

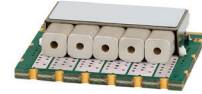
# Surface Mount Bandpass Filter

## 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

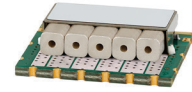
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B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.  
C. The parts covered by this specification document 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](http://www.minicircuits.com/MCLStore/terms.jsp)



# Surface Mount Bandpass Filter

## CBP-804F+

50Ω 783 to 825 MHz



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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

### Electrical Specifications at 25°C

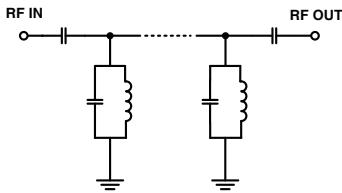
Parameter	F#	Frequency (MHz)	Min.	Typ.	Max.	Unit	
Pass Band	Center Frequency	-	-	804	-	MHz	
	Insertion Loss	F1-F2	783-825	-	2.0	3.5	dB
	VSWR	F1-F2	783-825	-	1.3	1.92	:1
Stop Band, Lower	Insertion Loss	DC-F3	DC-750	20.0	31.9	-	dB
	VSWR	DC-F3	DC-750	-	20.0	-	:1
Stop Band, Upper	Insertion Loss	F4-F5	860-1900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

### Maximum Ratings

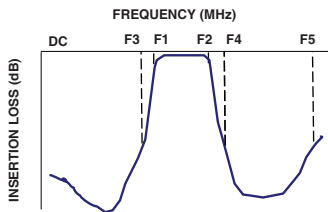
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power Input	5 W max.

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

### Functional Schematic



### Typical Frequency Response

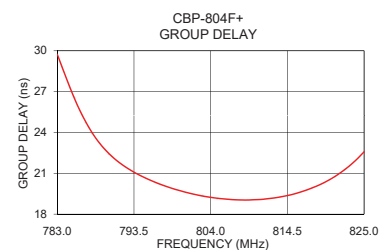
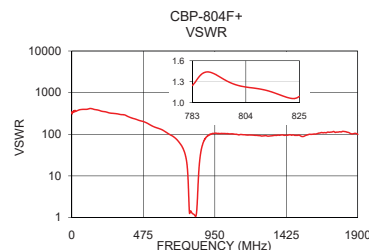
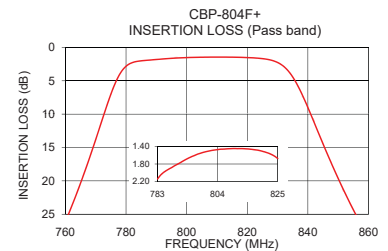
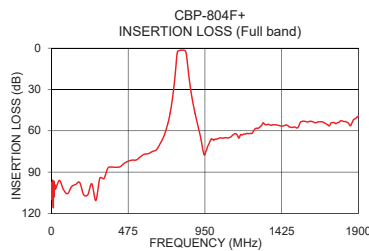


### Typical Performance Data at 25°C

Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)	Frequency (MHz)	Group Delay (nsec)
1	101.33	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

### +RoHS Compliant

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



### Notes

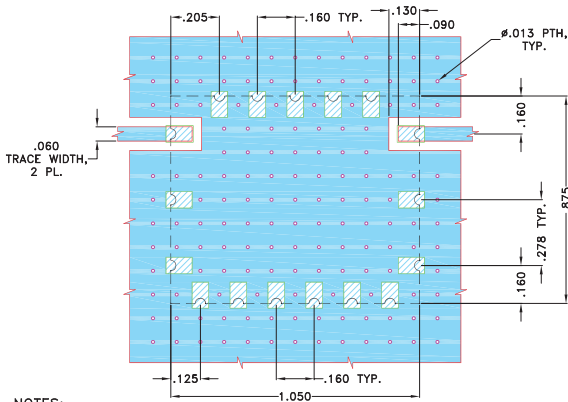
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## Pad Connections

INPUT	1
OUTPUT	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)

