CERAMIC RESONATOR SURFACE MOUNT

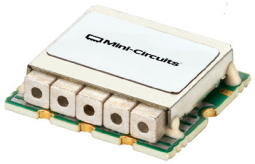
Bandpass Filter

CBP2-3440CC+

50Ω 3320 to 3560 MHz

KEY FEATURES

- Good Insertion Loss, 1.5 dB Typ.
- High Rejection, 65 dB Typ.
- Low-Profile Shielded Package

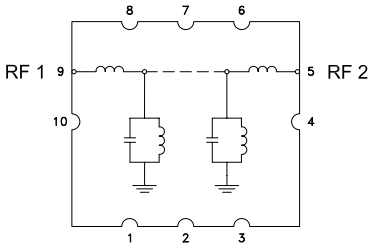


Generic photo used for illustration purposes only

APPLICATIONS

- 5G Applications
- Test and Measurements
- Wireless Communication

FUNCTIONAL DIAGRAM



PRODUCT OVERVIEW

All our Surface Mount Ceramic Resonator filters are built with rugged construction, qualified to withstand multiple demanding reflow cycles. Excellent repeatability across units is achieved through precise tuning and process.

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

Parameter		F#	Frequency (MHz)	Min.	Typ.	Max.	Units
Passband	Center Frequency	—	—	—	3440	—	MHz
	Insertion Loss	F1-F2	3320 - 3560	—	1.5	2	dB
	Return Loss	F1-F2	3320 - 3560	10	16	—	dB
Stopband, Lower	Rejection	DC-F3	DC - 2500	60	65	—	dB
		F3-F4	2500 - 3125	20	30	—	
Stopband, Upper	Rejection	F5-F6	3760 - 4200	20	29	—	dB
		F6-F7	4200 - 6500	52	58	—	

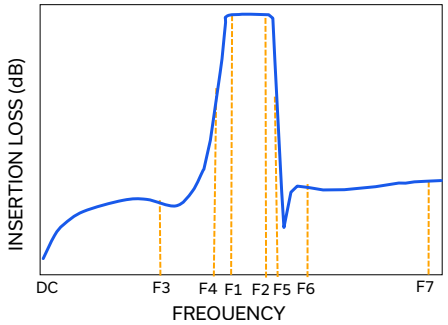
1. Tested in Evaluation Board P/N TB-CBP2-3440CC+.
2. This filter is bi-directional RF1 and RF2 ports may be interchanged, see S-Parameters for actual performance.
3. This component should not be used as a DC-block. In applications where DC voltage and/or current is present at either the input or output 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]	8 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 2 W at +85°C.

TYPICAL FREQUENCY RESPONSE AT +25°C



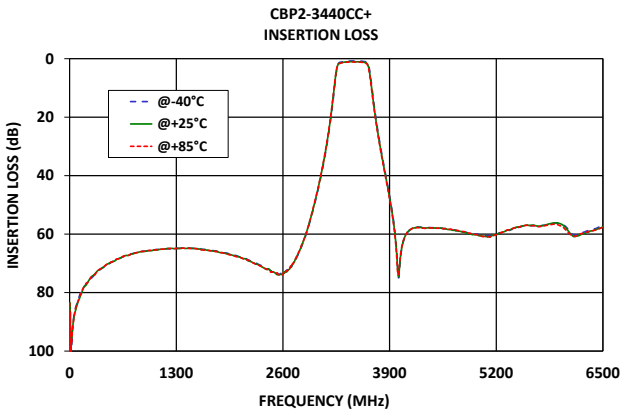
REV. OR
ECO-023740
CBP2-3440CC+
EDU4938
URJ
241125

