LUMPED LC SURFACE MOUNT

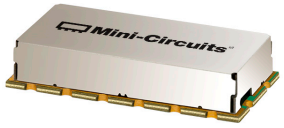
Bandpass Filter

BPF-BV880+

50Ω 805 to 955 MHz

KEY FEATURES

- Low Insertion Loss, 2.5 dB Typ.
- High Rejection, 55 dB Typ.
- Wide Stopband Rejection, Up to 4.5 GHz with 30 dB Typ.
- Miniature Shielded Package

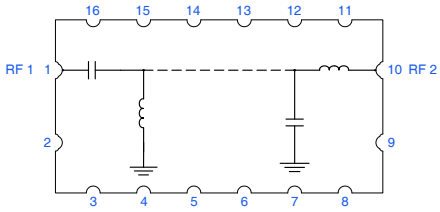


Generic photo used for illustration purposes only

APPLICATIONS

- Aerospace
- Defense & Government

FUNCTIONAL DIAGRAM



PRODUCT OVERVIEW

Mini-Circuits' Model BPF-BV880+ is a Lumped LC filter that offer a good insertion loss and high rejection. This bandpass filter covers from 805 to 955 MHz. This filter has high Q capacitors and inductors to achieve a low insertion loss. It has repeatable performance across production lots.

ELECTRICAL SPECIFICATIONS[1,2,3] AT +25°C

Parameter		F#	Frequency (MHz)	Min.	Typ.	Max.	Units
Passband	Center Frequency	Fc	—	—	880	—	MHz
	Insertion Loss	F1-F2	805 - 955	—	2.5	3.5	dB
	Return Loss	F1-F2	805 - 955	12	16	—	dB
Stopband, Lower	Rejection	DC-F3	DC - 650	48	55	—	dB
		F3-F4	650 - 730	20	30	—	
Stopband, Upper	Rejection	F5-F6	1020 - 1150	20	30	—	dB
		F6-F7	1150 - 1600	48	55	—	
		F7-F8	1600 - 4500	—	30	—	

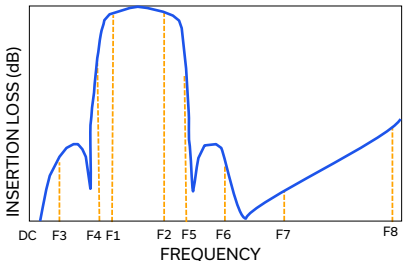
1. Tested in Evaluation Board P/N TB-BPF-BV880+.
2. This filter is bi-directional RF1 and RF2 ports may be interchanged, see S-Parameters for actual performance.
3. This component should not be used as a DC-block. In applications where DC voltage and/or current is present at either the input or output ports, external DC blocking capacitors are required.

ABSOLUTE MAXIMUM RATINGS[4]

Parameter	Ratings
Operating Temperature	-40°C to +85°C
Storage Temperature	-55°C to +100°C
Input Power[5]	3 W at +25°C

4. Permanent damage may occur if any of these limits are exceeded.
5. Power rating applies only to signals within the passband. Power rating above +25°C operating temperature decreases linearly to 1 W at +85°C.

TYPICAL FREQUENCY RESPONSE AT +25°C



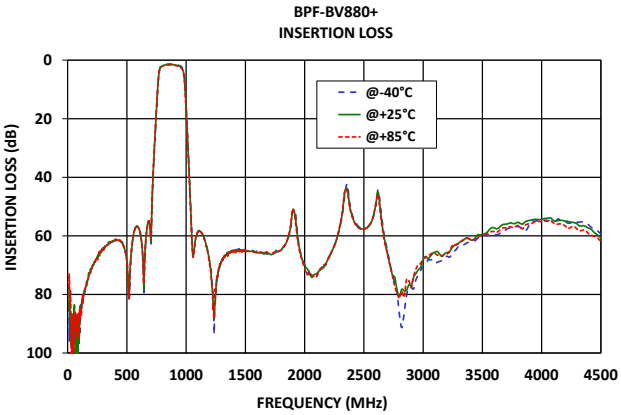
REV. OR
ECO-029821
BPF-BV880+
EDU5384
MCINU
260604

