

Surface Mount Bandpass Filter

CBP-1450F+

50Ω 1320 to 1580 MHz



Generic photo used for illustration purposes only
CASE STYLE: KV1710

The Big Deal

- High Q
- Good selectivity
- Low VSWR
- Small shielded package

Product Overview

CBP-1450F+ is a coaxial-ceramic-resonator based bandpass filter in a shielded package fabricated using SMT technology. This filter has low insertion loss with high rejection and low VSWR for use in L-band application, wireless medical telemetry and defence systems.

Key Features

Feature	Advantages
High Q	The CBP-1450F+ filter incorporates High-Q ceramic resonators that enables low insertion loss.
Good selectivity	This filter designed with six pole. So this providing good selectivity in the stopband performance.
Low VSWR	This filter maintains typical VSWR over a passband frequency range.
Rugged construction	The CBP-1450F+ has been qualified over wide range of thermal, mechanical and environmental conditions including withstanding the stress of extensive solder reflow cycles.

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



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Features

- High Q
- Good selectivity
- Low VSWR
- Small shielded package

Applications

- L-band application
- Wireless medical telemetry
- Defence systems

Electrical Specifications at 25°C

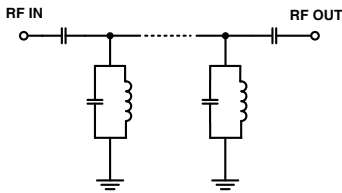
Parameter	F#	Frequency (MHz)	Min.	Typ.	Max.	Unit	
Pass Band	Center Frequency	-	-	1450	-	MHz	
	Insertion Loss	F1-F2	1320-1580	-	1.0	2.5	dB
	VSWR	F1-F2	1320-1580	-	1.5	2.0	:1
Stop Band, Lower	Insertion Loss	DC-F3	DC-1150	20	36	-	dB
	VSWR	DC-F3	DC-1150	-	20	-	:1
Stop Band, Upper	Insertion Loss	F4-F5	1775-2350	20	32	-	dB
	VSWR	F4-F5	1775-2350	-	20	-	:1

Maximum Ratings

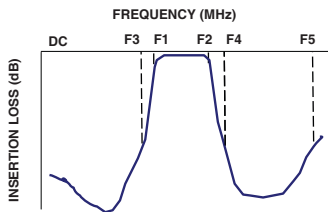
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power Input	1 W max.

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

Functional Schematic



Typical Frequency Response

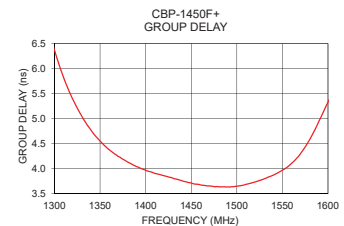
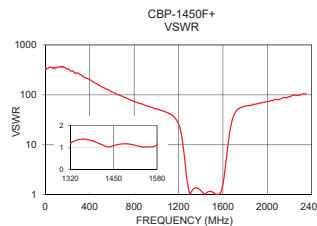
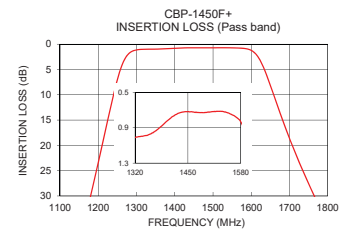
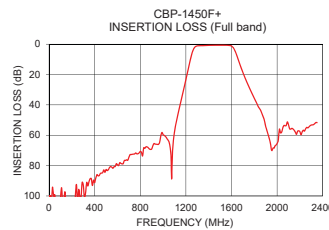


Typical Performance Data at 25°C

Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)	Frequency (MHz)	Group Delay (nsec)
1	101.46	345.96	1320	5.39
100	101.35	348.43	1350	4.55
500	82.59	148.69	1360	4.38
1000	59.59	52.43	1370	4.24
1150	39.72	38.03	1380	4.14
1180	30.00	31.82	1390	4.04
1210	20.04	22.93	1400	3.97
1250	7.00	6.57	1410	3.91
1268	3.13	2.81	1420	3.86
1320	1.01	1.20	1430	3.81
1450	0.72	1.08	1440	3.76
1580	0.83	1.13	1450	3.71
1600	1.24	1.64	1480	3.64
1622	3.06	3.58	1500	3.65
1650	8.18	11.92	1520	3.74
1710	20.56	43.89	1530	3.80
1770	30.89	56.85	1540	3.87
1775	31.69	57.89	1550	3.97
2000	65.49	73.65	1560	4.10
2350	51.72	103.98	1580	4.58

+RoHS Compliant

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



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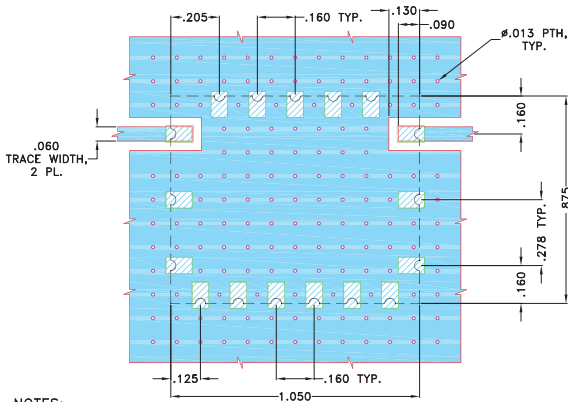
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CBP-1450F+
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Page 2 of 3

