

Surface Mount Bandpass Filter

CBP-1062C+

50Ω 960 to 1164 MHz

The Big Deal

- Excellent Rejection
- Low passband Insertion Loss
- Miniature shielded package



Generic photo used for illustration purposes only
CASE STYLE: MP1766

Product Overview

CBP-1062C+ is a ceramic-coaxial-resonator based bandpass filter in a shielded package fabricated using SMT technology. This filter offers outstanding close in rejection, low insertion loss and high power handling for use in aviation, mobile radio, broadband and fixed wireless.

Key Features

Feature	Advantages
High Selectivity	The CBP-1062C+ filter incorporates High-Q ceramic resonators that enables sharp rejection near passband.
Low Passband VSWR	This filter maintains typical VSWR over passband frequency range making this filter easier to integrate into receiver and transmitter RF chains with less concerns for in band frequency ripple.
Rugged construction	The CBP-1062C+ has been qualified over wide range of thermal, mechanical and environmental conditions including withstanding the stress of extensive solder reflow cycles.

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-Circuit's 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/MCLStore/terms.jsp

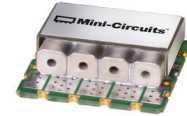


www.minicircuits.com P.O. Box 350166, Brooklyn, NY 11235-0003 (718) 934-4500 sales@minicircuits.com

Surface Mount Bandpass Filter

50Ω 960 to 1164 MHz

CBP-1062C+



Generic photo used for illustration purposes only
CASE STYLE: MP1766

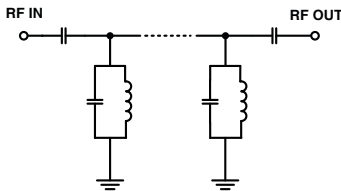
Features

- Low Insertion loss
- High selectivity
- Miniature shielded package

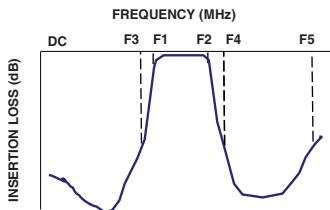
Applications

- Traffic collision avoidance system (TCAS)
- Aeronautical radio navigation
- Fixed satellite
- Radio astronomy
- Radar and navigation system

Functional Schematic



Typical Frequency Response

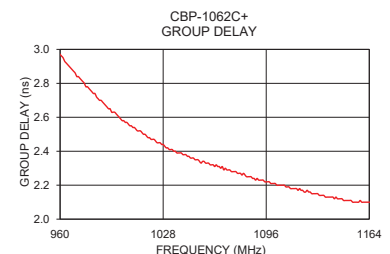
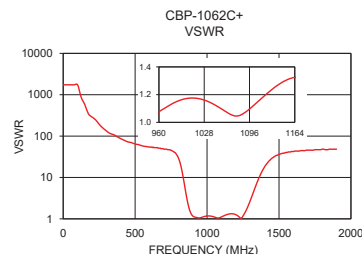
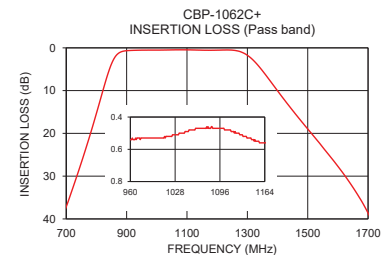
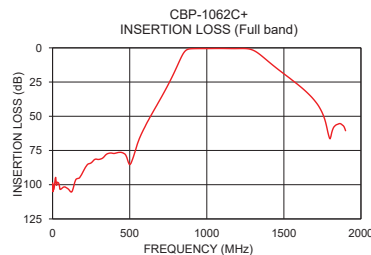


Typical Performance Data at 25°C

Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)	Frequency (MHz)	Group Delay (nsec)
1	98.71	1737.18	960	2.97
625	52.13	54.29	970	2.86
735	30.01	46.96	982	2.74
800	15.30	29.96	992	2.65
830	7.91	12.01	1000	2.59
850	3.73	4.77	1023	2.46
875	1.18	1.80	1040	2.39
960	0.54	1.08	1052	2.34
1000	0.53	1.17	1062	2.31
1062	0.47	1.07	1079	2.27
1120	0.50	1.20	1084	2.25
1145	0.54	1.29	1099	2.21
1164	0.56	1.32	1105	2.20
1305	2.00	3.05	1118	2.18
1350	5.36	7.94	1126	2.15
1415	11.46	21.46	1139	2.13
1535	21.94	38.61	1145	2.12
1620	29.59	43.44	1150	2.11
1790	63.87	46.96	1155	2.10
1900	60.55	48.26	1164	2.10