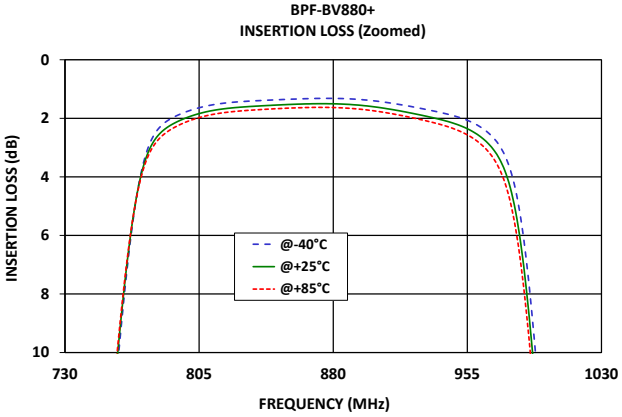
Bandpass Filter

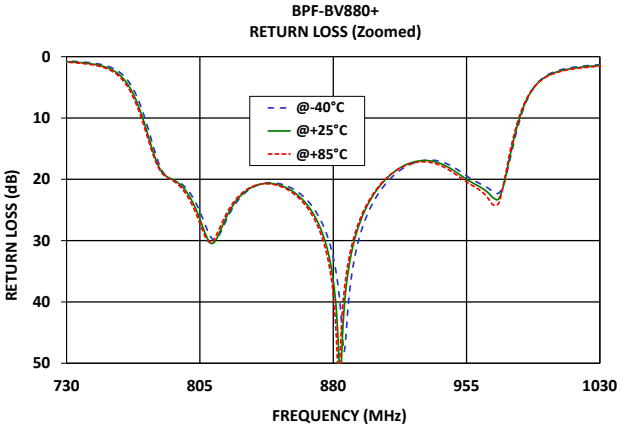
BPF-BV880+

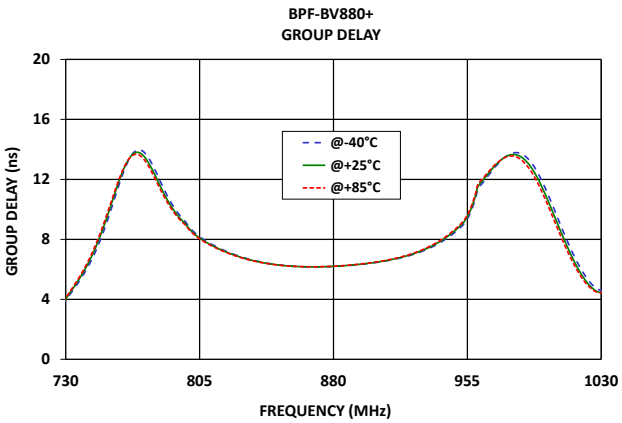
50Ω 805 to 955 MHz

TYPICAL PERFORMANCE GRAPHS









LUMPED LC SURFACE MOUNT

Bandpass Filter

BPF-BV880+

50Ω 805 to 955 MHz

FUNCTIONAL DIAGRAM

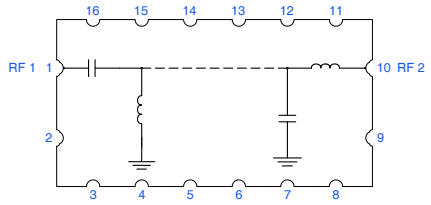


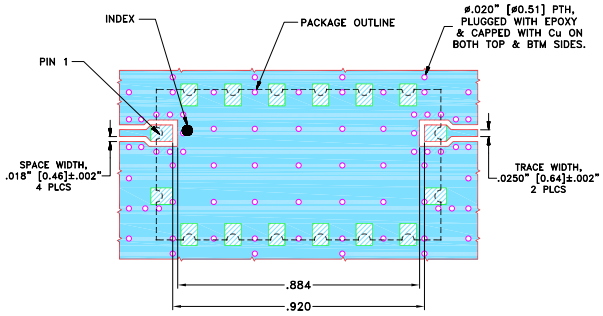
Figure 1. BPF-BV880+ Functional Diagram

PAD DESCRIPTION

Function	Pad Number	Description
RF1	1	Connects to RF Input Port
RF2	10	Connects to RF Output Port
GROUND	2-9,11-16	Connects to Ground on PCB, (See drawing PL-867)

SUGGESTED PCB LAYOUT

SUGGESTED MOUNTING CONFIGURATION FOR KV1974-1 CASE STYLE



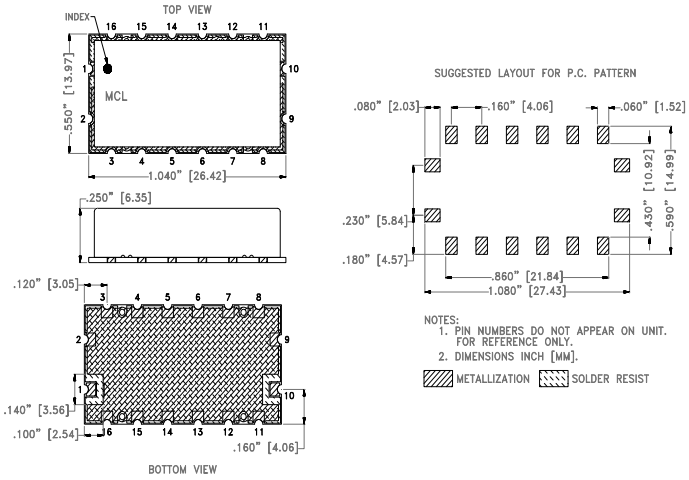
NOTES:
1. TRACE WIDTH ARE SHOWN FOR ROGERS (CLTE-MW); WITH DIELECTRIC THICKNESS .010"±.001" COPPER: 1/2 Oz EACH SIDE. FOR OTHER MATERIAL TRACE WIDTH MAY NEED TO BE MODIFIED.
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)

DENOTES COPPER LAND PATTERN FREE OF SOLDERMASK

Figure 2. Suggested PCB Layout

CASE STYLE DRAWING



Unit Weight: 2.5gram

Dimenions are in inches [mm]. Tolerances: 2Pl. ± .03; 3Pl. ± .015

PRODUCT MARKING*: BPF-BV880

*Marking may contain other features or characters for internal lot control.