Pad Connections

INPUT	1
OUTPUT	12
GROUND	2,3,4,5,6,7,8,9,10,11,13,14,15,16,17

Demo Board MCL P/N: TB-693+
Suggested PCB Layout (PL-378)

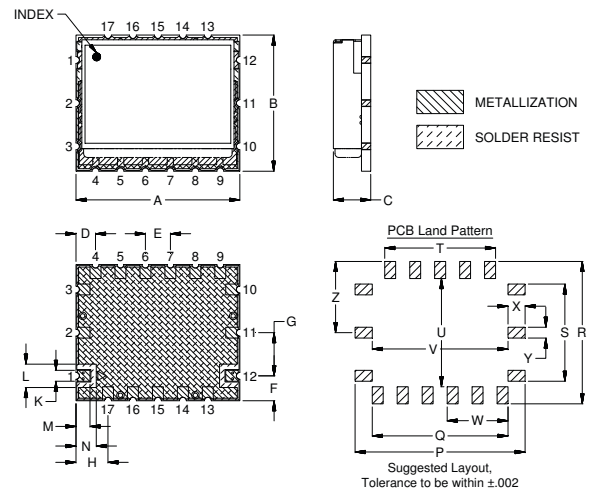


NOTES:

- TRACE WIDTH IS SHOWN FOR OAK (OAK-602) WITH DIELECTRIC THICKNESS .022"±.0015". 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	J	K	L	M	N
1.050	.875	.239	.125	.160	.160	.278	.205	.160	.070	.150	.090	.130
26.67	22.23	6.07	3.18	4.06	4.06	7.06	5.21	4.06	1.78	3.81	2.29	3.30
P	Q	R	S	T	U	V	W	X	Y	Z	Wt.	
1.090	.870	.915	.625	.710	.695	.870	.390	.110	.070	.458	grams	
27.69	22.10	23.24	15.88	18.03	17.65	22.10	9.91	2.79	1.78	11.63	8.5	

