CERAMIC RESONATOR SURFACE MOUNT

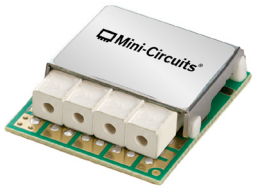
Band Pass Filter

CBP2-1350CR+

50Ω 1300 to 1400 MHz

THE BIG DEAL

- Good Insertion Loss, 1.2 dB Typ.
- Excellent Rejection, 70 dB Typ.
- Good Return Loss, 15 dB Typ.
- Miniature Shielded Package

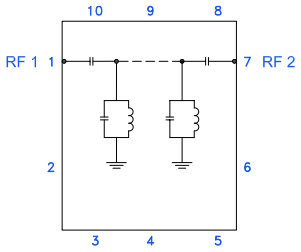


Generic photo used for illustration purposes only

APPLICATIONS

- Radionavigation

FUNCTIONAL DIAGRAM



PRODUCT OVERVIEW

All our coaxial-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 control.

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

Parameter		F#	Frequency (MHz)	Min.	Typ.	Max.	Units
Passband	Center Frequency	—	—	—	1350	—	MHz
	Insertion Loss	F1-F2	1300 - 1400	—	1.2	1.6	dB
	Return Loss	F1-F2	1300 - 1400	12	15	—	dB
Stopband, Lower	Rejection	DC-F3	DC - 900	60	70	—	dB
		F3-F4	900 - 1180	20	30	—	
Stopband, Upper	Rejection	F5-F6	1540 - 1720	20	30	—	dB
		F6-F7	1720 - 2300	45	55	—	

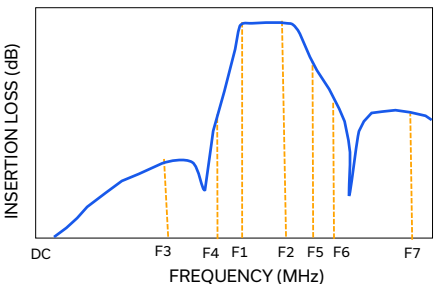
1. Tested in Evaluation Board P/N TB-CBP2-1350CR+.
2. This component should not be used as a DC-block. In applications where DC voltage and/or current is present at either the input or output ports, external DC blocking capacitors are required.

ABSOLUTE MAXIMUM RATINGS[3]

Operating Temperature	-40°C to +85°C
Storage Temperature	-55°C to +100°C
Input Power[4]	10 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 2 W at +85°C.

