



CERAMIC RESONATOR SURFACE MOUNT

Band Pass Filter

CBP2-2250CC+

50Ω

2000 to 2500 MHz

THE BIG DEAL

- Good Insertion Loss, 1.2 dB Typ.
- Excellent Rejection, 70 dB Typ.
- Good Return Loss, 16 dB Typ.
- Miniature Shielded Package

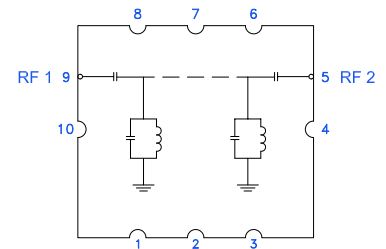


Generic photo used for illustration purposes only

APPLICATIONS

- Aerospace
- Defense and Government
- Test and Measurement

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	—	—	2250	—	MHz	
	Insertion Loss	F1-F2	2000 - 2500	—	1.2	1.7	dB
	Return Loss	F1-F2	2000 - 2500	10	16	—	dB
Stopband, Lower	Rejection	DC-F3	DC - 1000	60	70	—	dB
		F3-F4	1000 - 1800	20	25	—	dB
Stopband, Upper	Rejection	F5-F6	3000 - 3300	20	25	—	dB
		F6-F7	3300 - 4200	30	40	—	dB

1. Tested in Evaluation Board P/N TB-CBP2-2250CC+.

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.

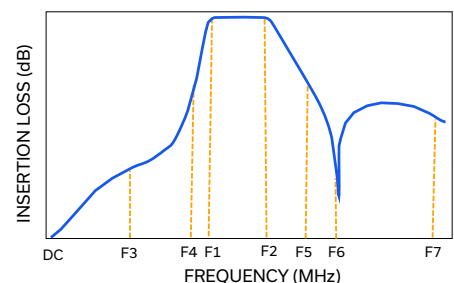
ABSOLUTE MAXIMUM RATINGS³

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.

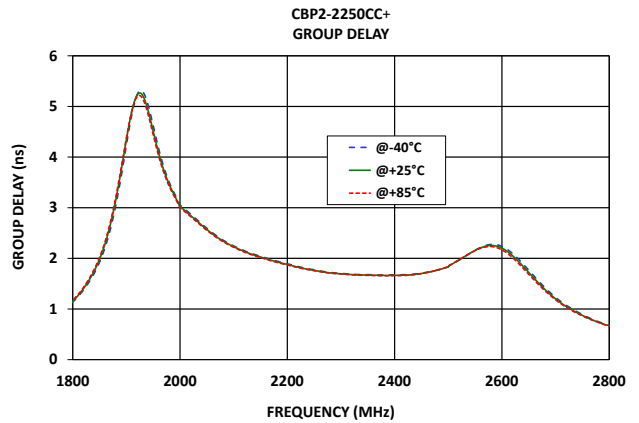
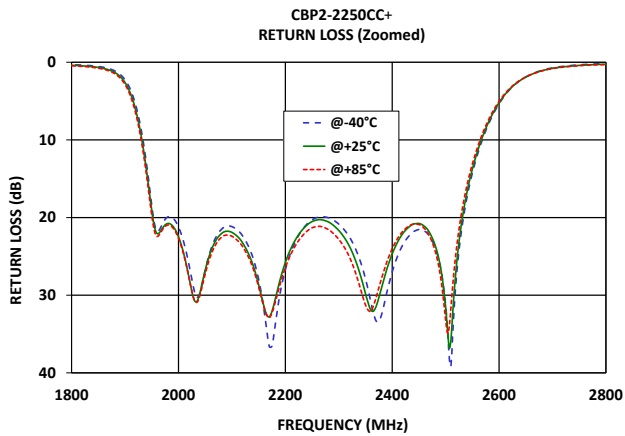
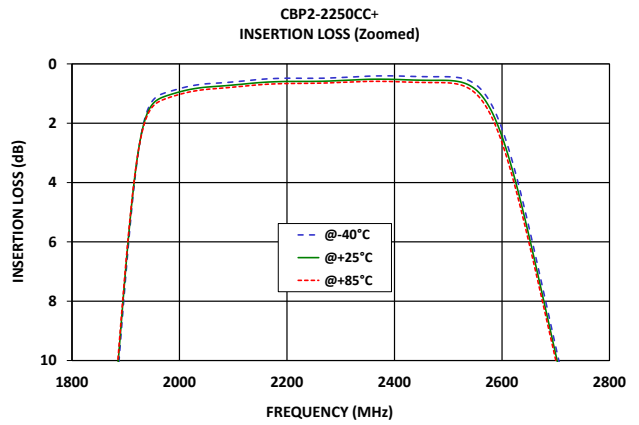
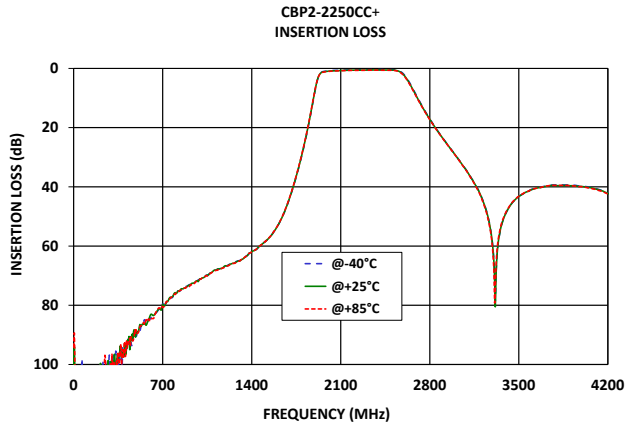
4. Power rating applies only to signals within the passband. Power rating above +25°C operating temperature decreases linearly to 1 W at +85°C.

