LUMPED LC SURFACE MOUNT

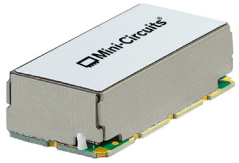
Band Pass Filter

BPF-AM585+

50Ω 420 to 750 MHz

THE BIG DEAL

- Low Insertion Loss, 0.4 dB Typ.
- High Rejection, 40 dB Typ.
- Wide Stopband Rejection, Up to 2 GHz

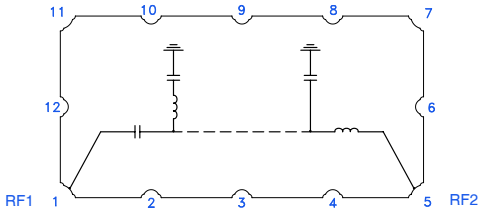


Generic photo used for illustration purposes only

APPLICATIONS

- Aerospace
- Test and Measurements
- UHF Radio

FUNCTIONAL DIAGRAM



PRODUCT OVERVIEW

Mini-Circuits' BPF-AM585+ is a Lumped LC filter that offer a good insertion loss and good rejection. This bandpass filter covers from 420 to 750 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] AT +25°C

Parameter		F#	Frequency (MHz)	Min.	Typ.	Max.	Units
Passband	Center Frequency	—	—	—	585	—	MHz
	Insertion Loss	F1-F2	420 - 750	—	0.4	1.0	dB
	Return Loss	F1-F2	420 - 750	12	17	—	dB
Stopband, Lower	Rejection	DC-F3	DC - 240	35	40	—	dB
		F3-F4	240 - 270	20	30	—	
Stopband, Upper	Rejection	F5-F6	1000 - 1250	25	36	—	dB
		F6-F7	1250 - 2000	40	48	—	

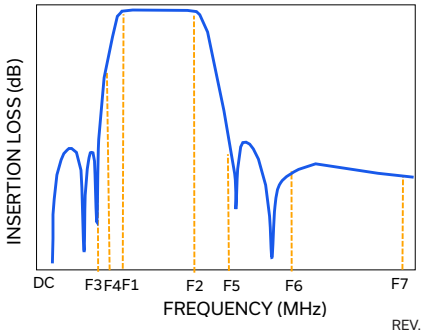
1. Tested in Evaluation Board P/N TB-BPF-AM585+.
2. This component should not be used as a DC-block. In applications where DC voltage and/or current is present at either the input or output ports, external DC blocking capacitors are required.

ABSOLUTE MAXIMUM RATINGS[3]

Operating Temperature	-40°C to +85°C
Storage Temperature	-55°C to +100°C
Input Power[4]	15 W at +25°C