TYPICAL FREQUENCY RESPONSE



REV. OR
ECO-030814
EDU5258
CBP2-1350CR+
MCINU
260831

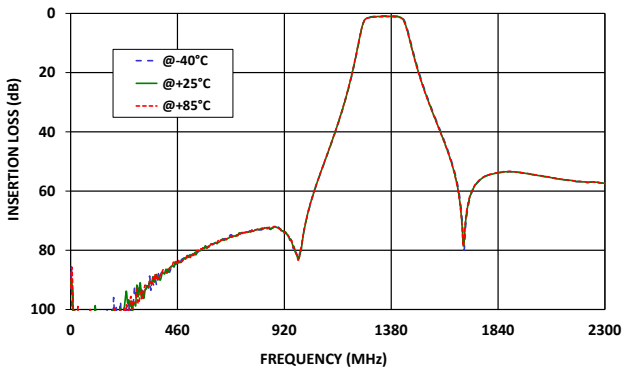
Band Pass Filter

CBP2-1350CR+

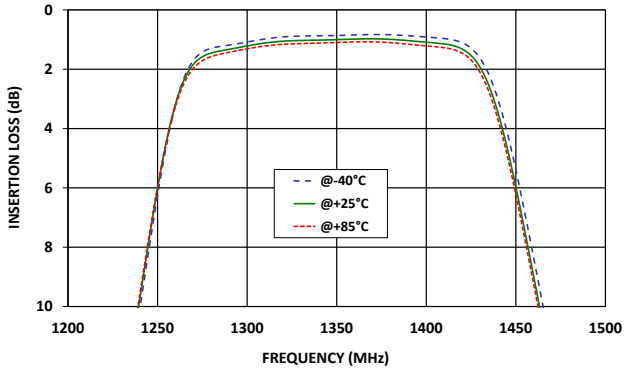
50Ω 1300 to 1400 MHz

TYPICAL PERFORMANCE GRAPHS

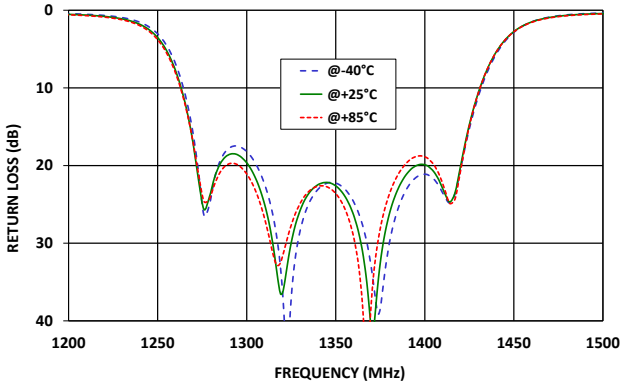
CBP2-1350CR+
INSERTION LOSS



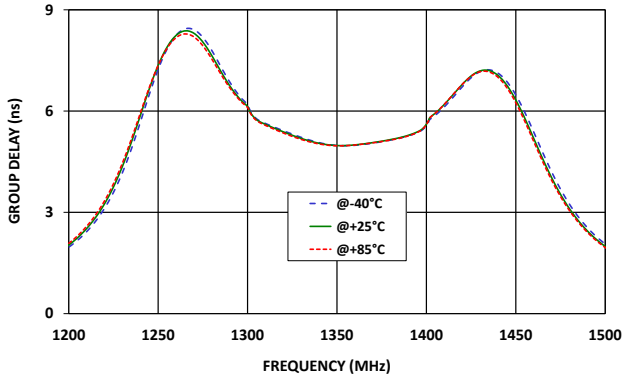
CBP2-1350CR+
INSERTION LOSS (Zoomed)



CBP2-1350CR+
RETURN LOSS (Zoomed)



CBP2-1350CR+
GROUP DELAY



CERAMIC RESONATOR SURFACE MOUNT

Band Pass Filter

CBP2-1350CR+

50Ω 1300 to 1400 MHz

FUNCTIONAL DIAGRAM

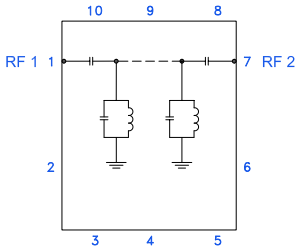


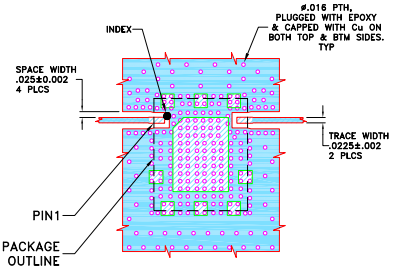
Figure 1. CBP2-1350CR+ Functional Diagram

PAD DESCRIPTION

Function	Pad Number	Description
RF1	1	Connects to RF Input Port
RF2	7	Connects to RF Output Port
GROUND	2-6,8-10	Connects to Ground on PCB, (See drawing PL-875)

SUGGESTED PCB LAYOUT

SUGGESTED MOUNTING CONFIGURATION FOR BCE3840 CASE STYLE



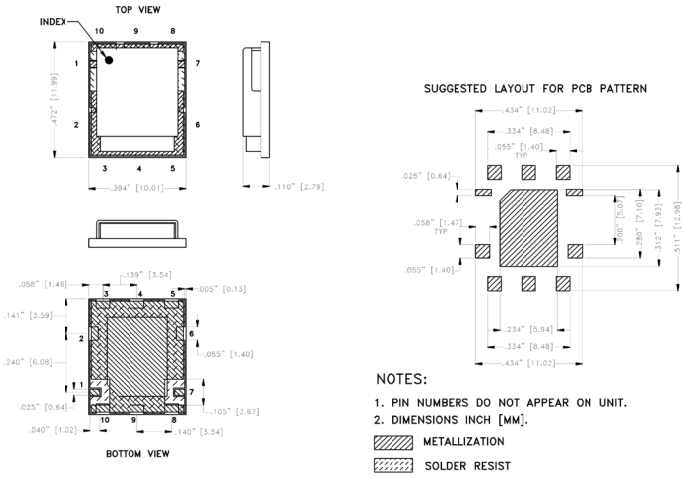
NOTES:
1. TRACE WIDTH IS SHOWN FOR ROGERS (RO4350B) WITH DIELECTRIC THICKNESS .010±.001. COPPER: 1/2 Oz. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