TYPICAL FREQUENCY RESPONSE





TYPICAL PERFORMANCE GRAPHS





FUNCTIONAL DIAGRAM

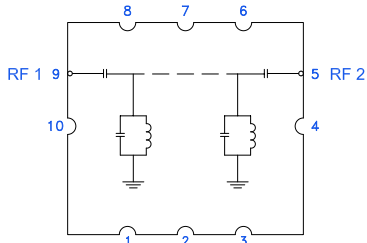


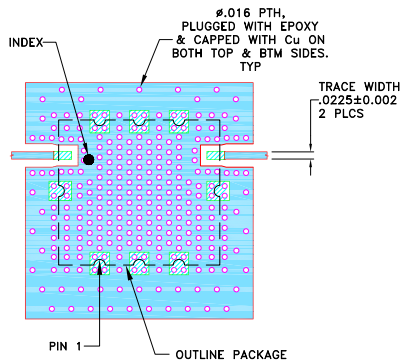
Figure 1. CBP2-2250CC+ Functional Diagram

PAD DESCRIPTION

Function	Pad Number	Description
RF1	9	Connects to RF Input Port
RF2	5	Connects to RF Output Port
GROUND	1-4, 6-8,10	Connects to Ground on PCB, (See drawing PL-794)

SUGGESTED PCB LAYOUT

SUGGESTED MOUNTING CONFIGURATION FOR CASE STYLE BAH350Z

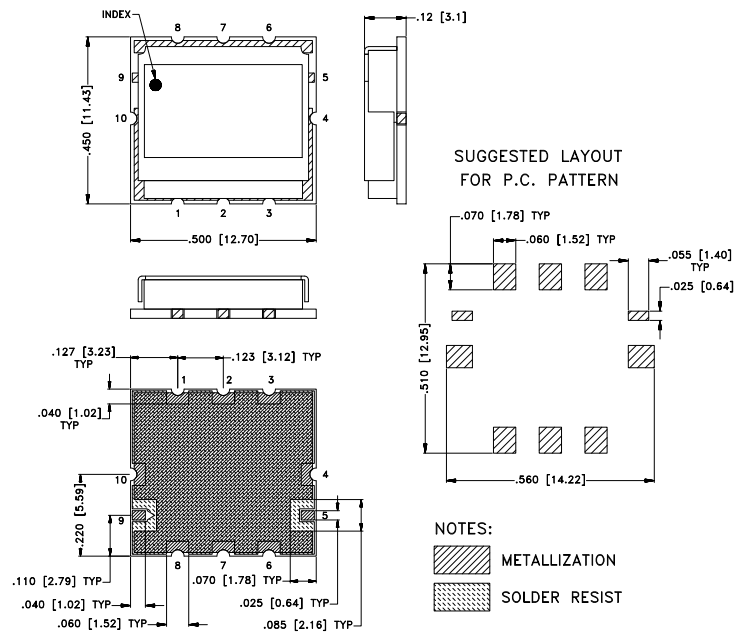


NOTES:

- TRACE WIDTH ARE SHOWN FOR ROGERS (R04350B) WITH DIELECTRIC THICKNESS .010±.001
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 PATTERN WITH SMOBC (SOLDER MASK OVER BARE COPPER)
 - DENOTES PCB COPPER PATTERN FREE OF SOLDERMASK

Figure 2. Suggested PCB Layout

CASE STYLE DRAWING



Weight: 1 gram

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

PRODUCT MARKING*: CBP2-2250CC

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



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	BAH3507 Lead Finish: Gold over Nickel Plate
RoHS/REACH Status	Compliant
Tape and Reel	F014
Suggested Layout for PCB Design	PL-794
Evaluation Board	TB-CBP2-2250CC+ 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