Note: Please refer to case style drawing for details

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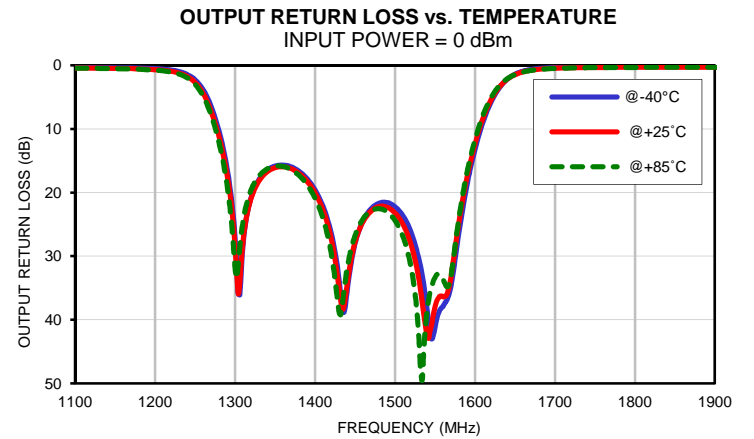
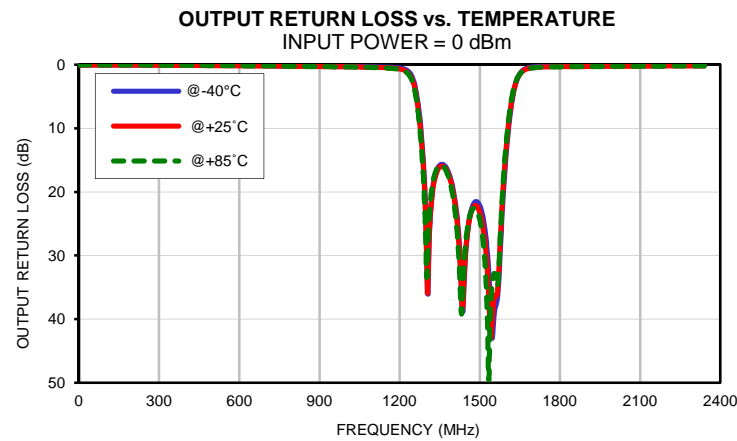
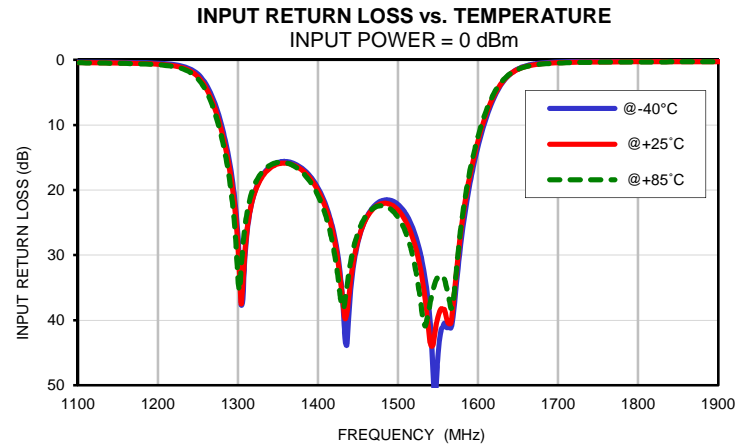
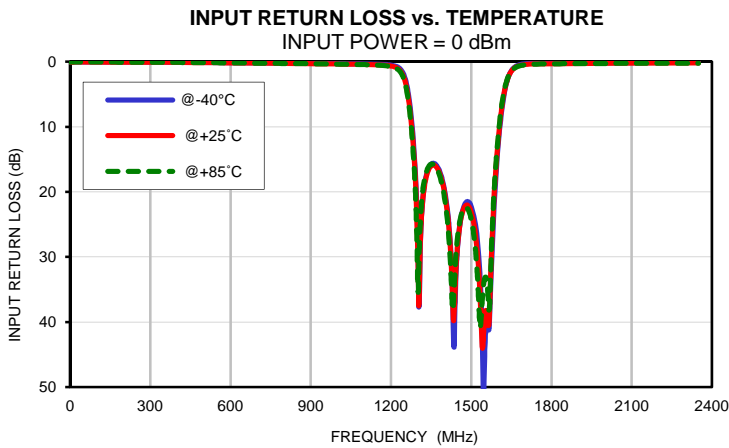
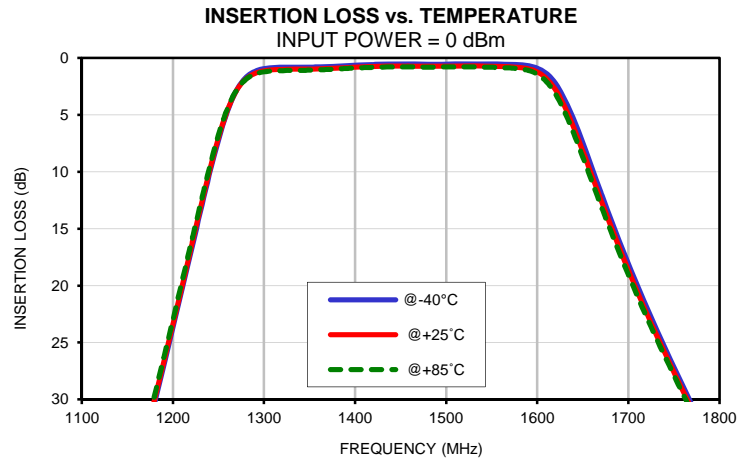
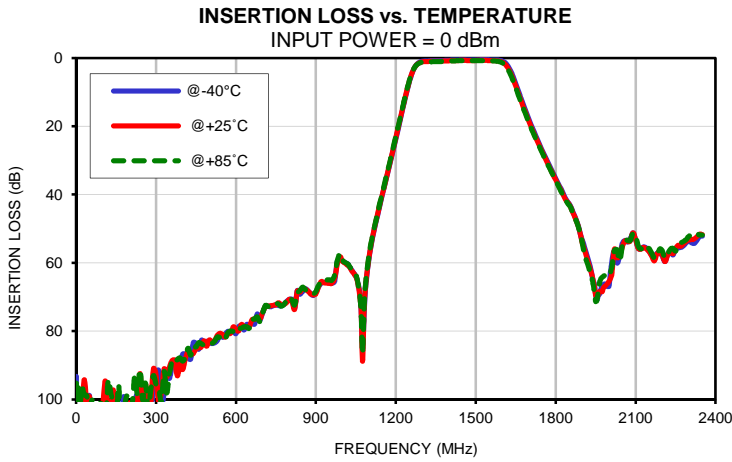
Typical Performance Data

