.7 dB typ.
- Minimal Insertion loss variation over operating temperature ± 0.35 dB
- High power handling, 14.5 W
- Wide pass band (14%), high selectivity

Applications

- Sub harmonic filtering
- Image Rejection
- Receivers/Transmitters
- Cable TV

Electrical Specifications at 25°C

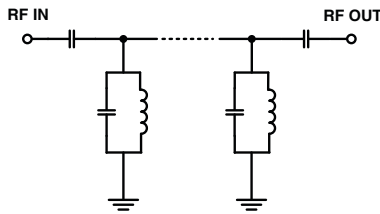
Parameter	F#	Frequency (MHz)	Min.	Typ.	Max.	Unit
Pass Band	Center Frequency	-	-	1300	-	MHz
	Insertion Loss	F1-F2	-	1.0	2.0	dB
	VSWR	F1-F2	-	1.5	1.75	:1
Stop Band, Lower	Insertion Loss	DC-F3	20	33	-	dB
Stop Band, Upper	Insertion Loss	F4-F5	20	30	-	dB

Maximum Ratings

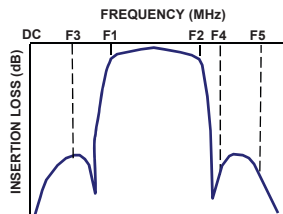
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power Input*	14.5W max. at 25°C

*Derate linearly to 10W at 85°C
Permanent damage may occur if any of these limits are exceeded.

Functional Schematic



Typical Frequency Response

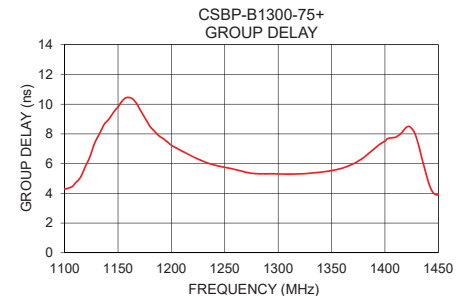
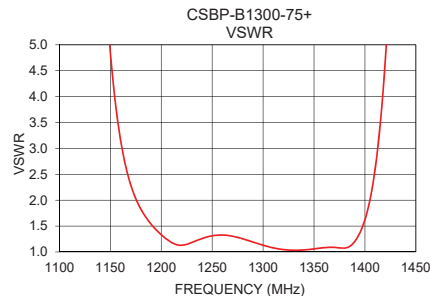
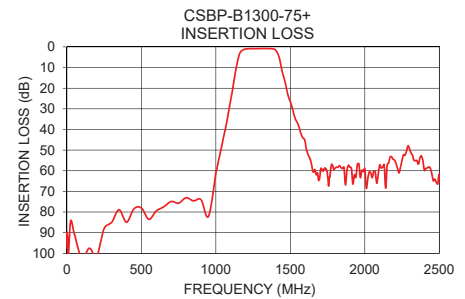
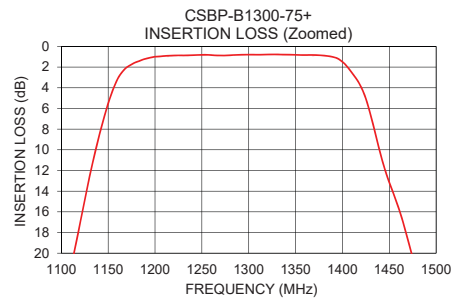


Typical Performance Data at 25°C

Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)	Frequency (MHz)	Group Delay (ns)
1	92.75	1737.18	1210	6.85
500	78.04	105.58	1220	6.47
1020	54.44	70.42	1230	6.16
1080	33.59	41.69	1240	5.91
1120	17.10	17.32	1250	5.75
1140	8.78	7.85	1260	5.60
1145	7.09	6.19	1270	5.42
1150	5.53	4.86	1280	5.32
1170	2.01	2.30	1290	5.31
1210	0.93	1.18	1300	5.31
1300	0.80	1.13	1310	5.30
1390	1.03	1.20	1320	5.32
1420	3.94	4.70	1330	5.36
1430	6.60	8.46	1340	5.43
1440	10.19	13.92	1350	5.53
1470	18.75	31.71	1360	5.69
1545	36.47	53.45	1370	5.97
1630	53.63	71.45	1380	6.40
2000	58.98	80.50	1385	6.70
2500	61.83	15.25	1390	7.00

+RoHS Compliant

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



Notes

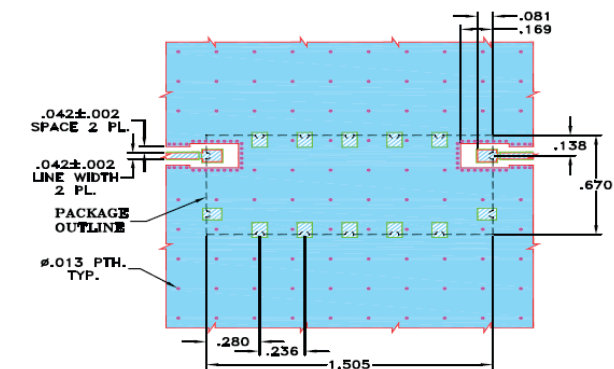
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Pad Connections