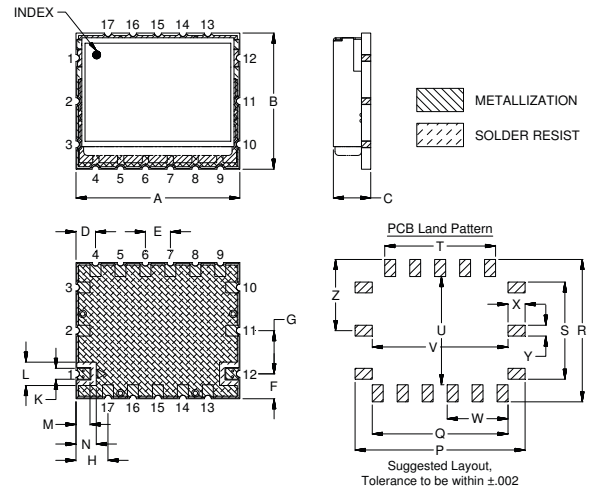


### NOTES:

- 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 )

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

### Notes

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*Typical Performance Data*

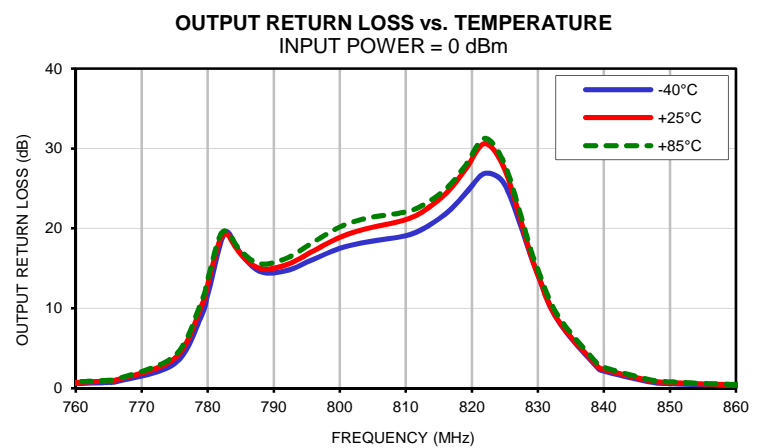
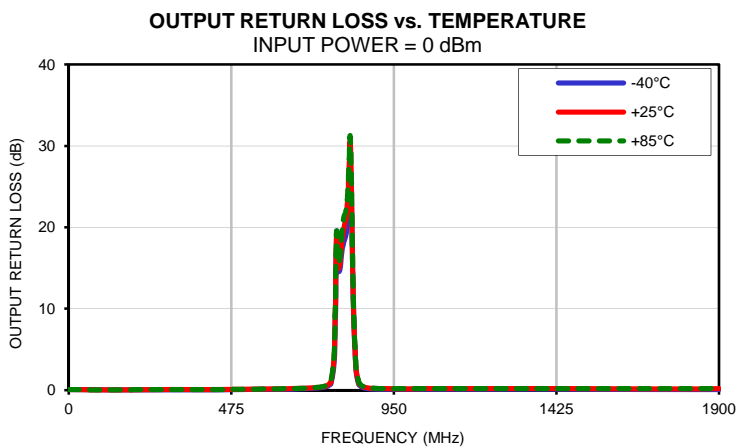
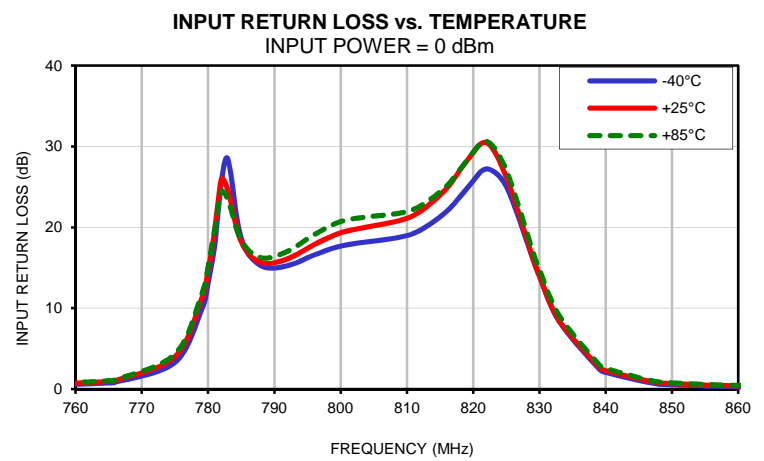
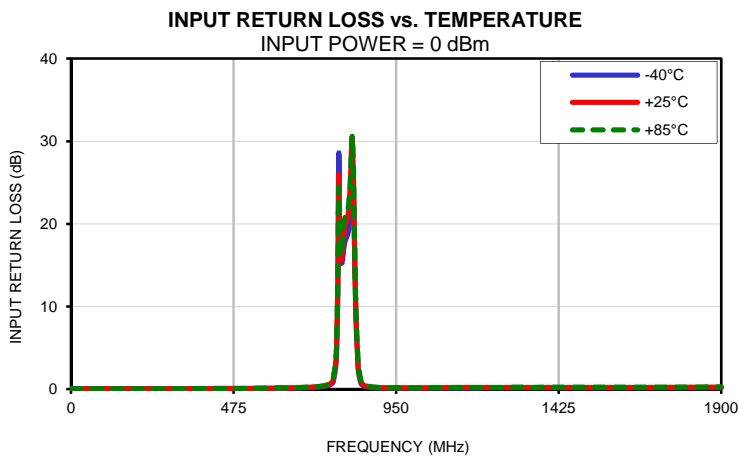
