Surface Mount

Bandpass Filter

CBP-804F+

50Ω 783 to 825 MHz

The Big Deal

- Excellent Rejection
- High selectivity
- Miniature shielded package

Generic photo used for illustration purposes only
CASE STYLE: KV1710

Product Overview

CBP-804F+ is a ceramic-coaxial-resonator based bandpass filter in a shielded package fabricated using SMT technology. This filter offers sharp rejection for use in narrowband, radar and navigation systems.

Key Features

Feature	Advantages
High Selectivity	The CBP-804F+ filter incorporates High-Q ceramic resonators that enables sharp rejection near passband.
Low Passband VSWR	This filter maintains typical VSWR over a passband frequency range making this filter easier to integrate into receiver and transmitter RF chains with less concerns for in band frequency ripple.
Rugged construction	The CBP-804+ has been qualified over wide range of thermal, mechanical and environmental conditions including withstanding the stress of extensive solder reflow cycles.

Notes
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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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CASE STYLE: KV1710

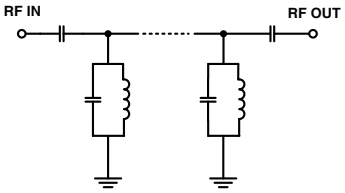
Features

- Good rejection
- High selectivity
- Miniature shielded package

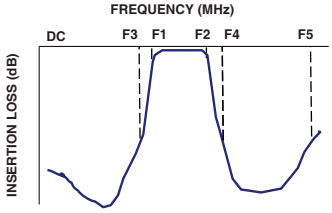
Applications

- Aeronautical radio navigation
- Radar and navigation systems
- Radio astronomy

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

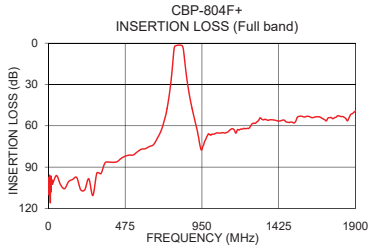
Parameter		F#	Frequency (MHz)	Min.	Typ.	Max.	Unit
Pass Band	Center Frequency	-	-	-	804	-	MHz
	Insertion Loss	F1-F2	783-825	-	2.0	3.5	dB
	VSWR	F1-F2	783-825	-	1.3	1.92	:1
Stop Band, Lower	Insertion Loss	DC-F3	DC-750	20.0	31.9	-	dB
	VSWR	DC-F3	DC-750	-	20.0	-	:1
Stop Band, Upper	Insertion Loss	F4-F5	860-1900	20.0	30.2	-	dB
	VSWR	F4-F5	860-1900	-	20.0	-	:1

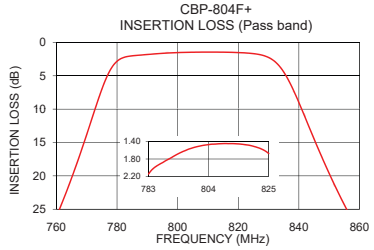
Maximum Ratings	
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power Input	5 W max.

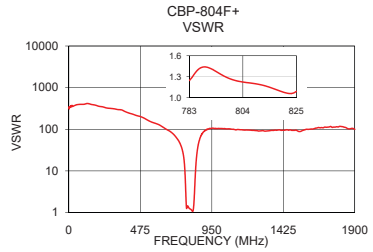
Permanent damage may occur if any of these limits are exceeded.

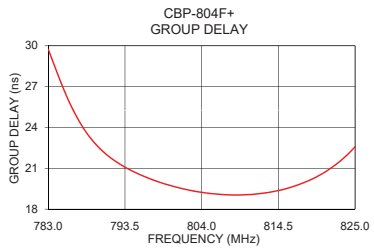
Typical Performance Data at 25°C

Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)	Frequency (MHz)	Group Delay (nsec)
1	101.33	341.82	785	26.95
50	96.08	385.81	787	24.68
350	86.99	291.66	789	23.07
750	35.81	35.70	791	21.99
756	30.26	29.67	793	21.24
765	20.35	19.07	795	20.67
779	3.30	1.90	797	20.21
783	2.15	1.25	799	19.84
804	1.47	1.22	801	19.55
825	1.67	1.09	803	19.32
830	2.25	1.49	805	19.16
833	3.26	2.20	807	19.06
851	20.62	26.03	809	19.04
860	28.58	42.44	811	19.08
862	30.16	45.98	815	19.42
900	53.10	90.39	817	19.75
950	77.33	105.27	819	20.18
1250	60.40	92.62	821	20.76
1700	54.99	112.45	823	21.55
1900	49.21	99.36	825	22.58









