CERAMIC RESONATOR SURFACE MOUNT

Band Pass Filter

CBP4-4625AG+

50Ω 4555 to 4695 MHz

THE BIG DEAL

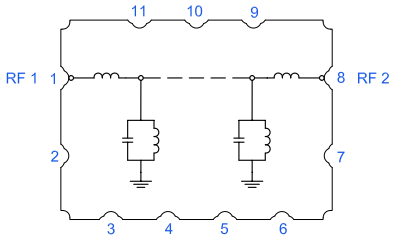
- Good Insertion Loss, 1.9 dB Typ.
- Excellent Rejection, 58 dB Typ.
- Good Return Loss, 18 dB Typ.
- Miniature Shielded Package

Generic photo used for illustration purposes only

APPLICATIONS

- Ship-Shore Communications
- Satellite Communications
- Mobile Telecommunications
- Radio Astronomy

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 tunning and process control.

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

Parameter		F#	Frequency (MHz)	Min.	Typ.	Max.	Units
Passband	Center Frequency	—	—	—	4625	—	MHz
	Insertion Loss	F1-F2	4555 - 4695	—	1.9	2.7	dB
	Return Loss	F1-F2	4555 - 4695	10	18	—	dB
Stopband, Lower	Rejection	DC-F3	DC - 3800	50	58	—	dB
		F3-F4	3800 - 4410	20	29	—	
Stopband, Upper	Rejection	F5-F6	4854 - 5300	20	29	—	dB
		F6-F7	5300 - 7000	33	45	—	

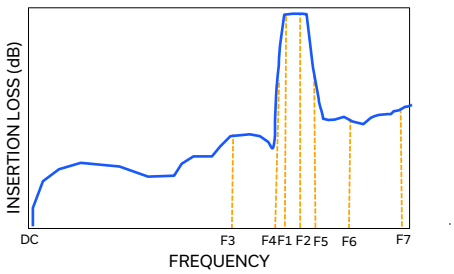
1. Tested in Evaluation Board P/N TB-CBP4-4625AG+.
2. This filter is bi-directional RF1 and RF2 ports may be interchanged, see S-Parameters for actual performance.
3. This component should not be used as a DC-block. In applications where DC voltage and/or current is present at either the input or output ports, external DC blocking capacitors are required.

ABSOLUTE MAXIMUM RATINGS[4]

Operating Temperature	-40°C to +85°C
Storage Temperature	-55°C to +100°C
Input Power[5]	5 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



REV. A
ECO-028461
EDU4840
CBP4-4625AG+
URJ
260206

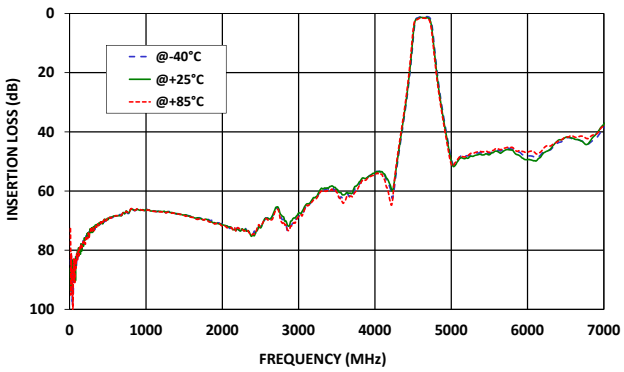
Band Pass Filter

CBP4-4625AG+

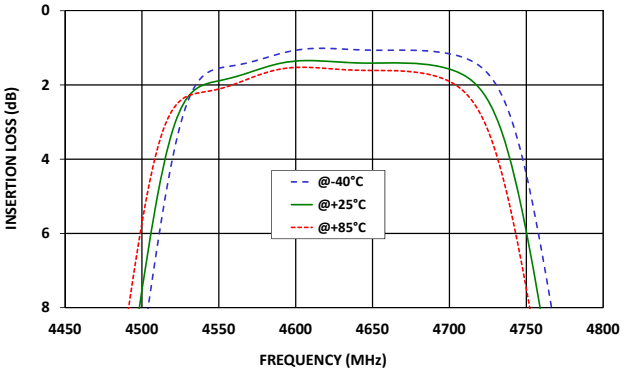
50Ω 4555 to 4695 MHz

TYPICAL PERFORMANCE GRAPHS

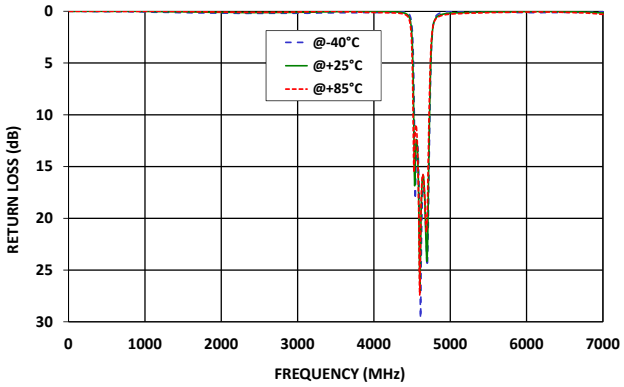
CBP4-4625AG+
INSERTION LOSS



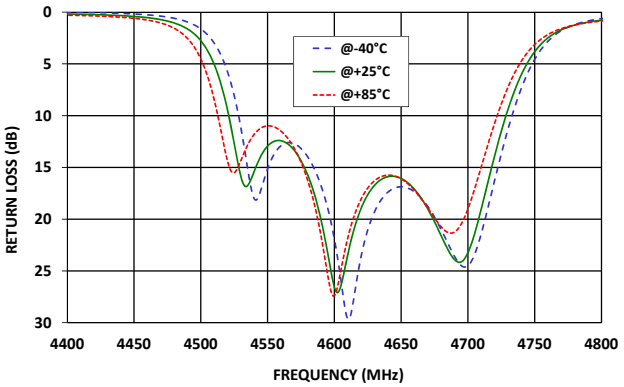
CBP4-4625AG+
INSERTION LOSS (Zoomed)