+RoHS Compliant

The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications



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/MCLStore/terms.jsp



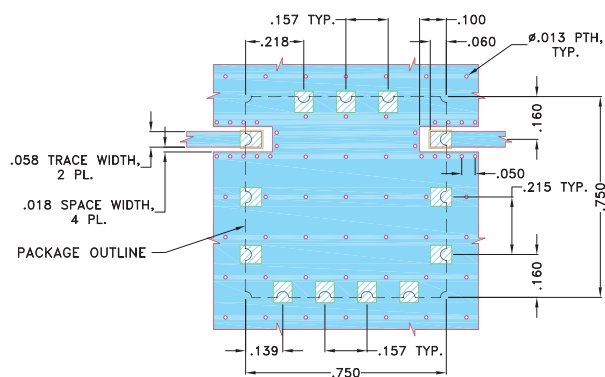
www.minicircuits.com P.O. Box 350166, Brooklyn, NY 11235-0003 (718) 934-4500 sales@minicircuits.com

REV.B
M174392
CBP-1062C+
EDU1777
URJ
200806
Page 2 of 3

Pad Connections

INPUT	1
OUTPUT	10
GROUND	2,3,4,5,6,7,8,9,11,12,13

Demo Board MCL P/N: TB-684+
Suggested PCB Layout (PL-373)



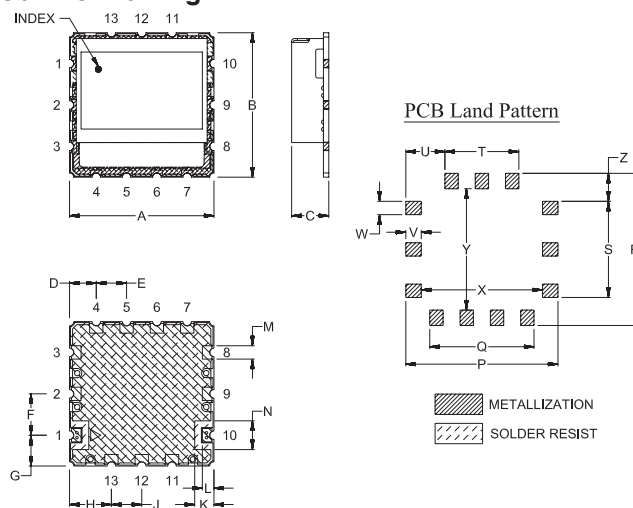
NOTES:

1. TRACE WIDTH IS SHOWN FOR OAK (OAK-602) WITH DIELECTRIC THICKNESS .022"±.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

Outline Drawing



Outline Dimensions ($\frac{\text{inch}}{\text{mm}}$)

A	B	C	D	E	F	G	H	J	K	L	M	N
.750	.750	.210	.139	.157	.215	.160	.218	.157	.200	.060	.069	.149
19.05	19.05	5.33	3.53	3.99	5.46	4.06	5.54	3.99	1.54	1.52	1.75	3.78
P	Q	R	S	T	U	V	W	X	Y	Z	wt,	
.790	.541	.790	.499	.384	.203	.080	.069	.630	.630	.145	grams	
20.07	13.74	20.07	12.67	9.75	2.16	2.03	1.75	16.00	16.00	3.68	4.6	

Note: Please refer to case style drawing for details

Notes

Notices:

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's 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/MC/Store/terms.jsp