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

DENOTES COPPER LAND PATTERN FREE OF SOLDERMASK

Figure 2. Suggested PCB Layout

CASE STYLE DRAWING



Weight: 1 gram
Dimensions are in inches (mm). Tolerances: 2Pl. ± .03 [.76]; 3Pl. ± .015 [.38]

PRODUCT MARKING*: CBP2-1350CR

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

Band Pass Filter

CBP2-1350CR+

50Ω 1300 to 1400 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	BCE3840 Lead Finish: Gold over Nickel Plate
RoHS/REACH Status	Compliant
Tape and Reel	F10-1
Suggested Layout for PCB Design	PL-875
Evaluation Board	TB-CBP2-1350CR+ Gerber File
Environmental Rating	ENV54
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 Bandpass Filter CBP2-1350CR+

Typical Performance Data

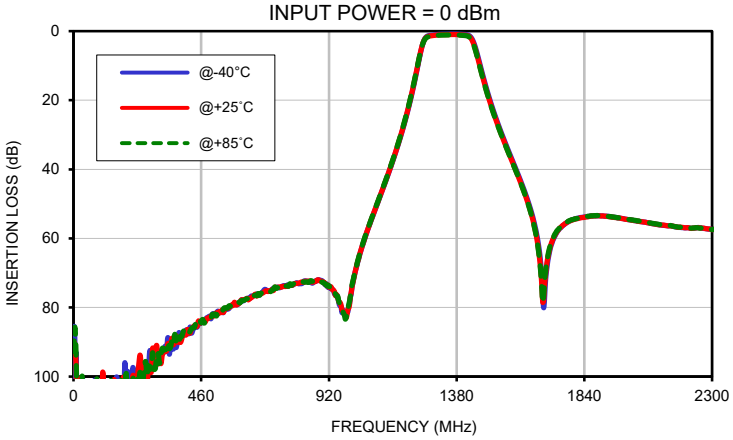
FREQ.	INSERTION LOSS			INPUT RETURN LOSS			OUTPUT RETURN LOSS		
(MHz)	(dB)			(dB)			(dB)		
	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C
5	90.13	91.03	85.69	0.06	0.06	0.06	0.05	0.05	0.05
15	100.15	106.31	107.04	0.05	0.05	0.05	0.05	0.05	0.05
55	106.36	103.71	101.79	0.05	0.05	0.05	0.04	0.04	0.04
105	108.63	98.80	105.98	0.04	0.04	0.04	0.04	0.04	0.04
205	100.13	104.10	102.13	0.03	0.04	0.04	0.02	0.04	0.04
255	109.58	98.90	97.20	0.03	0.04	0.05	0.02	0.04	0.05
305	95.81	96.29	93.13	0.03	0.04	0.05	0.02	0.04	0.05
355	91.36	88.88	89.35	0.03	0.05	0.05	0.02	0.04	0.05
400	87.13	87.75	86.45	0.03	0.05	0.06	0.03	0.05	0.05
500	81.93	82.11	81.96	0.04	0.06	0.07	0.03	0.05	0.07
600	78.40	78.35	78.65	0.05	0.08	0.09	0.04	0.07	0.08
655	76.22	76.12	76.42	0.06	0.09	0.11	0.05	0.08	0.10
705	75.27	75.14	75.35	0.07	0.10	0.12	0.06	0.10	0.11
900	72.62	72.71	72.74	0.12	0.16	0.18	0.11	0.14	0.17
1000	76.23	75.72	75.20	0.16	0.20	0.23	0.15	0.19	0.21
1180	30.04	29.80	29.61	0.35	0.42	0.47	0.34	0.41	0.46
1300	1.08	1.22	1.31	18.19	19.64	21.07	18.17	19.81	21.59
1310	0.98	1.12	1.22	22.38	24.95	26.79	22.39	25.55	28.81
1320	0.91	1.05	1.16	35.87	36.48	31.77	34.61	41.44	35.37
1330	0.88	1.03	1.13	28.40	25.77	24.88	27.66	25.49	24.65
1340	0.87	1.02	1.12	23.07	22.47	22.65	22.73	22.15	22.18