Bandpass Filter

BPF-BV880+

50Ω 805 to 955 MHz

ADDITIONAL DETAILED INFORMATION IS AVAILABLE ON OUR DASHBOARD. CLICK HERE

Performance Data and Graphs	Data Graphs S-Parameter (S2P Files) Data Set (.zip file) De-embedded to device pads
Case Style	KV1974-1 Lead Finish: Gold over Nickel Plate
RoHS/REACH Status	Compliant
Tape and Reel	F005
Suggested Layout for PCB Design	PL-867
Evaluation Board	TB-BPF-BV880+
	Gerber File
Environmental Rating	ENV02T1
MSL Level	MSL1

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-Circuits' 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/terms/viewterm.html

Surface Mount Band Pass Filter BPF-BV880+

Typical Performance Data

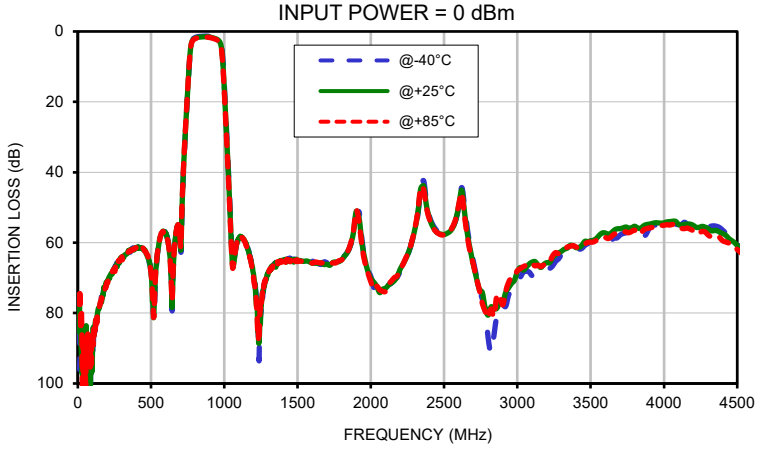
FREQ. (MHz)	INSERTION LOSS (dB)			INPUT RETURN LOSS (dB)			OUTPUT RETURN LOSS (dB)		
	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C
10	84.09	77.87	77.58	0.01	0.00	0.00	0.01	0.01	0.02
57	86.78	83.57	87.38	0.03	0.00	0.00	0.03	0.03	0.04
101	86.39	88.46	84.97	0.02	0.00	0.00	0.07	0.11	0.13
201	71.43	71.35	71.48	0.01	0.01	0.02	0.31	0.36	0.40
277	66.04	65.72	65.31	0.02	0.02	0.04	0.35	0.41	0.45
321	63.67	63.52	63.44	0.01	0.03	0.05	0.33	0.38	0.41
401	61.36	61.52	61.14	0.05	0.07	0.08	0.28	0.33	0.37
453	62.12	62.02	62.07	0.08	0.09	0.10	0.31	0.38	0.43
529	71.57	70.25	70.40	0.12	0.15	0.17	0.88	1.03	1.13
577	56.89	57.11	56.98	0.17	0.19	0.21	1.26	1.45	1.57
602	57.48	57.61	57.68	0.19	0.23	0.25	1.03	1.19	1.29
626	62.47	63.12	63.11	0.22	0.27	0.30	0.84	0.96	1.04
638	69.63	70.89	71.63	0.25	0.29	0.33	0.76	0.89	0.97
644	79.39	78.42	76.35	0.26	0.31	0.34	0.73	0.86	0.94
650	68.76	68.97	68.26	0.28	0.32	0.36	0.71	0.84	0.91
701	60.85	61.13	60.78	0.44	0.51	0.56	0.75	0.88	0.97
710	53.64	51.96	51.07	0.50	0.57	0.63	0.81	0.95	1.05
722	39.19	38.41	37.93	0.60	0.69	0.76	0.94	1.10	1.21
725	36.49	35.77	35.31	0.64	0.73	0.80	0.98	1.16	1.27
730	31.88	31.24	30.84	0.71	0.81	0.89	1.08	1.27	1.40
740	24.53	23.96	23.60	0.89	1.03	1.14	1.35	1.59	1.76
743	22.29	21.73	21.38	0.98	1.13	1.26	1.48	1.75	1.93
755	13.50	13.04	12.76	1.76	2.06	2.28	2.54	3.00	3.33
791	1.95	2.17	2.32	20.18	20.24	20.46	21.99	21.62	21.63
776	3.09	3.24	3.36	11.86	12.98	13.59	16.59	19.43	21.48
791	1.95	2.17	2.32	20.18	20.24	20.46	21.99	21.62	21.63
800	1.73	1.93	2.07	22.49	23.23	23.81	23.55	23.62	23.94
805	1.64	1.84	1.98	25.28	26.50	27.21	26.96	26.90	27.13
830	1.42	1.61	1.74	22.31	22.11	21.94	22.62	22.11	21.86
840	1.39	1.57	1.70	20.73	20.74	20.76	20.80	20.70	20.64
850	1.36	1.54	1.67	20.73	20.96	21.12	20.60	20.76	20.80
880	1.32	1.50	1.63	32.70	36.46	38.72	28.86	29.56	29.76
900	1.38	1.59	1.72	25.21	23.81	23.50	29.17	27.31	27.09
910	1.46	1.67	1.81	20.56	19.86	19.78	22.90	22.17	22.21
920	1.56	1.78	1.93	18.07	17.75	17.81	19.68	19.46	19.63
940	1.80	2.04	2.21	17.07	17.40	17.72	18.30	18.81	19.27
950	1.96	2.23	2.42	18.45	19.01	19.43	20.38	21.40	22.19
955	2.07	2.36	2.56	19.44	19.99	20.43	22.30	23.67	24.71
970	2.69	3.10	3.41	22.01	23.02	24.19	21.13	21.23	21.14
994	10.66	11.83	12.71	4.60	4.63	4.62	3.96	4.05	4.10
1000	15.37	16.57	17.47	3.07	3.20	3.28	2.70	2.87	2.98
1006	20.41	21.61	22.48	2.30	2.46	2.57	2.06	2.24	2.36
1015	28.16	29.33	30.19	1.73	1.89	2.00	1.55	1.73	1.85
1018	30.77	31.94	32.79	1.61	1.77	1.88	1.44	1.62	1.73
1020	32.54	33.71	34.56	1.55	1.70	1.81	1.38	1.55	1.66
1060	65.67	67.03	66.52	0.98	1.10	1.20	0.76	0.88	0.96
1150	60.19	60.29	60.87	0.62	0.71	0.78	0.37	0.47	0.52
1500	64.93	65.09	65.28	0.43	0.50	0.56	0.13	0.20	0.24
1600	65.22	65.83	65.82	0.46	0.53	0.59	0.11	0.19	0.22
2000	69.68	70.12	71.14	0.43	0.54	0.61	0.11	0.18	0.22
2200	68.02	67.51	67.77	0.37	0.49	0.56	0.11	0.18	0.22
2400	52.61	53.06	53.35	0.40	0.50	0.56	0.12	0.19	0.22
2600	49.76	49.49	49.07	0.37	0.46	0.53	0.13	0.19	0.23
2800	86.98	80.59	81.34	0.29	0.37	0.43	0.12	0.19	0.22
3000	70.28	68.18	67.94	0.28	0.38	0.43	0.13	0.19	0.22
3200	66.98	65.67	66.27	0.31	0.41	0.47	0.12	0.19	0.22
3400	62.08	61.41	61.23	0.35	0.48	0.56	0.13	0.20	0.23
4000	54.33	54.38	55.06	0.67	0.84	0.96	0.12	0.21	0.25
4300	55.33	55.93	57.78	0.69	0.86	0.18	0.13	0.22	0.28
4500	59.50	60.79	61.94	0.61	0.74	0.81	0.14	0.24	0.31