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	104.29	98.71	114.15	0.00	0.00	0.00	0.00	0.00	0.00
2	101.94	105.06	99.82	0.00	0.00	0.00	0.01	0.00	0.00
10	107.35	102.65	109.08	0.00	0.00	0.00	0.00	0.00	0.00
45	102.95	101.41	96.48	0.00	0.00	0.00	0.00	0.00	0.00
50	103.24	103.45	104.76	0.00	0.00	0.00	0.00	0.01	0.00
125	93.63	105.12	92.47	0.01	0.02	0.02	0.01	0.02	0.02
200	88.45	90.00	88.61	0.04	0.06	0.06	0.04	0.06	0.06
350	77.99	77.73	76.95	0.13	0.16	0.16	0.14	0.16	0.17
425	76.40	76.47	75.28	0.18	0.21	0.21	0.19	0.22	0.22
500	84.01	85.26	80.90	0.22	0.26	0.26	0.23	0.27	0.27
625	52.12	52.13	52.09	0.28	0.32	0.32	0.29	0.32	0.34
685	40.24	40.14	40.09	0.29	0.34	0.34	0.31	0.35	0.36
735	30.12	30.01	29.94	0.32	0.37	0.37	0.32	0.37	0.39
750	26.92	26.81	26.74	0.33	0.38	0.39	0.33	0.38	0.40
780	20.19	20.09	20.00	0.39	0.45	0.46	0.39	0.44	0.46
810	12.93	12.84	12.74	0.65	0.74	0.77	0.64	0.72	0.75
820	10.43	10.34	10.25	0.89	1.00	1.05	0.87	0.98	1.02
835	6.81	6.74	6.66	1.68	1.85	1.92	1.65	1.81	1.88
855	2.96	2.96	2.92	4.49	4.82	4.98	4.39	4.70	4.85
870	1.40	1.45	1.45	8.78	9.31	9.56	8.54	9.01	9.24
889	0.70	0.78	0.81	17.18	18.14	18.53	16.22	16.93	17.23
904	0.55	0.65	0.67	25.82	27.17	27.70	22.67	23.30	23.56
925	0.49	0.58	0.60	32.85	32.79	32.88	27.82	28.23	28.38
941	0.46	0.55	0.58	33.90	33.89	33.69	30.81	31.67	31.70
950	0.45	0.54	0.57	31.61	31.38	31.14	30.84	31.34	31.22
960	0.45	0.54	0.56	28.36	28.00	27.84	28.68	28.58	28.48
980	0.44	0.53	0.55	23.99	23.65	23.57	24.35	24.01	24.00
1000	0.44	0.53	0.55	22.10	21.82	21.80	22.41	22.11	22.16
1024	0.43	0.51	0.53	22.36	22.15	22.18	22.50	22.29	22.40
1050	0.40	0.48	0.50	26.05	25.88	25.98	25.79	25.73	25.95
1062	0.39	0.47	0.49	30.04	29.80	29.93	28.99	29.09	29.41
1076	0.38	0.46	0.49	38.18	37.25	36.83	32.47	33.04	33.07
1094	0.38	0.47	0.49	28.81	28.71	28.39	27.29	27.48	27.22
1100	0.39	0.47	0.49	26.33	26.27	26.05	25.33	25.46	25.25
1117	0.40	0.49	0.51	21.76	21.78	21.67	21.36	21.44	21.32
1151	0.46	0.55	0.57	17.58	17.69	17.70	17.47	17.59	17.60
1164	0.47	0.56	0.58	17.02	17.18	17.23	16.96	17.11	17.17
1198	0.46	0.55	0.57	18.20	18.57	18.79	18.18	18.53	18.77
1200	0.45	0.54	0.56	18.42	18.82	19.06	18.43	18.79	19.05
1255	0.46	0.58	0.61	19.86	18.97	18.42	19.97	19.07	18.49
1295	1.32	1.51	1.58	7.62	7.42	7.30	7.64	7.44	7.31
1300	1.54	1.74	1.81	6.78	6.62	6.51	6.80	6.64	6.53
1325	3.06	3.29	3.37	3.79	3.74	3.70	3.80	3.75	3.71
1360	6.03	6.27	6.35	1.76	1.79	1.79	1.78	1.81	1.81
1400	9.84	10.05	10.12	0.89	0.94	0.95	0.91	0.96	0.97
1425	12.19	12.38	12.44	0.66	0.72	0.72	0.67	0.73	0.74
1500	18.82	18.98	19.03	0.42	0.47	0.47	0.42	0.48	0.49
1560	23.99	24.15	24.20	0.37	0.42	0.43	0.37	0.43	0.44
1580	25.74	25.90	25.95	0.36	0.41	0.41	0.37	0.42	0.43
1600	27.54	27.71	27.75	0.35	0.41	0.41	0.36	0.41	0.42
1620	29.43	29.59	29.64	0.35	0.40	0.40	0.35	0.40	0.41
1630	30.41	30.58	30.63	0.34	0.40	0.40	0.35	0.40	0.41
1700	38.47	38.65	38.68	0.33	0.39	0.39	0.33	0.38	0.39
1760	50.24	50.64	50.53	0.32	0.38	0.38	0.31	0.37	0.38
1790	63.93	63.87	64.73	0.31	0.37	0.38	0.31	0.37	0.38
1800	67.73	66.42	65.34	0.31	0.37	0.38	0.31	0.36	0.38
1820	58.78	58.69	58.10	0.31	0.37	0.38	0.30	0.37	0.38
1850	55.64	55.83	55.66	0.31	0.37	0.38	0.30	0.36	0.38
1890	57.35	57.61	57.97	0.30	0.37	0.38	0.29	0.36	0.37
1900	60.39	60.55	61.11	0.31	0.37	0.38	0.29	0.36	0.37