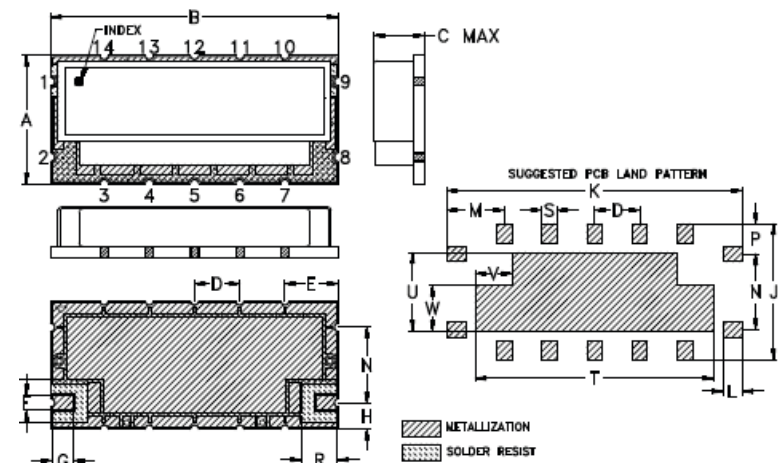
INPUT	1
OUTPUT	9
GROUND	2 to 8,10 to 16

Demo Board MCL P/N: TB-576+
Suggested PCB Layout (PL-333)



- NOTES:
- TRACE WIDTH IS SHOWN FOR OAK 602 WITH DIELECTRIC THICKNESS $.031 \pm .002$ ". 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)

A	B	C	D	E	F	G	H	J	K	L
.670	1.505	.285	.236	.280	.079	.108	0.138	0.71	1.545	0.1
17.02	38.23	7.24	5.99	7.11	2.01	2.74	3.51	18.03	39.24	2.54
M	N	P	Q	R	S	T	U	V	W	wt