FREQ. (MHz)	INSERTION LOSS			INPUT RETURN LOSS			OUTPUT RETURN LOSS		
	(dB)			(dB)			(dB)		
	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C
1	93.33	101.46	95.29	0.04	0.05	0.04	0.05	0.05	0.05
10	100.93	103.35	111.25	0.05	0.05	0.05	0.05	0.05	0.05
50	98.95	99.22	102.62	0.04	0.05	0.05	0.04	0.05	0.04
100	114.57	101.35	101.86	0.04	0.05	0.05	0.04	0.05	0.04
500	83.28	82.59	83.99	0.09	0.13	0.13	0.08	0.12	0.11
750	72.27	72.34	71.84	0.18	0.22	0.23	0.16	0.21	0.21
900	68.59	69.07	68.38	0.24	0.30	0.30	0.22	0.28	0.28
950	65.85	66.04	64.94	0.26	0.32	0.33	0.25	0.31	0.31
1000	59.51	59.59	59.18	0.28	0.34	0.36	0.27	0.33	0.34
1040	62.80	62.82	62.54	0.30	0.36	0.39	0.29	0.35	0.36
1060	66.89	67.14	67.03	0.31	0.38	0.40	0.29	0.37	0.38
1070	74.14	74.46	74.90	0.31	0.38	0.40	0.30	0.37	0.39
1080	77.08	75.59	74.82	0.32	0.39	0.42	0.30	0.38	0.40
1090	64.35	64.03	63.36	0.32	0.40	0.43	0.31	0.39	0.41
1100	58.22	57.91	57.49	0.33	0.41	0.44	0.32	0.40	0.42
1140	43.23	42.97	42.57	0.36	0.45	0.49	0.35	0.44	0.48
1150	39.94	39.72	39.32	0.37	0.47	0.51	0.36	0.46	0.50
1160	36.76	36.49	36.07	0.38	0.49	0.54	0.38	0.48	0.53
1180	30.24	30.00	29.60	0.43	0.55	0.61	0.42	0.55	0.61
1190	27.00	26.72	26.31	0.46	0.59	0.66	0.46	0.59	0.66
1200	23.71	23.40	23.00	0.51	0.65	0.74	0.50	0.66	0.74
1210	20.35	20.04	19.65	0.58	0.75	0.85	0.58	0.76	0.85
1220	16.96	16.64	16.27	0.71	0.90	1.02	0.72	0.92	1.04
1230	13.56	13.26	12.92	0.94	1.17	1.33	0.95	1.20	1.35
1240	10.25	9.97	9.68	1.37	1.67	1.88	1.39	1.71	1.92
1250	7.20	7.00	6.78	2.20	2.61	2.91	2.23	2.66	2.96
1268	3.11	3.13	3.08	5.71	6.40	7.00	5.75	6.46	7.04
1290	1.18	1.36	1.43	16.10	17.15	18.90	16.11	17.13	18.75
1320	0.82	1.01	1.12	20.66	20.72	19.42	20.82	20.93	19.61
1450	0.54	0.72	0.80	27.95	27.69	26.51	28.09	27.88	26.76
1580	0.60	0.83	0.95	26.71	24.97	24.36	26.19	24.58	23.96
1600	0.90	1.24	1.43	13.25	12.36	11.72	13.24	12.35	11.69
1620	2.25	2.80	3.18	5.77	5.43	5.10	5.79	5.44	5.10
1622	2.48	3.06	3.46	5.26	4.96	4.67	5.28	4.98	4.67
1650	7.46	8.18	8.71	1.38	1.45	1.44	1.38	1.46	1.44
1670	11.83	12.50	12.99	0.62	0.74	0.78	0.63	0.76	0.78
1680	13.98	14.61	15.07	0.46	0.59	0.63	0.47	0.60	0.63
1690	16.07	16.67	17.09	0.36	0.49	0.54	0.37	0.50	0.53
1700	18.08	18.65	19.04	0.30	0.43	0.47	0.31	0.44	0.47
1710	20.02	20.56	20.93	0.26	0.38	0.43	0.27	0.40	0.43
1720	21.90	22.41	22.75	0.24	0.36	0.40	0.25	0.37	0.39
1750	27.16	27.60	27.87	0.21	0.31	0.35	0.21	0.32	0.35
1760	28.84	29.26	29.52	0.21	0.30	0.34	0.21	0.31	0.33
1770	30.47	30.89	31.14	0.20	0.30	0.33	0.20	0.31	0.33
1775	31.29	31.69	31.94	0.20	0.29	0.32	0.20	0.30	0.32
1800	35.29	35.66	35.91	0.19	0.28	0.31	0.20	0.29	0.31
1900	53.48	54.27	54.17	0.19	0.26	0.28	0.18	0.26	0.28
2000	66.84	65.49	63.77	0.16	0.23	0.25	0.16	0.24	0.25
2050	54.31	55.19	55.05	0.15	0.22	0.24	0.14	0.23	0.24
2100	53.20	53.12	52.15	0.14	0.22	0.24	0.14	0.22	0.24
2140	55.65	55.95	56.04	0.13	0.20	0.23	0.11	0.20	0.22
2150	56.59	56.73	55.81	0.13	0.20	0.23	0.11	0.20	0.21
2160	57.80	57.94	57.16	0.12	0.20	0.22	0.11	0.19	0.21
2180	57.21	57.35	58.15	0.12	0.20	0.23	0.11	0.20	0.22
2190	57.31	57.09	55.98	0.12	0.20	0.22	0.10	0.19	0.21
2200	57.94	57.66	56.51	0.12	0.19	0.22	0.10	0.19	0.21
2250	56.12	55.79	56.54	0.10	0.18	0.22	0.08	0.18	0.20
2260	55.58	54.85	55.09	0.10	0.18	0.22	0.08	0.18	0.20
2300	53.69	53.29	52.22	0.09	0.18	0.22	0.08	0.17	0.20
2350	52.19	51.72	51.84	0.09	0.18	0.22	0.07	0.17	0.20