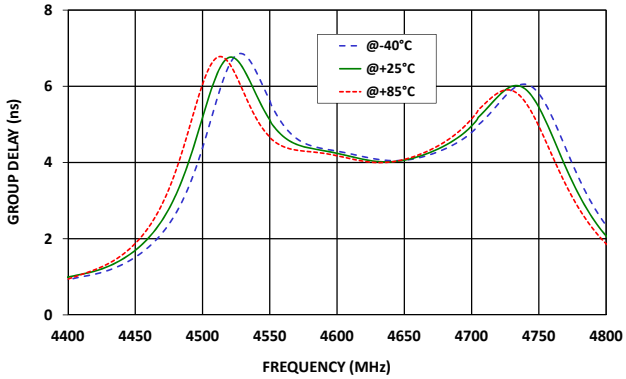
CBP4-4625AG+
RETURN LOSS



CBP4-4625AG+
RETURN LOSS (Zoomed)



CBP4-4625AG+
GROUP DELAY



CERAMIC RESONATOR SURFACE MOUNT

Band Pass Filter

CBP4-4625AG+

50Ω 4555 to 4695 MHz

FUNCTIONAL DIAGRAM

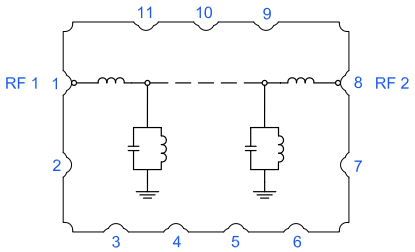


Figure 1. CBP4-4625AG+ Functional Diagram

PAD DESCRIPTION

Function	Pad Number	Description
RF1[2]	1	Connects to RF Input Port
RF2[2]	8	Connects to RF Output Port
GROUND	2-7,9,10,11	Connects to Ground on PCB, (See drawing PL-761)

SUGGESTED PCB LAYOUT

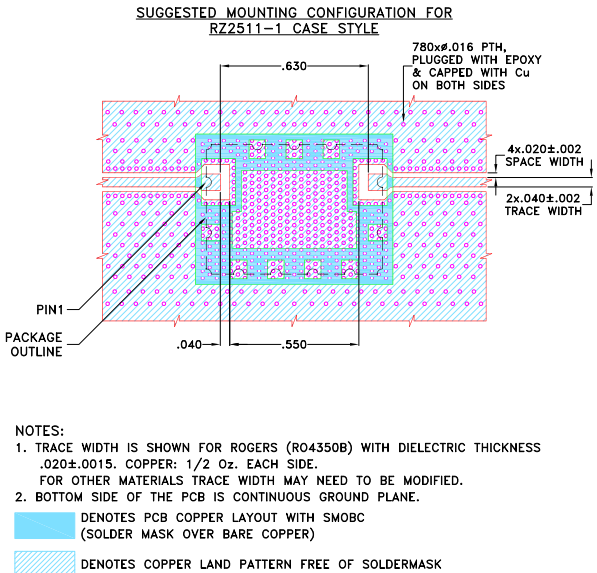
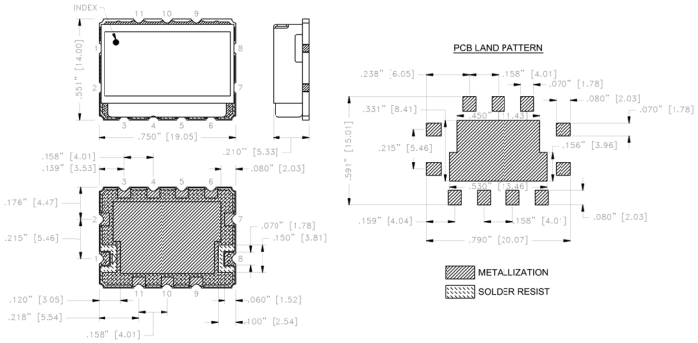


Figure 2. Suggested PCB Layout

CASE STYLE DRAWING



Weight: 2.4 gram
Dimensions are in inches (mm). Tolerances: 2Pl. ± .03; 3Pl. ± .015

PRODUCT MARKING*: CBP4-4625AG

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

Band Pass Filter

CBP4-4625AG+

50Ω 4555 to 4695 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	RZ2511-1 Lead Finish: Gold over Nickel Plate
RoHS/REACH Status	Compliant
Tape and Reel	F122
Suggested Layout for PCB Design	PL-761
Evaluation Board	TB-CBP4-4625AG+ 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 CBP4-4625AG+