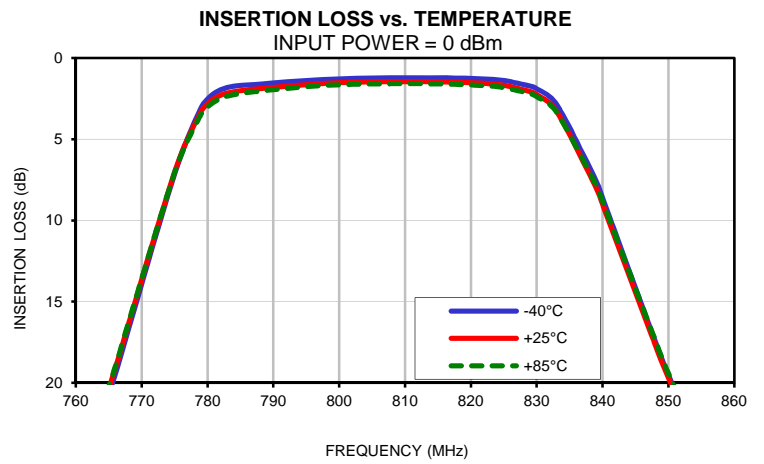
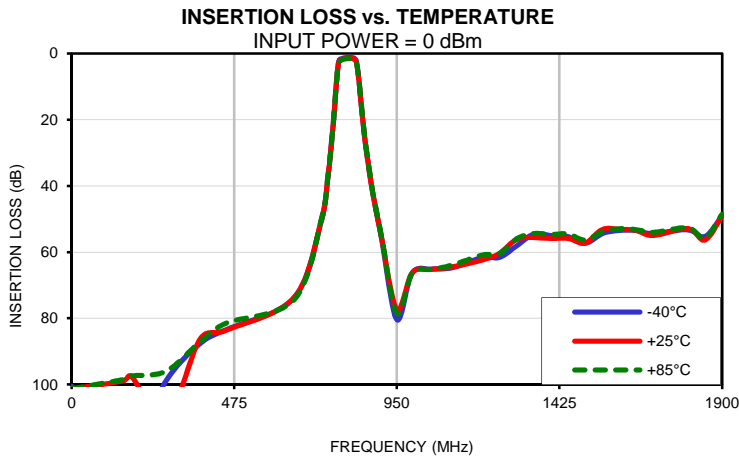
FREQ.  (MHz)	INSERTION LOSS			INPUT RETURN LOSS			OUTPUT RETURN LOSS		
	(dB)			(dB)			(dB)		
	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C
1	100.53	101.33	101.27	0.05	0.05	0.05	0.05	0.05	0.05
150	113.64	98.95	98.52	0.03	0.04	0.04	0.03	0.04	0.04
175	119.99	97.54	97.43	0.03	0.04	0.04	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