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

TYPICAL FREQUENCY RESPONSE



REV. OR
ECO-027878
EDU5236
BPF-AM585+
URJ
251127

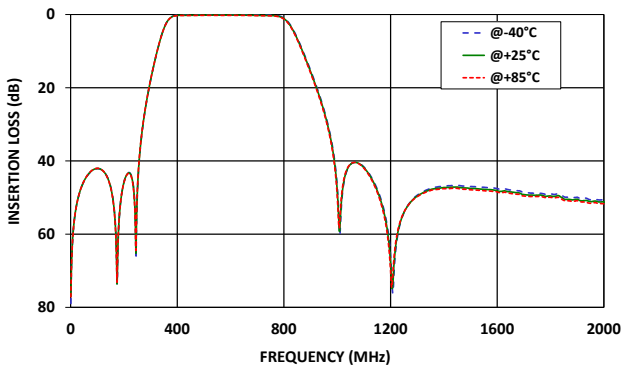
Band Pass Filter

BPF-AM585+

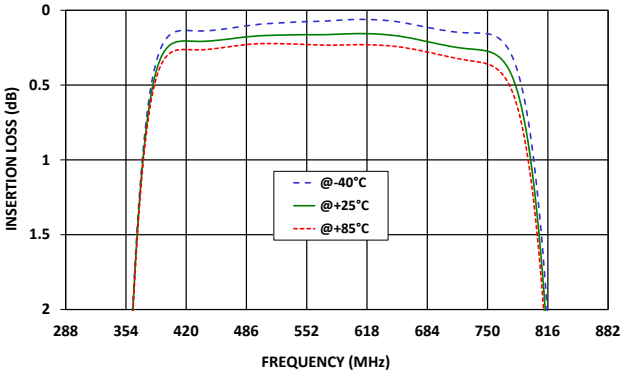
50Ω 420 to 750 MHz

TYPICAL PERFORMANCE GRAPHS

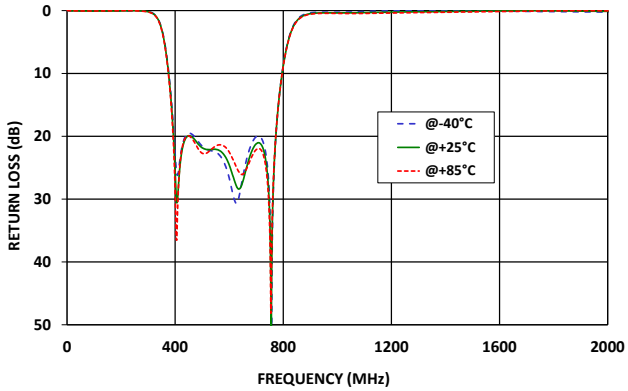
BPF-AM585+
INSERTION LOSS



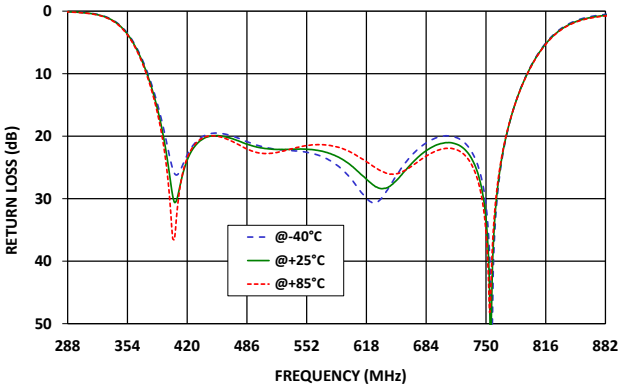
BPF-AM585+
INSERTION LOSS (Zoomed)



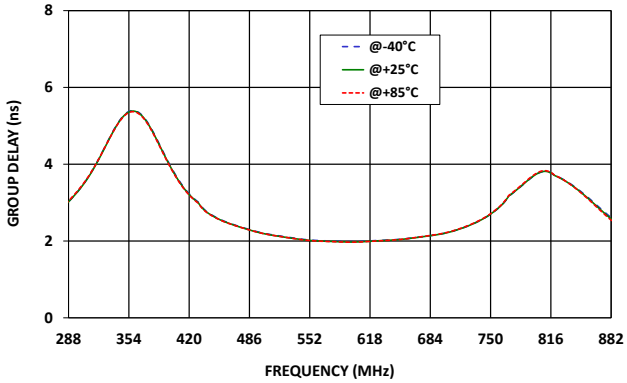
BPF-AM585+
RETURN LOSS



BPF-AM585+
RETURN LOSS (Zoomed)



BPF-AM585+
GROUP DELAY



LUMPED LC SURFACE MOUNT

Band Pass Filter

BPF-AM585+

50Ω 420 to 750 MHz

FUNCTIONAL DIAGRAM

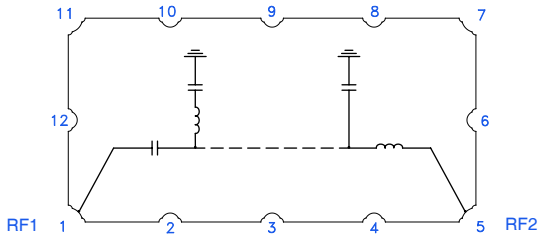


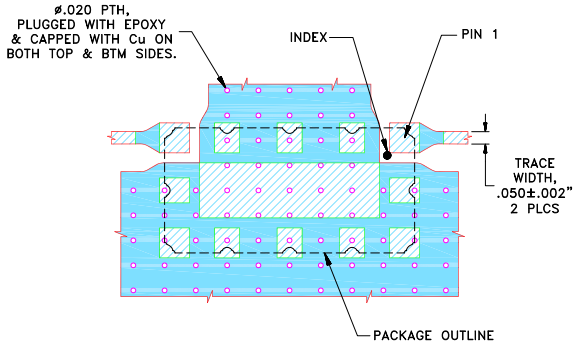
Figure 1. BPF-AM585+ Functional Diagram

PAD DESCRIPTION

Function	Pad Number	Description
RF1	1	Connects to RF Input Port
RF2	5	Connects to RF Output Port
GROUND	2-4, 6-12	Connects to Ground on PCB, (See drawing PL-842)

SUGGESTED PCB LAYOUT

SUGGESTED MOUNTING CONFIGURATION
FOR BBG2044-4 CASE STYLE



NOTES:

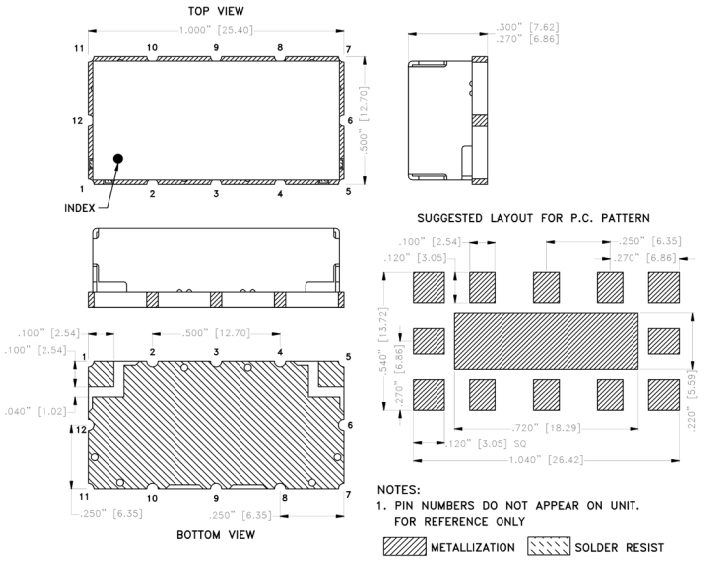
1. TRACE WIDTH ARE SHOWN FOR FR4 (IT-180A) WITH DIELECTRIC THICKNESS .028"±.002" COPPER: 1/2 Oz EACH SIDE. FOR OTHER MATERIAL TRACE WIDTH MAY NEED TO BE MODIFIED.
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