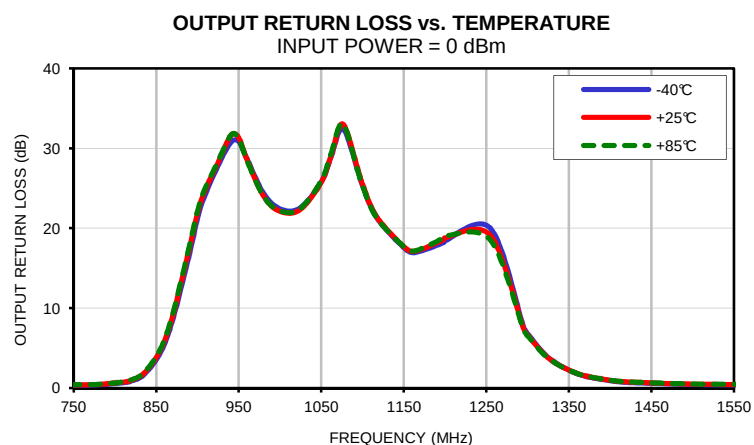
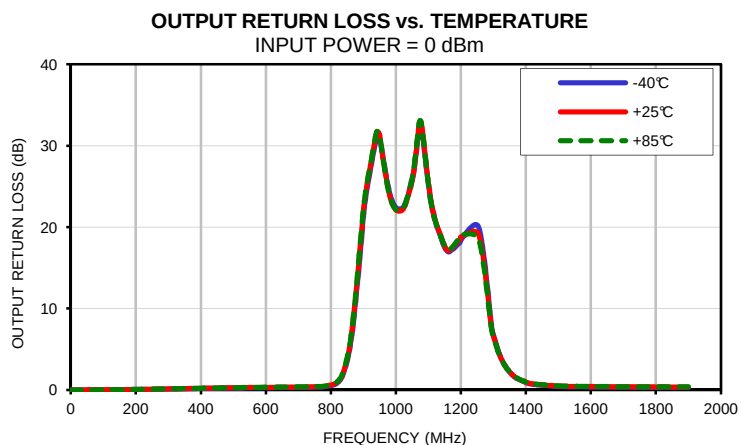
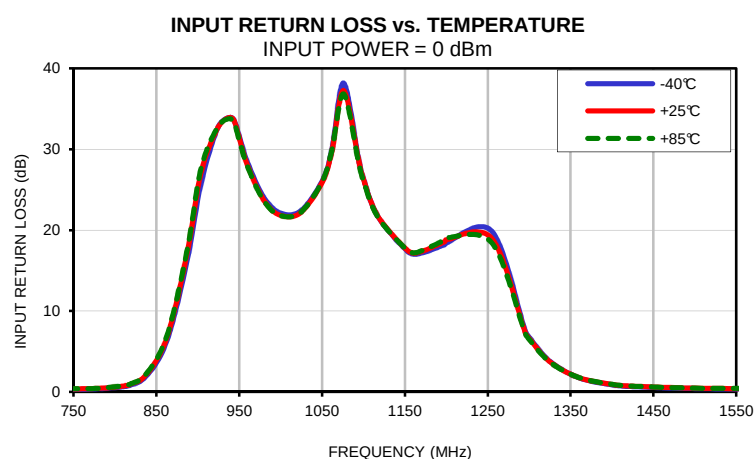
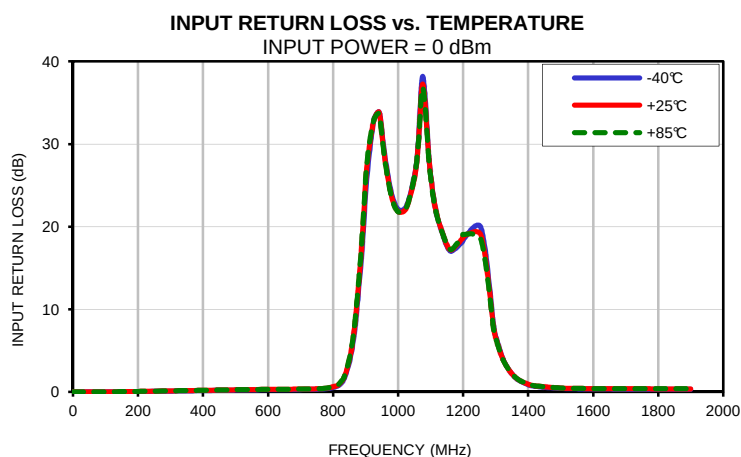
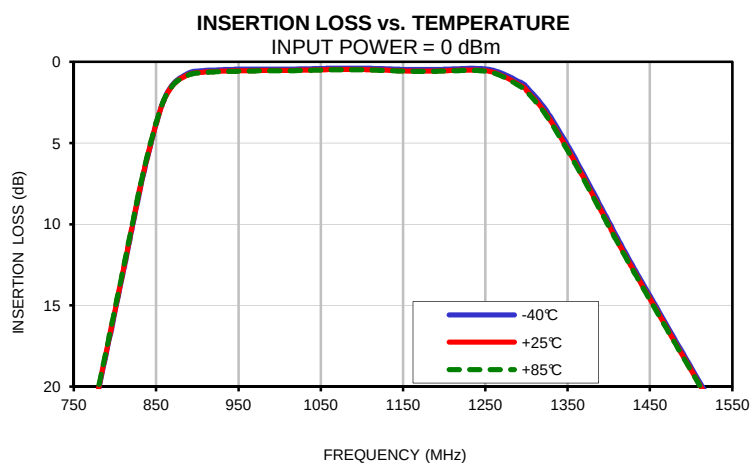
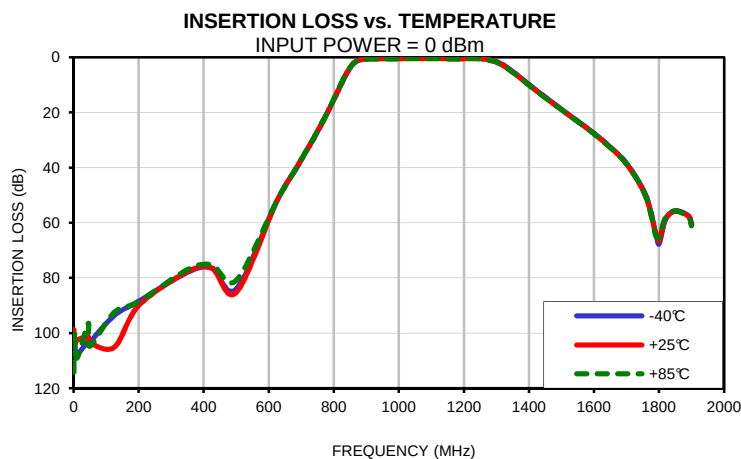
Typical Performance Data