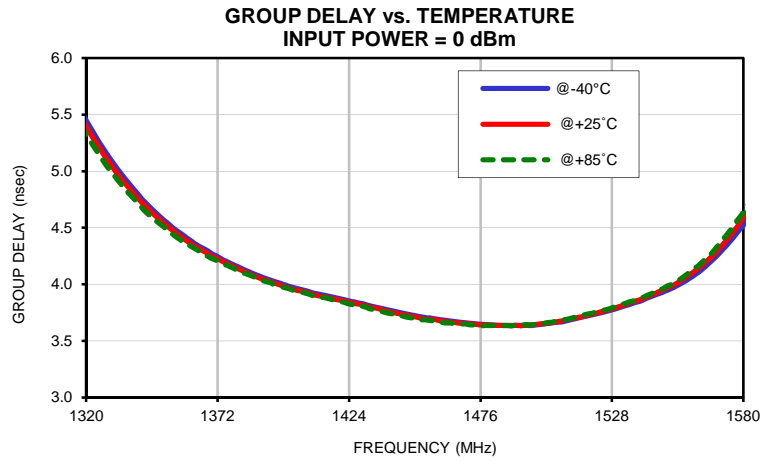
Typical Performance Data

FREQ. (MHz)	GROUP DELAY		
	(nsec)		
	@-40°C	@+25°C	@+85°C
1320	5.45	5.39	5.32
1324	5.30	5.25	5.18
1328	5.16	5.11	5.05
1332	5.03	4.98	4.93
1336	4.91	4.87	4.82
1340	4.81	4.77	4.73
1344	4.71	4.67	4.63
1348	4.62	4.59	4.55
1352	4.54	4.52	4.48
1356	4.47	4.44	4.41
1360	4.41	4.38	4.35
1364	4.34	4.32	4.30
1368	4.29	4.27	4.25
1372	4.25	4.23	4.21
1376	4.20	4.18	4.17
1380	4.15	4.14	4.12
1384	4.11	4.10	4.09
1388	4.08	4.06	4.05
1392	4.05	4.03	4.02
1396	4.02	4.00	3.99
1400	3.99	3.97	3.96
1404	3.96	3.94	3.94
1408	3.94	3.92	3.91
1412	3.91	3.90	3.89
1416	3.89	3.88	3.87
1420	3.87	3.86	3.85
1424	3.85	3.84	3.83
1428	3.83	3.82	3.81
1432	3.81	3.80	3.78
1436	3.79	3.78	3.77
1440	3.77	3.76	3.74
1444	3.75	3.74	3.73
1450	3.72	3.71	3.70
1452	3.71	3.70	3.69
1456	3.70	3.69	3.68
1460	3.69	3.68	3.67
1464	3.67	3.67	3.66
1468	3.66	3.66	3.65
1472	3.65	3.65	3.64
1476	3.65	3.64	3.63
1480	3.64	3.64	3.64
1484	3.64	3.64	3.63
1488	3.63	3.63	3.63
1492	3.64	3.63	3.64
1496	3.63	3.64	3.64
1500	3.65	3.65	3.65
1504	3.66	3.66	3.66
1508	3.67	3.68	3.68
1512	3.69	3.69	3.70
1516	3.71	3.71	3.72
1520	3.73	3.74	3.74
1524	3.75	3.76	3.76
1530	3.79	3.80	3.81
1540	3.86	3.87	3.88
1550	3.95	3.97	3.99
1560	4.07	4.10	4.13
1564	4.14	4.17	4.20
1570	4.26	4.30	4.34
1574	4.36	4.41	4.45
1580	4.52	4.58	4.64

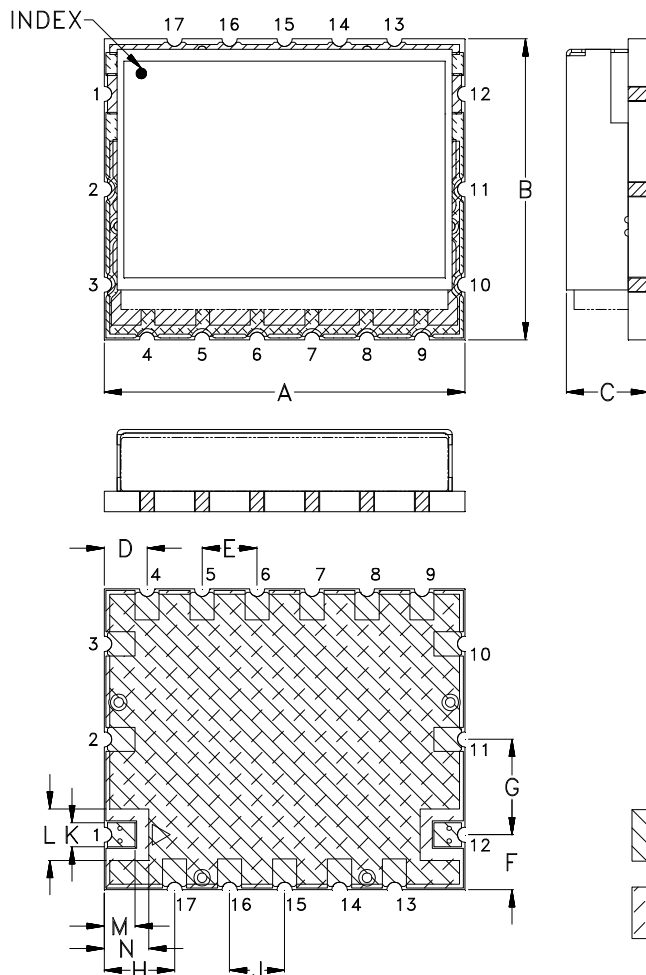
Typical Performance Curves



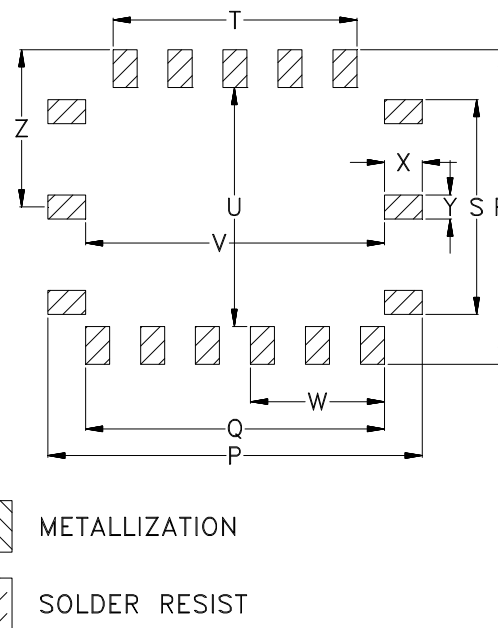
Typical Performance Curves



Outline Dimensions



SUGGESTED PCB LAND PATTERN



CASE#	A	B	C	D	E	F	G	H	J	K	L	M	N
KV1710	1.050 (26.67)	.875 (22.23)	.239 (6.07)	.125 (3.18)	.160 (4.06)	.160 (4.06)	.278 (7.06)	.205 (5.21)	.160 (4.06)	.070 (1.78)	.150 (3.81)	.090 (2.29)	.130 (3.30)