1350	0.86	1.00	1.10	22.26	22.63	23.61	22.01	22.24	22.87
1360	0.84	0.98	1.08	24.65	26.36	29.15	24.43	25.66	27.00
1370	0.83	0.97	1.08	33.21	41.15	37.51	33.12	35.07	30.83
1380	0.84	0.99	1.10	30.11	26.31	23.73	31.09	26.31	23.33
1390	0.87	1.04	1.16	22.94	21.04	19.61	23.36	21.18	19.52
1400	0.91	1.09	1.21	21.12	19.90	18.87	21.70	20.19	18.84
1441	3.21	3.67	3.91	5.30	5.05	5.06	5.43	5.13	5.07
1501	20.23	20.77	20.96	0.35	0.42	0.46	0.35	0.41	0.45
1540	29.23	29.71	29.83	0.23	0.29	0.32	0.22	0.28	0.31
1546	30.48	30.96	31.08	0.22	0.28	0.31	0.21	0.27	0.30
1600	41.23	41.71	41.81	0.19	0.25	0.28	0.18	0.23	0.26
1720	62.07	61.70	61.36	0.18	0.24	0.26	0.17	0.22	0.25
1750	57.25	57.15	57.04	0.19	0.24	0.27	0.17	0.23	0.25
1805	54.39	54.45	54.36	0.19	0.24	0.27	0.18	0.23	0.25
1810	54.25	54.33	54.29	0.19	0.25	0.27	0.18	0.23	0.26
1815	54.17	54.28	54.21	0.20	0.25	0.28	0.18	0.23	0.26
1820	54.06	54.18	54.07	0.20	0.25	0.28	0.18	0.23	0.26
1825	53.96	54.07	54.00	0.20	0.25	0.28	0.18	0.23	0.26
1830	53.92	53.99	53.91	0.19	0.25	0.27	0.18	0.23	0.25
1835	53.87	53.95	53.84	0.19	0.25	0.27	0.18	0.23	0.25
1840	53.82	53.91	53.80	0.19	0.24	0.27	0.18	0.23	0.25
1845	53.73	53.78	53.68	0.19	0.24	0.27	0.17	0.23	0.25
1850	53.68	53.77	53.59	0.18	0.24	0.26	0.17	0.23	0.25
1855	53.64	53.71	53.60	0.18	0.24	0.26	0.17	0.23	0.25
1860	53.57	53.61	53.52	0.18	0.24	0.26	0.17	0.23	0.25
1865	53.53	53.55	53.44	0.18	0.24	0.26	0.17	0.23	0.25
1870	53.48	53.52	53.46	0.18	0.23	0.26	0.17	0.22	0.25
1875	53.46	53.48	53.41	0.18	0.23	0.26	0.17	0.22	0.25
1880	53.47	53.49	53.40	0.18	0.23	0.26	0.17	0.22	0.25
1890	53.45	53.43	53.39	0.18	0.24	0.26	0.17	0.22	0.25
1895	53.43	53.48	53.39	0.18	0.24	0.27	0.17	0.23	0.25
1900	53.48	53.52	53.45	0.19	0.24	0.27	0.17	0.23	0.25
1950	53.89	53.96	53.88	0.18	0.24	0.27	0.17	0.23	0.26
2000	54.58	54.57	54.52	0.18	0.24	0.26	0.17	0.23	0.26
2050	55.23	55.20	55.14	0.17	0.24	0.27	0.16	0.22	0.25
2100	55.95	55.92	55.83	0.17	0.24	0.27	0.16	0.23	0.26
2150	56.32	56.37	56.26	0.17	0.24	0.27	0.16	0.23	0.26
2200	56.93	56.89	56.80	0.16	0.23	0.26	0.15	0.23	0.26
2300	57.41	57.46	57.46	0.16	0.24	0.27	0.15	0.23	0.26