0.3	.394	.158	.222	.187	.080	1.245	0.41	.192	.238	grams
7.62	10.01	4.01	5.64	4.75	2.03	31.62	10.41	4.88	6.05	9.80

Note: Please refer to case style drawing for details

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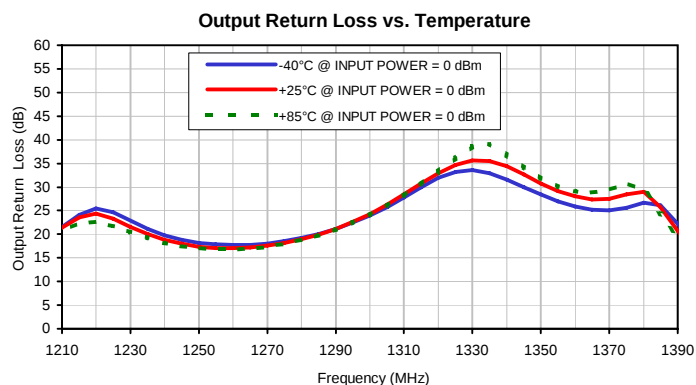
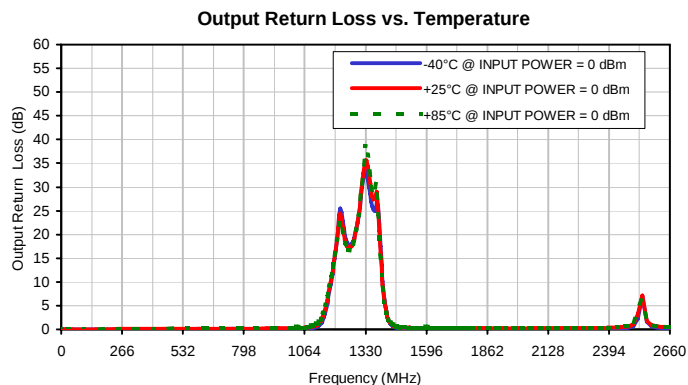
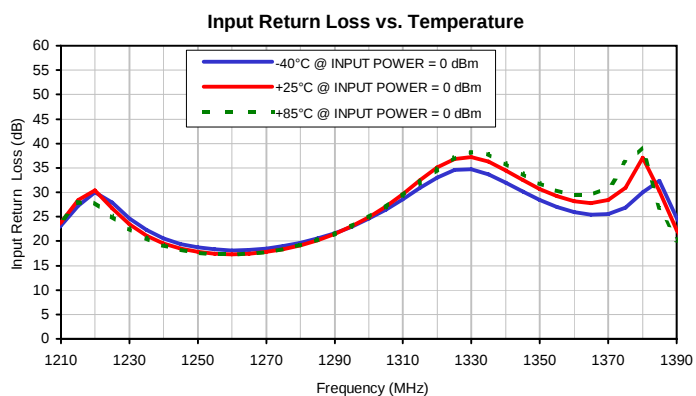
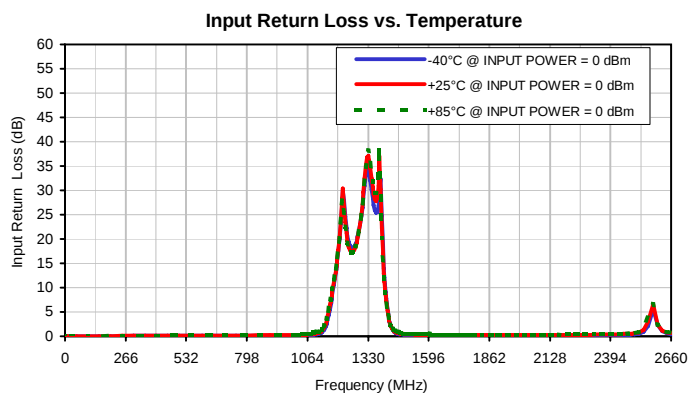
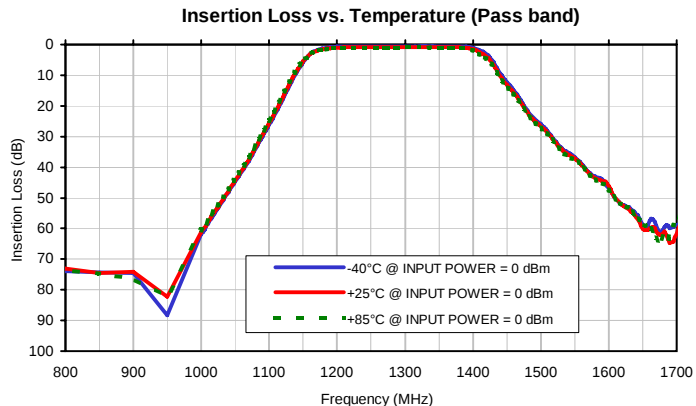
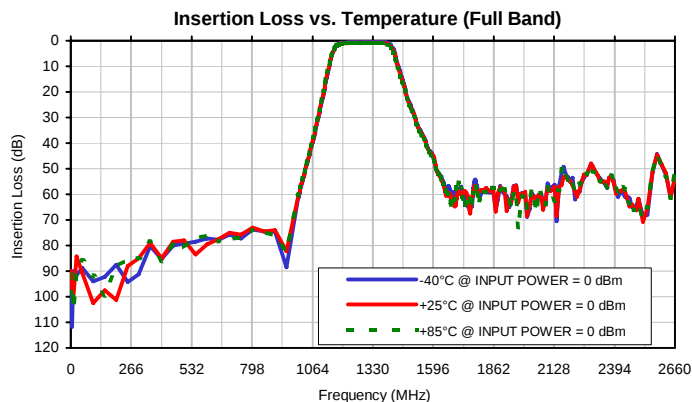
Typical Performance Data