FREQ.	GROUP DELAY		
(MHz)	(nsec)		
	@-40°C	@+25°C	@+85°C
960	2.99	2.97	2.97
970	2.88	2.86	2.86
980	2.78	2.76	2.76
990	2.69	2.67	2.67
1000	2.61	2.59	2.59
1010	2.55	2.53	2.53
1020	2.49	2.47	2.48
1050	2.36	2.35	2.35
1062	2.33	2.31	2.31
1087	2.25	2.24	2.24
1088	2.25	2.24	2.24
1089	2.25	2.23	2.24
1090	2.25	2.24	2.24
1091	2.25	2.23	2.24
1092	2.24	2.23	2.23
1093	2.24	2.23	2.23
1094	2.24	2.23	2.23
1095	2.24	2.22	2.22
1096	2.23	2.22	2.22
1097	2.23	2.22	2.22
1098	2.23	2.22	2.21
1099	2.22	2.21	2.22
1100	2.22	2.21	2.22
1101	2.22	2.21	2.21
1103	2.21	2.20	2.20
1104	2.21	2.20	2.20
1105	2.21	2.20	2.20
1106	2.21	2.20	2.20
1107	2.21	2.20	2.19
1108	2.21	2.20	2.19
1109	2.21	2.19	2.19
1110	2.20	2.19	2.19
1111	2.20	2.19	2.19
1112	2.19	2.18	2.19
1113	2.19	2.18	2.18
1114	2.19	2.18	2.18
1115	2.19	2.18	2.18
1116	2.19	2.18	2.18
1117	2.18	2.17	2.18
1118	2.18	2.18	2.18
1119	2.18	2.17	2.17
1120	2.18	2.17	2.17
1122	2.17	2.16	2.16
1123	2.17	2.17	2.16
1124	2.17	2.16	2.16
1125	2.17	2.16	2.16
1126	2.16	2.15	2.15
1127	2.16	2.15	2.15
1128	2.16	2.15	2.15
1129	2.16	2.15	2.15
1130	2.15	2.15	2.14
1134	2.15	2.14	2.14
1135	2.14	2.13	2.13
1137	2.14	2.13	2.13
1138	2.14	2.13	2.13
1139	2.13	2.13	2.13
1140	2.14	2.13	2.13
1141	2.14	2.12	2.12
1142	2.13	2.13	2.12
1164	2.11	2.10	2.10