Typical Performance Data

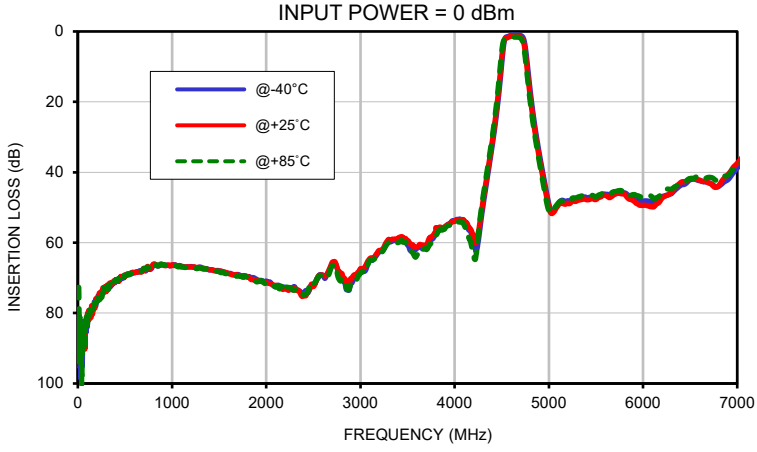
FREQ.	INSERTION LOSS			INPUT RETURN LOSS			OUTPUT RETURN LOSS		
(MHz)	(dB)			(dB)			(dB)		
	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C
10	83.34	86.10	72.69	0.00	0.00	0.00	0.00	0.01	0.01
21	81.70	90.07	81.08	0.00	0.01	0.01	0.00	0.01	0.01
26	95.66	84.77	88.66	0.00	0.01	0.01	0.00	0.01	0.01
31	93.31	83.23	90.37	0.00	0.01	0.01	0.00	0.01	0.01
101	83.95	80.35	83.67	0.01	0.01	0.01	0.00	0.01	0.02
201	76.30	76.54	77.68	0.02	0.00	0.00	0.01	0.00	0.01
211	75.57	76.29	75.83	0.02	0.01	0.00	0.01	0.00	0.00
306	72.94	73.78	72.45	0.03	0.01	0.00	0.03	0.01	0.00
500	69.45	69.70	69.57	0.04	0.01	0.01	0.03	0.00	0.01
600	68.59	68.51	68.33	0.04	0.01	0.01	0.04	0.00	0.01
700	67.36	67.27	67.33	0.04	0.00	0.02	0.03	0.00	0.02
1000	66.40	66.27	66.44	0.07	0.01	0.01	0.06	0.00	0.02
2000	70.89	71.41	71.81	0.18	0.11	0.08	0.19	0.12	0.08
3000	68.54	67.38	68.54	0.19	0.10	0.07	0.19	0.11	0.08
3510	60.75	59.52	60.78	0.15	0.04	0.02	0.15	0.04	0.03
3600	61.60	61.25	63.53	0.14	0.02	0.05	0.14	0.03	0.05
3800	56.12	55.74	56.28	0.13	0.01	0.10	0.12	0.01	0.10
3900	55.56	55.37	55.77	0.13	0.01	0.11	0.12	0.01	0.11
3600	61.60	61.25	63.53	0.14	0.02	0.05	0.14	0.03	0.05
4000	53.87	53.89	54.67	0.13	0.02	0.12	0.11	0.02	0.12
4100	53.91	53.68	54.88	0.11	0.03	0.13	0.10	0.04	0.14
4200	59.11	57.93	63.54	0.11	0.05	0.15	0.08	0.06	0.17
4300	49.79	48.45	47.30	0.09	0.07	0.18	0.07	0.08	0.19
4410	30.38	29.28	27.96	0.02	0.21	0.33	0.03	0.21	0.33
4430	26.49	25.30	23.85	0.08	0.28	0.42	0.09	0.28	0.43
4502	8.57	6.99	5.25	1.83	3.10	5.12	1.85	3.17	5.33
4511	6.07	4.79	3.58	3.19	5.37	9.00	3.23	5.53	9.54
4520	3.96	3.22	2.66	5.77	9.45	14.40	5.87	9.89	16.19
4555	1.51	1.84	2.05	13.72	12.48	11.10	14.02	12.61	11.13
4560	1.48	1.79	1.98	12.91	12.42	11.49	13.10	12.50	11.48
4566	1.43	1.71	1.89	12.60	12.82	12.34	12.72	12.87	12.28
4602	1.05	1.35	1.53	23.41	27.09	26.72	22.73	26.20	23.55
4625	1.02	1.38	1.57	20.84	17.53	16.91	20.17	17.28	16.48
4629	1.03	1.39	1.58	19.59	16.88	16.41	19.07	16.65	16.04
4680	1.07	1.43	1.67	21.02	21.61	20.74	20.49	21.17	20.39
4692	1.11	1.49	1.78	24.03	24.12	21.02	23.28	23.94	20.97
4695	1.13	1.52	1.82	24.49	24.13	20.47	23.74	24.14	20.52
4733	2.19	3.14	4.22	10.01	8.26	6.39	10.22	8.45	6.54
4735	2.36	3.38	4.53	9.19	7.57	5.87	9.39	7.74	6.01
4769	8.63	10.47	12.08	1.86	1.77	1.64	1.94	1.82	1.69
4771	9.13	10.98	12.58	1.71	1.65	1.55	1.78	1.70	1.60
4715	1.37	1.90	2.44	18.89	16.42	12.79	19.16	16.89	13.06
4775	10.14	11.98	13.56	1.45	1.45	1.39	1.52	1.49	1.44
4811	18.80	20.45	21.76	0.48	0.66	0.74	0.52	0.67	0.77
4854	27.36	28.74	29.88	0.22	0.40	0.51	0.24	0.41	0.52
5000	48.94	49.76	50.90	0.01	0.18	0.27	0.01	0.18	0.28
5105	48.82	49.20	48.59	0.02	0.15	0.23	0.02	0.15	0.24
5300	47.51	48.11	47.16	0.06	0.10	0.17	0.07	0.08	0.17
5405	47.28	47.82	46.78	0.07	0.08	0.16	0.07	0.08	0.16
5600	46.24	46.57	45.66	0.09	0.06	0.12	0.10	0.05	0.12
5660	46.30	47.01	45.94	0.09	0.05	0.11	0.09	0.06	0.12
5705	45.57	46.23	45.49	0.09	0.05	0.11	0.09	0.06	0.12
5810	45.89	46.37	45.40	0.11	0.04	0.09	0.10	0.05	0.10
5900	46.95	48.13	46.33	0.12	0.03	0.08	0.11	0.03	0.10
6005	48.17	49.39	46.86	0.13	0.03	0.08	0.11	0.04	0.10
6110	48.86	49.88	47.40	0.13	0.02	0.07	0.11	0.04	0.10
6200	46.98	47.43	45.97	0.13	0.02	0.07	0.10	0.05	0.12
6500	42.14	41.86	41.77	0.11	0.05	0.10	0.04	0.13	0.21
6600	42.40	42.19	41.53	0.11	0.06	0.13	0.01	0.17	0.26
7000	38.75	37.46	38.04	0.02	0.17	0.29	0.31	0.60	0.81