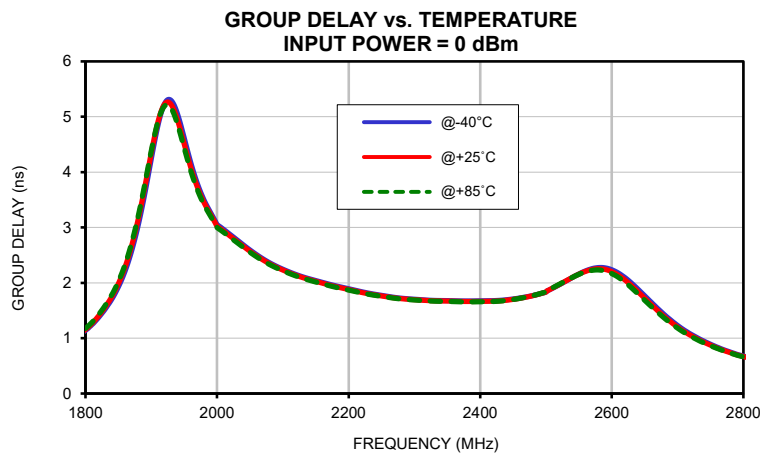
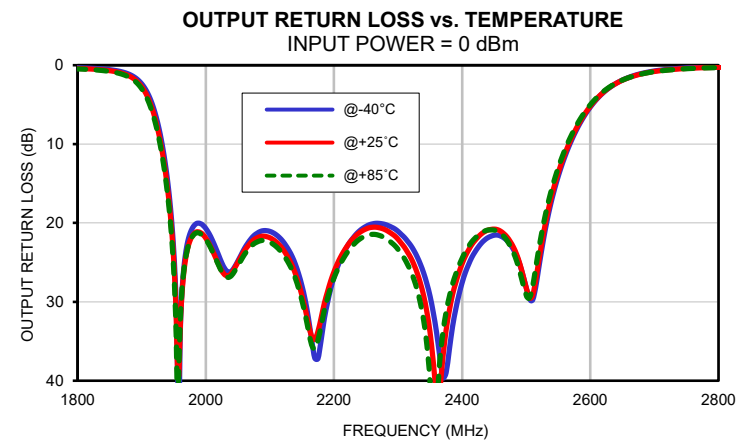
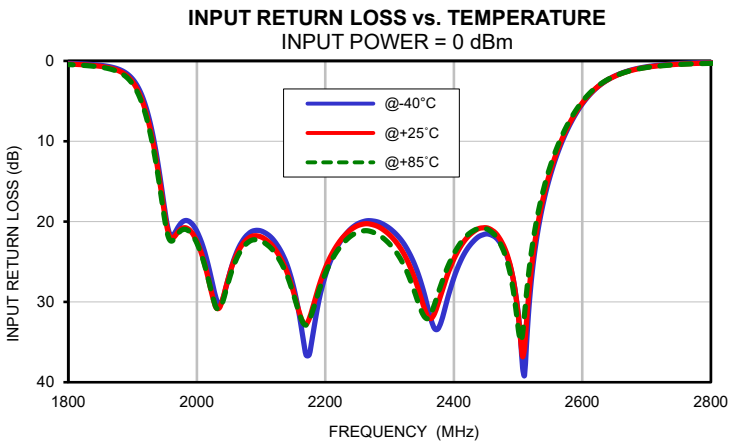
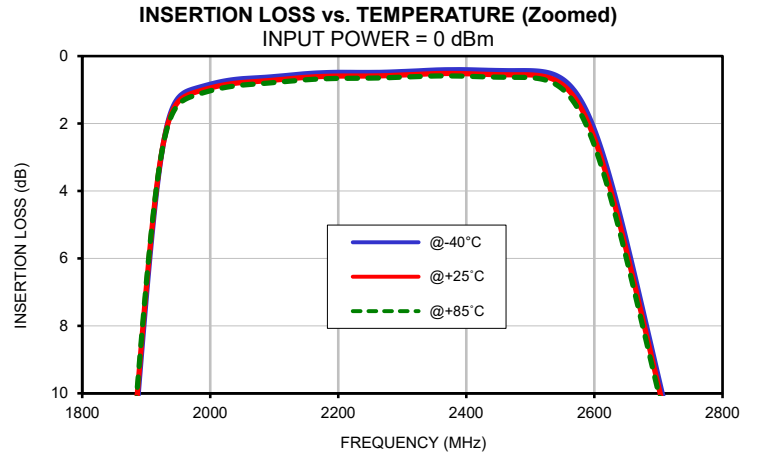
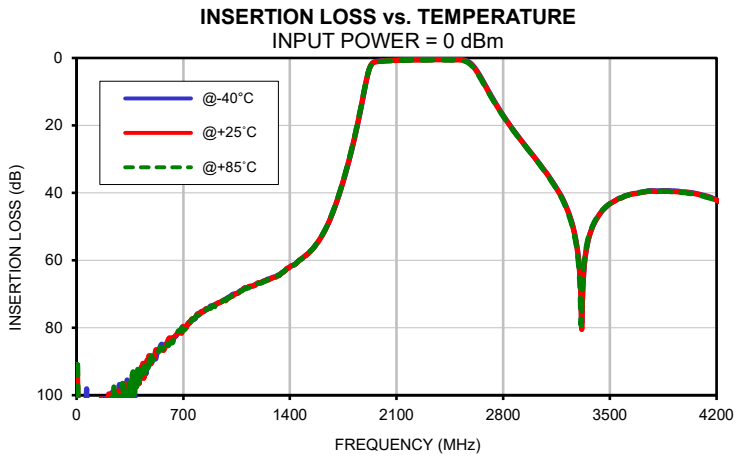
Typical Performance Data

