Surface Mount

Bandpass Filter

CBP-1630F+

50Ω 1500 to 1760 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-1630F+ 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, Aviation / Aeronautical, Maritime, Mobile satellite and radio astronomy.

Key Features

Feature	Advantages
High Q	The CBP-1630F+ 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-1630F+ has been qualified over wide range of thermal, mechanical and environmental conditions including withstanding the stress of extensive solder reflow cycles.

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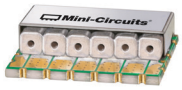


Generic photo used for illustration purposes only

CASE STYLE: KV1710

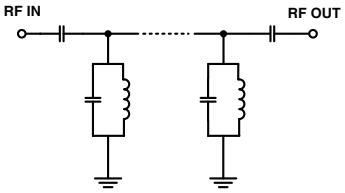
Features

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

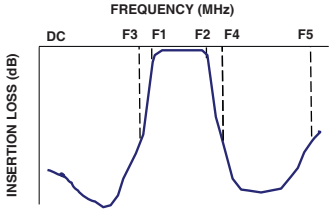
Applications

- L-band application
- Aviation/Aeronautical
- Maritime
- Radio astronomy
- Mobile satellite

Functional Schematic



Typical Frequency Response



+RoHS Compliant

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

Electrical Specifications at 25°C

Parameter		F#	Frequency (MHz)	Min.	Typ.	Max.	Unit
Pass Band	Center Frequency	-	-	-	1630	-	MHz
	Insertion Loss	F1-F2	1500-1760	-	1.0	2.2	dB
	VSWR	F1-F2	1500-1760	-	1.5	2.1	:1
Stop Band, Lower	Insertion Loss	DC-F3	DC-1320	20	30	-	dB
	VSWR	DC-F3	DC-1320	-	20	-	:1
Stop Band, Upper	Insertion Loss	F4-F5	1960-2600	20	30	-	dB
	VSWR	F4-F5	1960-2600	-	20	-	:1

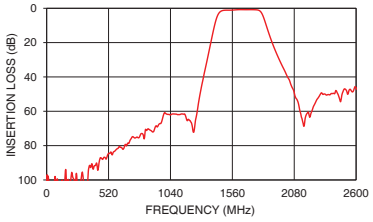
Maximum Ratings	
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power Input	1 W max.

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

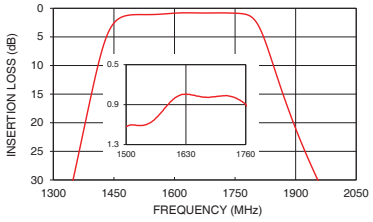
Typical Performance Data at 25°C

Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)	Frequency (MHz)	Group Delay (nsec)
1	106.98	351.51	1500	5.08
100	106.33	347.45	1514	4.69
500	87.87	181.11	1528	4.38
1000	61.30	75.35	1542	4.14
1320	39.21	31.83	1556	3.97
1350	29.58	25.93	1570	3.87
1380	19.67	18.49	1584	3.80
1400	13.16	12.50	1598	3.74
1420	7.46	6.71	1612	3.69
1440	3.65	3.26	1626	3.64
1500	1.12	1.27	1630	3.63
1630	0.79	1.06	1654	3.54
1760	0.90	1.08	1668	3.53
1808	3.05	3.30	1682	3.55
1850	11.10	17.62	1696	3.58
1895	20.12	42.83	1710	3.66
1955	30.04	62.13	1724	3.77
1960	30.79	63.34	1738	3.91
2300	50.01	90.14	1752	4.12
2600	46.38	93.19	1760	4.31

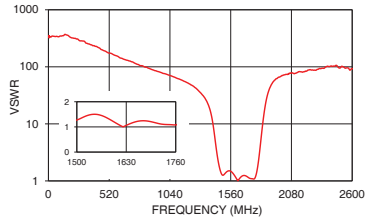
CBP-1630F+
INSERTION LOSS (Full band)



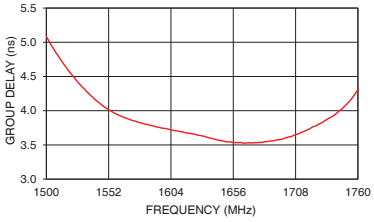
CBP-1630F+
INSERTION LOSS (Pass band)



CBP-1630F+
VSWR



CBP-1630F+
GROUP DELAY



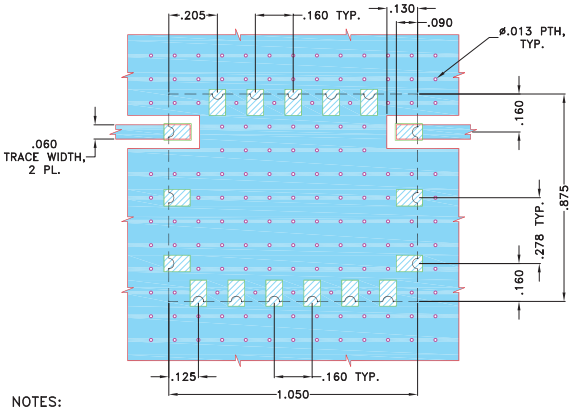
Notes

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

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)