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



Weight: 5 gram
Dimensions are in inches (mm). Tolerances: 2Pl. ± .03; 3Pl. ± .015

PRODUCT MARKING*: BPF-AM585

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

Band Pass Filter

BPF-AM585+

50Ω 420 to 750 MHz

ADDITIONAL DETAILED INFORMATION IS AVAILABLE ON OUR DASHBOARD CLICK HERE

Performance Data & Graphs	Data Graphs S-Parameter (S2P Files) Data Set (.zip file) De-embedded to device pads
Case Style	BBG2044-4 Lead Finish: Gold over Nickel Plate
RoHS/REACH Status	Compliant
Tape and Reel	F023
Suggested Layout for PCB Design	PL-842
Evaluation Board	TB-BPF-AM585+ 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

Typical Performance Data

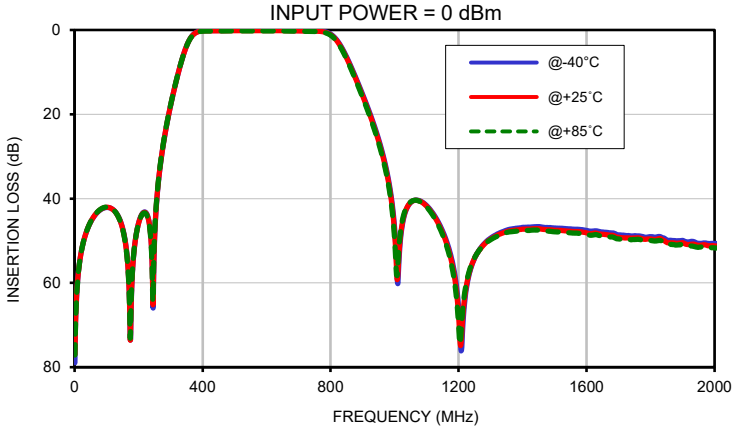
FREQ.	INSERTION LOSS			INPUT RETURN LOSS			OUTPUT RETURN LOSS		
(MHz)	(dB)			(dB)			(dB)		
	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C
1	78.96	77.02	77.12	0.00	0.00	0.00	0.00	0.00	0.00
3	69.07	69.38	69.10	0.00	0.00	0.00	0.01	0.00	0.00
11	58.10	58.12	58.07	0.03	0.03	0.03	0.03	0.03	0.03
52	45.32	45.25	45.22	0.07	0.06	0.06	0.06	0.05	0.05
100	42.11	42.06	42.01	0.09	0.07	0.06	0.05	0.03	0.01
200	45.76	45.87	45.87	0.07	0.05	0.02	0.13	0.17	0.20
210	43.74	43.83	43.90	0.07	0.04	0.01	0.15	0.19	0.21
216	43.24	43.34	43.44	0.06	0.03	0.00	0.15	0.19	0.22
222	43.26	43.38	43.53	0.05	0.02	0.00	0.16	0.20	0.23
228	44.07	44.22	44.40	0.05	0.02	0.01	0.16	0.21	0.24
234	46.08	46.29	46.57	0.05	0.01	0.01	0.16	0.21	0.25
240	50.97	51.44	52.07	0.04	0.01	0.02	0.16	0.21	0.25
246	63.73	61.66	59.63	0.03	0.00	0.03	0.16	0.21	0.25
252	46.20	45.76	45.26	0.03	0.00	0.03	0.15	0.21	0.26
258	39.31	39.06	38.77	0.02	0.02	0.04	0.15	0.21	0.26
264	34.64	34.46	34.24	0.01	0.03	0.06	0.15	0.21	0.26
270	30.94	30.79	30.61	0.01	0.04	0.07	0.14	0.21	0.26
276	27.79	27.67	27.51	0.02	0.06	0.09	0.14	0.21	0.26
282	25.01	24.91	24.76	0.04	0.08	0.11	0.14	0.22	0.27
286	23.29	23.21	23.07	0.06	0.09	0.13	0.14	0.22	0.28
288	22.47	22.39	22.26	0.07	0.10	0.14	0.14	0.22	0.28
290	21.68	21.60	21.47	0.08	0.11	0.15	0.15	0.23	0.29
340	5.92	5.93	5.92	1.61	1.70	1.78	1.53	1.65	1.75
350	3.77	3.80	3.80	2.85	2.97	3.08	2.73	2.88	3.00
410	0.14	0.21	0.27	26.06	29.32	30.43	28.08	33.03	33.16
420	0.13	0.21	0.26	23.03	23.86	23.52	23.17	24.39	24.13
426	0.14	0.21	0.26	21.56	22.11	21.79	21.38	22.28	22.13
432	0.14	0.21	0.26	20.61	21.05	20.80	20.25	21.02	20.98
500	0.09	0.17	0.22	21.56	21.83	22.70	20.60	20.99	21.77
510	0.09	0.17	0.22	21.91	22.04	22.77	21.01	21.24	21.88
550	0.08	0.16	0.23	22.52	22.07	21.55	22.08	21.69	21.20
585	0.07	0.16	0.23	24.60	23.22	21.71	24.50	23.20	21.74
600	0.06	0.16	0.23	26.65	24.56	22.52	26.90	24.76	22.70
610	0.06	0.16	0.23	28.55	25.83	23.35	29.28	26.18	23.59
620	0.06	0.16	0.23	30.21	27.14	24.27	32.24	27.76	24.62
700	0.13	0.23	0.30	20.06	21.19	22.11	20.21	20.90	21.49
720	0.15	0.25	0.33	20.39	21.43	22.32	20.34	21.01	21.64
750	0.16	0.27	0.36	31.00	33.20	35.33	28.95	30.21	31.28
800	0.97	1.13	1.25	8.67	8.77	8.83	8.62	8.56	8.53
824	2.85	3.05	3.22	3.85	3.99	4.05	3.77	3.78	3.78
888	13.00	13.34	13.68	0.45	0.60	0.69	0.26	0.37	0.44
924	20.01	20.41	20.81	0.27	0.39	0.47	0.01	0.14	0.23
960	28.56	29.03	29.52	0.25	0.36	0.43	0.07	0.08	0.18
970	31.57	32.08	32.63	0.25	0.36	0.44	0.08	0.08	0.18
1000	46.95	48.16	49.67	0.26	0.37	0.45	0.09	0.07	0.17
1050	40.95	40.91	40.81	0.22	0.36	0.47	0.10	0.07	0.18
1100	41.65	41.81	41.99	0.14	0.32	0.45	0.10	0.07	0.20
1150	47.70	48.13	48.56	0.08	0.28	0.41	0.10	0.08	0.21
1200	65.84	67.81	69.86	0.05	0.25	0.39	0.09	0.09	0.22
1250	54.13	54.09	54.05	0.02	0.22	0.35	0.09	0.10	0.23
1300	49.37	49.59	49.78	0.00	0.19	0.31	0.09	0.10	0.23
1350	47.49	47.83	48.06	0.01	0.18	0.30	0.08	0.11	0.24
1400	46.83	47.26	47.56	0.03	0.15	0.26	0.08	0.11	0.24
1450	46.65	47.14	47.48	0.05	0.12	0.23	0.09	0.10	0.24
1500	46.99	47.51	47.88	0.05	0.11	0.21	0.08	0.11	0.25
1550	47.19	47.76	48.13	0.07	0.08	0.18	0.08	0.11	0.24
1600	47.56	48.13	48.46	0.09	0.05	0.14	0.08	0.10	0.23
1700	48.60	49.17	49.58	0.12	0.01	0.10	0.09	0.09	0.22
1800	49.04	49.57	49.94	0.16	0.03	0.05	0.09	0.09	0.21
2000	50.64	51.25	51.71	0.24	0.12	0.05	0.14	0.03	0.16