CASE#	P	Q	R	S	T	U	V	W	X	Y	Z	WT, GRAMS
KV1710	1.090 (27.69)	.870 (22.10)	.915 (23.24)	.625 (15.88)	.710 (18.03)	.695 (17.65)	.870 (22.10)	.390 (9.91)	.110 (2.79)	.070 (1.78)	.458 (11.63)	8.5

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

Notes:

1. Case material: Nickel-Silver alloy.
2. Base: Printed wiring laminate.
3. 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.



P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661 For detailed performance specs & shopping online see Mini-Circuits web site

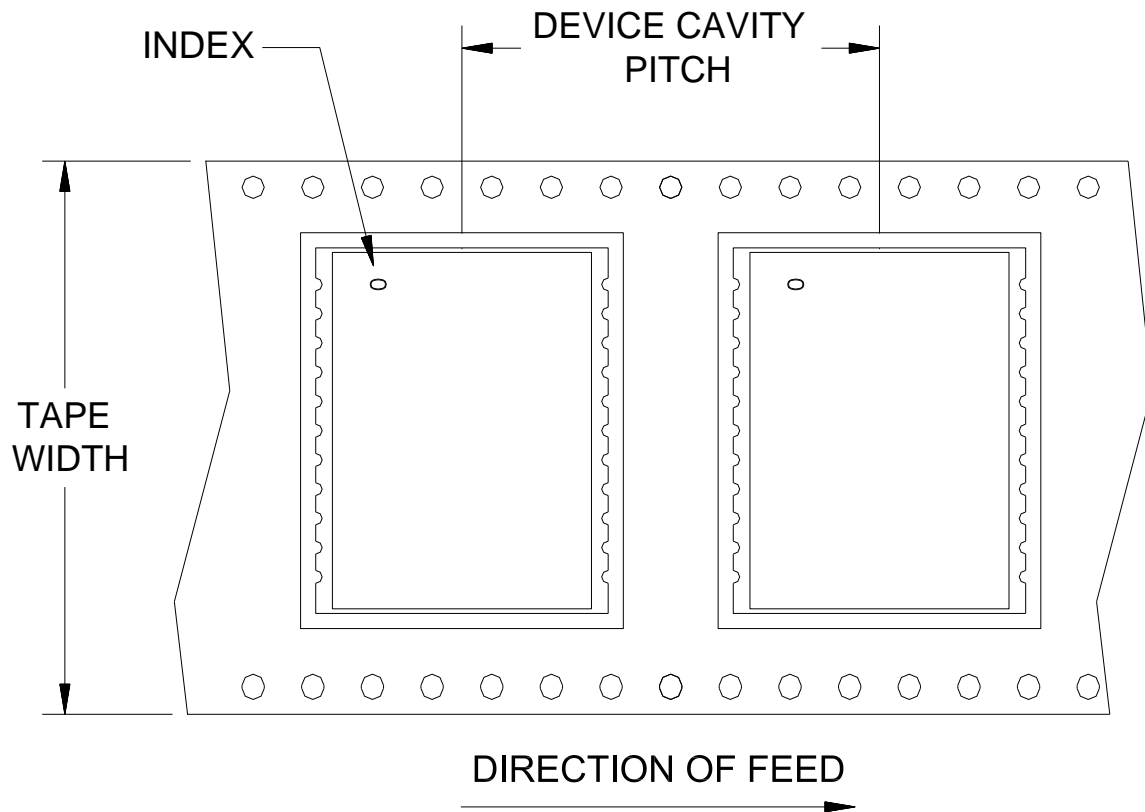


The Design Engineers Search Engine Provides ACTUAL Data Instantly From MINI-CIRCUITS At: www.minicircuits.com

RF/IF MICROWAVE COMPONENTS

Tape & Reel Packaging TR-F97

DEVICE ORIENTATION IN T&R



Tape Width, mm	Device Cavity Pitch, mm	Reel Size, inches	Devices per Reel	
44	32	13	Small quantity standards (see note)	20
				50
				100
			Standard	200

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

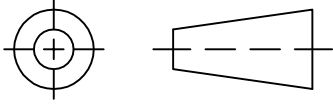
Mini-Circuits carrier tape materials provide protection from ESD (Electro-Static Discharge) during handling and transportation. Tapes are static dissipative and comply with industry standards EIA-481/EIA-541.