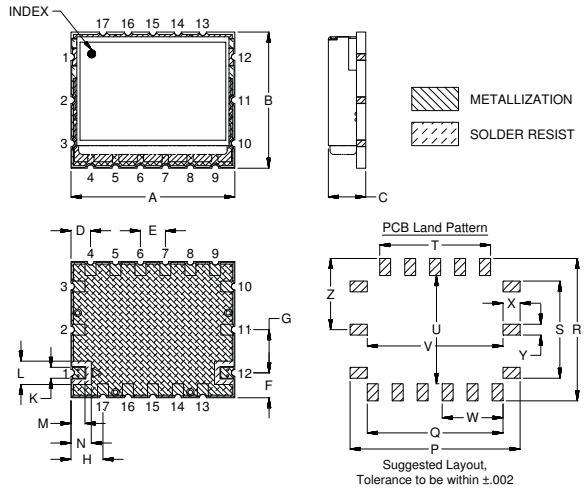
NOTES:

1. 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.
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

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.

Surface Mount Band Pass Filter CBP-1630F+

Typical Performance Data

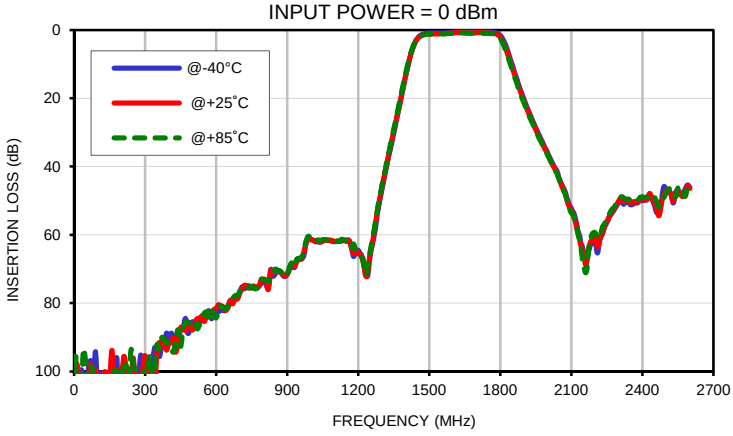
FREQ.	INSERTION LOSS			INPUT RETURN LOSS			OUTPUT RETURN LOSS		
(MHz)	(dB)			(dB)			(dB)		
	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C
1	104.08	106.98	97.72	0.05	0.05	0.05	0.05	0.05	0.05
10	98.13	97.87	101.54	0.05	0.05	0.05	0.05	0.05	0.05
50	109.29	102.09	97.86	0.05	0.05	0.05	0.05	0.05	0.05
100	106.94	106.33	108.49	0.05	0.05	0.06	0.05	0.05	0.05
500	85.45	87.87	85.08	0.07	0.11	0.11	0.07	0.10	0.11
750	75.53	75.35	75.06	0.13	0.17	0.19	0.11	0.15	0.17
900	71.44	71.66	71.69	0.17	0.23	0.24	0.15	0.20	0.22
950	66.87	67.18	66.89	0.19	0.25	0.26	0.16	0.21	0.23
1000	61.31	61.30	61.37	0.20	0.26	0.28	0.18	0.23	0.25
1200	64.54	65.37	65.52	0.31	0.38	0.41	0.28	0.34	0.37
1300	46.56	45.89	45.40	0.40	0.52	0.56	0.39	0.49	0.55
1310	43.15	42.58	42.09	0.42	0.55	0.59	0.41	0.52	0.57
1320	39.66	39.21	38.78	0.44	0.58	0.62	0.43	0.55	0.61
1330	36.51	35.97	35.48	0.46	0.62	0.66	0.45	0.58	0.65
1340	33.33	32.81	32.31	0.49	0.65	0.70	0.48	0.62	0.70
1345	31.74	31.21	30.72	0.50	0.68	0.73	0.50	0.64	0.73
1350	30.11	29.58	29.10	0.52	0.70	0.76	0.51	0.67	0.76
1370	23.51	22.99	22.51	0.62	0.85	0.92	0.62	0.82	0.94
1375	21.83	21.33	20.86	0.66	0.91	0.98	0.66	0.88	1.00
1380	20.17	19.67	19.22	0.71	0.97	1.05	0.71	0.94	1.07
1400	13.56	13.16	12.78	1.08	1.45	1.57	1.07	1.39	1.58
1420	7.64	7.46	7.22	2.20	2.75	2.98	2.13	2.61	2.89
1430	5.31	5.26	5.12	3.36	4.03	4.34	3.23	3.80	4.15
1440	3.57	3.65	3.58	5.10	5.86	6.28	4.86	5.50	5.94
1450	2.41	2.58	2.57	7.45	8.26	8.84	7.05	7.71	8.24
1500	0.87	1.12	1.22	19.90	20.19	19.64	18.62	18.36	17.92