Typical Performance Data

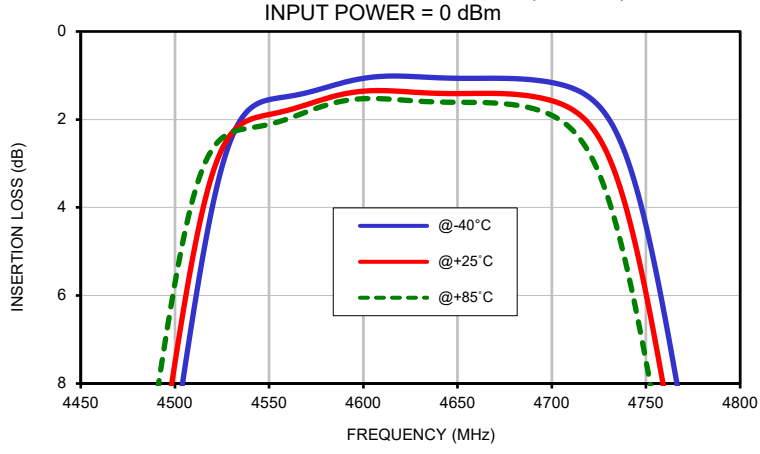
FREQ.	GROUP DELAY		
	(nsec)		
(MHz)	@-40°C	@+25°C	@+85°C
4555	5.26	4.86	4.51
4557	5.14	4.78	4.47
4560	4.99	4.68	4.42
4563	4.86	4.60	4.38
4566	4.75	4.54	4.35
4569	4.65	4.49	4.33
4572	4.58	4.45	4.31
4575	4.52	4.42	4.30
4578	4.47	4.39	4.29
4581	4.44	4.37	4.28
4584	4.41	4.35	4.27
4587	4.38	4.33	4.26
4590	4.36	4.31	4.24
4593	4.34	4.29	4.22
4596	4.32	4.27	4.21
4599	4.30	4.25	4.18
4602	4.28	4.23	4.16
4605	4.26	4.20	4.14
4608	4.24	4.18	4.11
4611	4.22	4.15	4.09
4614	4.20	4.12	4.07
4617	4.17	4.10	4.05
4620	4.15	4.08	4.03
4625	4.11	4.05	4.01
4626	4.11	4.04	4.01
4629	4.09	4.03	4.00
4632	4.07	4.02	4.00
4635	4.06	4.02	4.00
4695	4.65	4.79	4.96

Typical Performance Curves

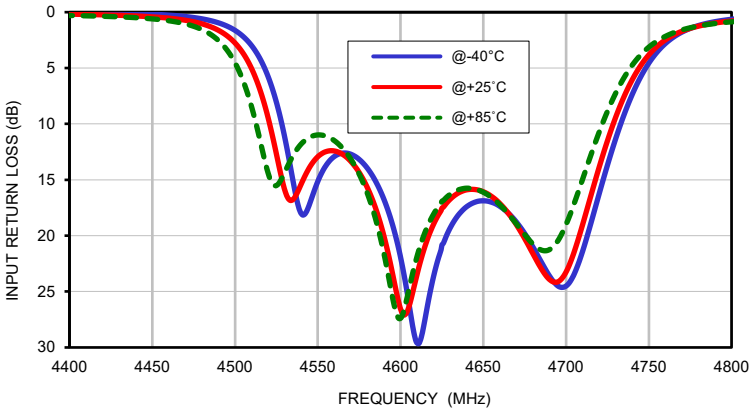
INSERTION LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