Typical Performance Data

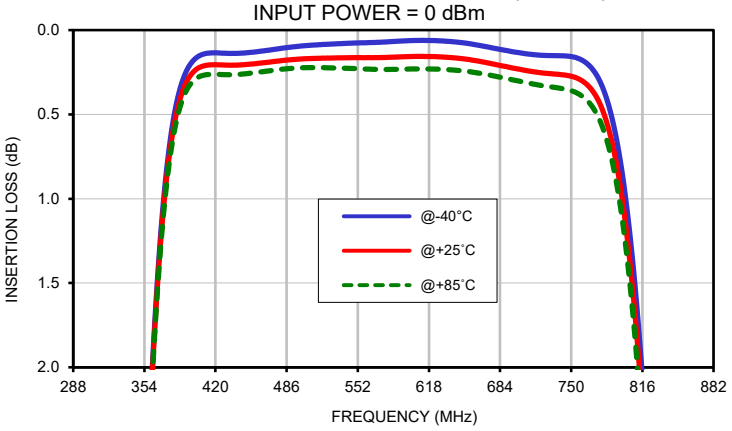
FREQ. (MHz)	GROUP DELAY (nsec)		
	@-40°C	@+25°C	@+85°C
420	3.23	3.21	3.20
430	3.01	3.00	2.99
440	2.75	2.74	2.73
450	2.61	2.60	2.59
460	2.50	2.49	2.49
470	2.42	2.41	2.41
480	2.34	2.33	2.33
490	2.27	2.26	2.26
500	2.21	2.20	2.20
510	2.17	2.15	2.15
520	2.13	2.12	2.12
530	2.09	2.08	2.08
540	2.06	2.05	2.05
550	2.03	2.02	2.02
560	2.01	2.00	2.00
570	2.00	1.99	1.99
585	1.99	1.98	1.98
590	1.99	1.98	1.97
600	1.98	1.97	1.97
610	1.99	1.98	1.98
620	2.01	2.00	1.99
630	2.02	2.01	2.01
640	2.03	2.02	2.02
650	2.04	2.04	2.04
660	2.07	2.06	2.07
670	2.10	2.09	2.10
680	2.13	2.13	2.13
690	2.16	2.16	2.17
692	2.17	2.17	2.17
694	2.18	2.18	2.18
696	2.18	2.18	2.19
698	2.19	2.19	2.20
700	2.20	2.20	2.21
702	2.21	2.21	2.22
704	2.23	2.23	2.23
706	2.24	2.24	2.25
710	2.27	2.27	2.27
730	2.44	2.44	2.45
740	2.55	2.55	2.56
750	2.70	2.70	2.71