1550	0.87	1.09	1.17	13.95	14.40	14.43	13.70	13.98	14.12
1600	0.65	0.86	0.94	21.22	22.36	23.74	20.63	21.70	23.14
1630	0.58	0.79	0.89	31.47	30.14	27.88	32.56	30.62	28.54
1700	0.60	0.82	0.91	20.88	22.40	24.13	20.20	21.26	22.65
1760	0.63	0.90	1.04	22.97	22.80	22.80	27.48	28.24	29.36
1800	1.62	2.18	2.56	8.06	7.42	6.91	8.33	7.70	7.19
1810	2.62	3.33	3.82	5.18	4.83	4.51	5.31	4.97	4.67
1840	8.09	8.95	9.56	1.26	1.36	1.37	1.28	1.38	1.40
1860	12.43	13.22	13.78	0.59	0.75	0.79	0.59	0.74	0.80
1880	16.57	17.27	17.75	0.36	0.51	0.56	0.34	0.50	0.56
1890	18.52	19.19	19.63	0.30	0.45	0.50	0.28	0.43	0.50
1895	19.47	20.12	20.54	0.28	0.42	0.48	0.26	0.41	0.47
1900	20.40	21.03	21.44	0.26	0.40	0.46	0.25	0.39	0.45
1950	28.77	29.28	29.57	0.19	0.31	0.35	0.16	0.28	0.33
1955	29.55	30.04	30.32	0.19	0.31	0.35	0.16	0.28	0.33
1960	30.31	30.79	31.07	0.19	0.31	0.35	0.16	0.27	0.32
1970	31.80	32.27	32.54	0.19	0.30	0.33	0.15	0.26	0.31
1980	33.26	33.71	33.96	0.18	0.29	0.33	0.15	0.26	0.31
1985	33.95	34.39	34.65	0.18	0.29	0.33	0.15	0.26	0.30
1990	34.64	35.07	35.34	0.18	0.28	0.32	0.15	0.25	0.30
2000	36.07	36.48	36.72	0.18	0.28	0.32	0.14	0.25	0.29
2100	52.28	52.84	53.59	0.17	0.26	0.29	0.14	0.23	0.26
2125	57.95	58.93	58.68	0.16	0.26	0.28	0.13	0.22	0.25
2150	64.66	65.82	68.71	0.16	0.25	0.28	0.13	0.21	0.24
2175	64.24	63.22	63.14	0.16	0.25	0.28	0.13	0.22	0.25
2200	61.64	60.56	59.39	0.15	0.24	0.27	0.13	0.21	0.24
2250	56.42	56.09	55.06	0.15	0.24	0.27	0.12	0.20	0.23
2300	50.55	50.01	49.87	0.15	0.24	0.27	0.11	0.19	0.23
2350	51.23	50.60	50.01	0.14	0.22	0.26	0.10	0.18	0.22
2400	50.00	49.72	48.88	0.13	0.22	0.26	0.08	0.17	0.21
2450	51.20	50.49	48.93	0.13	0.23	0.27	0.08	0.17	0.21
2500	46.63	47.03	47.74	0.12	0.22	0.27	0.09	0.18	0.23
2550	46.93	47.17	46.18	0.14	0.23	0.28	0.09	0.18	0.24
2600	46.10	46.38	45.58	0.10	0.20	0.25	0.08	0.19	0.25