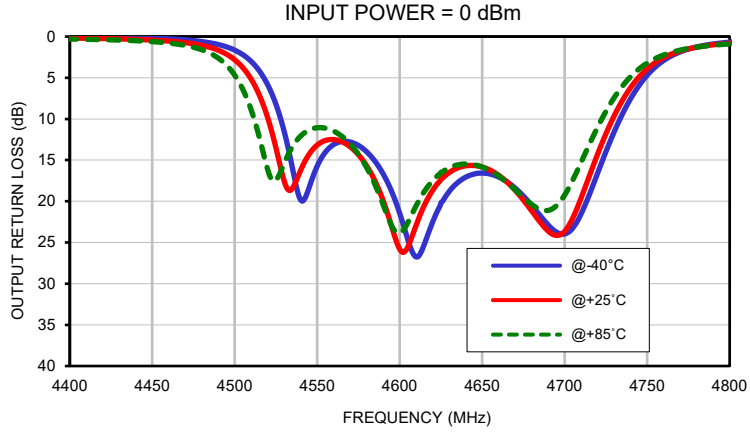
INSERTION LOSS vs. TEMPERATURE (Zoomed)
INPUT POWER = 0 dBm



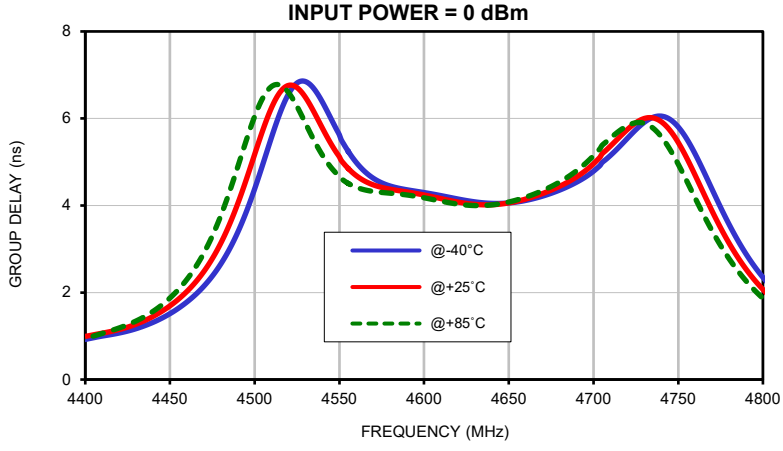
INPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



OUTPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



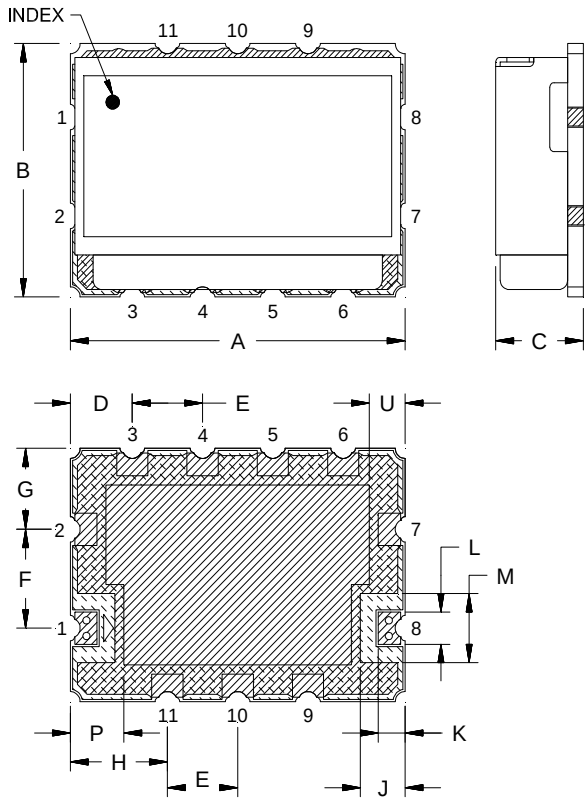
GROUP DELAY vs. TEMPERATURE
INPUT POWER = 0 dBm

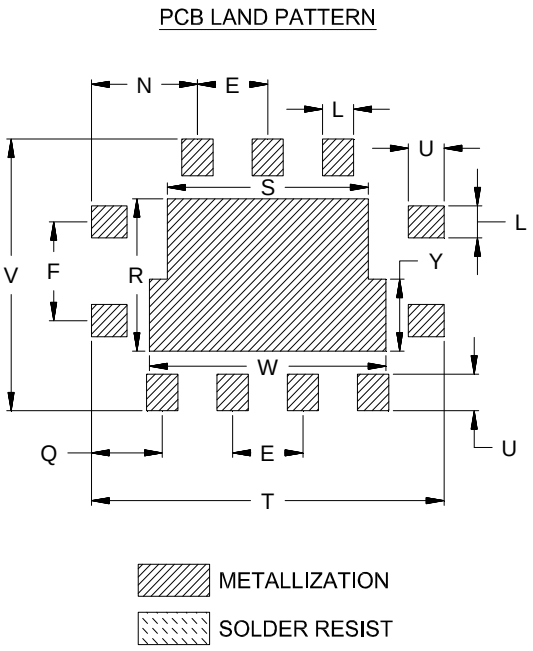


Case Style RZ

Outline Dimensions

RZ2511-1





CASE#	A	B	C	D	E	F	G	H	J	K	L	M
RZ2511-1	.750 (19.05)	.551 (14.00)	.210 (5.33)	.139 (3.53)	.158 (4.01)	.215 (5.46)	.176 (4.47)	.218 (5.54)	.100 (2.54)	.060 (1.52)	.070 (1.78)	.150 (3.81)