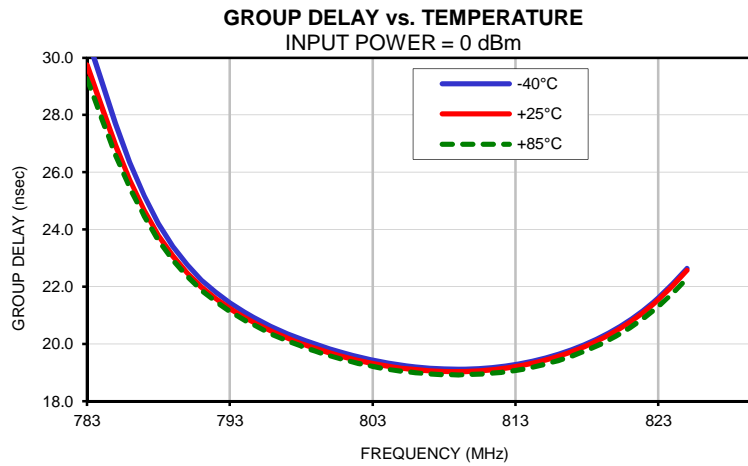
## Typical Performance Data

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

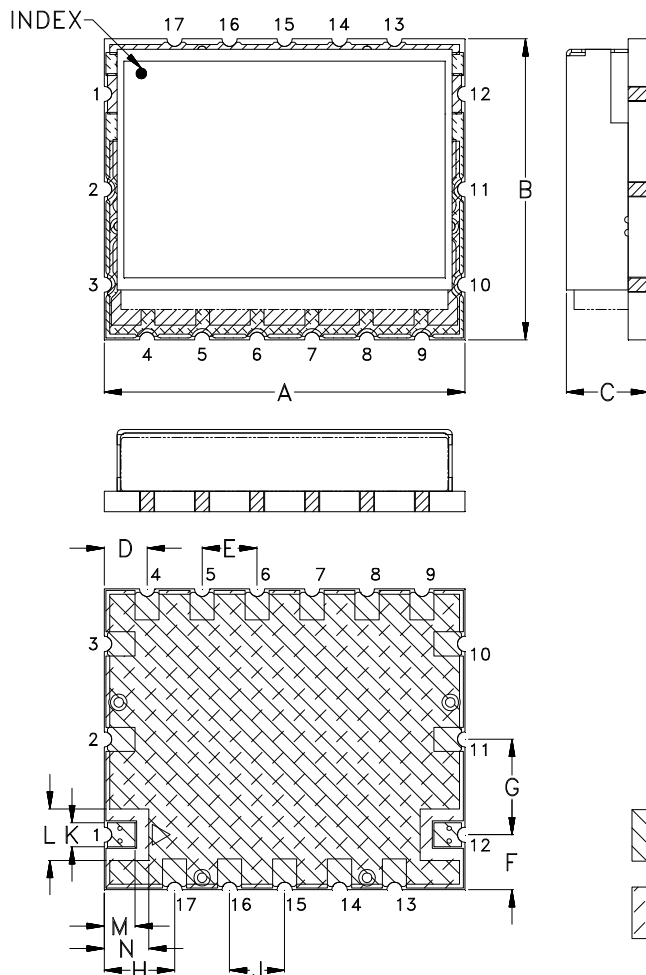
## Typical Performance Curves



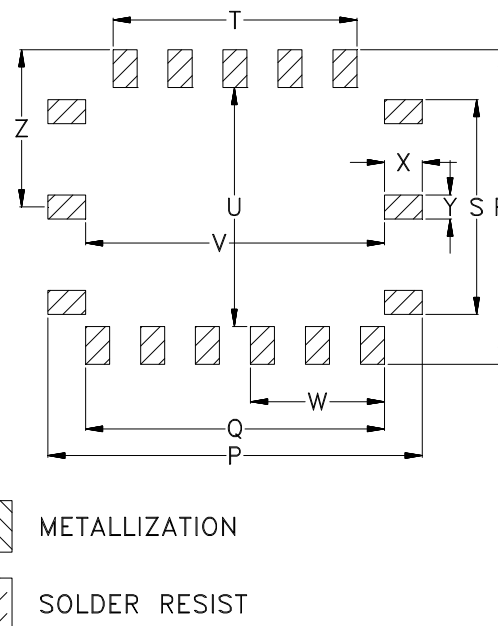
## Typical Performance Curves



### 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:

- 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.