Typical Performance Data

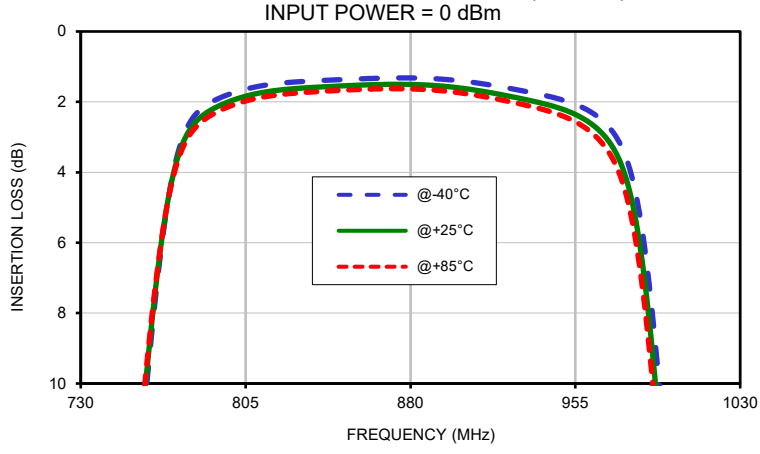
FREQ. (MHz)	GROUP DELAY (nsec)		
	@-40°C	@+25°C	@+85°C
805	8.17	8.09	8.03
810	7.79	7.72	7.68
815	7.47	7.41	7.38
820	7.20	7.15	7.12
825	6.97	6.93	6.90
830	6.77	6.74	6.72
835	6.61	6.58	6.56
840	6.48	6.45	6.44
845	6.37	6.35	6.35
850	6.29	6.28	6.27
855	6.23	6.22	6.22
860	6.19	6.19	6.19
865	6.17	6.17	6.17
870	6.16	6.17	6.17
875	6.17	6.18	6.18
880	6.19	6.20	6.21
885	6.22	6.23	6.24
890	6.27	6.28	6.29
895	6.32	6.34	6.35
900	6.39	6.41	6.43
905	6.48	6.49	6.51
910	6.57	6.59	6.62
915	6.69	6.72	6.74
920	6.83	6.87	6.90
925	7.01	7.05	7.09
930	7.22	7.27	7.32
932	7.32	7.37	7.42
934	7.42	7.49	7.54
936	7.54	7.61	7.67
938	7.66	7.74	7.80
940	7.80	7.88	7.95
942	7.94	8.03	8.11
944	8.10	8.20	8.28
946	8.28	8.38	8.46
947	8.37	8.48	8.56
950	8.67	8.78	8.87
951	8.77	8.89	8.99
952	8.89	9.01	9.11
953	9.02	9.15	9.25
955	9.37	9.51	9.62

Typical Performance Curves

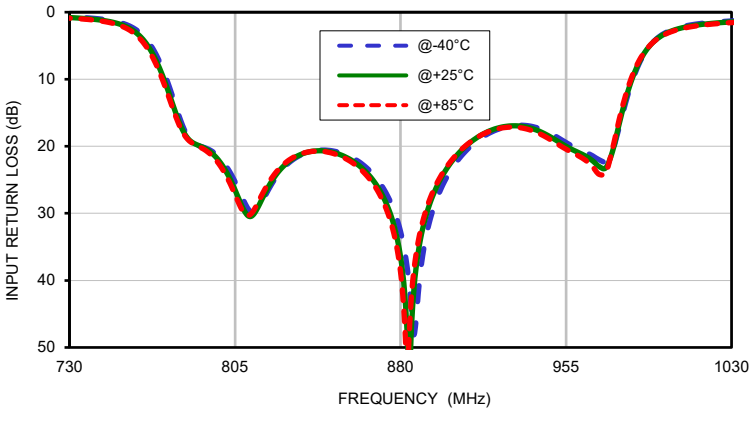
INSERTION LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



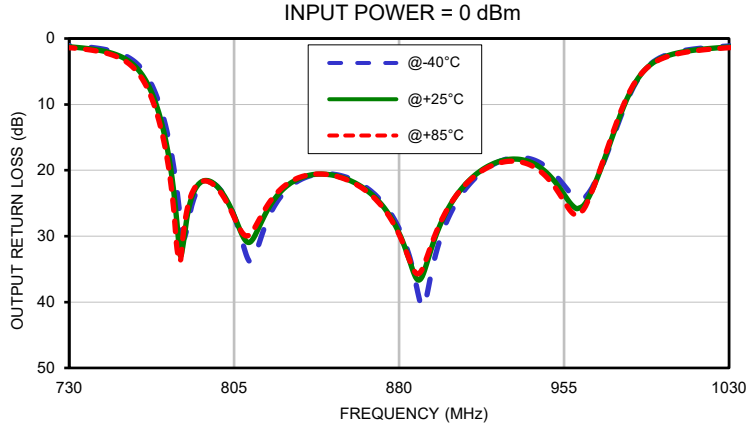
INSERTION LOSS vs. TEMPERATURE (Zoomed)
INPUT POWER = 0 dBm



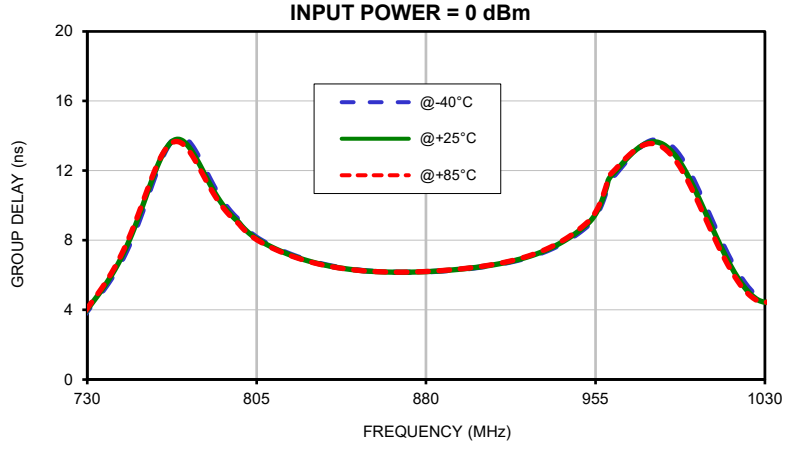
INPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



OUTPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



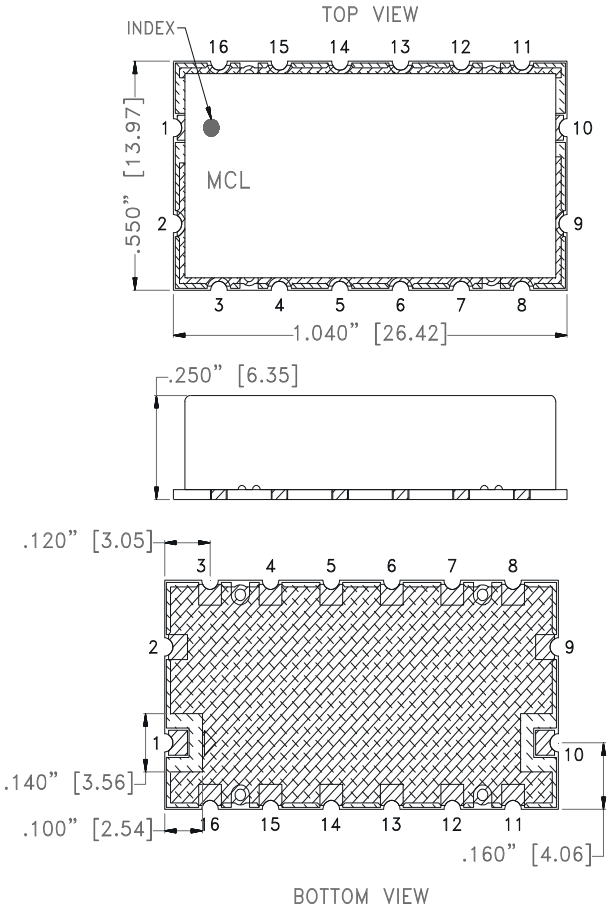
GROUP DELAY vs. TEMPERATURE
INPUT POWER = 0 dBm