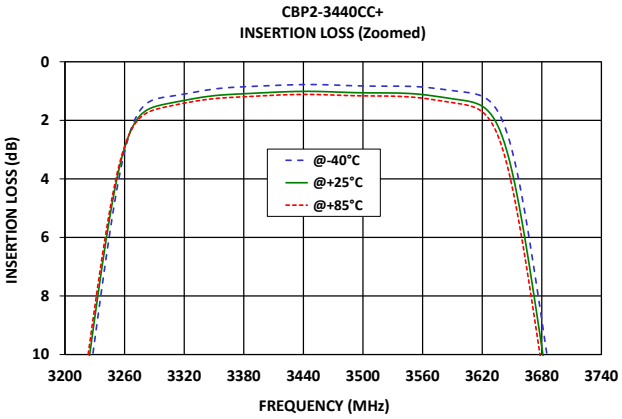
Bandpass Filter

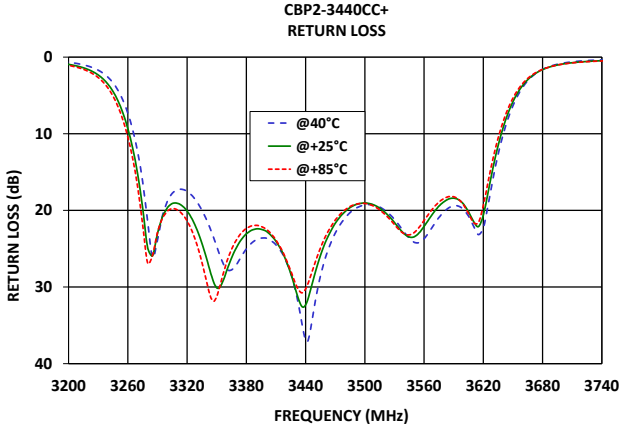
CBP2-3440CC+

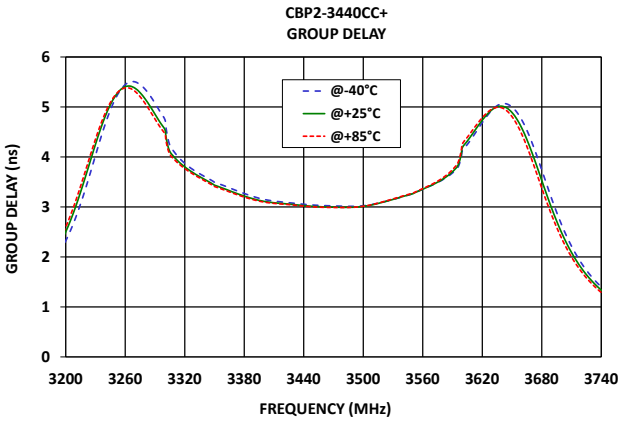
50Ω 3320 to 3560 MHz

TYPICAL PERFORMANCE GRAPHS









Bandpass Filter

CBP2-3440CC+

50Ω 3320 to 3560 MHz

FUNCTIONAL DIAGRAM

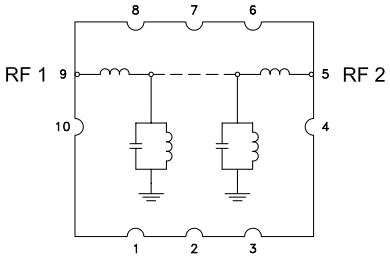
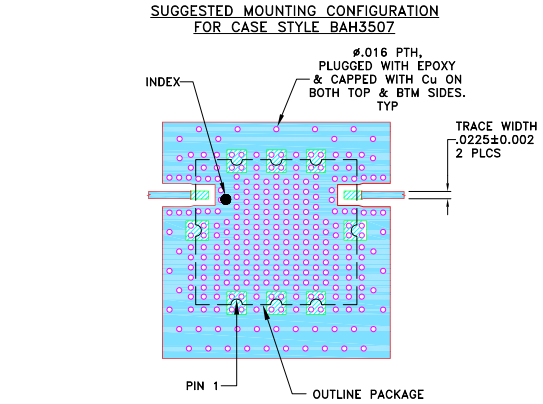


Figure 1. CBP2-3440CC+ Functional Diagram

PAD DESCRIPTION

Function	Pad Number	Description
RF1[2]	9	Connects to RF Input Port
RF2[2]	5	Connects to RF Output Port
GROUND	1-4,6-8,10	Connects to Ground on PCB, (See drawing PL-794)
NC	—	No connection, not used internally. See drawing PL-794 for connection to PCB

SUGGESTED PCB LAYOUT (PL-794)



NOTES:

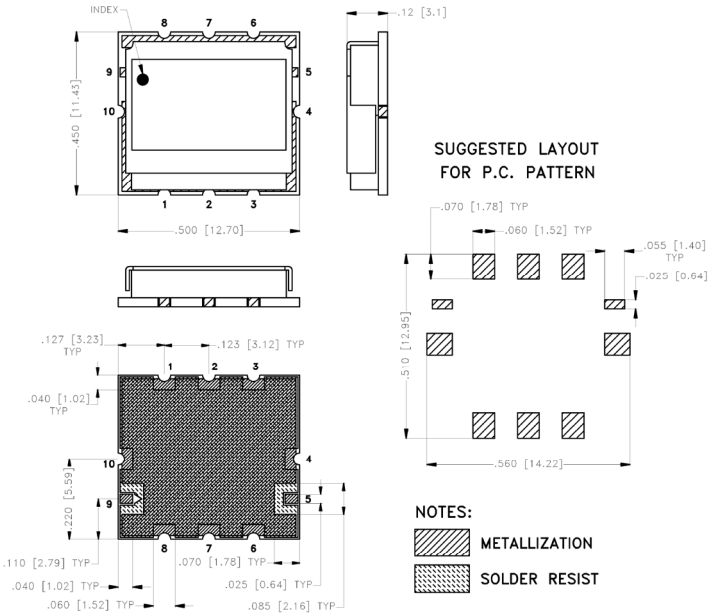
1. TRACE WIDTH ARE SHOWN FOR ROGERS (RO4350B) WITH DIELECTRIC THICKNESS .010±.001 COPPER: 1/2 Oz. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