Band Pass Filter

CBP-1062C+

Typical Performance Curves



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

IF/RF MICROWAVE COMPONENTS

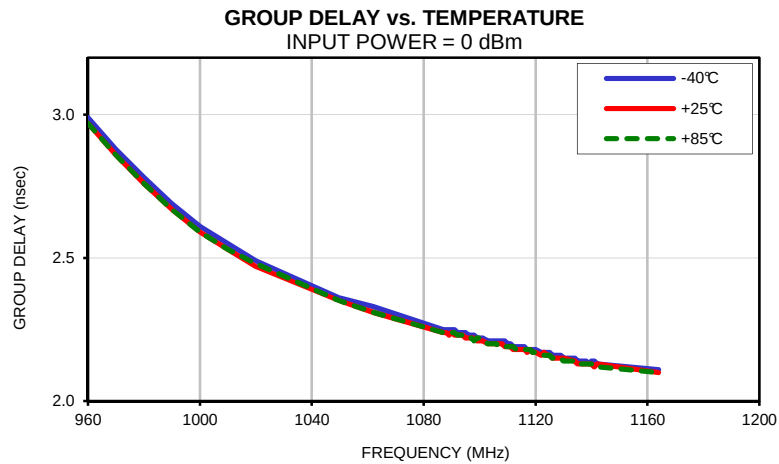


REV. OR
CBP-1062C+
130408
Page 1 of 2

Band Pass Filter

CBP-1062C+

Typical Performance Curves



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



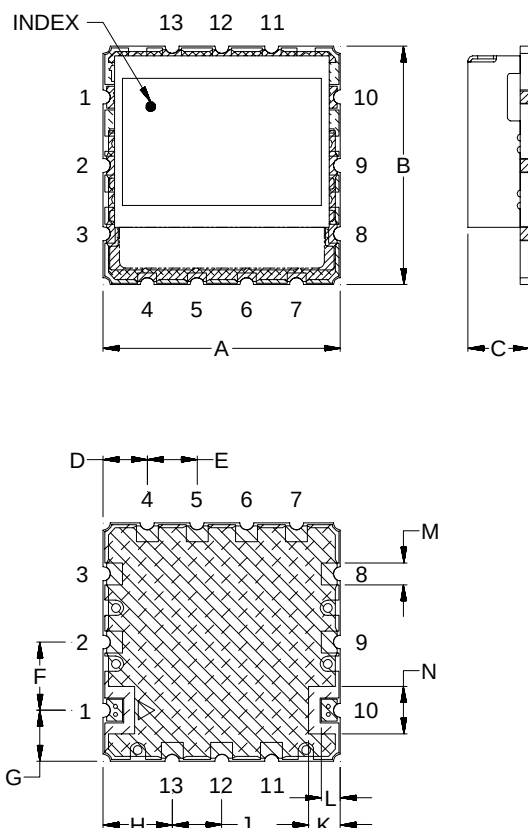
IF/RF MICROWAVE COMPONENTS



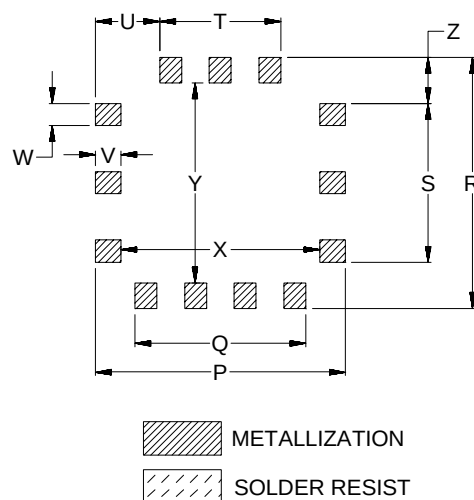
REV. OR
CBP-1062C+
130408
Page 2 of 2

Outline Dimensions

MP1766



PCB Land Pattern



CASE#	A	B	C	D	E	F	G	H	J	K	L	M	N
MP1766	.750 (19.05)	.750 (19.05)	.210 (5.33)	.139 (3.53)	.157 (3.99)	.215 (5.46)	.160 (4.06)	.218 (5.54)	.157 (3.99)	.100 (2.54)	.060 (1.52)	.069 (1.75)	.149 (3.78)

CASE#	P	Q	R	S	T	U	V	W	X	Y	Z	WT.GRAMS
MP1766	.790 (20.07)	.541 (13.74)	.790 (20.07)	.499 (12.67)	.384 (9.75)	.203 (5.16)	.080 (2.03)	.069 (1.75)	.630 (16.00)	.630 (16.00)	.145 (3.68)	4.6

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

Notes:

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

Mini-Circuits®
ISO 9001 ISO 14001 CERTIFIED

ALL NEW
minicircuits.com

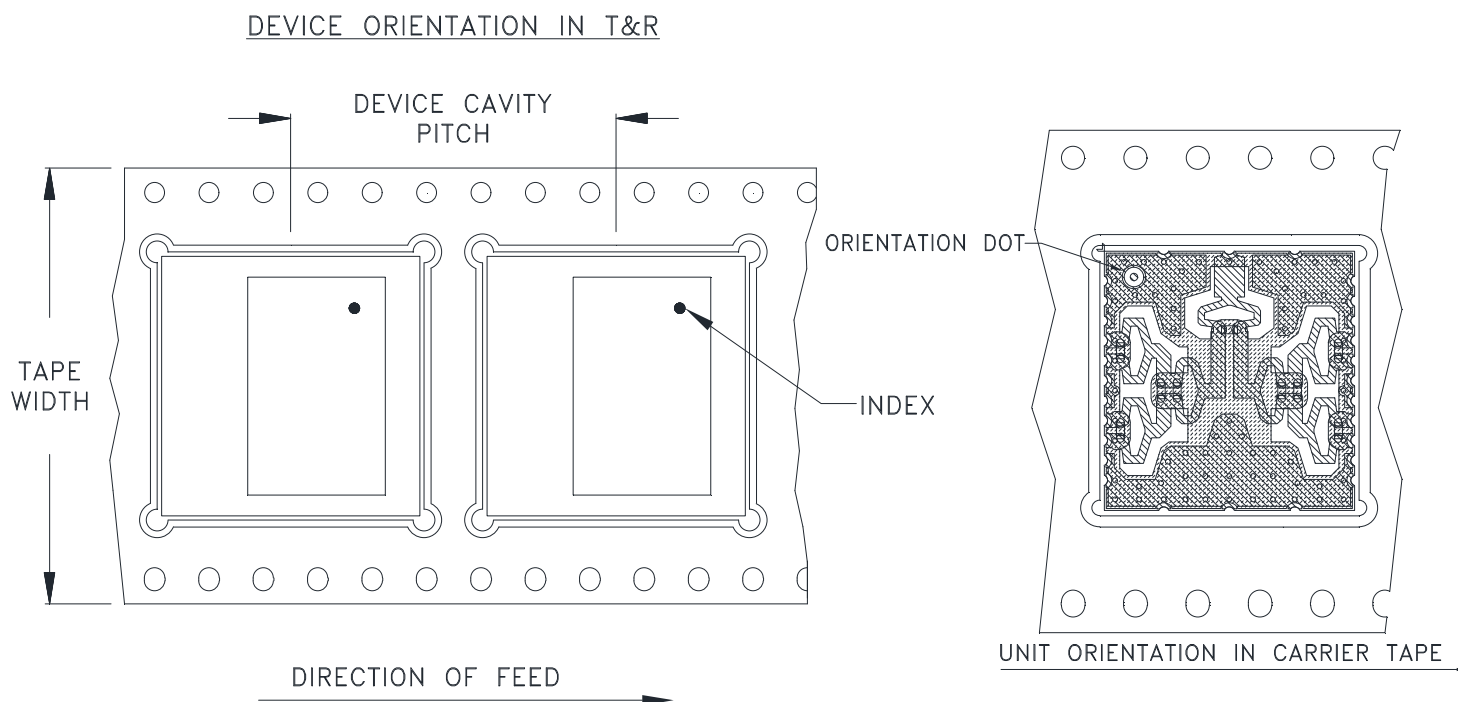
P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661 For detailed performance specs & shopping online see Mini-Circuits web site