CASE#	N	P	Q	R	S	T	U	V	W	Y	WT.GRAMS
RZ2511-1	.238 (6.05)	.120 (3.05)	.159 (4.04)	.331 (8.41)	.450 (11.43)	.790 (20.07)	.080 (2.03)	.591 (15.01)	.530 (13.46)	.156 (3.96)	2.4

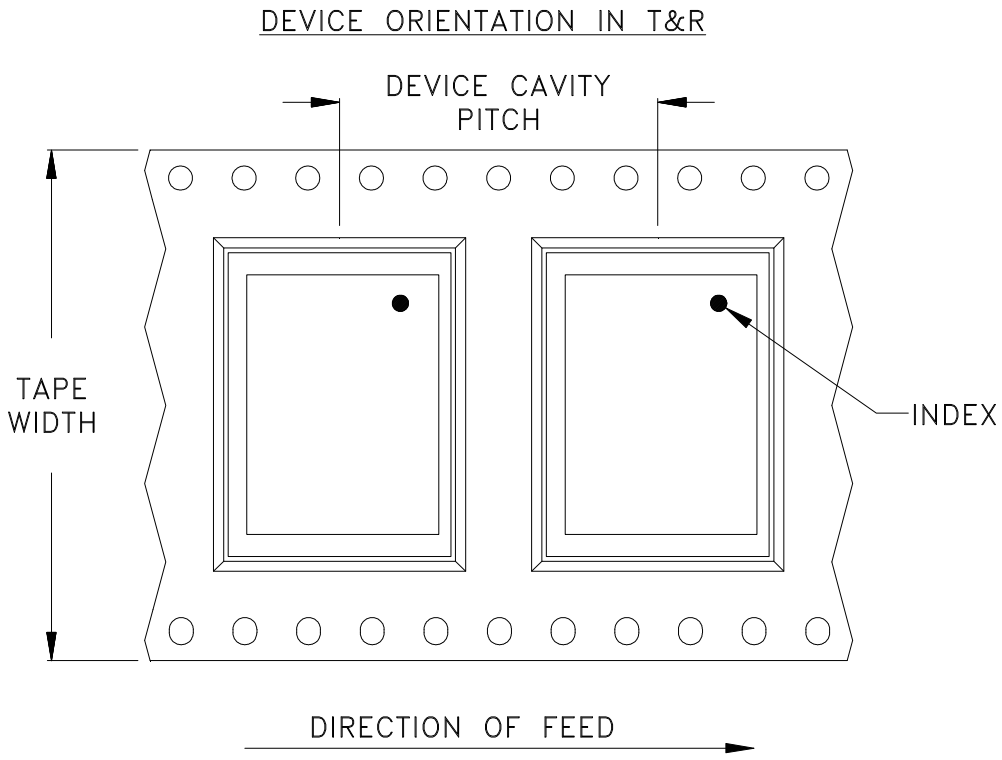
Dimensions are in inches (mm). Tolerances: 2PL. ± .03; 3PL. ± .015

Notes:

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

This document and its contents are the property of Mini-Circuits

Tape & Reel Packaging TR-F122



Tape Width, mm	Device Cavity Pitch, mm	Reel Size, inches	Devices per Reel
32	20	13	500