FREQ.	INSERTION LOSS			INPUT RETURN LOSS			OUTPUT RETURN LOSS		
(MHz)	(dB)			(dB)			(dB)		
	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C
0.3	100.68	97.54	91.35	0.02	0.02	0.02	0.00	0.00	0.00
0.5	97.25	92.75	98.62	0.01	0.00	0.00	0.00	0.00	0.01
1.0	95.59	89.89	98.20	0.00	0.01	0.00	0.01	0.01	0.01
50.0	88.66	90.67	86.12	0.00	0.01	0.01	0.03	0.00	0.00
100.0	93.98	102.41	92.00	0.00	0.01	0.02	0.02	0.02	0.02
200.0	87.54	101.28	88.28	0.03	0.05	0.07	0.01	0.06	0.08
300.0	91.35	85.04	84.86	0.07	0.10	0.13	0.05	0.10	0.13
400.0	85.33	84.92	85.90	0.10	0.14	0.18	0.05	0.14	0.16
500.0	79.30	78.04	80.57	0.11	0.17	0.21	0.04	0.16	0.21
600.0	77.22	79.47	75.97	0.13	0.19	0.22	0.08	0.20	0.25
700.0	75.68	74.90	77.21	0.13	0.17	0.21	0.08	0.18	0.22
800.0	73.84	73.08	73.79	0.15	0.20	0.23	0.07	0.18	0.23
900.0	74.50	74.02	76.33	0.14	0.20	0.24	0.08	0.21	0.26
1000.0	61.84	61.21	60.51	0.16	0.24	0.29	0.07	0.23	0.29
1010.0	58.53	57.60	57.14	0.15	0.24	0.28	0.09	0.24	0.30
1020.0	55.09	54.44	53.83	0.16	0.25	0.31	0.10	0.25	0.31
1030.0	51.57	51.17	50.74	0.17	0.27	0.32	0.11	0.27	0.33
1040.0	48.20	47.76	47.31	0.17	0.27	0.35	0.11	0.28	0.35
1050.0	44.71	44.32	43.75	0.19	0.30	0.38	0.12	0.30	0.38
1060.0	41.38	41.02	40.41	0.21	0.32	0.41	0.14	0.33	0.42
1070.0	37.95	37.47	36.91	0.22	0.35	0.45	0.16	0.36	0.46
1080.0	34.07	33.59	33.01	0.26	0.41	0.51	0.20	0.42	0.53
1100.0	26.17	25.57	24.91	0.39	0.56	0.70	0.32	0.59	0.76
1120.0	17.77	17.10	16.46	0.64	0.91	1.11	0.62	1.00	1.26
1140.0	9.27	8.78	8.30	1.58	2.12	2.52	1.60	2.22	2.68
1160.0	3.09	3.17	3.14	4.94	5.77	6.39	4.83	5.68	6.26
1180.0	1.24	1.52	1.64	10.56	11.04	11.61	10.20	10.68	11.05
1200.0	0.71	1.00	1.15	17.50	17.76	18.32	16.75	16.91	16.97
1210.0	0.66	0.93	1.07	23.14	23.86	24.24	21.50	21.45	20.89
1220.0	0.61	0.89	1.03	30.06	30.35	28.09	25.47	24.36	22.63
1240.0	0.57	0.85	1.00	20.61	19.55	19.16	19.78	18.82	18.19
1250.0	0.54	0.81	0.96	18.68	17.80	17.59	18.17	17.38	17.03
1260.0	0.58	0.84	0.96	18.14	17.34	17.23	17.68	17.03	16.77
1280.0	0.60	0.86	0.99	19.64	19.18	19.21	19.24	18.95	18.76
1290.0	0.56	0.82	0.95	21.63	21.52	21.53	21.13	21.16	20.98
1300.0	0.55	0.80	0.93	24.59	24.88	24.85	23.97	24.28	24.04
1310.0	0.54	0.81	0.94	28.58	29.60	29.34	27.79	28.42	28.16
1320.0	0.53	0.79	0.94	33.02	35.07	34.74	31.92	32.90	33.33
1340.0	0.52	0.79	0.94	31.98	34.51	35.92	31.62	34.40	36.85
1350.0	0.55	0.82	0.97	28.46	30.72	31.82	28.39	30.75	31.81
1360.0	0.56	0.84	0.99	25.97	28.17	29.46	25.84	27.98	29.06
1380.0	0.57	0.89	1.08	30.03	37.14	39.36	26.65	28.95	29.45
1390.0	0.67	1.03	1.25	24.79	22.28	20.17	22.18	20.71	19.08
1400.0	1.03	1.50	1.82	14.01	12.90	11.87	13.45	12.49	11.51
1450.0	12.22	13.16	13.85	0.75	0.90	0.99	0.67	0.87	0.95
1500.0	25.96	26.62	27.15	0.30	0.41	0.49	0.19	0.40	0.49
1540.0	35.28	35.86	36.46	0.23	0.33	0.39	0.12	0.30	0.38
1545.0	35.90	36.47	37.11	0.23	0.32	0.39	0.13	0.33	0.39
1600.0	47.05	46.09	47.57	0.21	0.29	0.33	0.09	0.27	0.34
1700.0	58.92	61.84	56.51	0.18	0.26	0.31	0.05	0.24	0.33
1800.0	61.36	58.80	61.73	0.14	0.24	0.29	0.03	0.22	0.30
1900.0	58.74	58.29	55.15	0.12	0.23	0.29	0.01	0.21	0.27
2000.0	59.88	58.98	59.82	0.12	0.26	0.28	0.04	0.22	0.30
2100.0	55.81	57.16	57.15	0.14	0.26	0.29	0.01	0.24	0.40
2200.0	55.14	54.90	55.39	0.17	0.28	0.35	0.06	0.26	0.36
2300.0	49.70	49.29	50.98	0.18	0.31	0.39	0.16	0.32	0.35
2400.0	58.97	59.79	57.64	0.22	0.38	0.45	0.14	0.37	0.45
2500.0	61.79	61.83	64.60	0.39	0.60	0.69	0.74	1.14	1.44
2600.0	48.45	48.32	49.46	2.32	2.36	2.25	0.37	0.65	0.73
2660.0	53.96	53.45	51.26	0.45	0.63	0.76	0.18	0.45	0.52