Typical Performance Curves

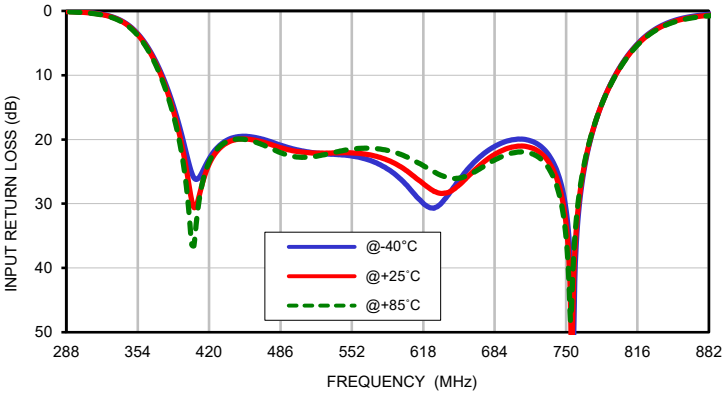
INSERTION LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



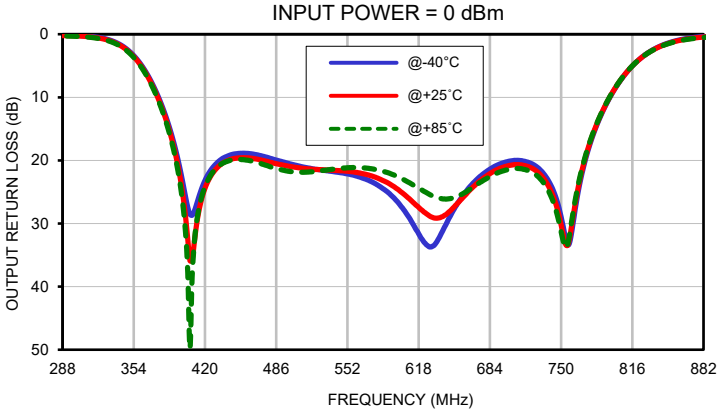
INSERTION LOSS vs. TEMPERATURE (Zoomed)
INPUT POWER = 0 dBm



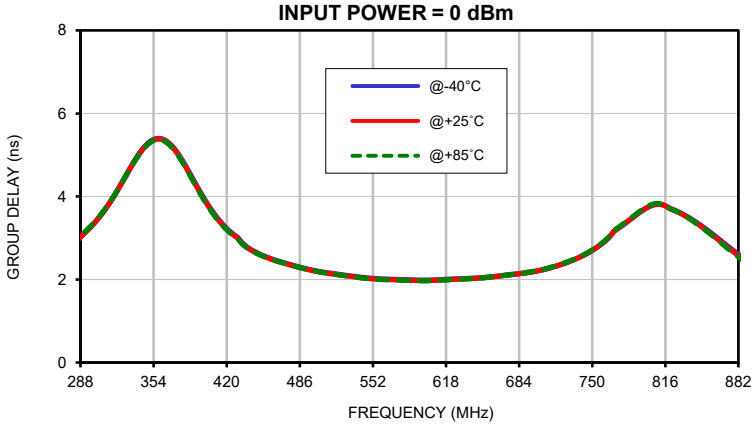
INPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



OUTPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



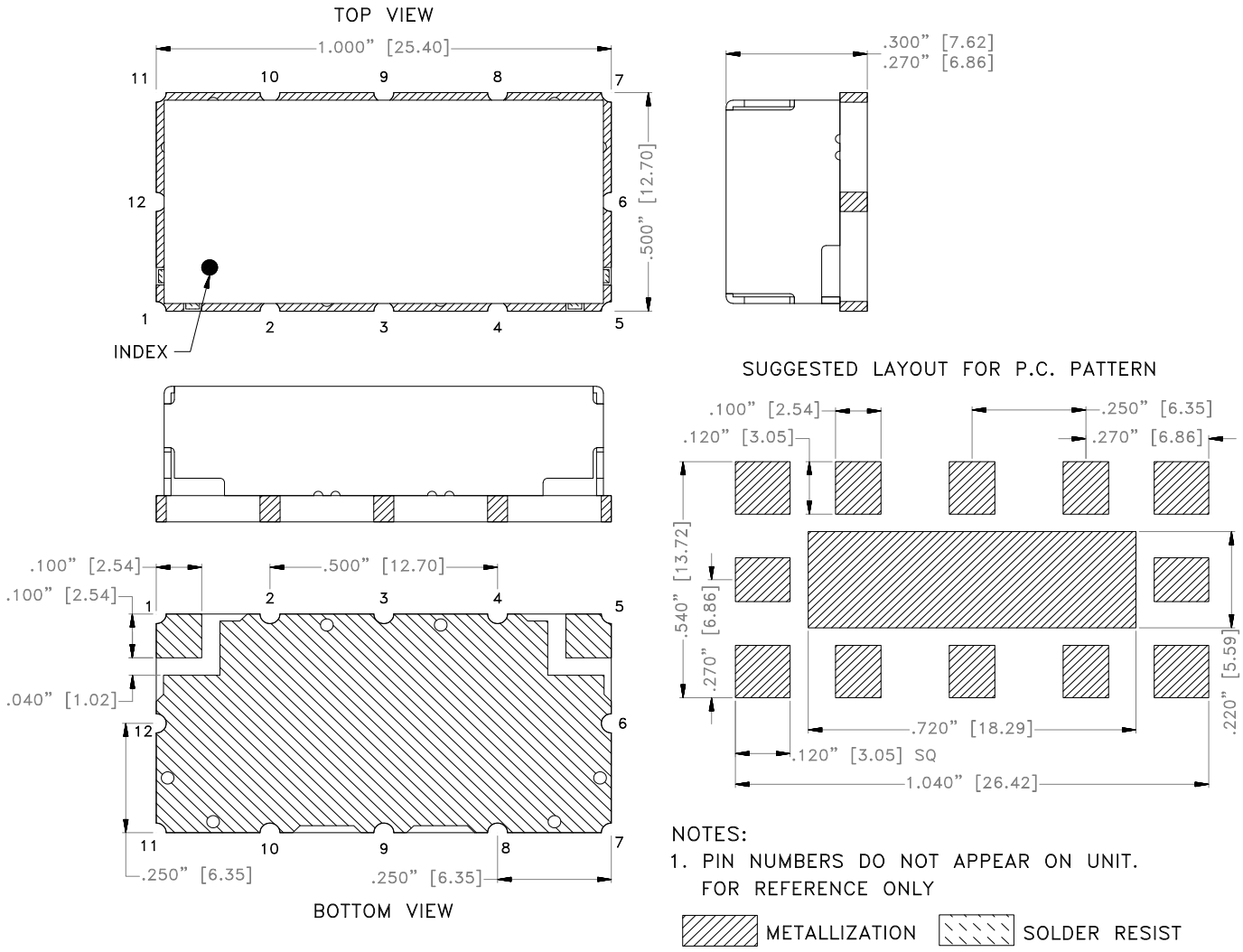
GROUP DELAY vs. TEMPERATURE
INPUT POWER = 0 dBm



Case Style BBG

Outline Dimension

BBG2044-4



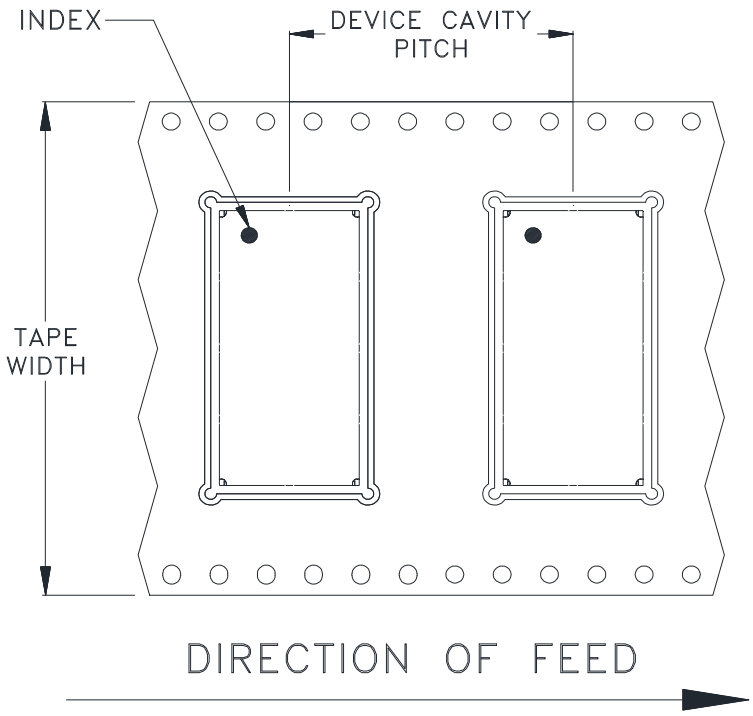
Dimensions are in inches [mm]. Tolerances: 2 Pl ± .03; 3 Pl ± .015

Notes:

1. Case material: Nickel-Silver alloy.
2. Base: Printed wiring laminate.
3. Unit Weight: 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-F023

DEVICE ORIENTATION IN T&R



Tape Width, mm	Device Cavity Pitch, mm	Reel Size, inches	Devices per Reel See note	
44	24	13	Small quantity standards	10
				20
				50
				100
			Standard	200