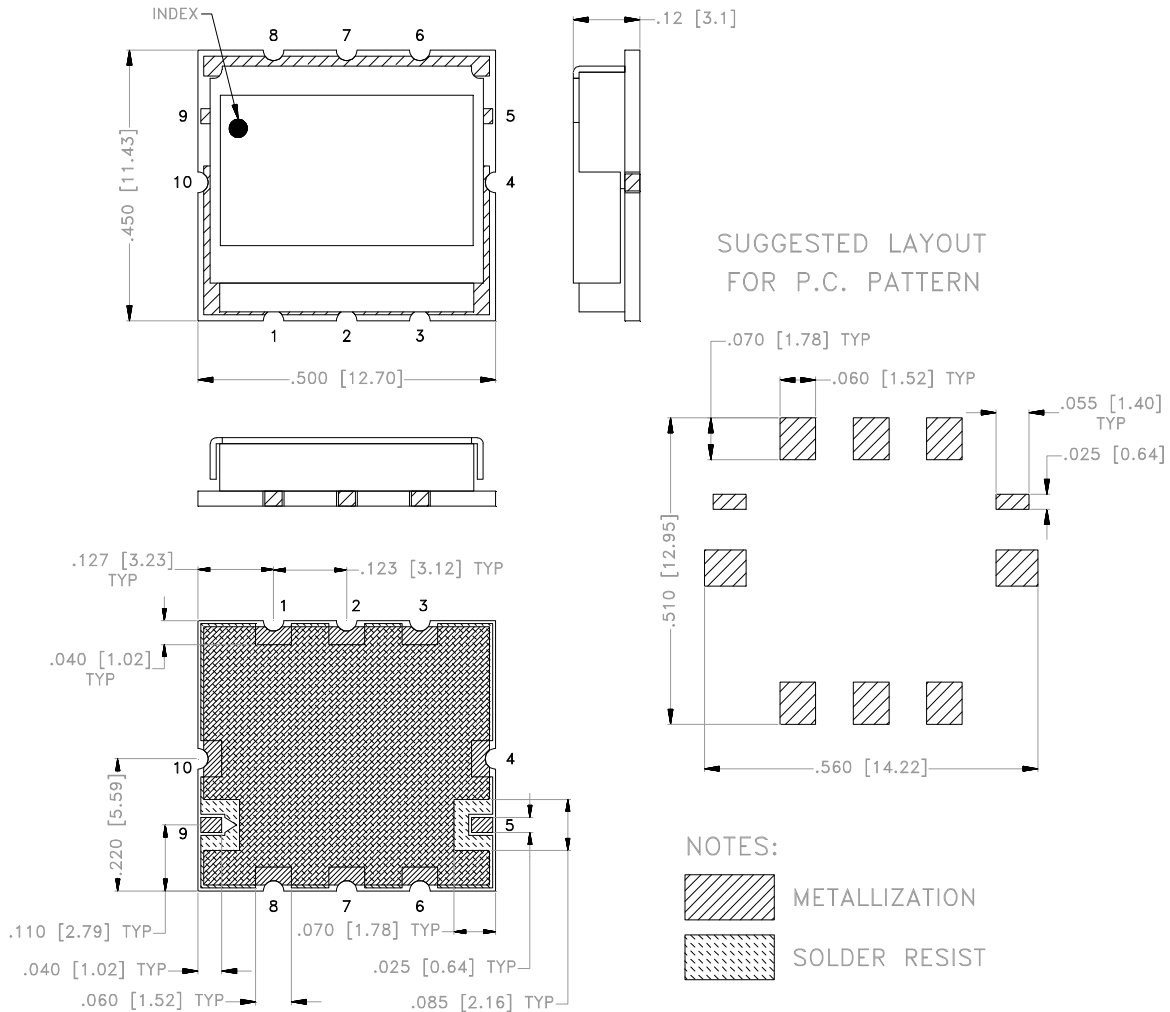
FREQ. (MHz)	INSERTION LOSS			INPUT RETURN LOSS			OUTPUT RETURN LOSS		
	(dB)			(dB)			(dB)		
	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C
1	97.86	102.38	94.11	0.05	0.05	0.05	0.05	0.05	0.05
6	108.15	94.06	89.85	0.05	0.05	0.05	0.05	0.05	0.05
56	116.06	105.00	104.50	0.04	0.04	0.04	0.04	0.04	0.04
101	110.06	104.07	104.86	0.03	0.03	0.03	0.03	0.03	0.03
201	110.42	107.21	106.14	0.01	0.02	0.03	0.01	0.02	0.03
236	107.68	101.41	107.96	0.01	0.02	0.03	0.01	0.02	0.03
301	101.76	110.28	96.49	0.00	0.02	0.03	0.00	0.02	0.03
356	97.01	96.21	99.96	0.00	0.02	0.03	0.00	0.02	0.03
401	94.55	92.84	92.39	0.00	0.02	0.03	0.00	0.02	0.03
456	93.66	91.89	90.94	0.01	0.01	0.02	0.00	0.02	0.03
486	88.60	90.78	89.68	0.00	0.02	0.03	0.00	0.02	0.03
491	90.45	89.77	88.27	0.00	0.02	0.03	0.00	0.02	0.03
500	88.81	89.39	89.54	0.00	0.02	0.03	0.00	0.02	0.03
550	85.50	86.42	85.78	0.00	0.02	0.03	0.00	0.02	0.03
600	84.73	83.66	85.35	0.01	0.02	0.03	0.01	0.02	0.03
650	82.50	82.30	82.11	0.00	0.03	0.04	0.00	0.03	0.04
800	76.04	75.75	76.32	0.00	0.04	0.05	0.00	0.04	0.05
850	74.34	74.40	74.79	0.00	0.04	0.05	0.01	0.04	0.06
900	73.31	73.38	73.53	0.00	0.04	0.05	0.01	0.04	0.06
950	72.25	72.32	72.63	0.02	0.05	0.07	0.02	0.05	0.07
1000	70.87	71.17	71.12	0.02	0.06	0.07	0.02	0.06	0.08
1050	69.80	69.82	70.11	0.02	0.06	0.08	0.03	0.06	0.08
1100	68.27	68.31	68.57	0.03	0.07	0.09	0.04	0.07	0.09
1200	66.70	66.66	66.81	0.05	0.08	0.10	0.05	0.09	0.11
1300	64.94	65.02	65.13	0.06	0.10	0.12	0.07	0.10	0.12
1400	61.96	61.94	61.99	0.08	0.12	0.14	0.09	0.13	0.15
1788	30.44	30.24	30.01	0.28	0.36	0.42	0.30	0.38	0.43
1800	28.33	28.11	27.88	0.31	0.39	0.45	0.32	0.41	0.47
1838	21.04	20.75	20.51	0.46	0.56	0.65	0.47	0.59	0.67