Typical Performance Data

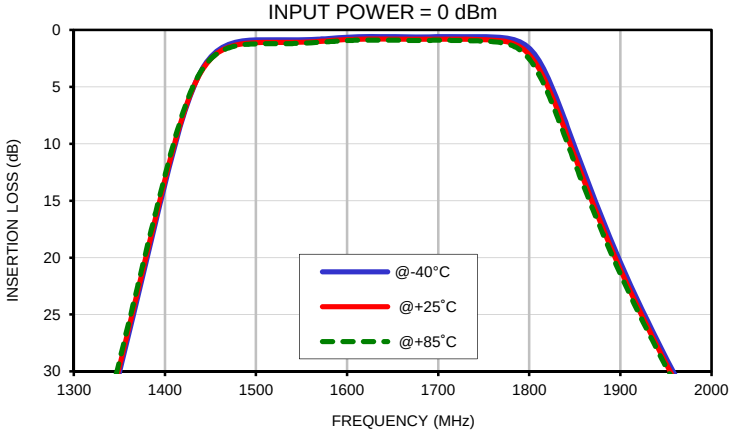
FREQ. (MHz)	GROUP DELAY (nsec)		
	@-40°C	@+25°C	@+85°C
1500	5.16	5.08	5.02
1504	5.03	4.96	4.90
1508	4.91	4.85	4.79
1512	4.81	4.74	4.69
1516	4.70	4.65	4.59
1520	4.61	4.55	4.50
1524	4.52	4.47	4.42
1528	4.43	4.38	4.35
1532	4.35	4.31	4.27
1536	4.28	4.24	4.21
1540	4.21	4.17	4.15
1544	4.15	4.12	4.09
1548	4.09	4.06	4.04
1552	4.04	4.01	4.00
1556	3.99	3.97	3.95
1560	3.96	3.94	3.92
1564	3.93	3.91	3.90
1568	3.90	3.88	3.87
1572	3.87	3.86	3.85
1576	3.85	3.84	3.83
1580	3.83	3.82	3.81
1584	3.81	3.80	3.79
1588	3.80	3.78	3.77
1592	3.78	3.76	3.75
1596	3.76	3.75	3.74
1600	3.75	3.74	3.72
1604	3.74	3.72	3.71
1608	3.73	3.71	3.70
1612	3.72	3.69	3.68
1616	3.70	3.68	3.67
1620	3.69	3.67	3.65
1624	3.67	3.66	3.64
1630	3.65	3.63	3.61
1632	3.64	3.63	3.61
1636	3.62	3.60	3.59
1640	3.60	3.59	3.57
1644	3.59	3.57	3.55
1648	3.57	3.56	3.55
1652	3.56	3.55	3.53
1656	3.55	3.53	3.53
1660	3.54	3.53	3.52
1664	3.53	3.53	3.52
1668	3.53	3.53	3.53
1672	3.53	3.53	3.53
1676	3.53	3.53	3.54
1680	3.53	3.54	3.54
1684	3.54	3.55	3.56
1688	3.56	3.56	3.57
1692	3.56	3.57	3.58
1696	3.58	3.58	3.59
1700	3.59	3.60	3.61
1704	3.61	3.62	3.64
1708	3.64	3.65	3.66
1712	3.67	3.68	3.69
1720	3.73	3.74	3.75
1730	3.81	3.83	3.84
1740	3.91	3.93	3.96
1750	4.05	4.08	4.12
1756	4.16	4.21	4.25
1760	4.25	4.31	4.36

Typical Performance Curves

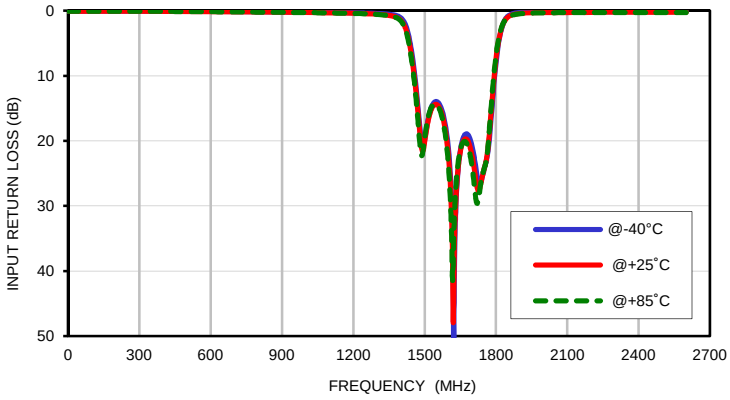
INSERTION LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



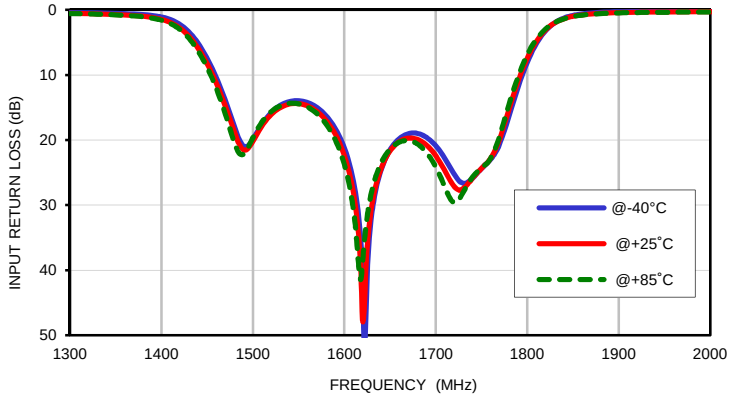
INSERTION LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