Note: Please consult individual model data sheet/dashboard 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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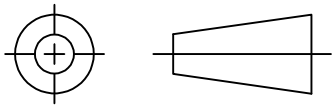
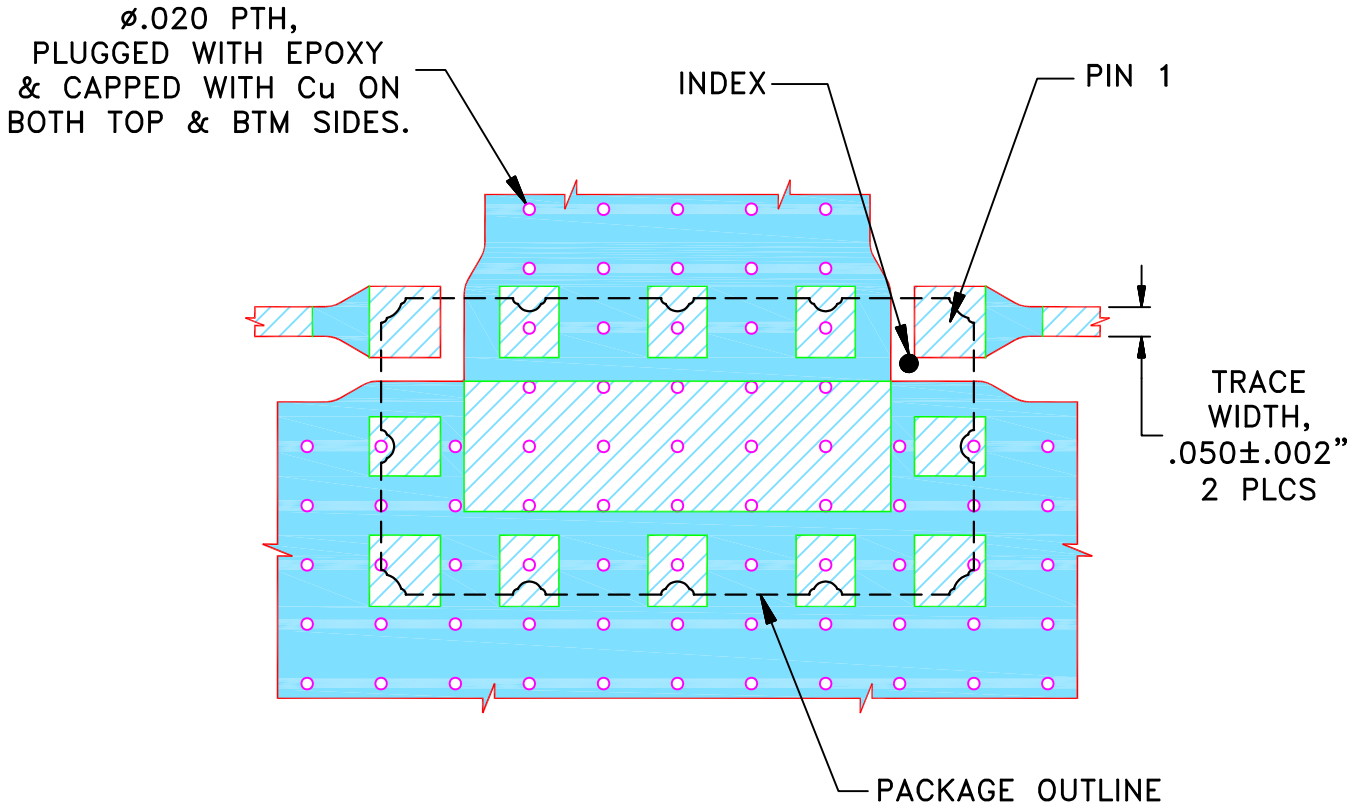
Mini-Circuits ISO 9001 & ISO 14001 Certified

THIRD ANGLE PROJECTION



REVISIONS					
REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	NPO-005726	NEW RELEASE	OCT 25	SS	VR

SUGGESTED MOUNTING CONFIGURATION FOR BBG2044-4 CASE STYLE



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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	SS	28 OCT 25
TOLERANCES ON:	CHECKED	SPS	05 NOV 25
2 PL DECIMALS ±	APPROVED	RR	13 NOV 25
3 PL DECIMALS ± .005"			
ANGLES ±			
FRACTIONS ±			