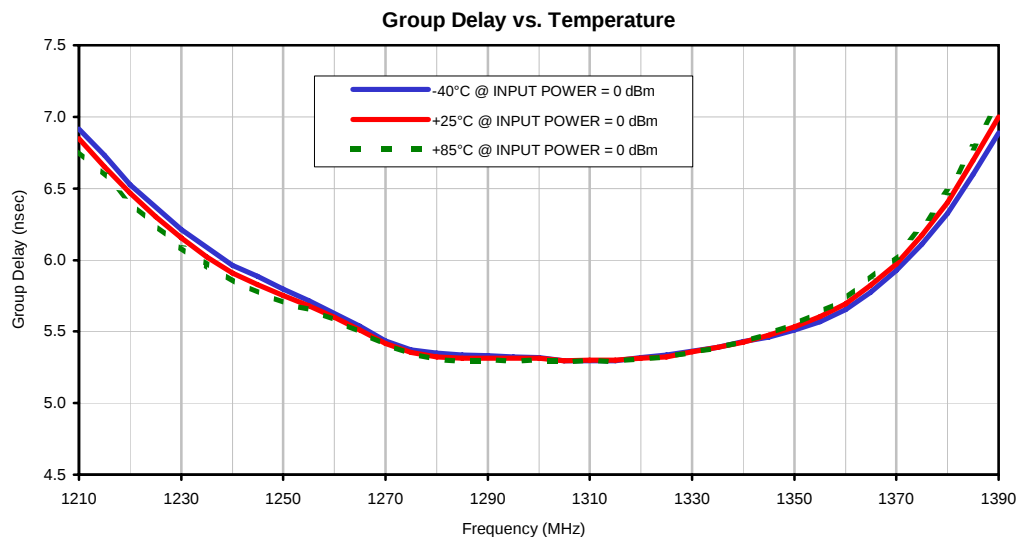
Typical Performance Data

FREQ.	GROUP DELAY		
(MHz)	(nsec)		
	@-40°C	@+25°C	@+85°C
1210.0	6.91	6.85	6.76
1215.0	6.73	6.65	6.59
1220.0	6.52	6.47	6.41
1225.0	6.37	6.30	6.25
1230.0	6.21	6.16	6.09
1235.0	6.09	6.02	5.97
1240.0	5.96	5.91	5.85
1245.0	5.89	5.83	5.77
1250.0	5.80	5.75	5.70
1255.0	5.72	5.68	5.65
1260.0	5.63	5.60	5.58
1265.0	5.54	5.51	5.50
1270.0	5.43	5.42	5.41
1275.0	5.37	5.35	5.34
1280.0	5.35	5.32	5.31
1285.0	5.34	5.31	5.29
1290.0	5.33	5.31	5.30
1295.0	5.32	5.31	5.30
1300.0	5.32	5.31	5.30
1305.0	5.29	5.30	5.29
1310.0	5.30	5.30	5.30
1315.0	5.30	5.30	5.29
1320.0	5.32	5.32	5.31
1325.0	5.33	5.32	5.32
1330.0	5.36	5.36	5.36
1335.0	5.39	5.39	5.39
1340.0	5.43	5.43	5.43
1345.0	5.46	5.48	5.48
1350.0	5.51	5.53	5.55
1355.0	5.57	5.60	5.63
1360.0	5.66	5.69	5.73
1365.0	5.77	5.82	5.87
1370.0	5.93	5.97	6.02
1375.0	6.11	6.17	6.23
1380.0	6.33	6.40	6.47
1385.0	6.60	6.70	6.78
1390.0	6.89	7.00	7.10