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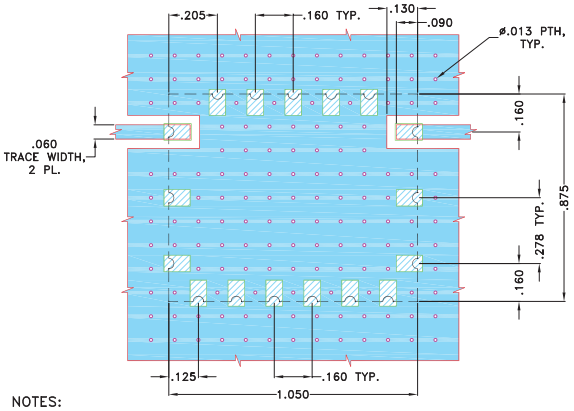
Pad Connections

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)



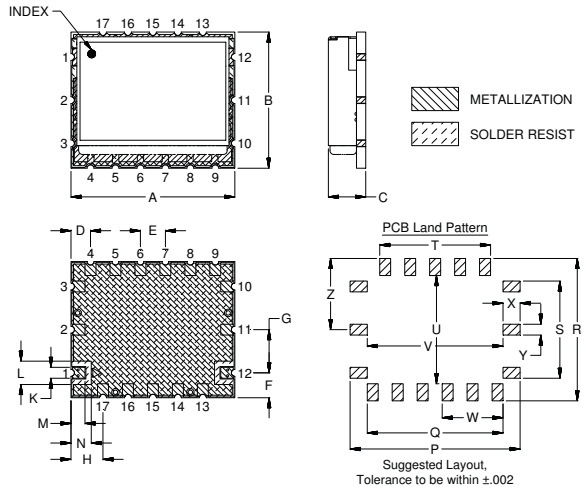
NOTES:

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

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Band Pass Filter CBP-804F+

Typical Performance Data

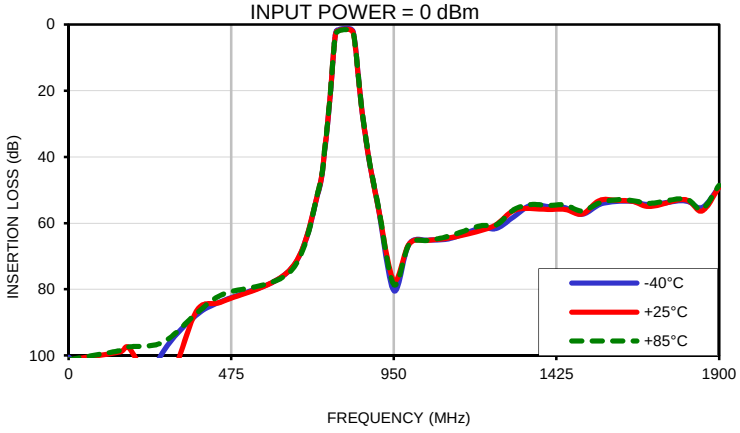
FREQ.	INSERTION LOSS			INPUT RETURN LOSS			OUTPUT RETURN LOSS		
(MHz)	(dB)			(dB)			(dB)		
	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C
1	100.53	101.33	101.27	0.05	0.05	0.05	0.05	0.05	0.05
150	113.64	98.95	98.52	0.03	0.04	0.04	0.03	0.04	0.04
175	119.99	97.54	97.43	0.03	0.04	0.04	0.03	0.05	0.05
275	99.05	110.57	96.03	0.03	0.05	0.05	0.03	0.05	0.06
375	87.67	86.36	87.17	0.04	0.06	0.06	0.04	0.07	0.07
450	83.48	83.67	81.54	0.05	0.07	0.08	0.05	0.08	0.08
650	73.83	73.72	74.39	0.12	0.17	0.18	0.13	0.18	0.19
730	50.38	50.09	49.95	0.26	0.33	0.35	0.26	0.33	0.35
750	36.16	35.81	35.68	0.40	0.50	0.54	0.39	0.49	0.52
756	30.62	30.26	30.14	0.49	0.61	0.66	0.47	0.59	0.63
764	21.92	21.56	21.44	0.73	0.90	0.99	0.68	0.85	0.93
765	20.71	20.35	20.23	0.79	0.97	1.07	0.73	0.91	1.00
766	19.46	19.10	18.99	0.85	1.05	1.16	0.79	0.98	1.08
775	7.13	7.02	7.05	3.32	3.99	4.33	3.07	3.71	4.06
779	3.07	3.30	3.47	9.78	11.15	11.66	8.97	10.16	10.74
780	2.53	2.82	3.01	13.09	14.70	15.16	11.72	12.99	13.61
781	2.17	2.49	2.69	17.84	19.68	19.78	15.04	16.20	16.81
782	1.95	2.28	2.48	25.59	25.90	24.38	18.33	18.83	19.29
783	1.81	2.15	2.34	28.38	24.59	23.40	19.55	19.21	19.55
785	1.68	2.00	2.17	18.59	18.21	18.41	16.86	16.75	17.17
788	1.59	1.88	2.03	15.25	15.65	16.23	14.57	14.96	15.55
792	1.47	1.73	1.86	15.27	16.11	17.03	14.73	15.46	16.28
796	1.35	1.60	1.73	16.58	17.85	19.10	16.13	17.18	18.27
800	1.27	1.51	1.64	17.69	19.32	20.71	17.49	18.88	20.17
804	1.23	1.47	1.59	18.20	20.04	21.29	18.28	19.95	21.25
809	1.21	1.45	1.57	18.79	20.87	21.77	18.91	20.86	21.90
812	1.21	1.44	1.58	19.64	21.96	22.64	19.68	21.81	22.64
816	1.22	1.46	1.60	21.97	24.82	25.12	21.79	24.31	24.88
819	1.24	1.49	1.63	24.73	28.16	28.18	24.33	27.33	27.85
822	1.28	1.56	1.70	27.22	30.46	30.63	26.89	30.61	31.27
825	1.38	1.67	1.81	25.05	26.21	27.05	25.45	27.34	27.95
829	1.72	2.06	2.19	16.12	16.19	17.01	16.42	16.47	17.13
830	1.89	2.25	2.37	13.92	13.97	14.75	14.17	14.16	14.81
833	2.84	3.26	3.32	8.34	8.44	9.08	8.49	8.53	9.11
839	7.54	7.96	7.80	2.51	2.73	3.05	2.57	2.76	3.06
840	8.61	9.00	8.82	2.08	2.29	2.57	2.13	2.33	2.58
847	16.35	16.58	16.32	0.75	0.91	1.04	0.77	0.93	1.05
851	20.46	20.62	20.35	0.51	0.65	0.74	0.53	0.67	0.75
860	28.52	28.58	28.32	0.30	0.40	0.46	0.30	0.41	0.46
877	40.51	40.48	40.23	0.17	0.25	0.28	0.17	0.26	0.28
882	43.50	43.44	43.22	0.15	0.23	0.26	0.15	0.23	0.26
906	56.17	56.08	55.77	0.12	0.18	0.20	0.12	0.19	0.20
950	80.41	77.33	78.57	0.10	0.16	0.17	0.10	0.17	0.18
995	66.29	66.26	66.40	0.11	0.17	0.18	0.11	0.17	0.18
1050	65.16	65.22	65.23	0.12	0.17	0.18	0.11	0.17	0.18
1110	64.79	64.50	63.99	0.13	0.18	0.19	0.12	0.18	0.19
1200	61.64	62.40	60.90	0.14	0.20	0.21	0.12	0.18	0.20
1250	61.60	60.40	60.51	0.15	0.20	0.21	0.13	0.19	0.20
1300	58.13	56.19	55.98	0.16	0.21	0.23	0.13	0.19	0.20
1350	54.60	55.65	54.40	0.15	0.21	0.22	0.13	0.18	0.20
1400	54.97	55.89	54.71	0.16	0.21	0.22	0.12	0.18	0.20
1450	55.32	55.86	54.54	0.15	0.21	0.22	0.12	0.18	0.19
1500	57.36	57.26	56.36	0.15	0.21	0.22	0.12	0.18	0.20
1550	54.45	53.20	53.94	0.15	0.21	0.22	0.12	0.19	0.20
1600	53.44	53.09	52.96	0.15	0.21	0.22	0.11	0.17	0.19
1650	53.52	53.53	53.24	0.15	0.21	0.23	0.09	0.16	0.18
1700	54.40	54.99	54.02	0.15	0.21	0.24	0.08	0.15	0.17
1800	53.27	52.91	52.66	0.15	0.22	0.25	0.06	0.15	0.17
1850	55.33	56.36	55.74	0.15	0.23	0.26	0.07	0.17	0.19
1900	49.12	49.21	48.60	0.15	0.24	0.28	0.08	0.17	0.22