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

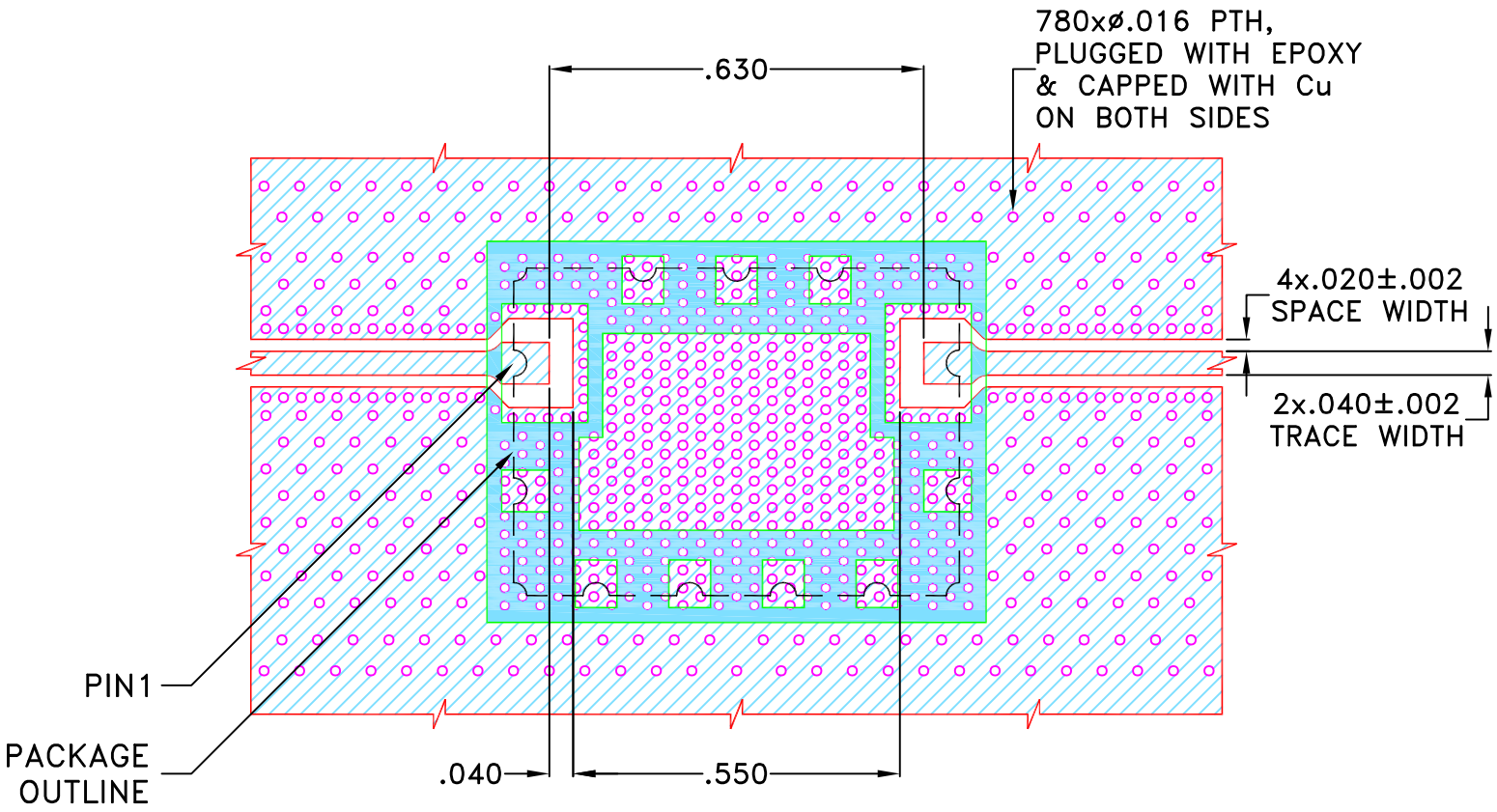
Mini-Circuits®
INTERNET http://www.minicircuits.com
P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661
Distribution Centers NORTH AMERICA 800-654-7949 • 417-335-5935 • Fax 417-335-5945 • EUROPE 44-1252-832600 • Fax 44-1252-837010
Mini-Circuits ISO 9001 & ISO 14001 Certified

This document and its contents are the property of Mini-Circuits.

THIRD ANGLE PROJECTION

REVISIONS					
REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	ECO-026307	NEW RELEASE	JUL 25	DDR	VC

SUGGESTED MOUNTING CONFIGURATION FOR RZ2511-1 CASE STYLE



NOTES:

1. TRACE WIDTH IS SHOWN FOR ROGERS (RO4350B) WITH DIELECTRIC THICKNESS .020±.0015. 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	DDR	23 JUL 25
TOLERANCES ON:	CHECKED	GKK	23 JUL 25
2 PL DECIMALS ±	APPROVED	KN	23 JUL 25
3 PL DECIMALS ± .005			
ANGLES ±			
FRACTIONS ±			

Mini-Circuits®
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.