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

DENOTES PCB COPPER PATTERN FREE OF SOLDERMASK

Figure 2. Suggested PCB Layout PL-794

CASE STYLE DRAWING



Weight: 1 gram

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

PRODUCT MARKING*: CBP2-3440CC

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

CERAMIC RESONATOR SURFACE MOUNT

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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	BAH3507 Lead Finish: Electroless Nickel Immersion Gold
RoHS Status	Compliant
Tape and Reel	TR-F014
Suggested Layout for PCB Design	PL-794
Evaluation Board	TB-CBP2-3440CC+
	Gerber File
Environmental Rating	ENV54

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 CBP2-3440CC+

Typical Performance Data

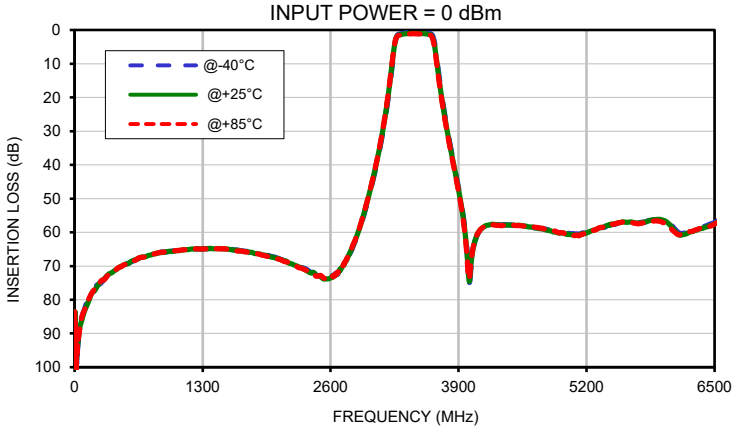
FREQ.	INSERTION LOSS			INPUT RETURN LOSS			OUTPUT RETURN LOSS		
(MHz)	(dB)			(dB)			(dB)		
	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C
1	97.31	86.28	83.58	0.01	0.01	0.02	0.00	0.01	0.01
2	85.25	93.80	91.89	0.01	0.01	0.02	0.00	0.01	0.01
3	86.14	98.28	89.41	0.01	0.02	0.02	0.01	0.01	0.02
10	100.77	102.59	97.34	0.02	0.02	0.03	0.01	0.02	0.03
50	88.50	88.72	89.11	0.03	0.05	0.05	0.03	0.05	0.06
100	82.92	83.38	83.13	0.05	0.07	0.08	0.06	0.07	0.08
200	77.13	77.44	76.91	0.09	0.11	0.11	0.08	0.10	0.11
400	71.53	71.46	71.55	0.11	0.15	0.16	0.09	0.13	0.14
600	68.47	68.32	68.45	0.13	0.17	0.18	0.09	0.13	0.15
800	66.47	66.43	66.50	0.12	0.17	0.19	0.08	0.13	0.15
1000	65.54	65.66	65.48	0.11	0.16	0.18	0.06	0.11	0.14
1500	64.86	64.88	64.90	0.03	0.10	0.13	0.02	0.06	0.09
2000	67.23	67.32	67.38	0.05	0.04	0.07	0.06	0.04	0.07
2500	72.80	73.16	72.79	0.07	0.01	0.04	0.05	0.04	0.07
3000	48.12	47.72	47.53	0.05	0.14	0.17	0.04	0.14	0.18
3125	31.22	30.64	30.36	0.21	0.34	0.39	0.17	0.30	0.36
3130	30.40	29.80	29.52	0.22	0.36	0.41	0.18	0.32	0.37
3185	20.12	19.37	19.00	0.50	0.72	0.81	0.44	0.65	0.74
3260	3.08	2.94	2.89	7.31	9.32	10.43	7.31	9.37	10.44
3320	1.10	1.32	1.41	17.51	20.08	21.37	16.52	18.15	18.82
3370	0.87	1.11	1.21	27.08	24.86	23.86	22.72	21.91	21.59
3390	0.84	1.08	1.18	23.82	22.42	21.95	22.11	21.36	21.23
3400	0.82	1.06	1.16	23.62	22.70	22.43	22.44	22.03	22.05
3410	0.81	1.04	1.14	24.50	24.04	23.87	23.53	23.55	23.73
3440	0.78	1.01	1.12	36.92	32.33	30.24	32.94	31.73	30.91
3450	0.78	1.01	1.12	31.71	28.00	26.67	29.55	27.43	26.66
3470	0.79	1.03	1.14	22.97	21.69	21.26	22.17	21.27	21.03
3490	0.82	1.05	1.16	19.80	19.29	19.23	19.22	18.97	19.04
3500	0.83	1.06	1.16	19.26	19.03	19.09	18.78	18.82	19.03
3520	0.83	1.06	1.17	19.96	20.20	20.48	19.84	20.60	21.23
3540	0.84	1.07	1.19	22.85	23.06	23.06	24.58	27.07	29.09
3560	0.86	1.12	1.24	23.67	22.07	21.30	31.19	28.65	27.23
3660	4.60	5.45	6.06	3.91	3.66	3.42	4.28	4.08	3.84
3700	13.37	14.24	14.87	0.80	0.91	0.92	0.92	1.07	1.11
3760	25.24	25.90	26.41	0.27	0.38	0.41	0.28	0.43	0.49
3900	46.96	47.47	47.95	0.07	0.17	0.20	0.05	0.18	0.22
4000	72.10	72.55	73.79	0.00	0.11	0.13	0.00	0.13	0.17
4200	57.86	57.88	57.95	0.12	0.01	0.05	0.05	0.08	0.13
4300	57.79	57.80	57.92	0.15	0.02	0.03	0.07	0.07	0.12
4400	57.75	57.85	57.86	0.18	0.05	0.01	0.08	0.06	0.12
4500	57.94	57.90	58.02	0.23	0.08	0.02	0.10	0.05	0.12
4600	58.17	58.36	58.31	0.25	0.10	0.04	0.10	0.05	0.12
4700	58.69	58.78	58.56	0.28	0.12	0.04	0.11	0.05	0.13
4800	59.26	59.39	59.13	0.30	0.14	0.06	0.11	0.06	0.14
4900	59.80	60.08	59.94	0.32	0.15	0.06	0.11	0.06	0.14
5000	60.27	60.60	60.57	0.35	0.17	0.08	0.11	0.06	0.15
5100	60.46	60.90	60.82	0.37	0.19	0.09	0.12	0.06	0.16
5200	60.06	60.14	60.18	0.37	0.18	0.08	0.11	0.08	0.18
5300	59.18	59.13	59.08	0.42	0.22	0.12	0.13	0.06	0.16
5400	58.20	58.05	58.12	0.41	0.21	0.10	0.10	0.09	0.20
5500	57.50	57.34	57.38	0.43	0.23	0.12	0.11	0.09	0.20
5600	57.04	57.05	57.13	0.45	0.25	0.15	0.11	0.09	0.20
5700	57.29	57.24	57.37	0.45	0.26	0.16	0.09	0.10	0.21
5800	56.92	56.91	57.07	0.48	0.28	0.18	0.10	0.10	0.21
5900	56.29	56.21	56.59	0.48	0.29	0.19	0.08	0.11	0.23
6000	56.58	56.68	57.35	0.50	0.30	0.20	0.09	0.12	0.23
6100	59.16	59.70	60.07	0.50	0.30	0.21	0.06	0.14	0.25
6300	58.98	59.47	59.34	0.55	0.36	0.26	0.06	0.12	0.22
6400	58.20	58.52	58.68	0.55	0.35	0.00	0.04	0.16	0.27
6500	57.07	57.49	57.55	0.59	0.38	0.28	0.05	0.14	0.24