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

RF/IF MICROWAVE COMPONENTS

Tape & Reel Packaging TR-F111



Applicable Case styles:

Applicable Case styles: RS1539

Tape Width, mm	Device Cavity Pitch, mm	Reel Size, inches	Devices per Reel
32	24	13	250

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



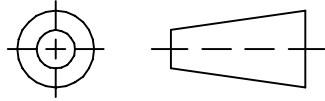
INTERNET <http://www.minicircuits.com>

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

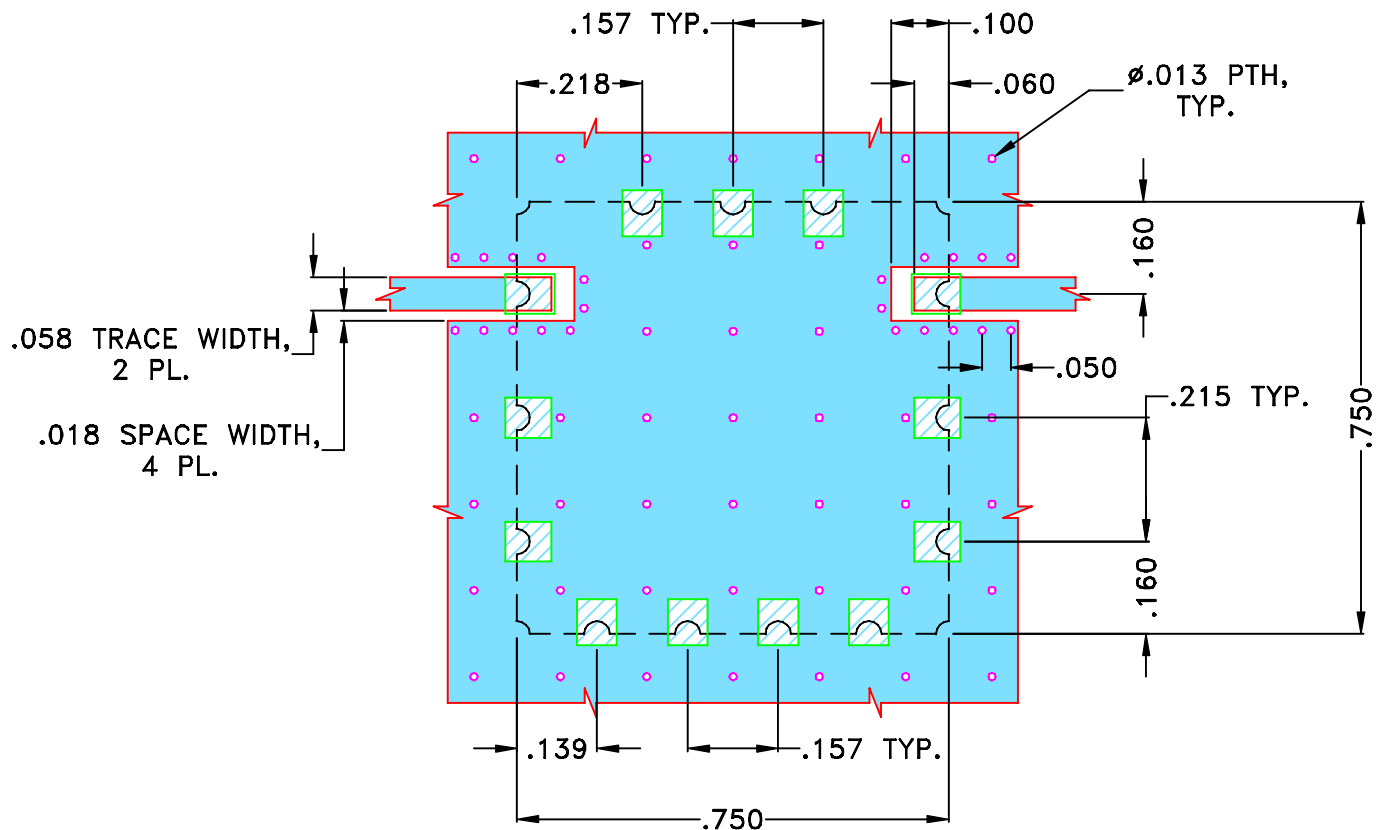
THIRD ANGLE PROJECTION



REVISIONS

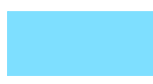
REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	M137721	NEW RELEASE	JUN 12	DDR	KG