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

Mini-Circuits®
13 Neptune Avenue
Brooklyn NY 11235

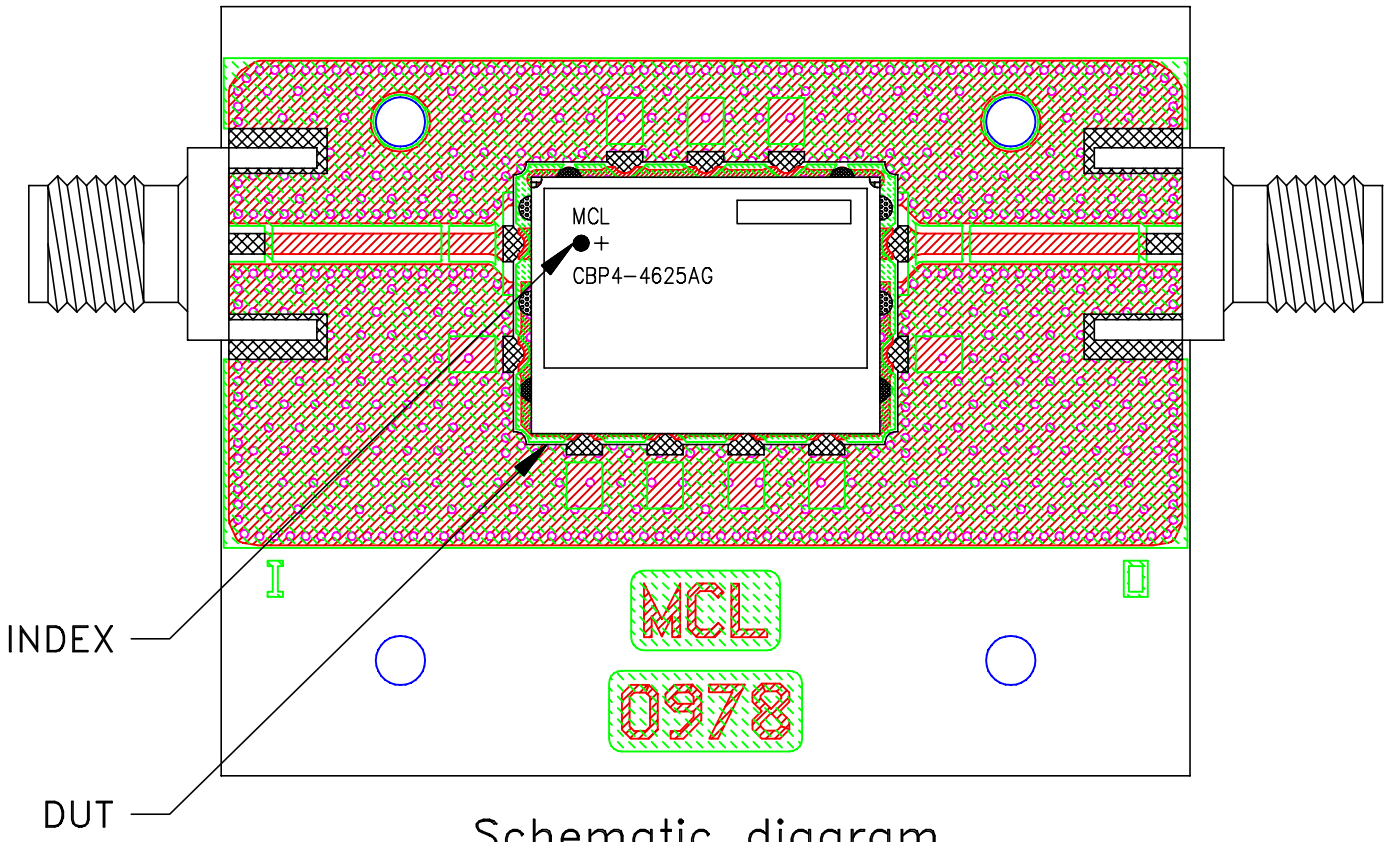
PL DWG, RZ2511-1, TB-1274

SIZE	CODE IDENT	DRAWING NO:	REV:
A	15542	98-PL-761	OR

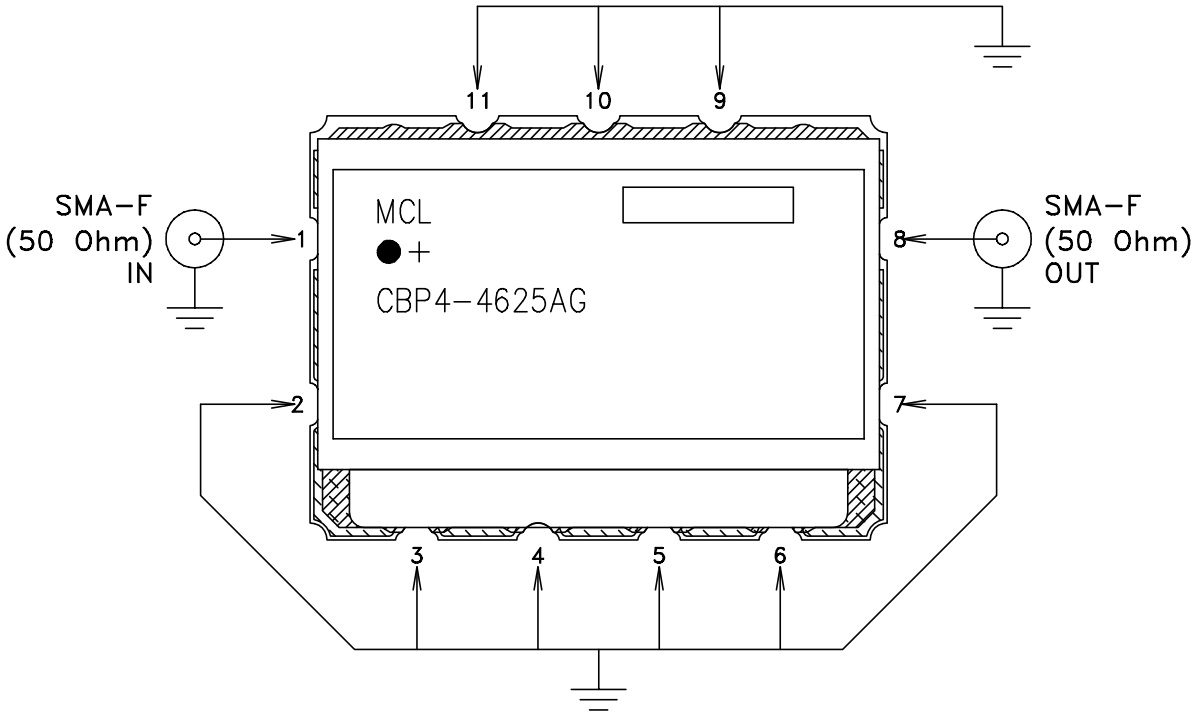
FILE:	SCALE:	SHEET:
98-PL-761	3:1	1 OF 1

Evaluation Board and Circuit

TB-CBP4-4625AG+



Schematic diagram



Notes:

1. PCB Material: ROGERS (RO4350B) OR Equivalent, Dielectric Constant=3.48±.05
Dielectric Thickness: .020±.0015 inch
2. 50 Ohm SMA Female Connectors.

Mini-Circuits®

THIS DOCUMENT AND ITS CONTENTS ARE THE PROPERTY OF 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

This document and its contents are the property of Mini-Circuits.