Typical Performance Data

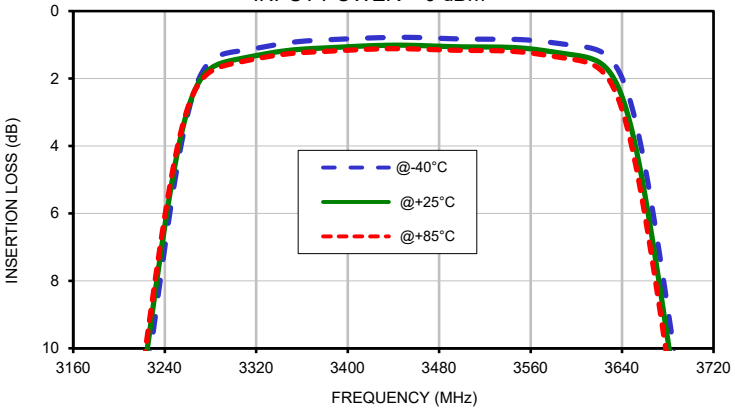
FREQ. (MHz)	GROUP DELAY (nsec)		
	@-40°C	@+25°C	@+85°C
3320	3.87	3.80	3.77
3321	3.86	3.79	3.75
3323	3.82	3.76	3.73
3325	3.79	3.73	3.70
3327	3.76	3.70	3.67
3329	3.74	3.68	3.65
3330	3.72	3.66	3.64
3335	3.67	3.61	3.58
3337	3.64	3.58	3.56
3340	3.61	3.55	3.52
3345	3.55	3.50	3.47
3348	3.52	3.46	3.43
3350	3.49	3.44	3.41
3360	3.42	3.36	3.34
3366	3.37	3.32	3.29
3370	3.34	3.29	3.26
3376	3.30	3.24	3.22
3380	3.27	3.22	3.20
3386	3.23	3.18	3.16
3390	3.20	3.16	3.14
3396	3.17	3.13	3.11
3400	3.15	3.11	3.10
3410	3.12	3.08	3.07
3420	3.10	3.07	3.05
3430	3.07	3.05	3.04
3440	3.05	3.03	3.02
3450	3.04	3.01	3.00
3460	3.03	3.00	2.99
3470	3.02	3.00	2.99
3480	3.01	2.99	2.99
3490	3.01	2.99	2.99
3500	3.02	3.01	3.01
3510	3.05	3.05	3.05
3516	3.08	3.08	3.08
3520	3.10	3.10	3.10
3526	3.13	3.13	3.14
3530	3.15	3.15	3.16
3536	3.18	3.19	3.20
3540	3.21	3.21	3.22
3550	3.26	3.26	3.28
3560	3.35	3.36	3.37