1882	11.29	10.96	10.76	1.15	1.37	1.53	1.21	1.43	1.59
1920	3.44	3.36	3.34	5.52	6.16	6.59	5.83	6.50	6.93
2000	0.83	0.94	1.03	21.19	22.45	22.66	20.70	21.93	22.08
2050	0.67	0.78	0.86	26.82	26.81	27.29	24.84	24.99	25.42
2100	0.61	0.71	0.78	21.17	21.91	22.41	21.07	21.88	22.45
2150	0.52	0.63	0.70	27.94	28.64	28.93	27.96	29.20	29.84
2200	0.48	0.59	0.66	26.73	25.80	26.47	26.86	26.19	26.98
2250	0.49	0.59	0.65	20.30	20.52	21.33	20.43	20.76	21.62
2300	0.46	0.56	0.62	20.84	21.66	22.80	21.07	22.07	23.35
2350	0.42	0.52	0.59	27.89	29.79	31.25	29.31	33.93	40.40
2400	0.41	0.52	0.60	27.01	24.68	24.02	27.56	25.16	24.47
2450	0.43	0.55	0.62	21.54	20.76	20.89	21.55	20.78	20.91
2500	0.43	0.56	0.64	31.28	31.51	33.19	28.21	28.24	29.16
2600	2.19	2.44	2.66	5.35	5.22	5.04	5.31	5.19	5.01
2615	3.02	3.30	3.53	3.91	3.84	3.73	3.88	3.83	3.71
2735	12.31	12.53	12.69	0.42	0.49	0.53	0.43	0.50	0.53
2846	20.08	20.19	20.29	0.11	0.19	0.23	0.13	0.20	0.24
3000	29.16	29.23	29.31	0.06	0.15	0.21	0.08	0.16	0.21
3020	30.33	30.40	30.48	0.06	0.15	0.21	0.08	0.16	0.22
3050	32.12	32.19	32.28	0.06	0.15	0.21	0.08	0.16	0.22
3100	35.17	35.25	35.39	0.07	0.15	0.22	0.08	0.16	0.23
3200	42.74	42.86	43.16	0.07	0.16	0.24	0.08	0.17	0.25
3300	62.53	62.87	65.11	0.07	0.17	0.25	0.08	0.18	0.26
3400	48.74	48.76	48.43	0.09	0.19	0.28	0.08	0.19	0.28
3500	43.24	43.25	43.18	0.09	0.21	0.31	0.09	0.20	0.30
3600	40.87	40.96	40.92	0.09	0.21	0.32	0.08	0.20	0.30
3700	39.83	39.94	39.86	0.10	0.22	0.32	0.07	0.19	0.29
4000	39.74	39.91	39.99	0.10	0.22	0.30	0.05	0.17	0.25
4100	40.57	40.70	40.86	0.10	0.21	0.29	0.05	0.16	0.24
4150	41.16	41.28	41.47	0.09	0.20	0.27	0.04	0.15	0.23
4200	42.07	42.18	42.42	0.09	0.20	0.26	0.04	0.15	0.22