Typical Performance Data

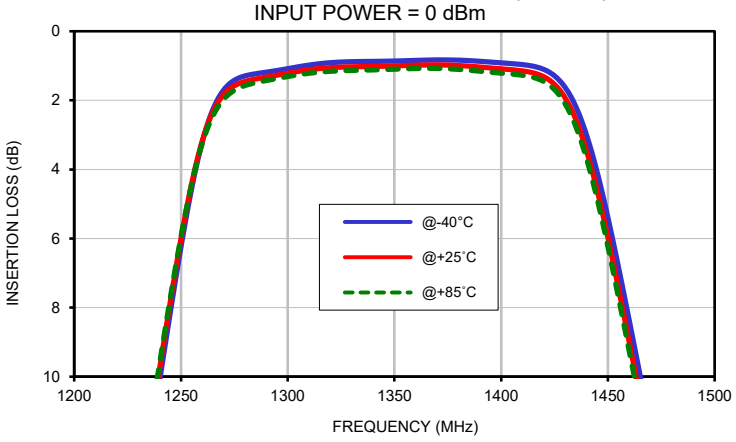
FREQ.	GROUP DELAY		
	(nsec)		
(MHz)	@-40°C	@+25°C	@+85°C
1300	6.19	6.14	6.11
1302	5.96	5.93	5.90
1304	5.82	5.79	5.77
1306	5.73	5.71	5.68
1308	5.68	5.65	5.63
1310	5.63	5.61	5.58
1312	5.59	5.56	5.53
1314	5.54	5.51	5.48
1316	5.50	5.47	5.44
1318	5.46	5.43	5.39
1320	5.42	5.38	5.35
1322	5.38	5.34	5.31
1324	5.34	5.30	5.27
1326	5.30	5.26	5.23
1328	5.26	5.23	5.20
1330	5.22	5.19	5.16
1332	5.19	5.16	5.13
1334	5.15	5.12	5.10
1336	5.12	5.10	5.07
1338	5.09	5.07	5.05
1340	5.06	5.05	5.03
1345	5.01	5.00	4.99
1350	4.98	4.98	4.97
1355	4.97	4.98	4.98
1360	4.99	5.00	5.00
1365	5.01	5.03	5.03
1370	5.05	5.07	5.06
1375	5.09	5.11	5.10
1380	5.14	5.16	5.14
1390	5.27	5.29	5.27
1400	5.57	5.61	5.60

Typical Performance Curves

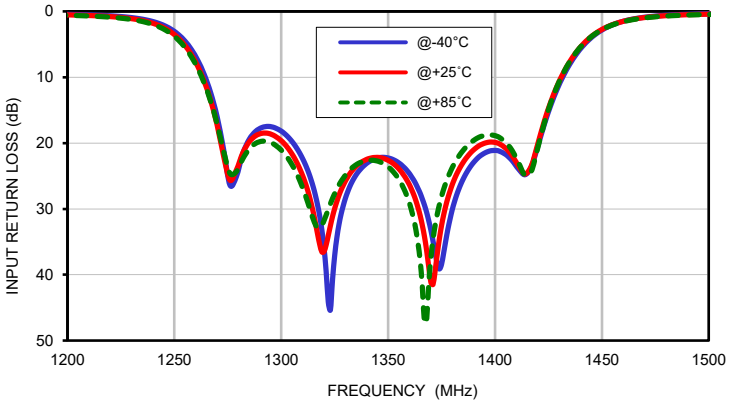
INSERTION LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



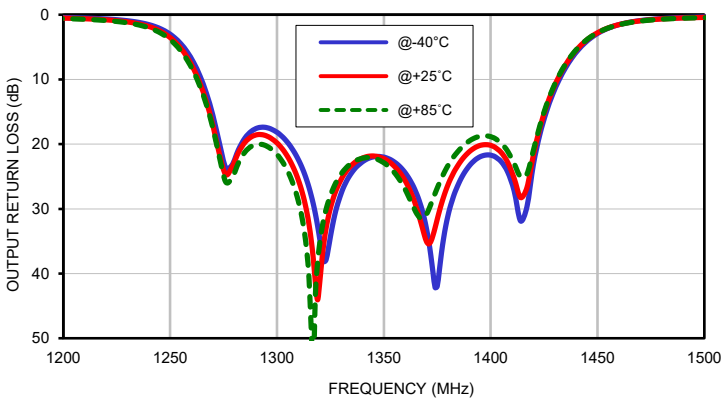
INSERTION LOSS vs. TEMPERATURE (Zoomed)
INPUT POWER = 0 dBm



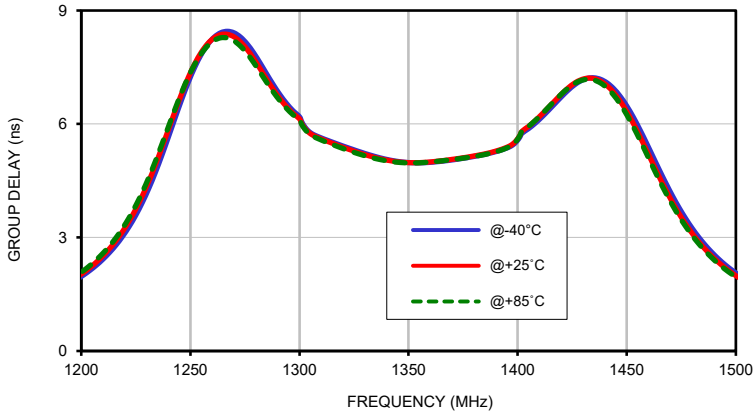
INPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



OUTPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



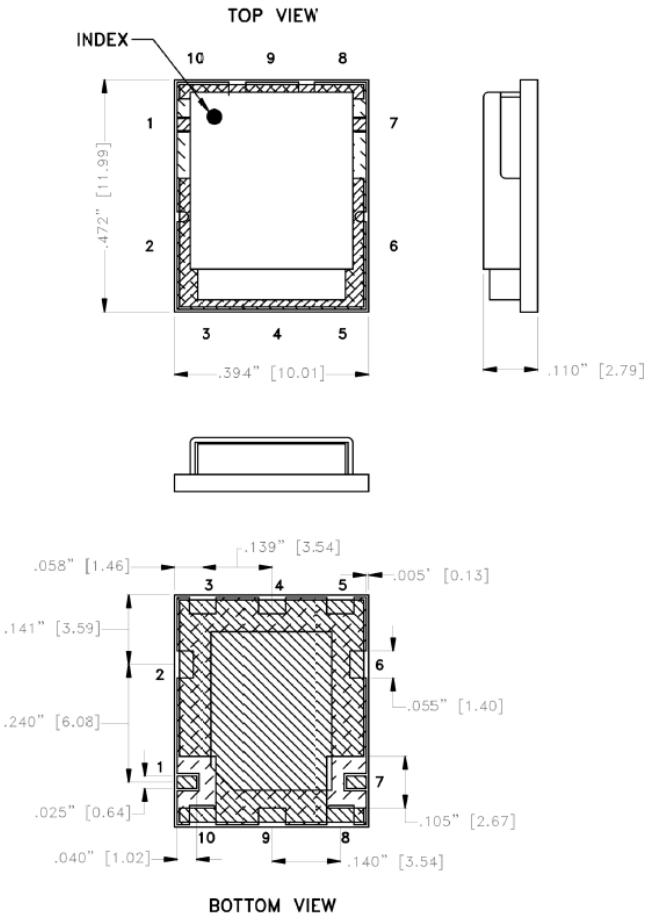
GROUP DELAY vs. TEMPERATURE
INPUT POWER = 0 dBm

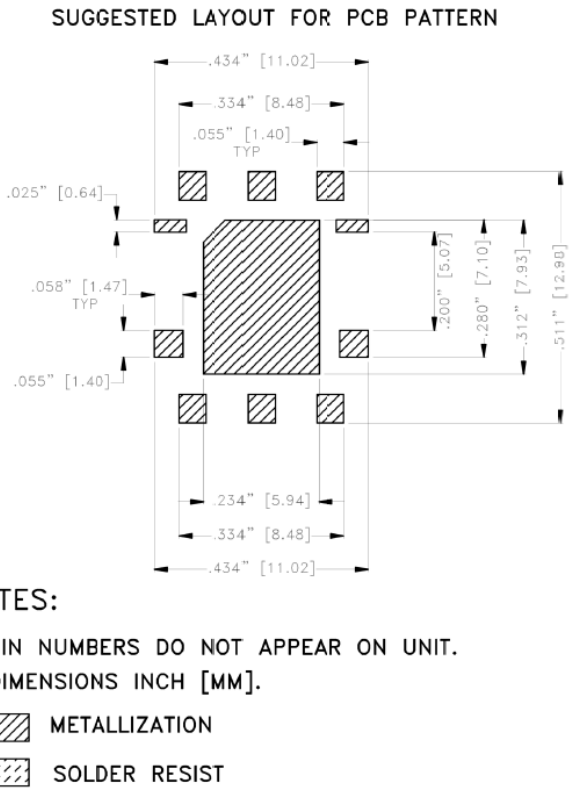


Case Style BCE

Outline Dimension

BCE3840





NOTES:

1. PIN NUMBERS DO NOT APPEAR ON UNIT.
2. DIMENSIONS INCH [MM].

METALLIZATION

SOLDER RESIST

Dimensions are in inches [mm]. Tolerances: 2 Pl ± .030 [.76]; 3 Pl ± .015[.38]

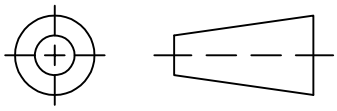
Notes:

1. Case material: Nickel-silver alloy.
2. Base: Printed wiring laminate.
3. Unit weight: 1g
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.