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



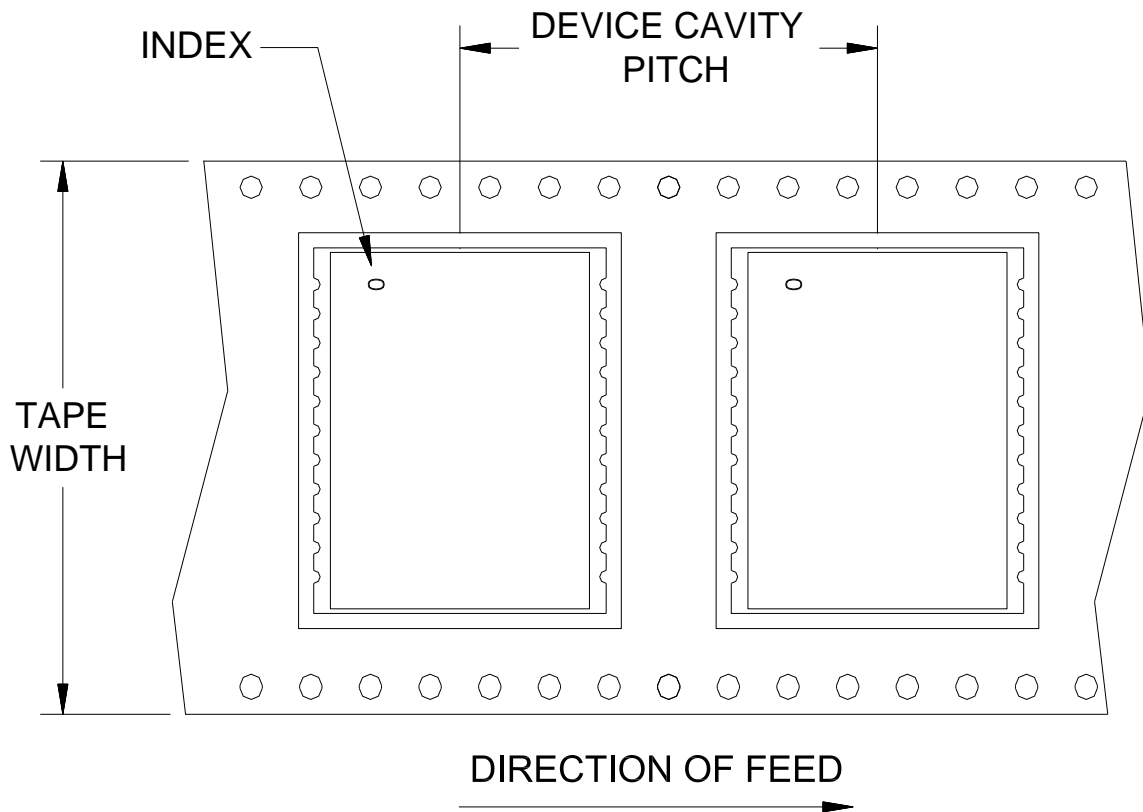
The Design Engineers Search Engine Provides ACTUAL Data Instantly From MINI-CIRCUITS At: [www.minicircuits.com](http://www.minicircuits.com)

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.

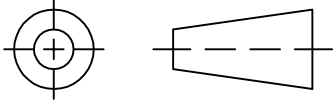
Mini-Circuits carrier tape materials provide protection from ESD (Electro-Static Discharge) during handling and transportation. Tapes are static dissipative and comply with industry standards EIA-481/EIA-541.

Go to: [www.minicircuits.com/pages/pdfs/tape.pdf](http://www.minicircuits.com/pages/pdfs/tape.pdf)