Typical Performance Data

FREQ. (MHz)	GROUP DELAY		
	(nsec)		
	@-40°C	@+25°C	@+85°C
2000	3.05	3.02	3.00
2005	3.01	2.98	2.96
2010	2.96	2.93	2.91
2015	2.92	2.89	2.87
2020	2.87	2.84	2.82
2025	2.83	2.80	2.78
2030	2.78	2.75	2.73
2035	2.73	2.71	2.69
2040	2.68	2.66	2.64
2045	2.64	2.61	2.60
2050	2.59	2.57	2.55
2100	2.25	2.23	2.22
2105	2.22	2.21	2.19
2110	2.20	2.18	2.17
2115	2.17	2.16	2.15
2220	1.84	1.83	1.82
2225	1.83	1.81	1.81
2230	1.81	1.80	1.79
2235	1.80	1.79	1.78
2240	1.79	1.78	1.77
2245	1.78	1.77	1.76
2250	1.77	1.76	1.76
2255	1.76	1.75	1.75
2260	1.75	1.74	1.74
2265	1.75	1.74	1.73
2300	1.70	1.70	1.69
2350	1.68	1.67	1.66
2380	1.67	1.66	1.66
2400	1.67	1.67	1.66
2450	1.71	1.70	1.70
2500	1.83	1.83	1.84

Typical Performance Curves





Dimensions are in inches [mm]. Tolerances: 2 Pl \pm .03; 3 Pl \pm .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.



ISO 9001 ISO 14001 CERTIFIED



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

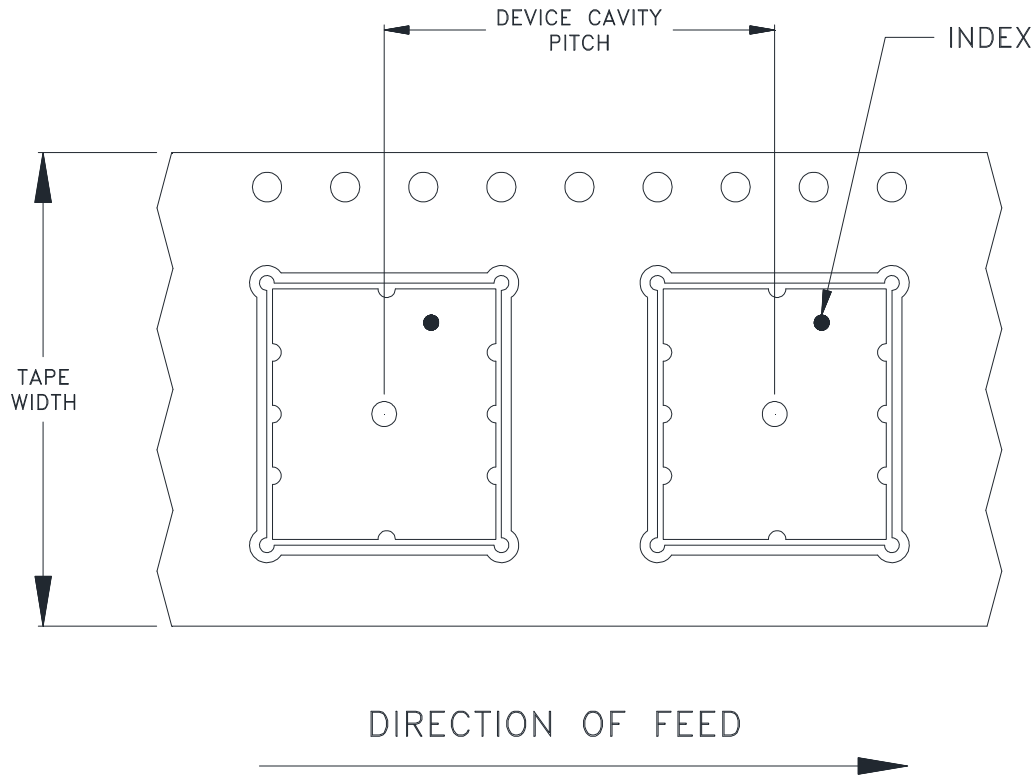


The Design Engineers Search Engine Provides ACTUAL Data Instantly From MINI-CIRCUITS At: www.minicircuits.com

RF/IF MICROWAVE COMPONENTS

Tape & Reel Packaging TR-F014

DEVICE ORIENTATION IN T&R



Tape Width, mm	Device Cavity Pitch, mm	Reel Size, inches	Devices per Reel See note	
24	20	13	Small quantity standards	10
				20
				50
				100
			Standard	400

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



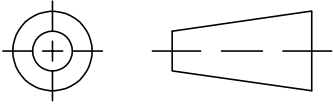
Distribution Centers NORTH AMERICA 800-654-7949 • 417-335-5935 • Fax 417-335-5945 • EUROPE 44-1252-832600 • Fax 44-1252-837010