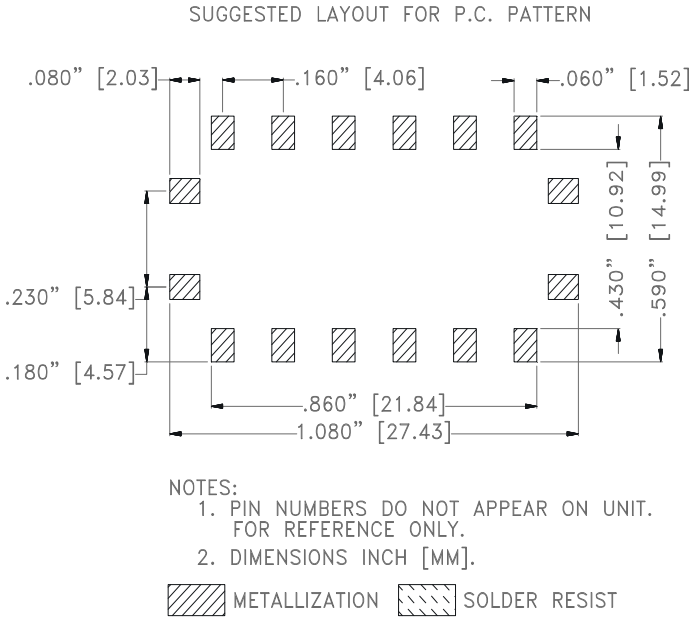


Case Style KV

Outline Dimension

KV1974-1



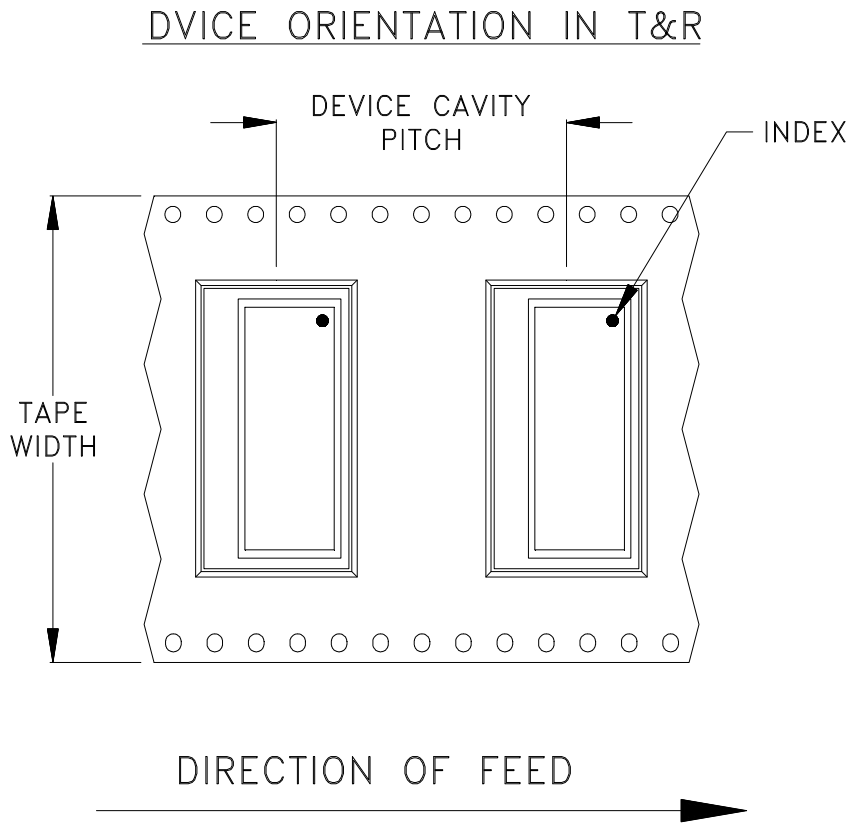


Dimensions are in inches [mm]. Tolerances: 2 Pl ± .03; 3 Pl ± .015

Notes:

1. Case material: Nickel-Silver alloy.
2. Base: Printed wiring laminate.
3. Unit Weight: 2.5g
4. 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-F005



Tape Width, mm	Device Cavity Pitch, mm	Reel Size, inches	Devices per Reel
44	28	13	200

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.