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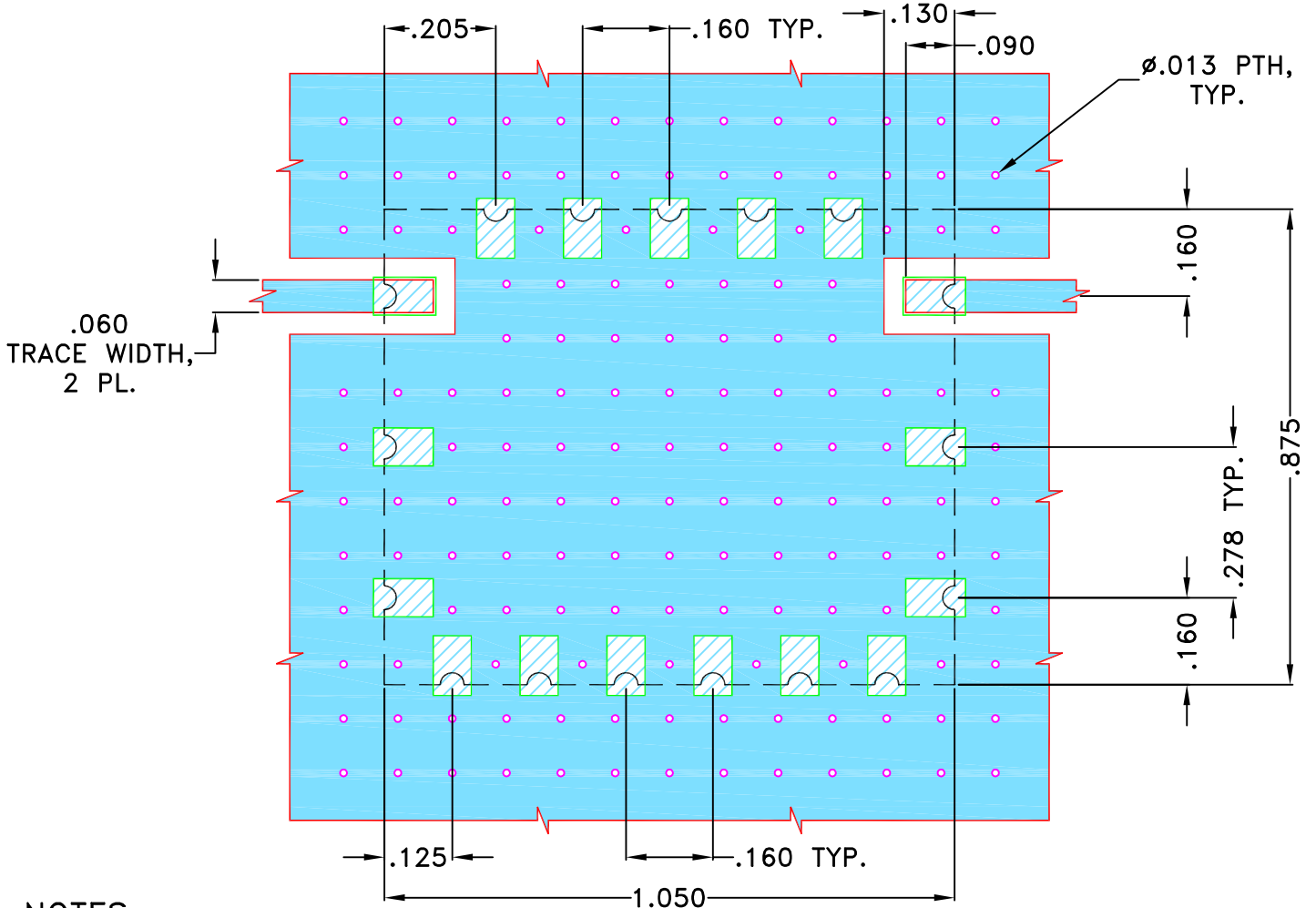
THIRD ANGLE PROJECTION