Mini-Circuits ISO 9001 & ISO 14001 Certified

INTERNET <http://www.minicircuits.com>

P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661

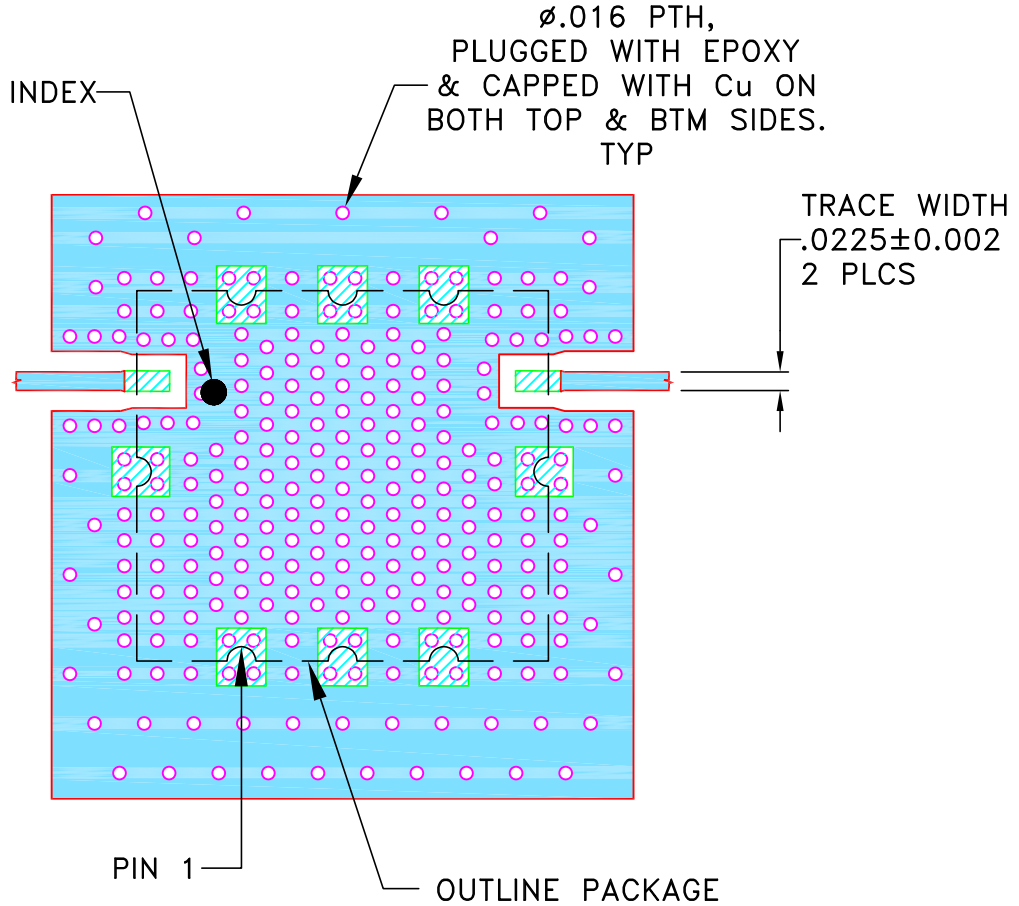
THIRD ANGLE PROJECTION



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:

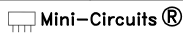
1. TRACE WIDTH ARE SHOWN FOR ROGERS (R04350B) WITH DIELECTRIC THICKNESS $.010 \pm .001$ COPPER: 1/2 Oz. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

-  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 ±		

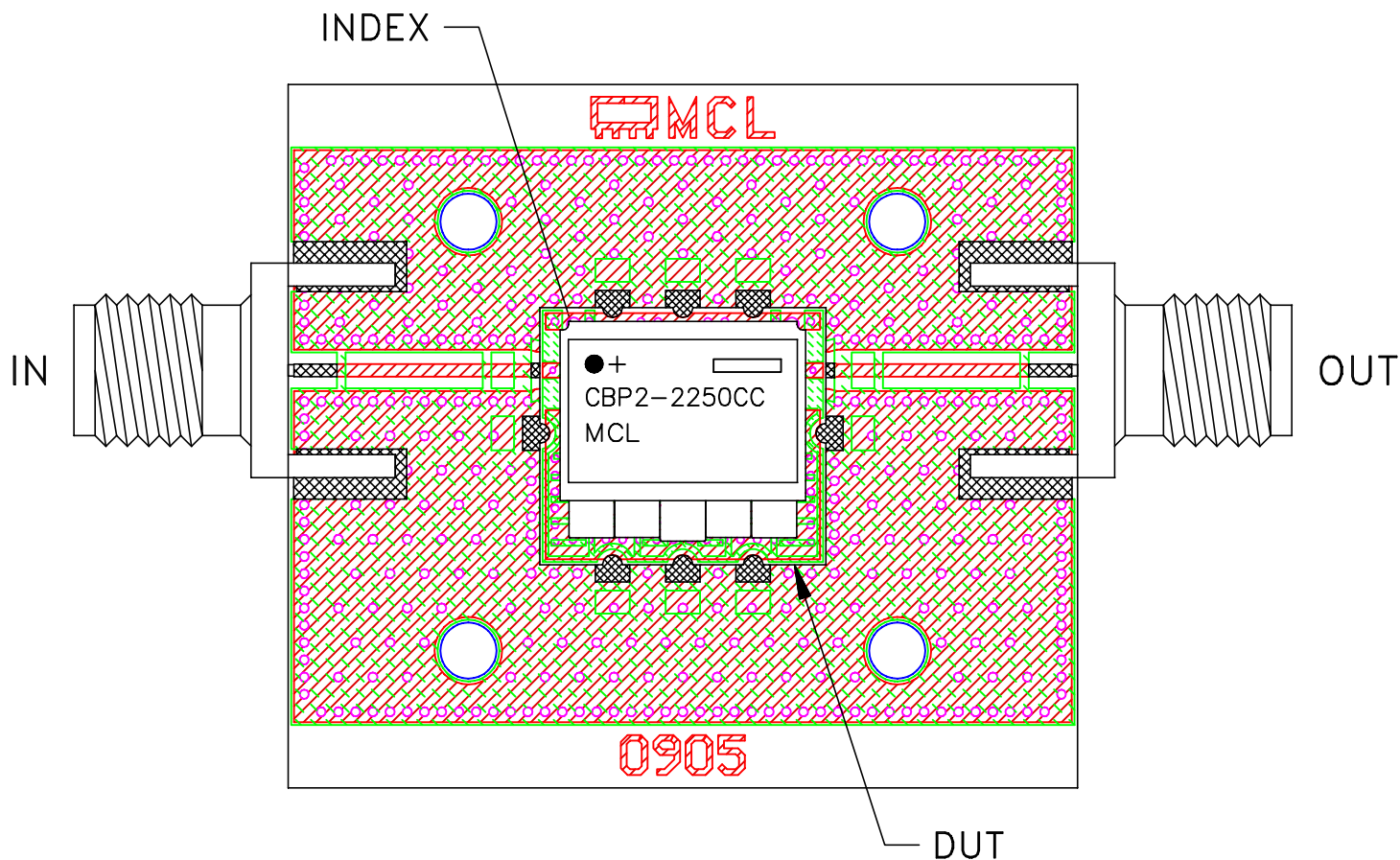
 **Mini-Circuits[®]** 13 Neptune Avenue
Brooklyn NY 11235