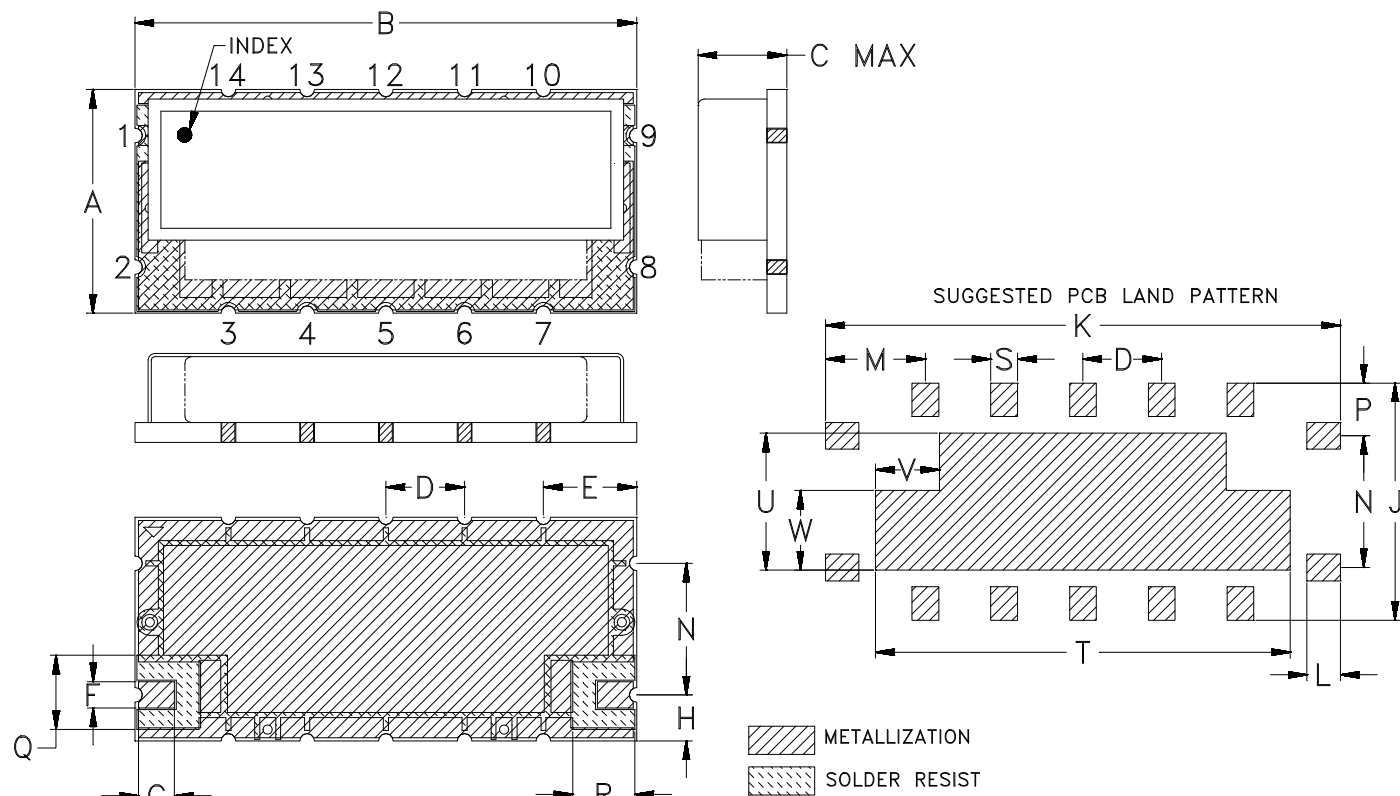
Typical Performance Curves



Typical Performance Curves



Outline Dimensions



CASE#	A	B	C	D	E	F	G	H	J	K	L	M
KR1508	.670 (17.02)	1.505 (38.23)	.285 (7.24)	.236 (5.99)	.280 (7.11)	.079 (2.01)	.108 (2.74)	.138 (3.51)	.710 (18.03)	1.545 (39.24)	.100 (2.54)	.300 (7.62)

CASE#	N	P	Q	R	S	T	U	V	W	WT, GRAMS
KR1508	.394 (10.01)	.158 (4.01)	.222 (5.64)	.187 (4.75)	.080 (2.03)	1.245 (31.62)	0.410 (10.41)	0.192 (4.88)	.238 (6.05)	9.8

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

- Case material: Nickel-Silver alloy.
- Base: Printed wiring laminate.
- Termination finish:
For RoHS Case Styles: 2-5 μ inch (.05-.13 microns) Gold over 120-240 μ inch (3.05-6.10 microns) Nickel plate.
All models, (+) suffix.



INTERNET <http://www.minicircuits.com>

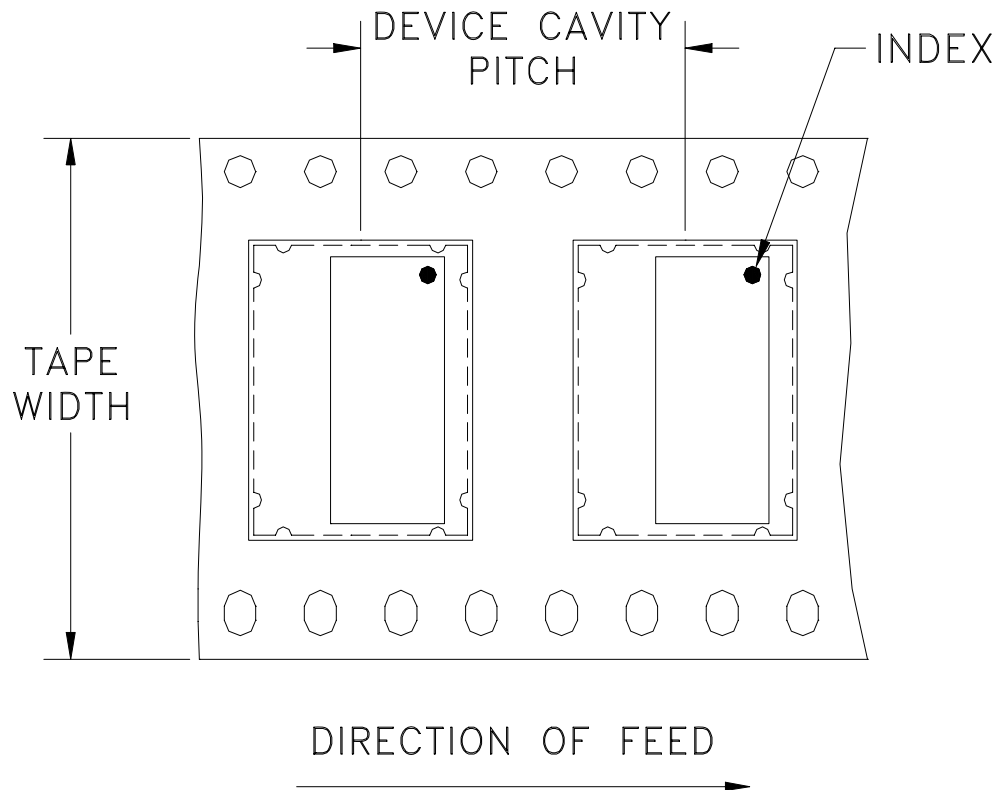
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Mini-Circuits ISO 9001 & ISO 14001 Certified

Tape & Reel Packaging TR-F105

DEVICE ORIENTATION IN T&R



Tape Width, mm	Device Cavity Pitch, mm	Reel Size, inches	Devices per Reel
56	24	13	250