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

Mini-Circuits® 13 Neptune Avenue Brooklyn NY 11235

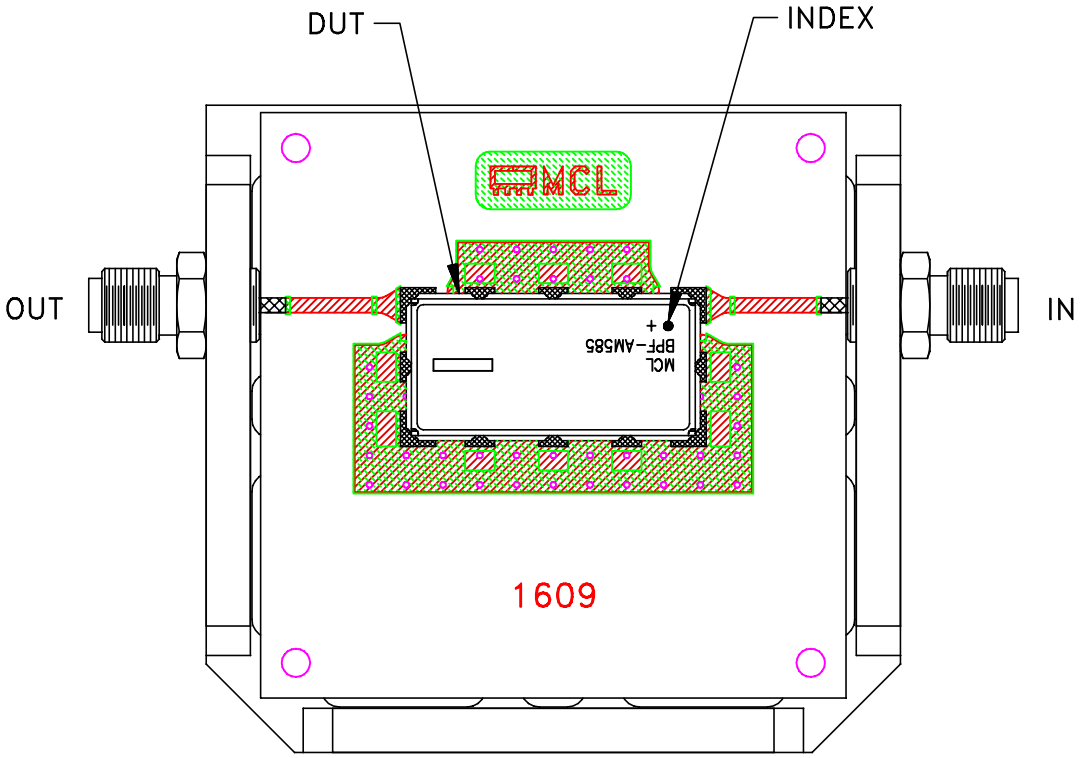
PL, BBG2044-4, TB-1320, 50 Ohm

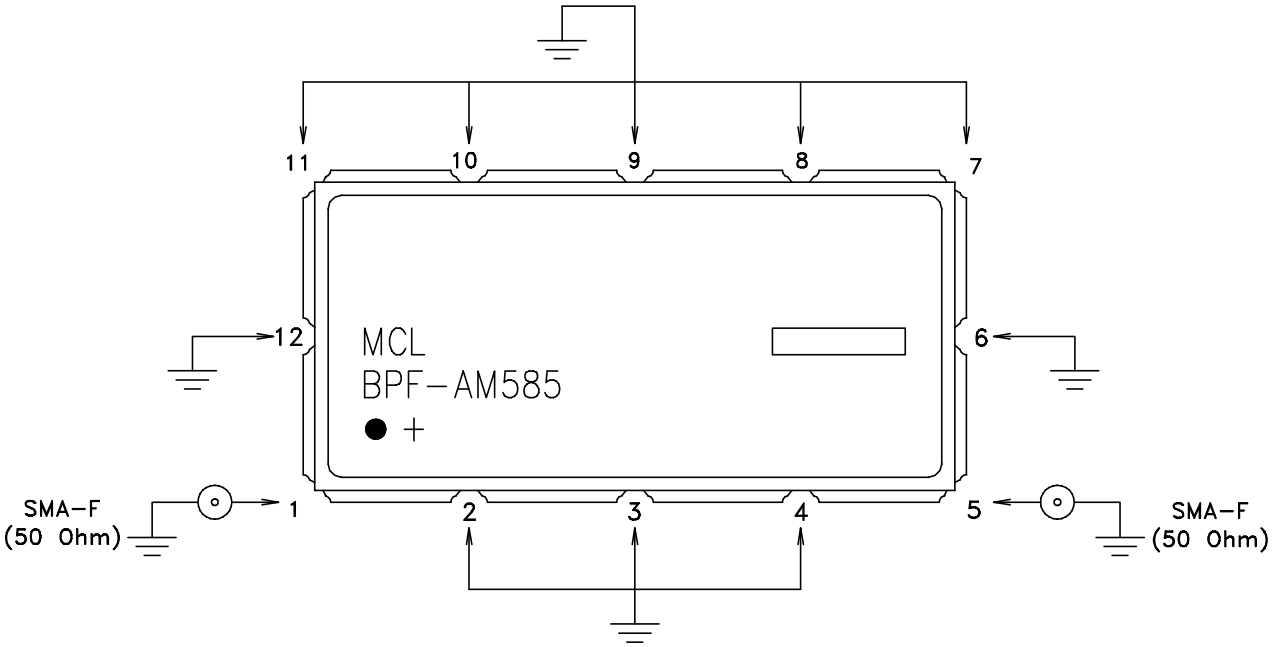
SIZE	CODE IDENT	DRAWING NO:	REV:
A	15542	98-PL-842	OR

FILE:	SCALE:	SHEET:
98-PL-842	3:1	1 OF 1

Evaluation Board and Circuit

TB-BPF-AM585+





Notes:

1. PCB Material: FR4 OR Equivalent, Dielectric Constant=4.7
Dielectric Thickness: .028"±.002
2. 50 Ohm SMA Female Connectors.

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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