Typical Performance Data

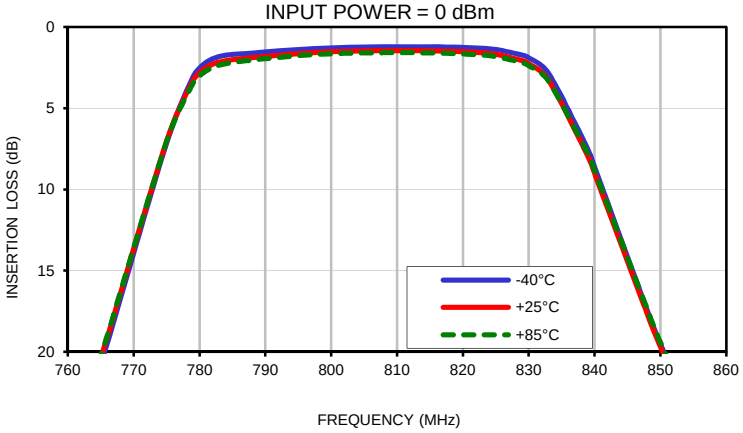
FREQ. (MHz)	GROUP DELAY (nsec)		
	@-40°C	@+25°C	@+85°C
783	30.74	29.75	29.27
784	29.20	28.32	27.91
785	27.69	26.95	26.61
786	26.34	25.72	25.45
787	25.17	24.68	24.46
788	24.20	23.79	23.62
789	23.42	23.07	22.93
790	22.78	22.49	22.37
791	22.24	21.99	21.88
792	21.81	21.59	21.49
793	21.44	21.24	21.15
794	21.12	20.94	20.84
795	20.85	20.67	20.58
796	20.59	20.43	20.33
797	20.36	20.21	20.12
798	20.17	20.02	19.93
799	19.99	19.84	19.75
800	19.82	19.69	19.59
801	19.68	19.55	19.45
802	19.55	19.43	19.32
803	19.44	19.32	19.22
804	19.34	19.23	19.12
805	19.26	19.16	19.05
806	19.20	19.11	19.00
807	19.16	19.06	18.95
808	19.13	19.04	18.93
809	19.12	19.04	18.92
810	19.13	19.06	18.94
811	19.16	19.08	18.97
812	19.21	19.14	19.01
813	19.28	19.21	19.08
814	19.38	19.31	19.17
815	19.49	19.42	19.29
816	19.64	19.57	19.43
817	19.81	19.75	19.59
818	20.02	19.95	19.78
819	20.25	20.18	20.01
820	20.52	20.45	20.27
821	20.83	20.76	20.56
822	21.20	21.13	20.92
823	21.61	21.55	21.31
824	22.09	22.03	21.77
825	22.64	22.58	22.28

Typical Performance Curves

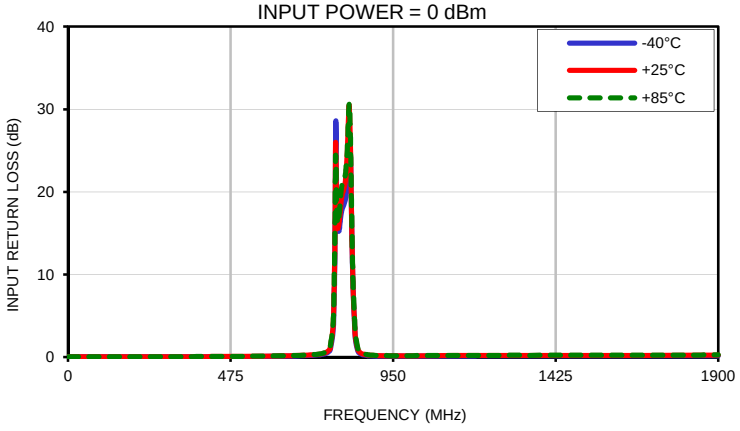
INSERTION LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



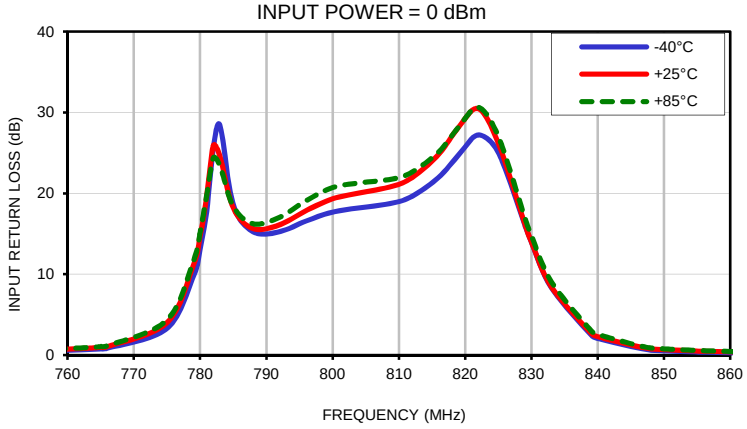
INSERTION LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



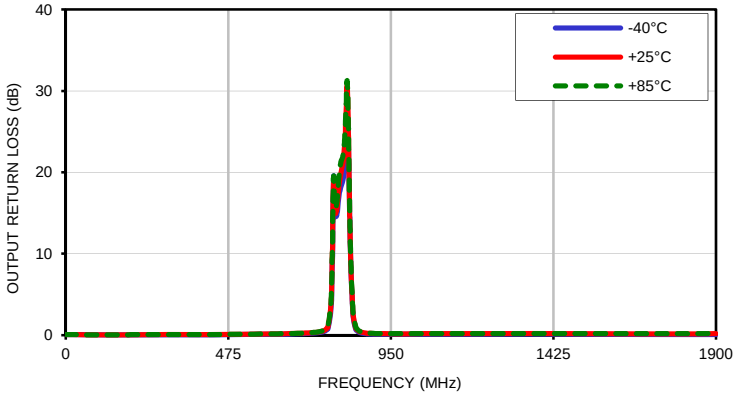
INPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