Go to: www.minicircuits.com/pages/pdfs/tape.pdf



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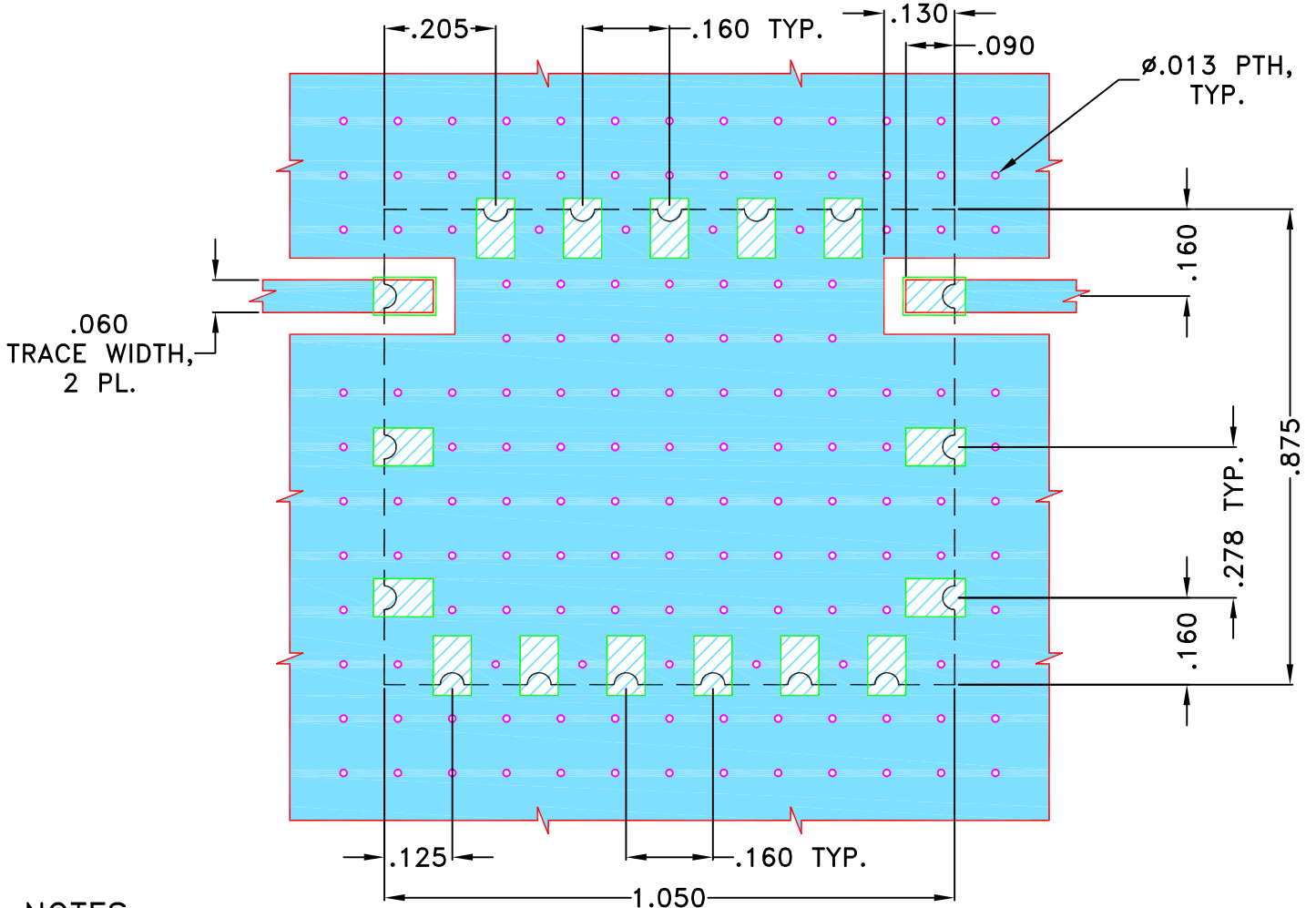
THIRD ANGLE PROJECTION



REVISIONS

REV OR	ECN No.	DESCRIPTION	DATE	DR	AUTH
	M138032	NEW RELEASE	JUL 12	DDR	KG

SUGGESTED MOUNTING CONFIGURATION FOR KV1710 CASE STYLE "17FL01" PIN CODE



NOTES:

- TRACE WIDTH IS SHOWN FOR OAK (OAK-602) WITH DIELECTRIC THICKNESS .022"±.0015". 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

UNLESS OTHERWISE SPECIFIED	INITIALS	DATE
DIMENSIONS ARE IN INCHES	DRAWN: DDR	17 JUL 12
TOLERANCES ON:	CHECKED: DDR	17 JUL 12
2 PL DECIMALS ±	APPROVED: GM	17 JUL 12
3 PL DECIMALS ± .005"		
ANGLES ±		
FRACTIONS ±		