Typical Performance Curves

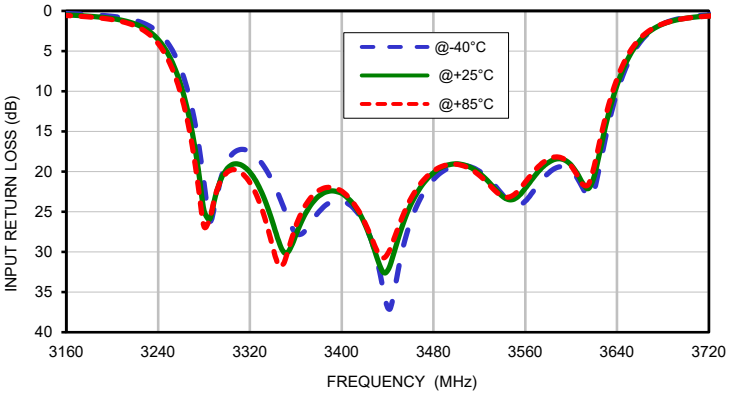
INSERTION LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



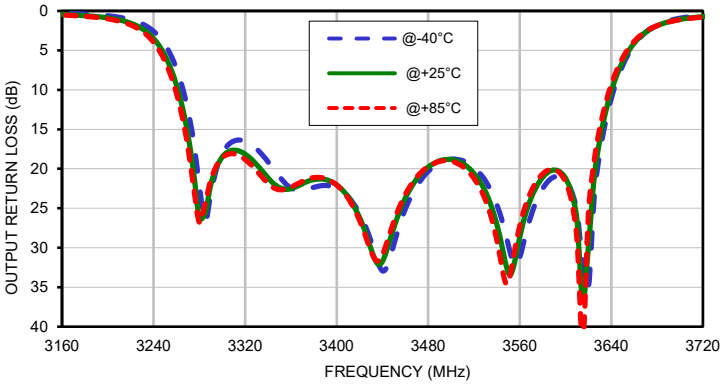
INSERTION LOSS vs. TEMPERATURE (Zoomed)
INPUT POWER = 0 dBm



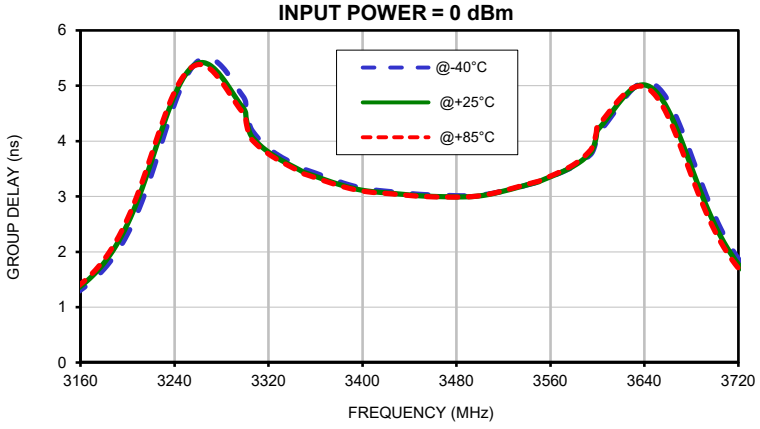
INPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



OUTPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



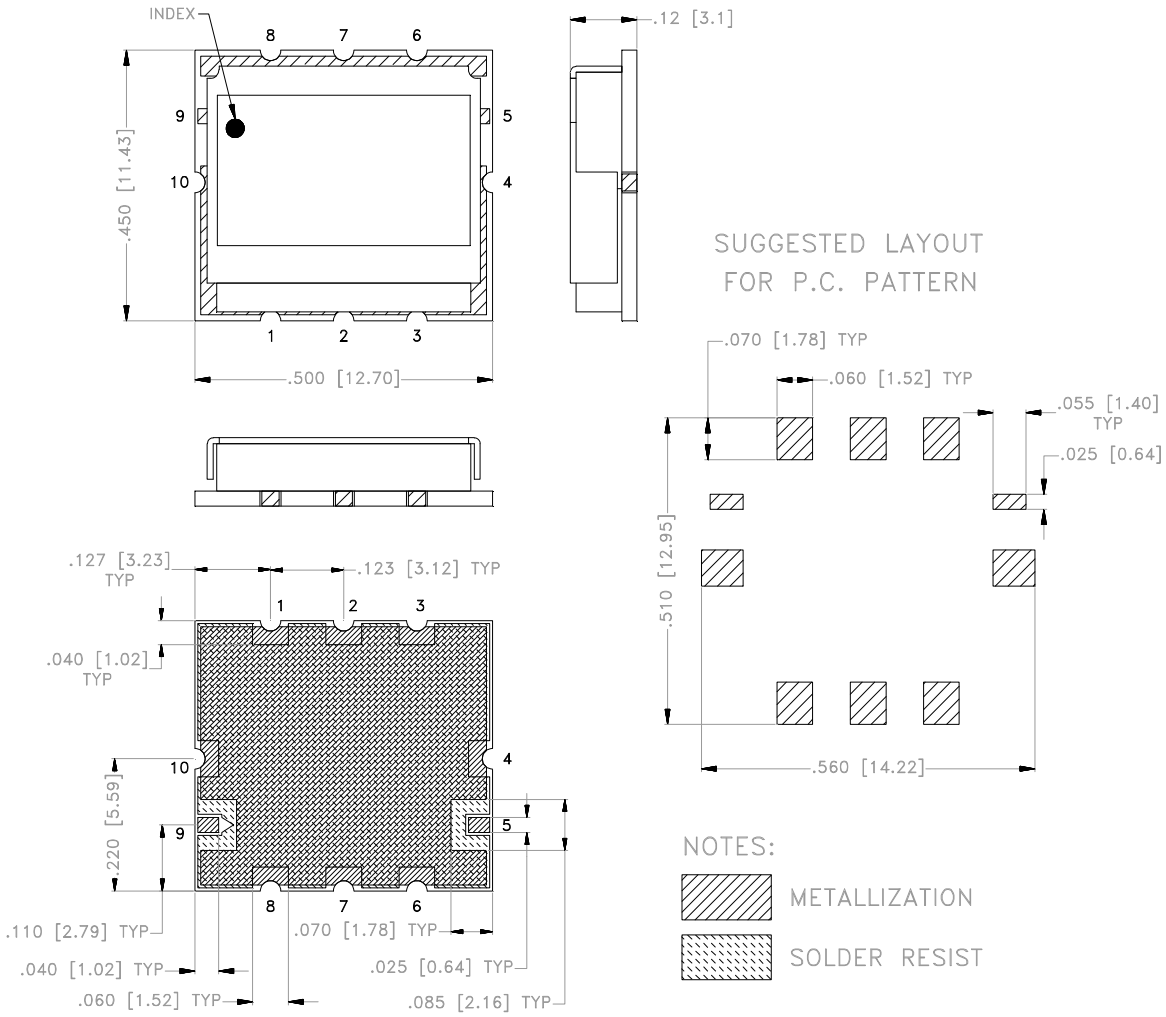
GROUP DELAY vs. TEMPERATURE
INPUT POWER = 0 dBm



Case Style BAH

Outline Dimension

BAH3507

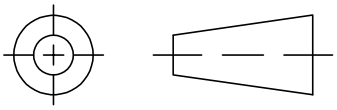


Dimensions are in inches [mm]. Tolerances: 2 Pl ± .03; 3 Pl ± .015

Notes:

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

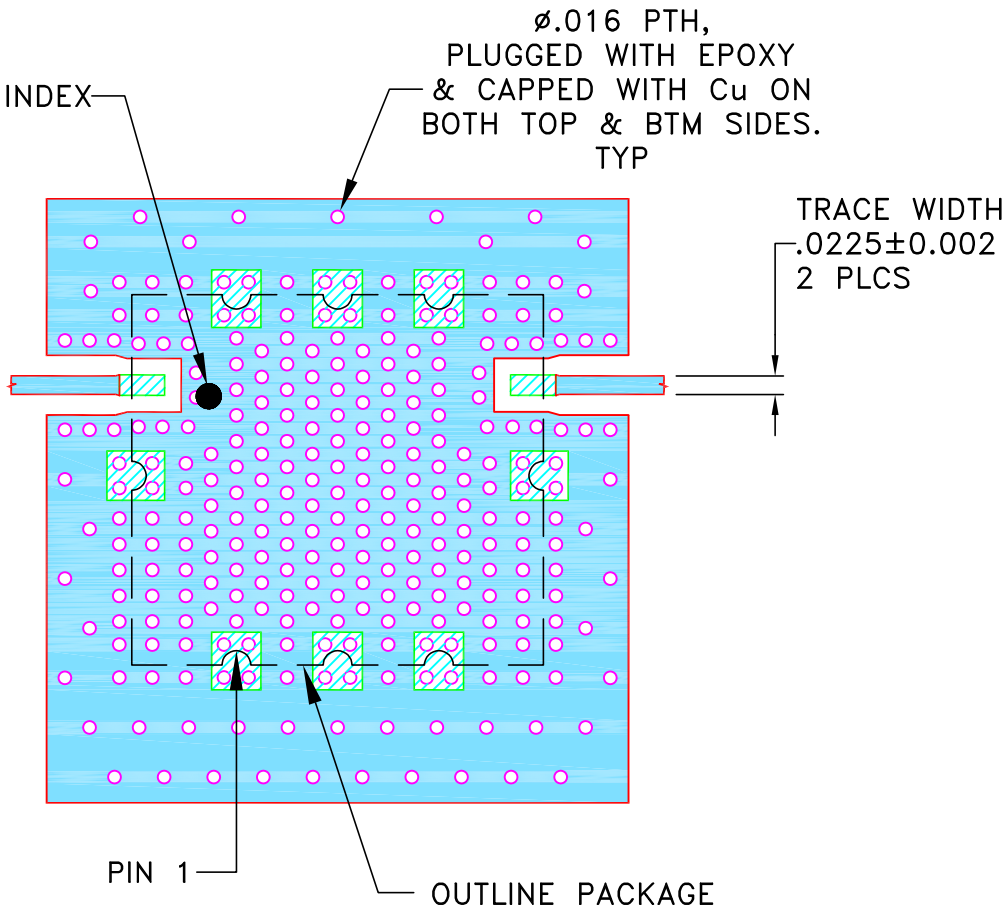
THIRD ANGLE PROJECTION



REVISIONS

REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	NPO-004638	NEW RELEASE	SEP 24	SS	VR

SUGGESTED MOUNTING CONFIGURATION FOR CASE STYLE BAH3507



NOTES:

1. TRACE WIDTH ARE SHOWN FOR ROGERS (RO4350B) WITH DIELECTRIC THICKNESS .010±.001
   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 PATTERN WITH SMOBC (SOLDER MASK OVER BARE COPPER)

DENOTES PCB COPPER PATTERN FREE OF SOLDERMASK

UNLESS OTHERWISE SPECIFIED		INITIALS	DATE
DIMENSIONS ARE IN INCHES	DRAWN	SS	09 SEP 24
TOLERANCES ON:	CHECKED	LK	09 SEP 24
2 PL DECIMALS ±	APPROVED	KSK	09 SEP 24
3 PL DECIMALS ± .005			
ANGLES ±			
FRACTIONS ±			