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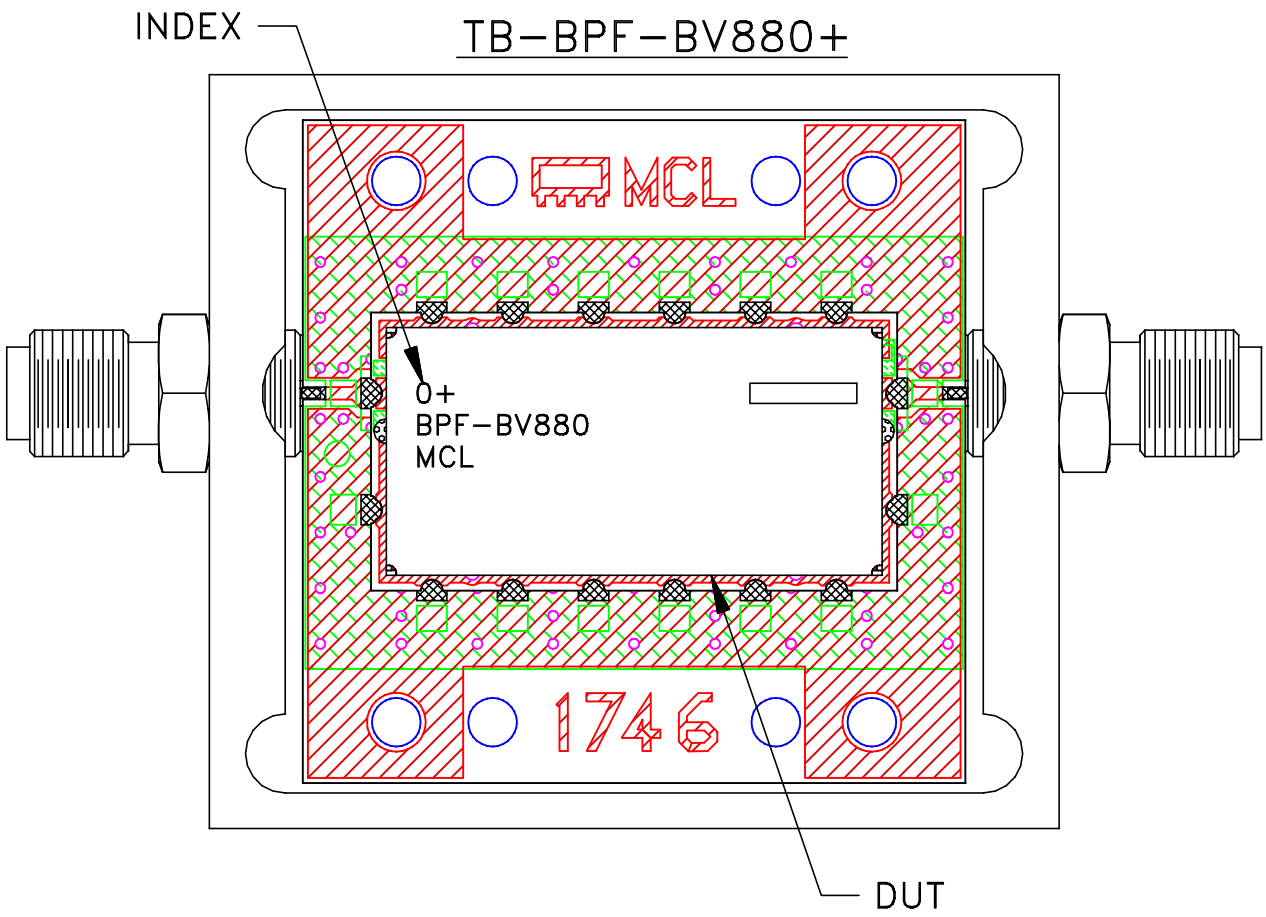
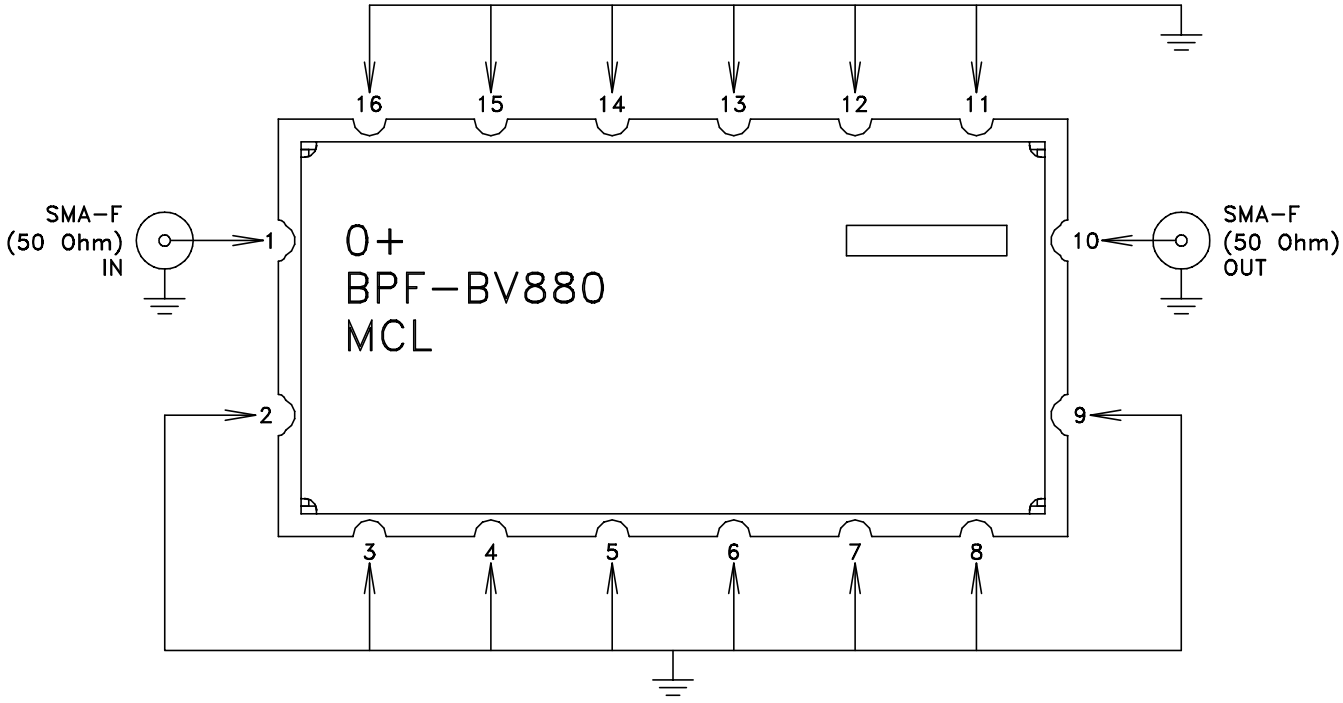
Evaluation Board and Circuit



Schematic diagram



Notes:

1. PCB Material: ROGERS (CLTE-MW) OR Equivalent, Dielectric Constant=2.98±.04
Dielectric Thickness: .010±.001 inch
2. 50 Ohm SMA Female Connectors.

Mini-Circuits®

Mini-Circuits

Environmental Specifications ENV02T1

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, 240 hours, 50°C	MIL-STD-202, Method 103, Condition A, Except 50°C and end-point electrical test done within 12 hours
Thermal Shock	-55° to 100°C, 100 cycles	MIL-STD-202, Method 107, Condition A-3, except +100°C
Solder Reflow Heat	Sn-Pb Eutetic Process: 225°C peak Pb-Free Process 245° - 250°C peak	J-STD-020, Table 4-1, 4-2 and 5-2, Figure 5-1
Solderability	10X Magnification	J-STD-002, 95% Coverage
Vibration (High Frequency)	20g peak, 10-2000 Hz, 12 times in each of three perpendicular directions (total 36)	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
Marking Resistance to Solvents	Isopropyl alcohol + mineral spirits at 25°C; terpene defluxer at 25°C; distilled water + proylene glycol monomethyl ether + monoethanolamine at 63°C to 70°C	MIL-STD-202, Method 215