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



INTERNET <http://www.minicircuits.com>

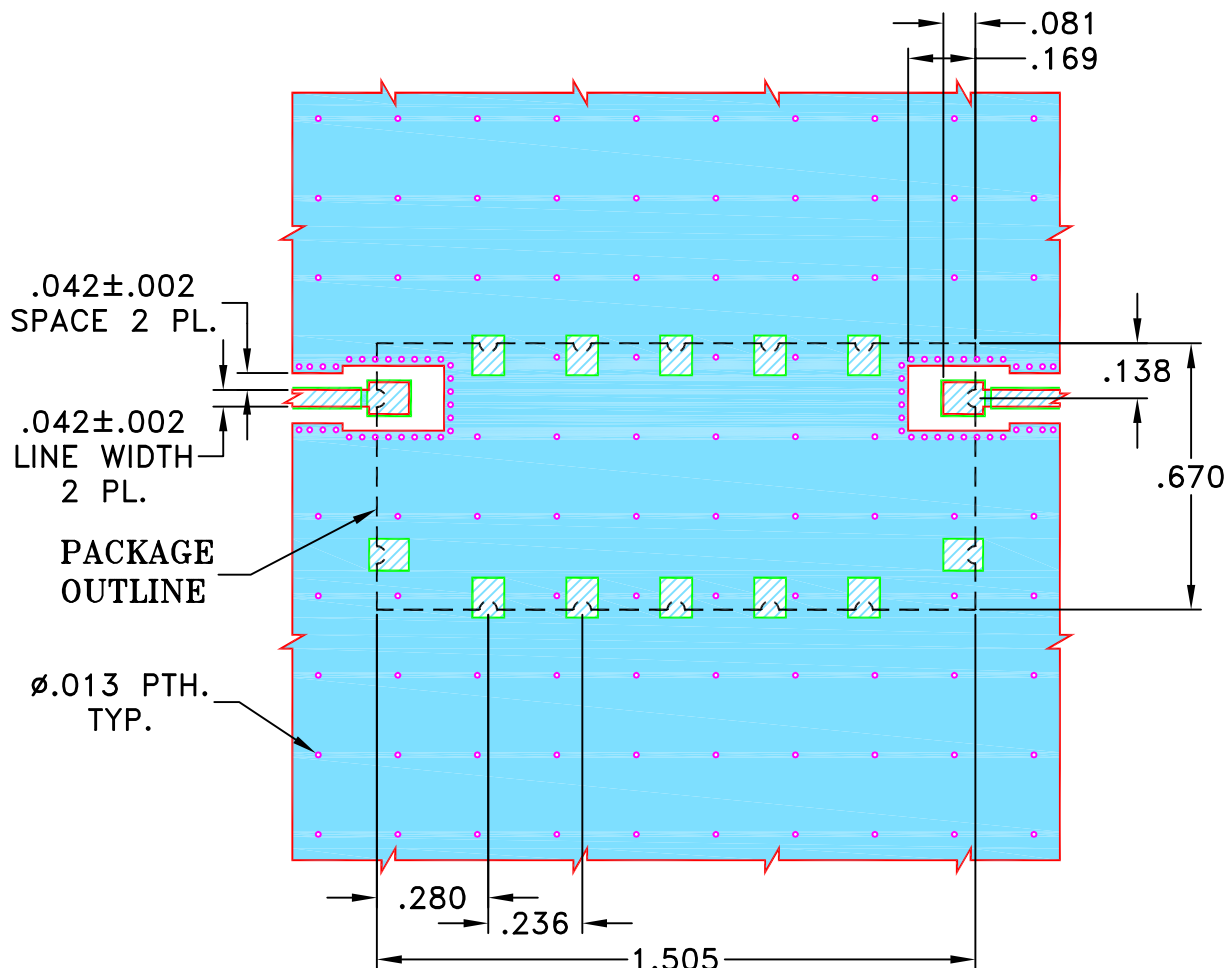
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Mini-Circuits ISO 9001 & ISO 14001 Certified

THIRD ANGLE PROJECTION		REVISIONS				
		REV OR	ECN No. M126890	DESCRIPTION NEW RELEASE	DATE APR 10	DR RB
						AUTH KG

**SUGGESTED MOUNTING CONFIGUTATION FOR
KR1508 CASE STYLE "16FL02" PIN CODE**



NOTES:

- TRACE WIDTH IS SHOWN FOR OAK 602 WITH DIELECTRIC THICKNESS .031"±.002". COPPER: 1/2 OZ. EACH SIDE.
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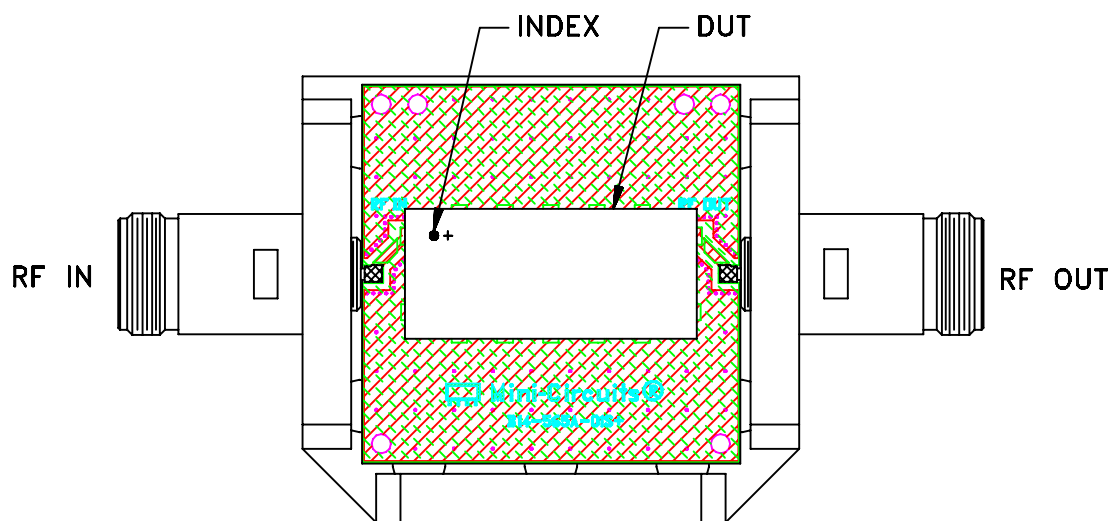
DENOTES PCB COPPER LAYOUT WITH SMOBC
(SOLDER MASK OVER BARE COPPER)