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

Mini-Circuits® 13 Neptune Avenue Brooklyn NY 11235

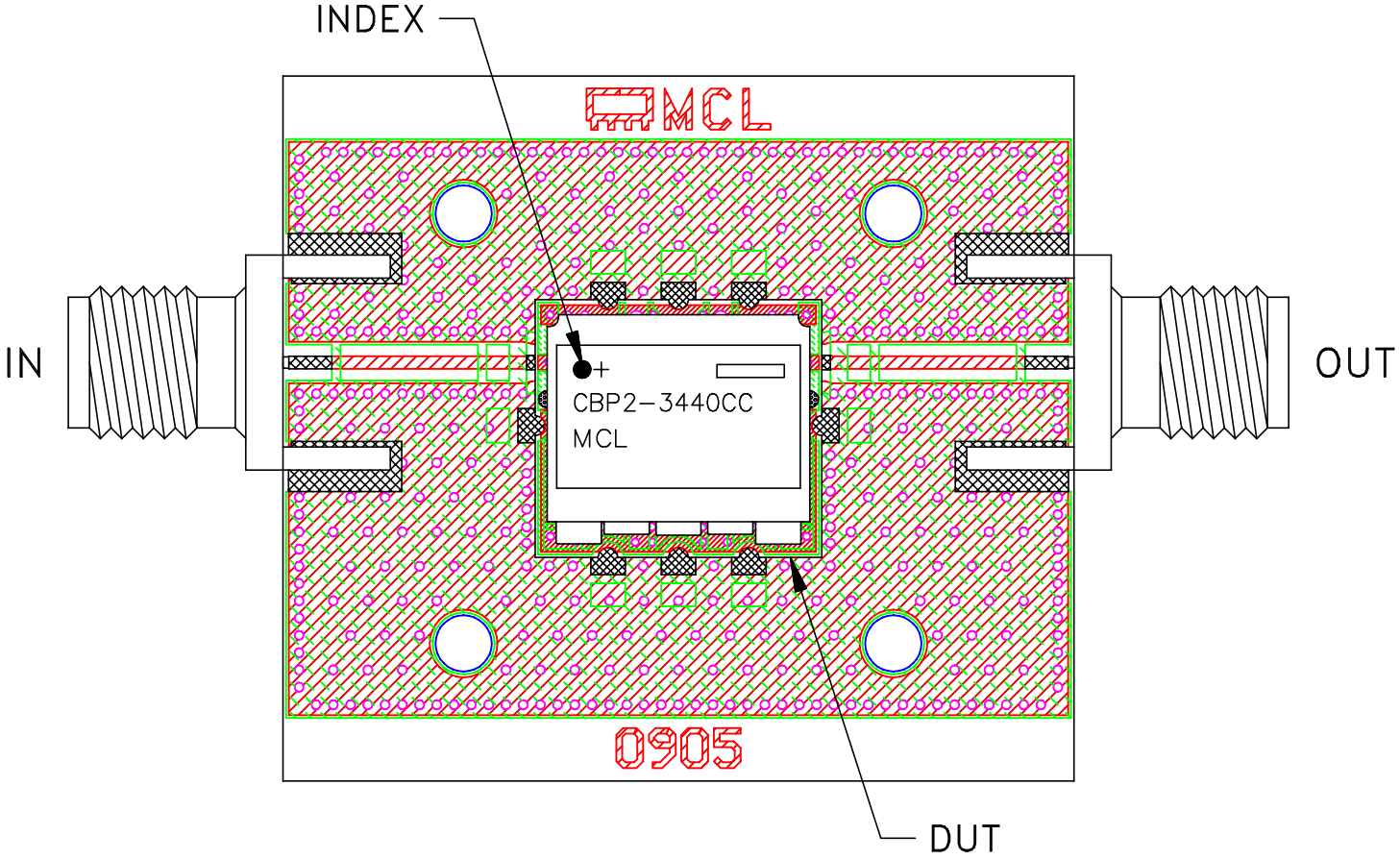
PL DWG, BAH3507, TB-1265

SIZE	CODE IDENT	DRAWING NO:	REV:
A	15542	98-PL-794	OR

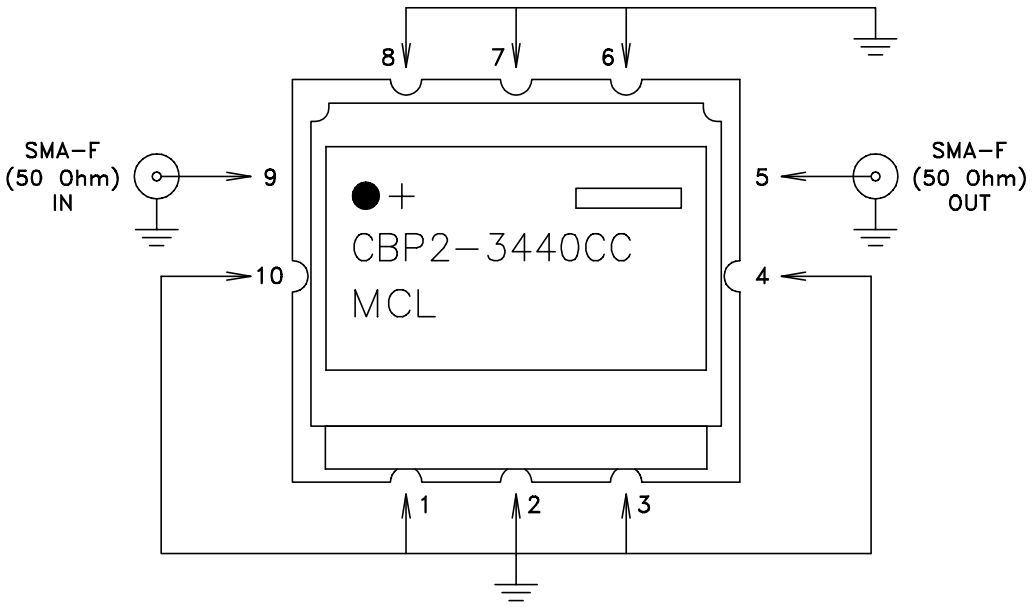
FILE:	SCALE:	SHEET:
98-PL-794	3.5:1	1 OF 1

Evaluation Board and Circuit

TB-CBP2-3440CC+



Schematic diagram



Notes:

1. PCB Material: ROGERS (RO4350B) OR Equivalent, Dielectric Constant=3.48
   Thickness=.010 inch
2. 50 Ohm SMA Female Connector.

Mini-Circuits®

Mini-Circuits

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