PL DWG, BAH3507, TB-1265

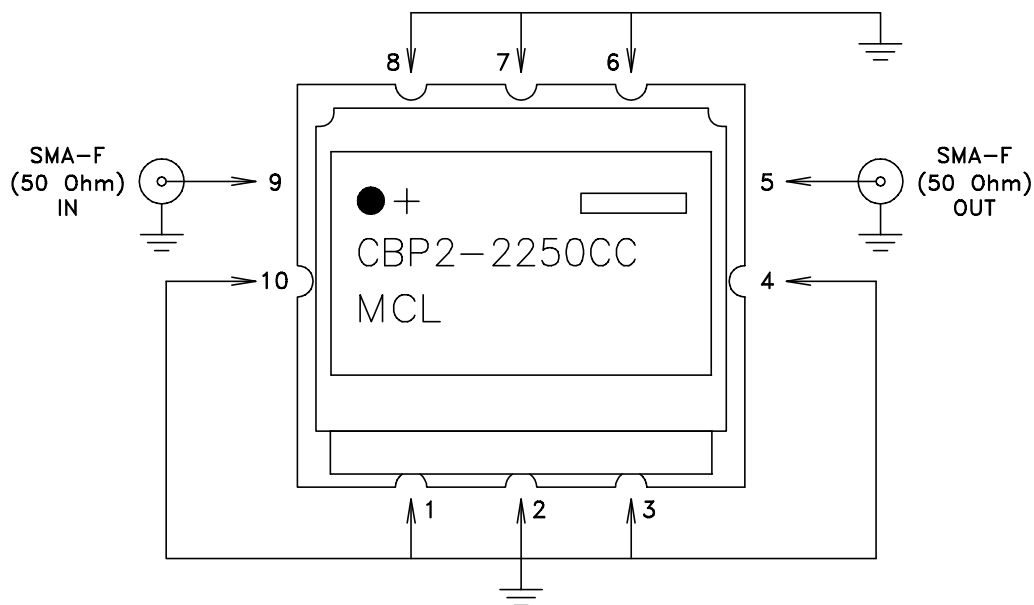
 Mini-Circuits [®] <small>THIS DOCUMENT AND ITS CONTENTS ARE THE PROPERTY OF MINI-CIRCUITS. EXCEPT FOR USE EXPRESSLY GRANTED, IN WRITING, TO ITS VENDORS, VENDEE AND THE UNITED STATES GOVERNMENT, MINI-CIRCUITS RESERVES ALL PROPRIETARY DESIGN, USE, MANUFACTURING AND REPRODUCTION RIGHTS THERETO. THESE CONTENTS SHALL NOT BE USED, DUPLICATED OR DISCLOSED TO ANY OUTSIDE PARTY, IN WHOLE OR IN PART, WITHOUT WRITTEN PERMISSION OF MINI-CIRCUITS.</small>		SIZE A	CODE IDENT 15542	DRAWING NO: 98-PL-794	REV: OR
ASHEETA1.DWG REV:A DATE:01/12/95		FILE: 98-PL-794	SCALE: 3.5:1	SHEET: 1 OF 1	

Evaluation Board and Circuit

TB-CBP2-2250CC+




Schematic diagram



Notes:

1. PCB Material: ROGERS (R04350B) OR Equivalent, Dielectric Constant=3.48
Thickness=.010 inch
2. 50 Ohm SMA Female Connector.

 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