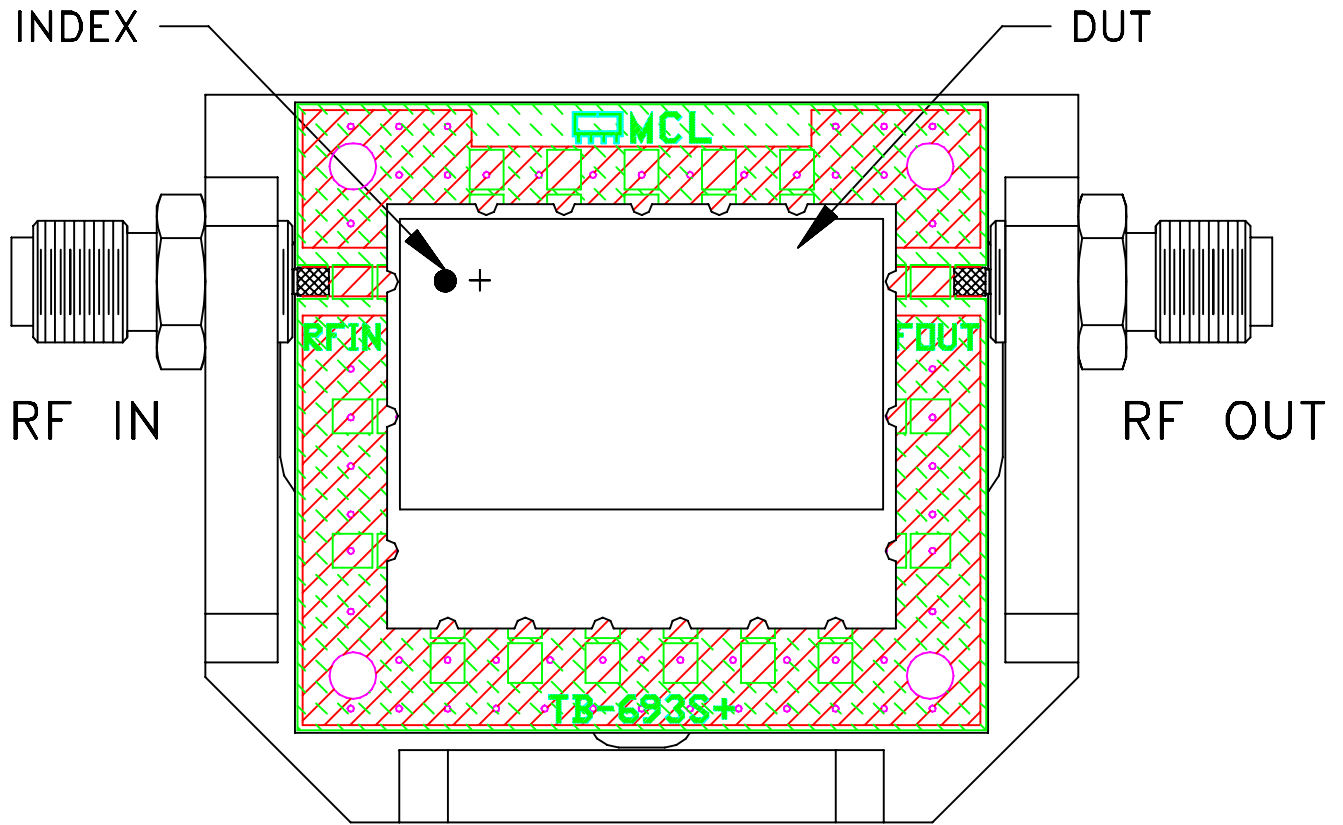
Mini-Circuits® 13 Neptune Avenue
Brooklyn NY 11235

**PL, 17FL01, KV1710, CSBP,
TB-693+, 50 Ohm**

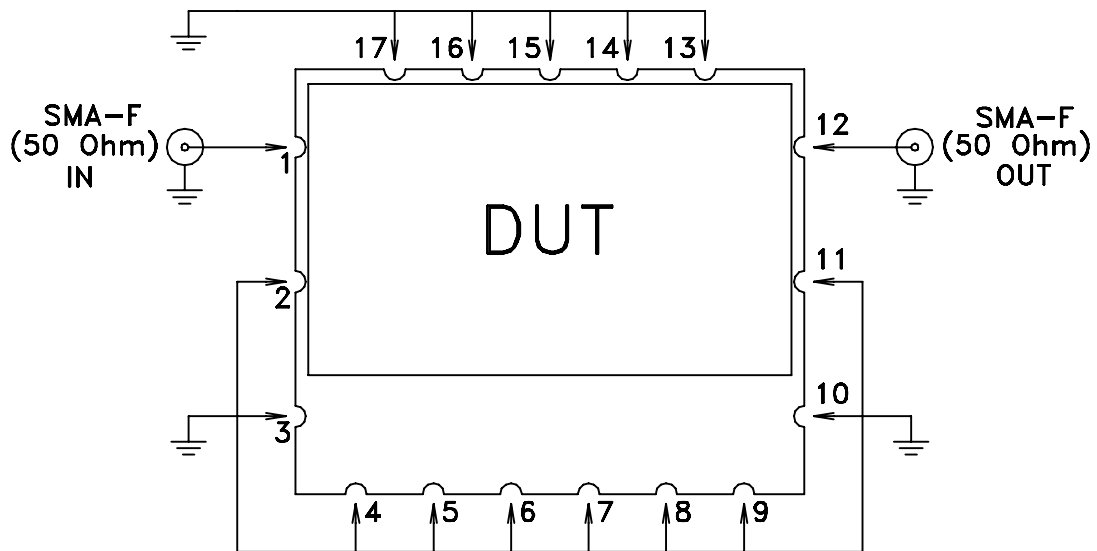
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SIZE A	CODE IDENT 15542	DRAWING NO: 98-PL-378	REV: OR
FILE: 98PL378	SCALE: 3:1	SHEET: 1 OF 1	

Evaluation Board and Circuit




TB-693+



Schematic Diagram

Notes:

1. 50 Ohm SMA Female connectors.
2. PCB Material: OAK-602 OR Equivalent
Dielectric Constant= $2.50 \pm .04$, Thickness=.022 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