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

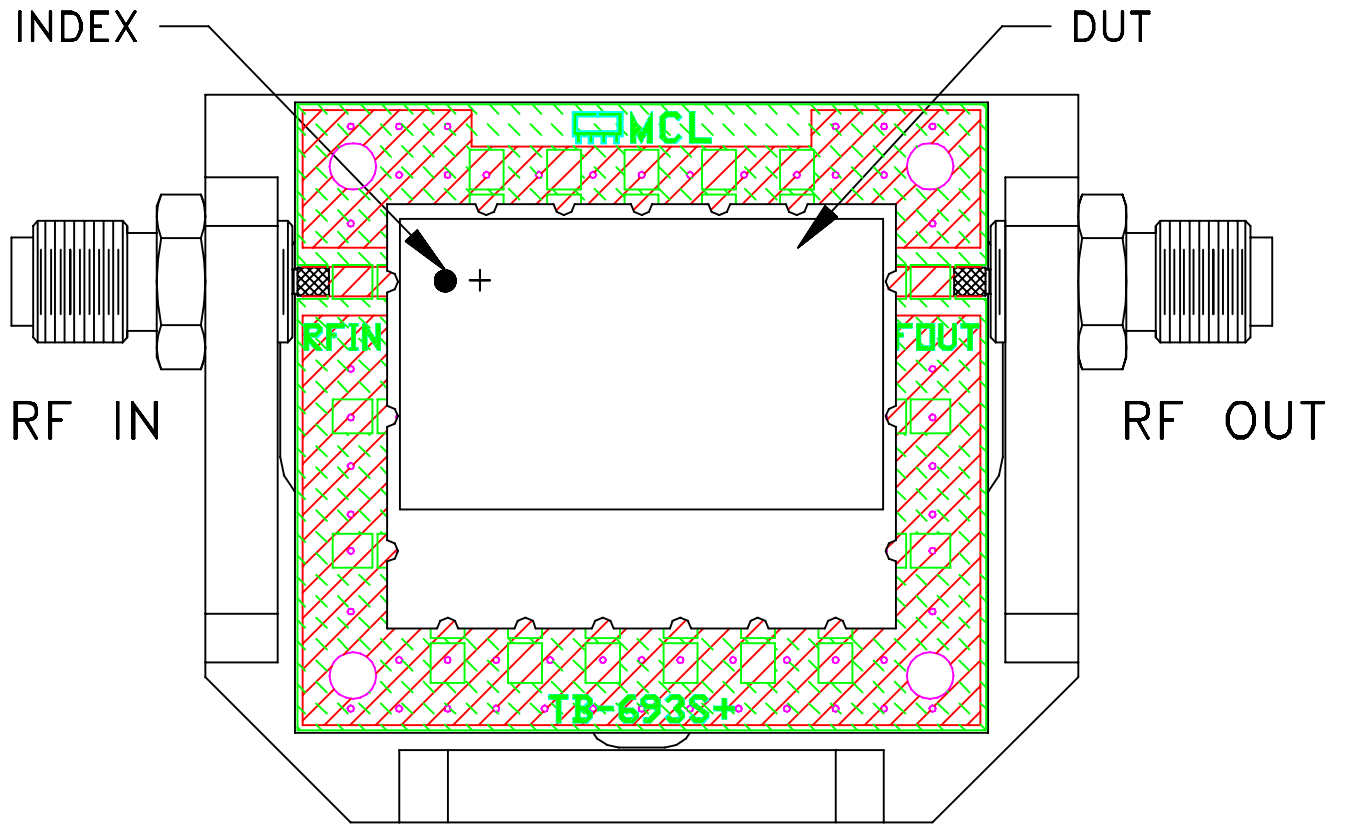
**PL, 17FL01, KV1710, CSBP,  
TB-693+, 50 Ohm**

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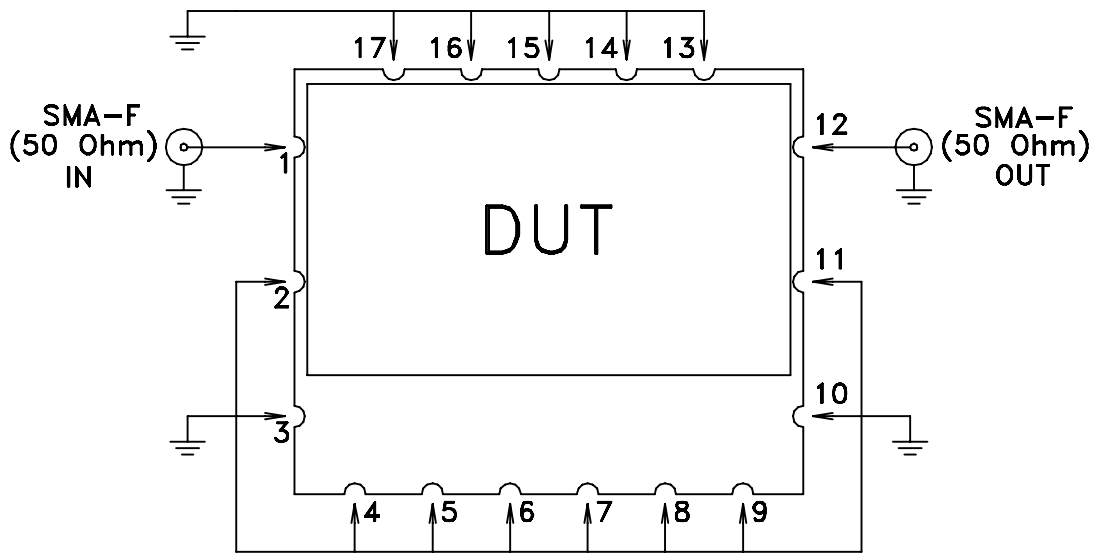
ASHEETA1.DWG REV:A DATE:01/12/95

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

# 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.

 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