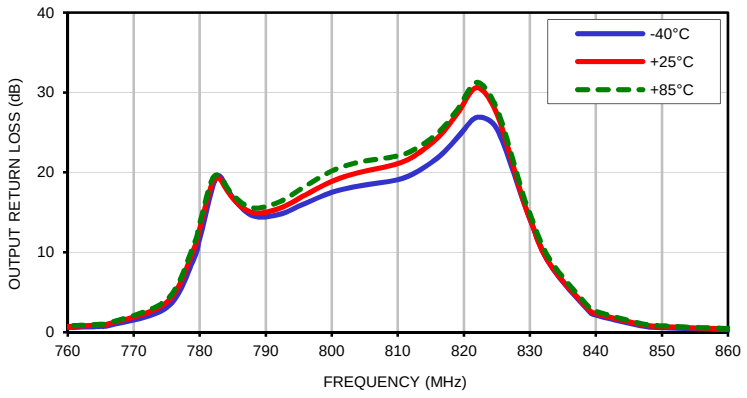
INPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



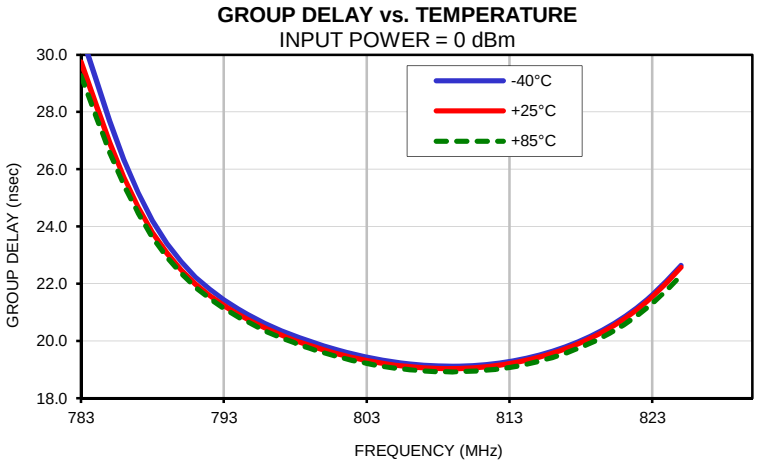
OUTPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



OUTPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



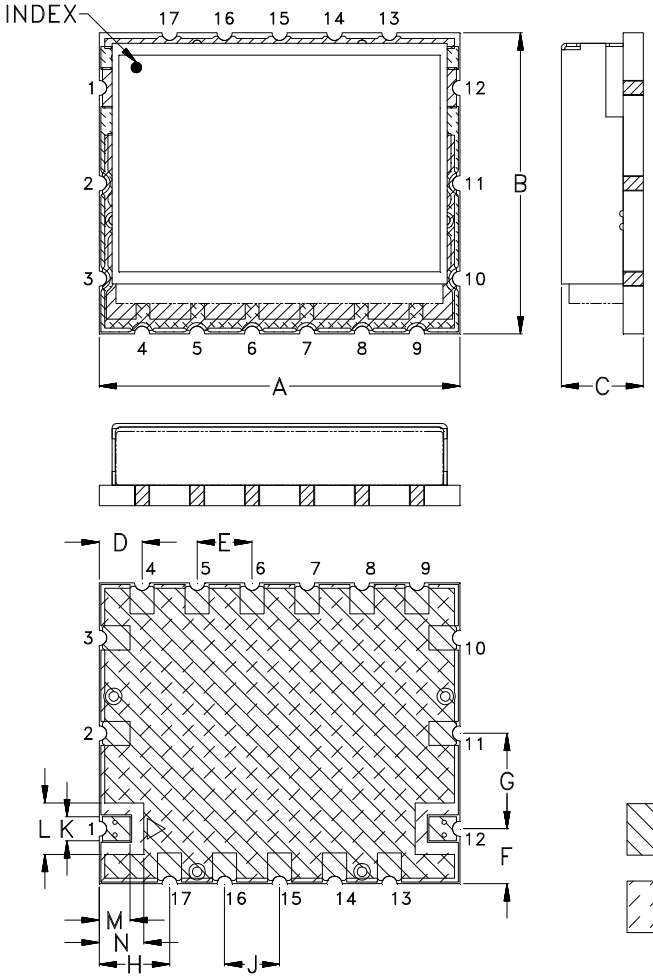
Typical Performance Curves

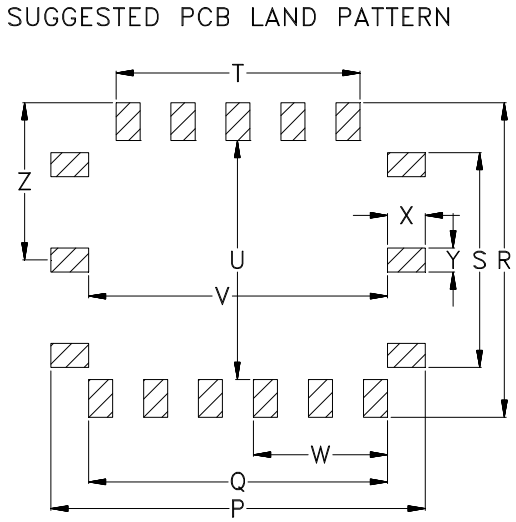


Case Style KV

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.

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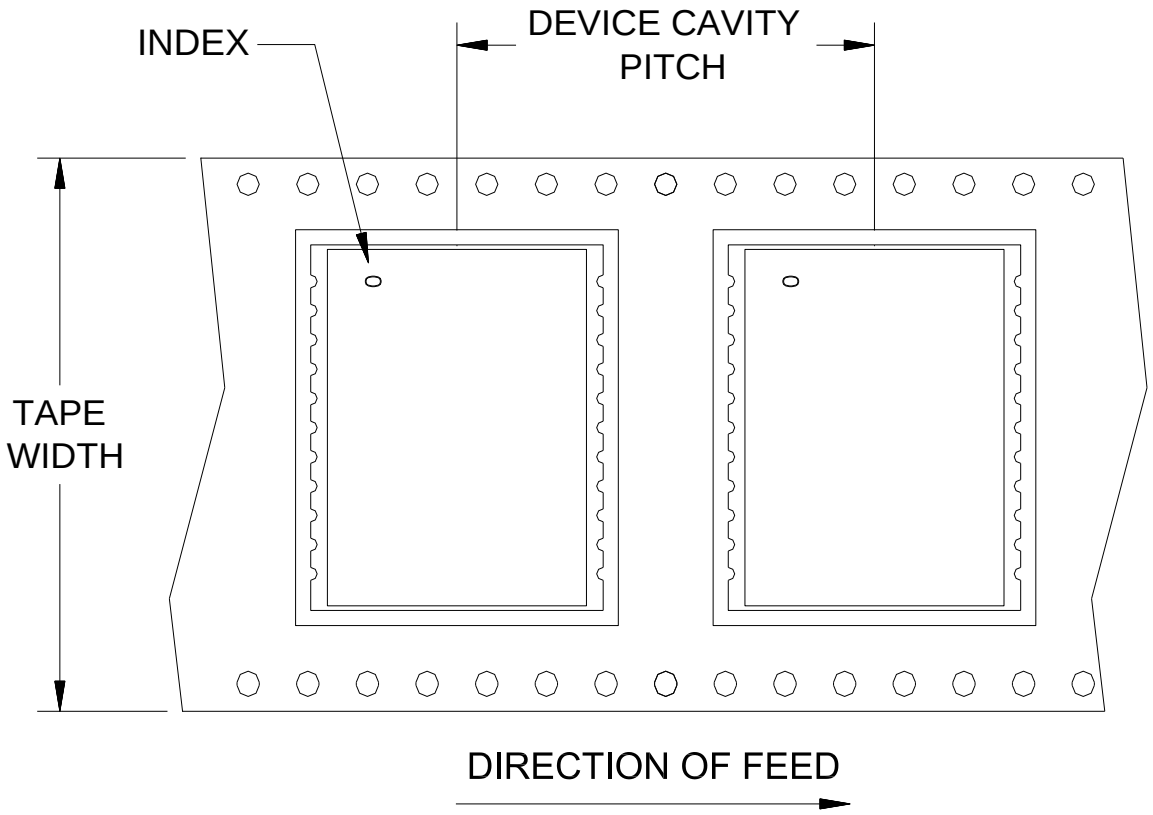
Tape & Reel Packaging TR-F97