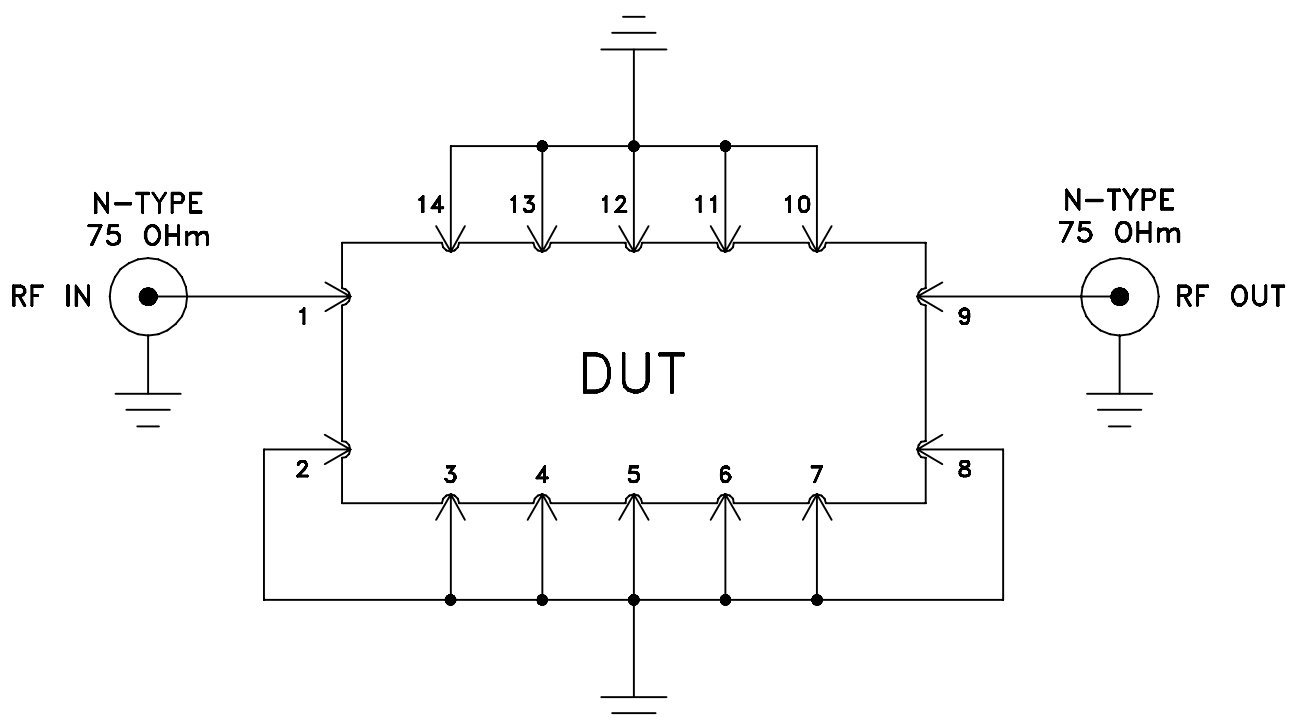
DENOTES COPPER LAND PATTERN FREE OF SOLDERMASK

UNLESS OTHERWISE SPECIFIED		INITIALS		DATE		Mini-Circuits® 13 Neptune Avenue Brooklyn NY 11235					
DIMENSIONS ARE IN INCHES		DRAWN	RB	19 APR 10							
TOLERANCES ON:		CHECKED	MD	19 APR 10							
2 PL DECIMALS ±		APPROVED	GM	19 APR 10							
3 PL DECIMALS ± .005"						PL, 16FL02, KR1508, CSBP, TB-576+, 75Ω					
ANGLES ±											
FRACTIONS ±						SIZE A					
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						FILE: 98PL333		SCALE: 2:1		SHEET: 1 OF 1	

Evaluation Board and Circuit



TB-576+



Schematic Diagram

Notes:

1. 75 Ohm N-Type Female connectors.
2. PCB Material: OAK-602 or equivalent, Dielectric Constant=2.5, Thickness=.031 inch.

 Mini-Circuits®



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, 96 hours, 40°C	MIL-STD-202, Method 103B, Condition B, Except 50°C
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, 10-2000 Hz, 4 times in each of three axes (total 12)	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