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RF/IF MICROWAVE COMPONENTS

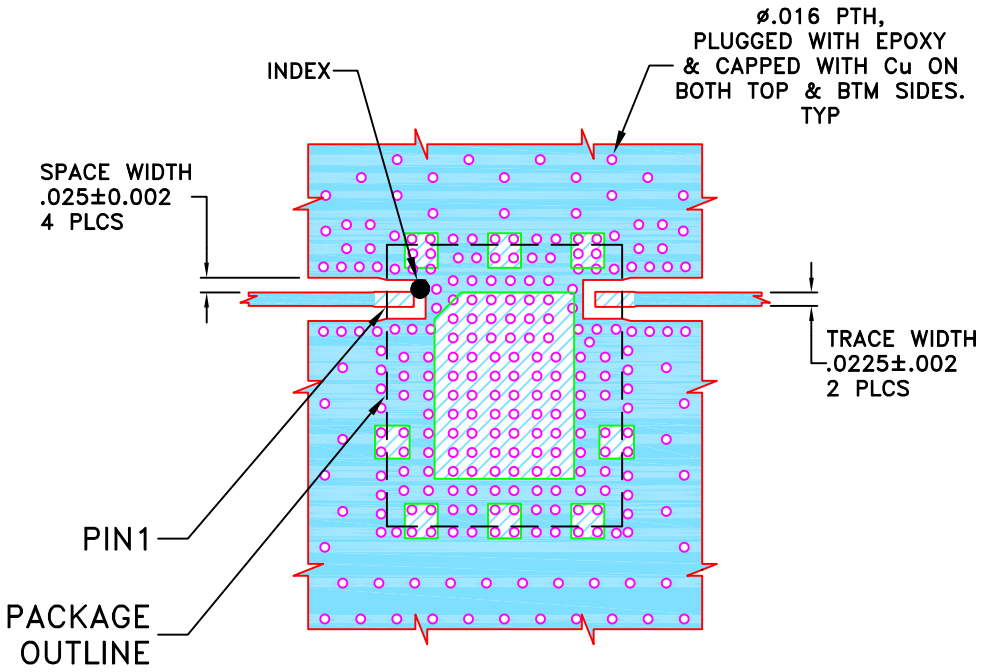
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THIRD ANGLE PROJECTION



REVISIONS					
REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	NPO-006345	NEW RELEASE	JUL 26	PS	VR

SUGGESTED MOUNTING CONFIGURATION FOR BCE3840 CASE STYLE



NOTES:

1. TRACE WIDTH IS 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 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	PS	07 JUL 26
TOLERANCES ON:	CHECKED	MD	07 JUL 26
2 PL DECIMALS ± .005	APPROVED	CSS	07 JUL 26
3 PL DECIMALS ±			
ANGLES ±			
FRACTIONS ±			

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

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13 Neptune Avenue
Brooklyn NY 11235