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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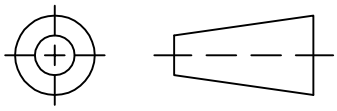
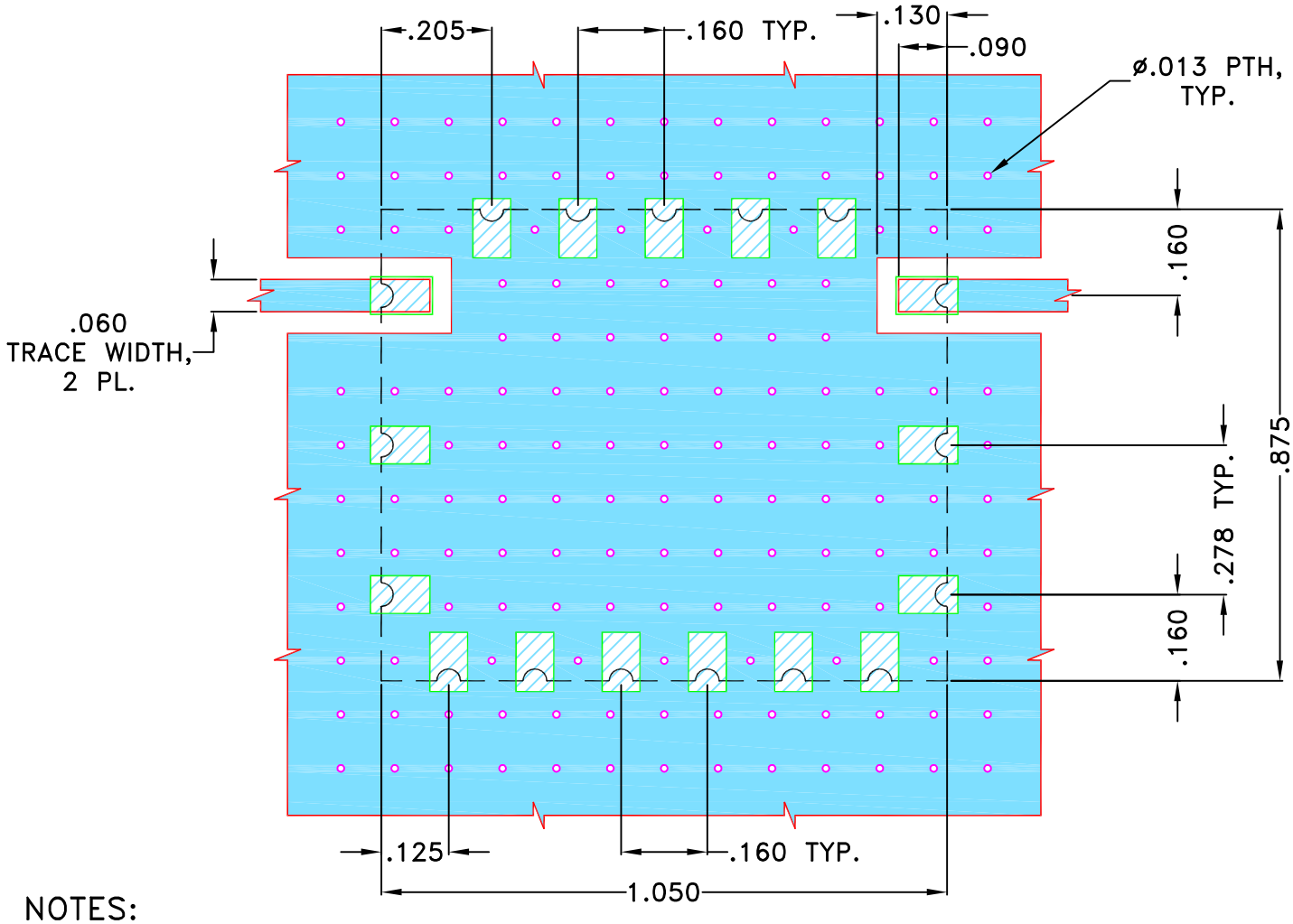
THIRD ANGLE PROJECTION