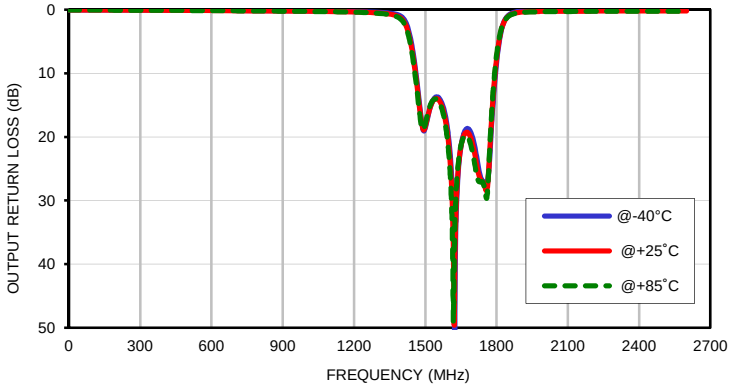
INPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



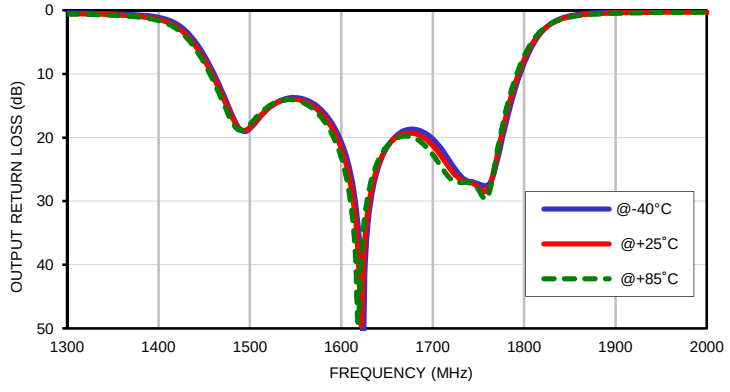
INPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



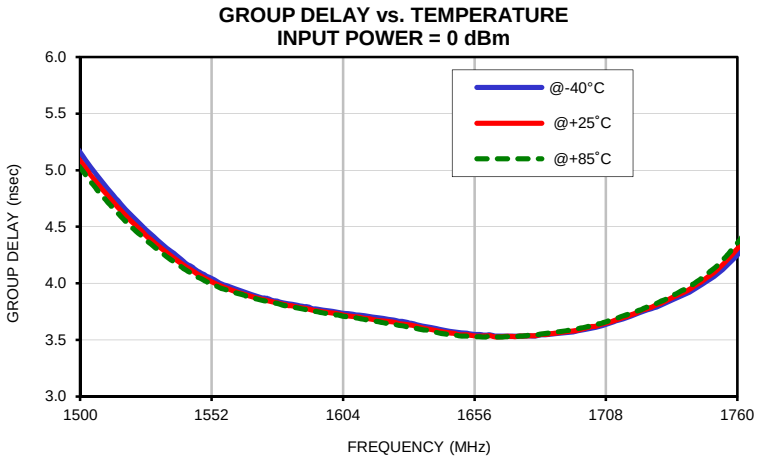
OUTPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



OUTPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



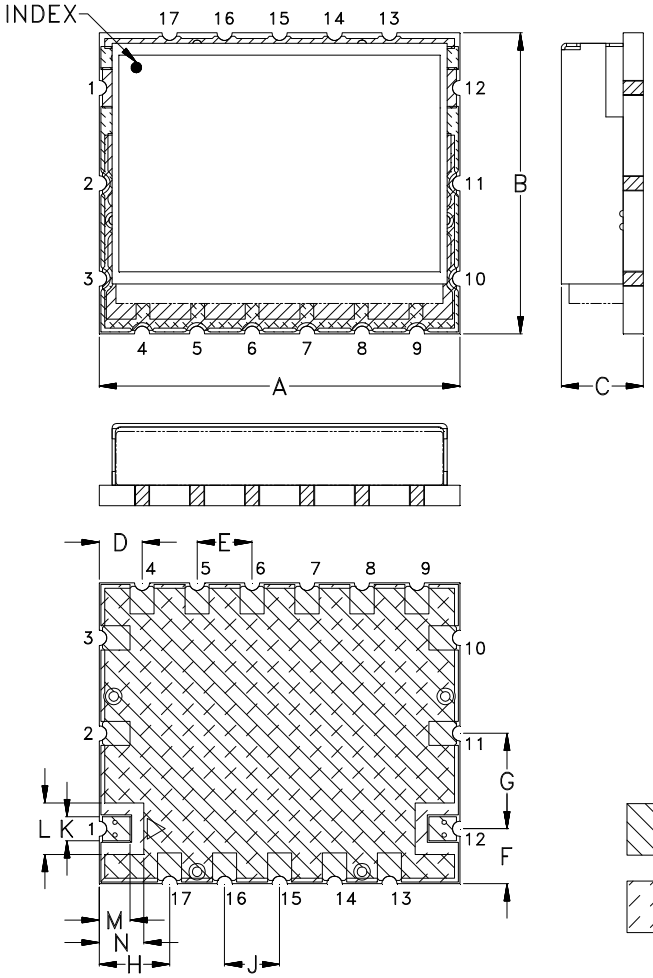
Typical Performance Curves

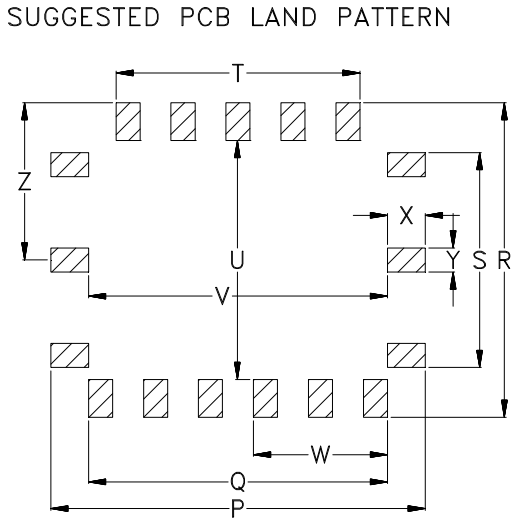


Case Style KV

KV1710

Outline Dimensions





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

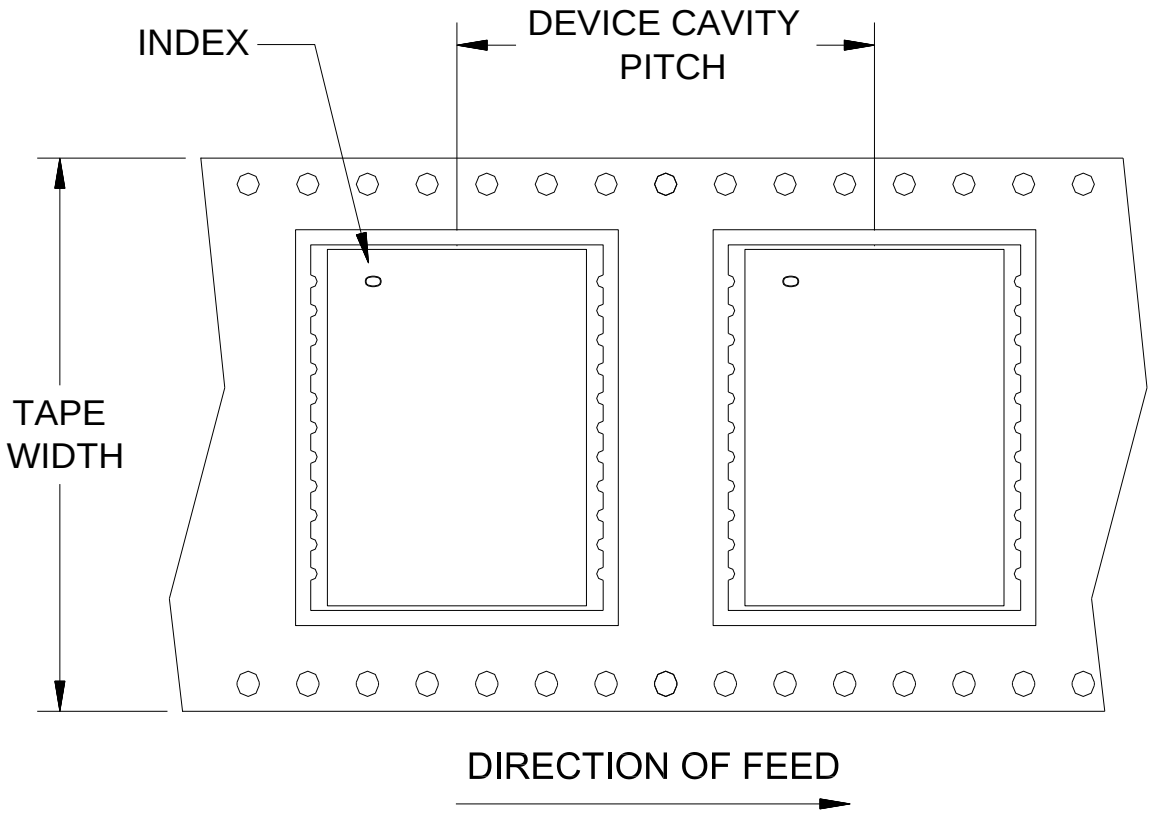
Notes:

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.