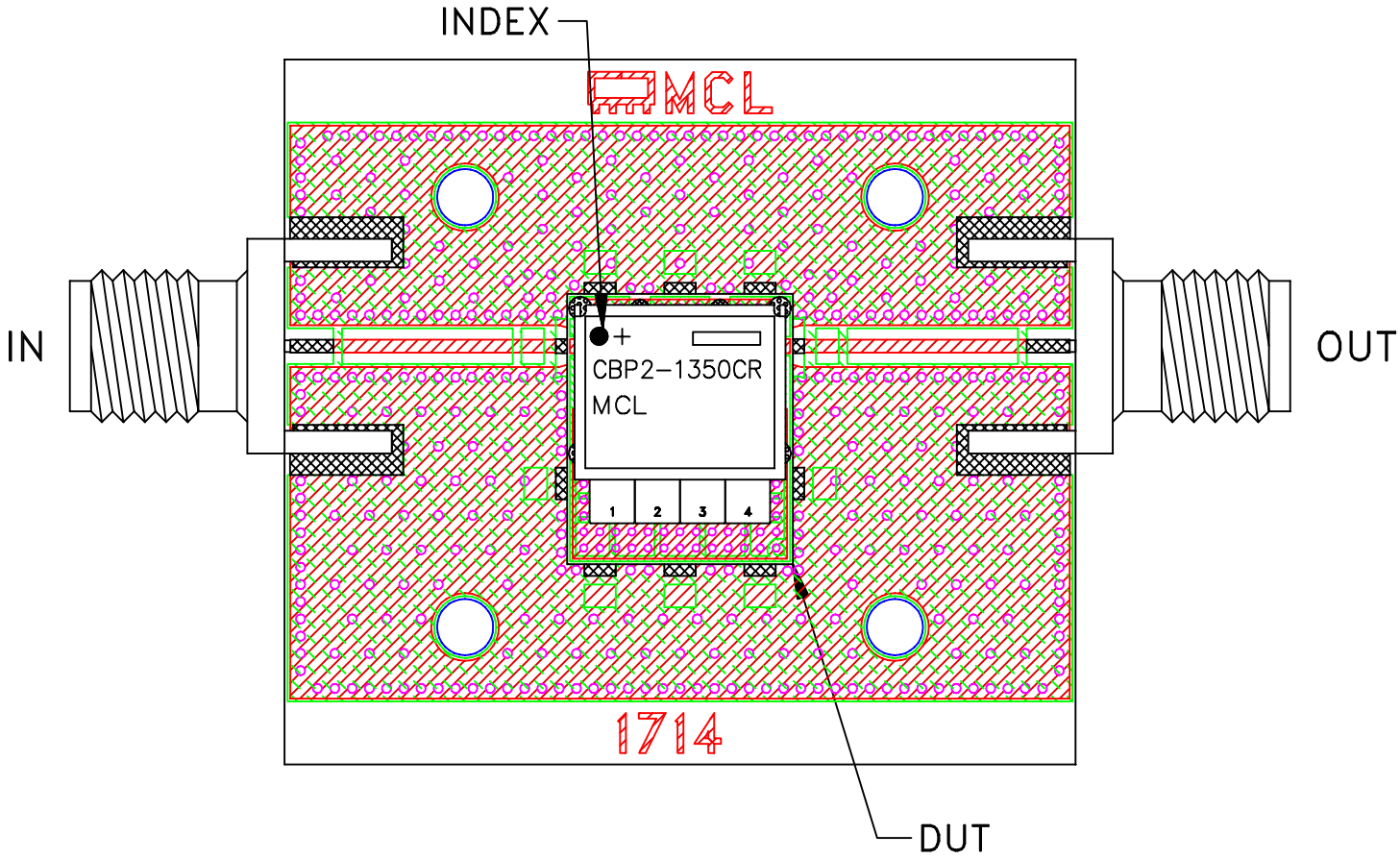
PL DWG, BCE3840, TB-1345

SIZE	CODE IDENT	DRAWING NO:	REV:
A	15542	98-PL-875	OR

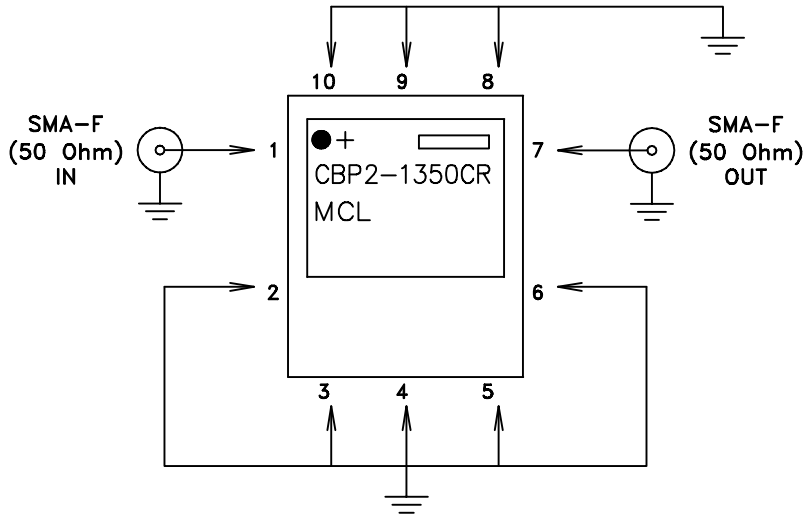
FILE:	SCALE:	SHEET:
98-PL-875	3:1	1 OF 1

Evaluation Board and Circuit

TB-CBP2-1350CR+



Schematic diagram



Notes:

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

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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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