REVISIONS					
REV	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 ±			

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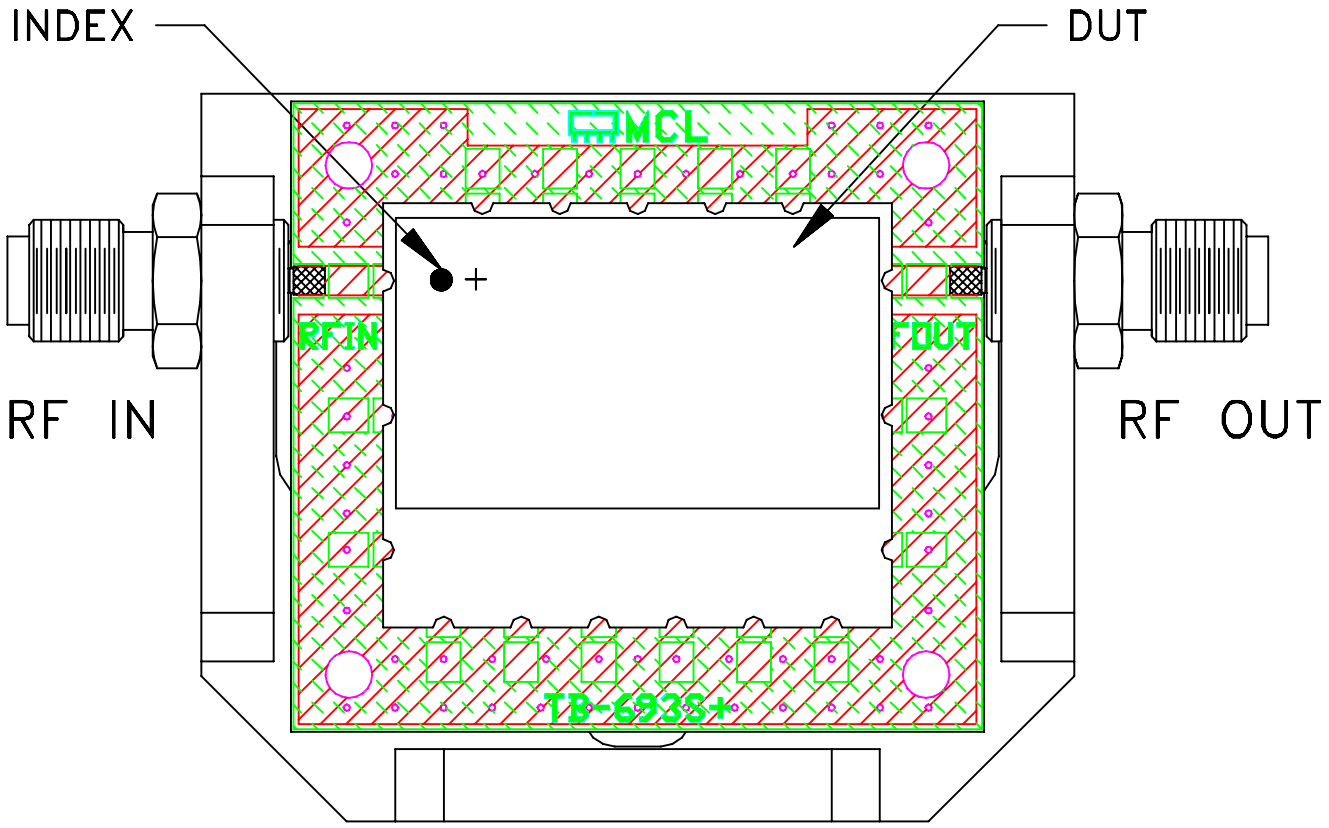
ASHEETA1.DWG REV:A DATE:01/12/95

Mini-Circuits®
13 Neptune Avenue
Brooklyn NY 11235

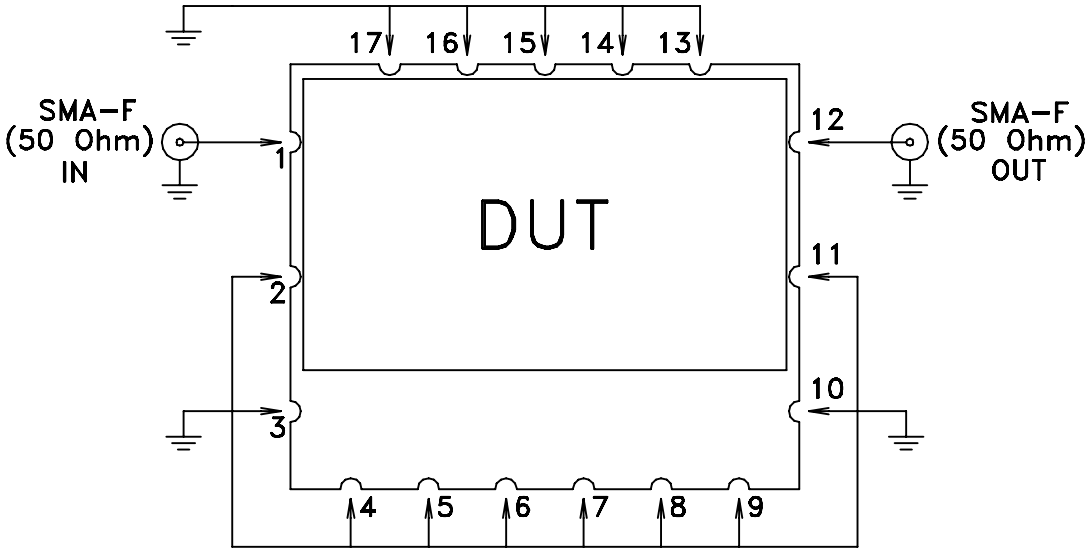
PL, 17FL01, KV1710, CSBP, TB-693+, 50 Ohm

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

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