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

Mini-Circuits®
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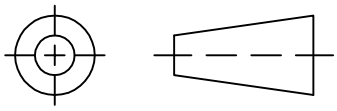
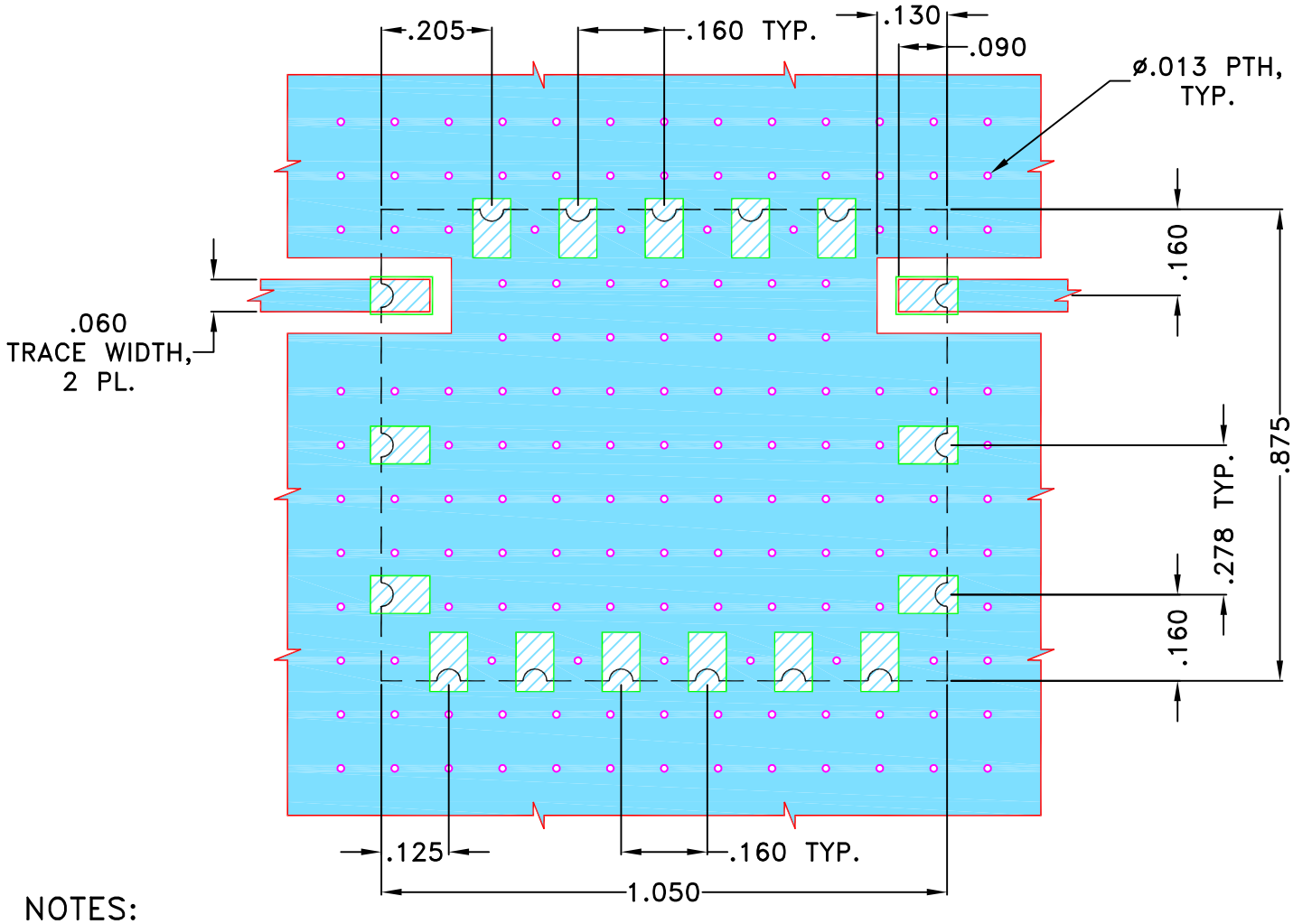
THIRD ANGLE PROJECTION



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

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



NOTES:

1. 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.
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	DRAWN	DDR	17 JUL 12
TOLERANCES ON:	CHECKED	DDR	17 JUL 12
2 PL DECIMALS ± .005"	APPROVED	GM	17 JUL 12
3 PL DECIMALS ±			
ANGLES ±			
FRACTIONS ±			

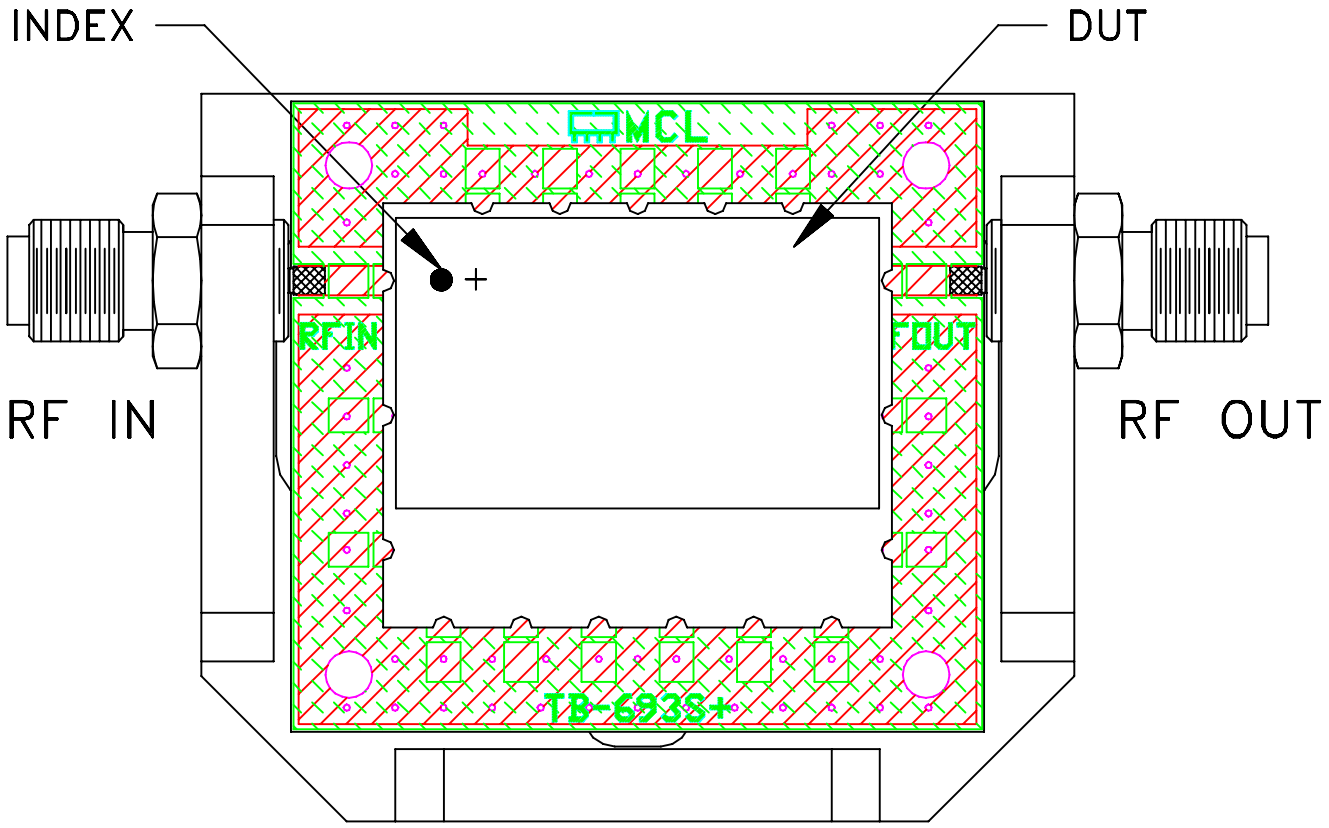
ASHEETA1.DWG REV:A DATE:01/12/95

Mini-Circuits®
13 Neptune Avenue
Brooklyn NY 11235

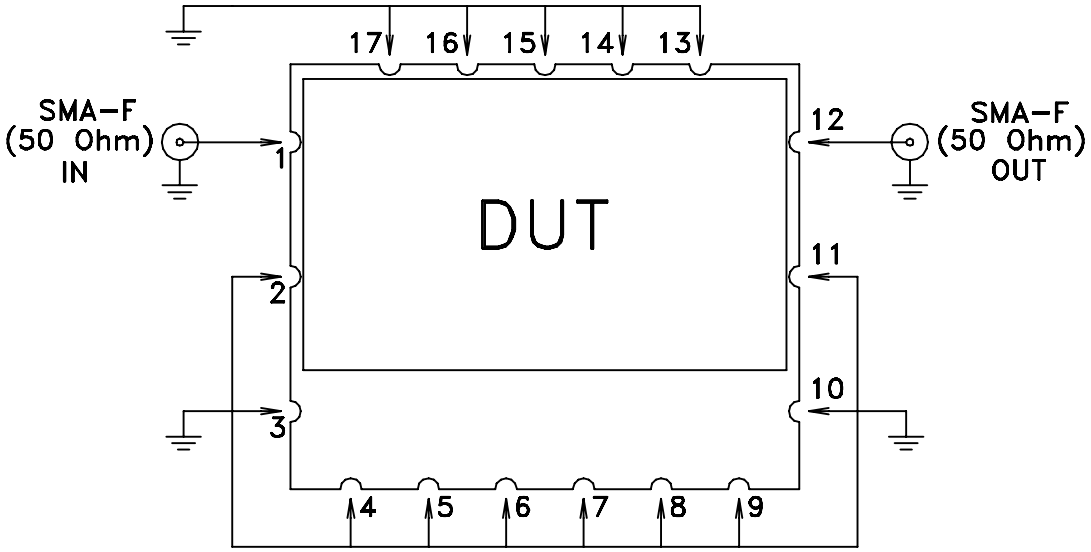
PL, 17FL01, KV1710, CSBP, TB-693+, 50 Ohm

SIZE	CODE IDENT	DRAWING NO:	REV:
A	15542	98-PL-378	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±.04, Thickness=.022 inch.

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Environmental Specifications ENV54

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