SUGGESTED MOUNTING CONFIGURATION FOR MP1766 CASE STYLE "13FL01" PIN CODE



NOTES:

- TRACE WIDTH IS SHOWN FOR OAK (OAK-602) WITH DIELECTRIC THICKNESS $.022 \pm .0015$ ". 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 LAYOUT WITH SMOBC
(SOLDER MASK OVER BARE COPPER)

 DENOTES COPPER LAND PATTERN FREE OF SOLDERMASK

UNLESS OTHERWISE SPECIFIED	INITIALS		DATE
DIMENSIONS ARE IN INCHES TOLERANCES ON: 2 PL DECIMALS $\pm$ 3 PL DECIMALS $\pm$.005" ANGLES $\pm$ FRACTIONS $\pm$	DRAWN	DDR	22 JUN 12
	CHECKED	MD	22 JUN 12
	APPROVED	GM	22 JUN 12

 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.

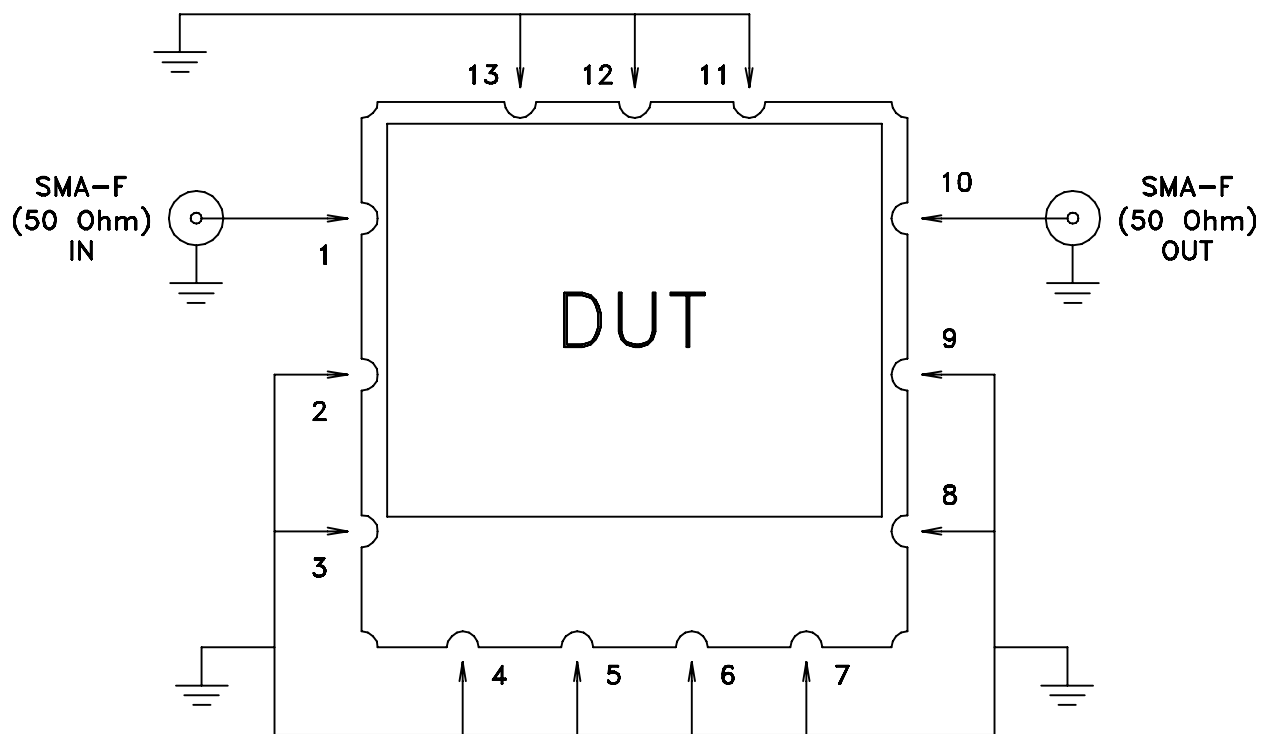
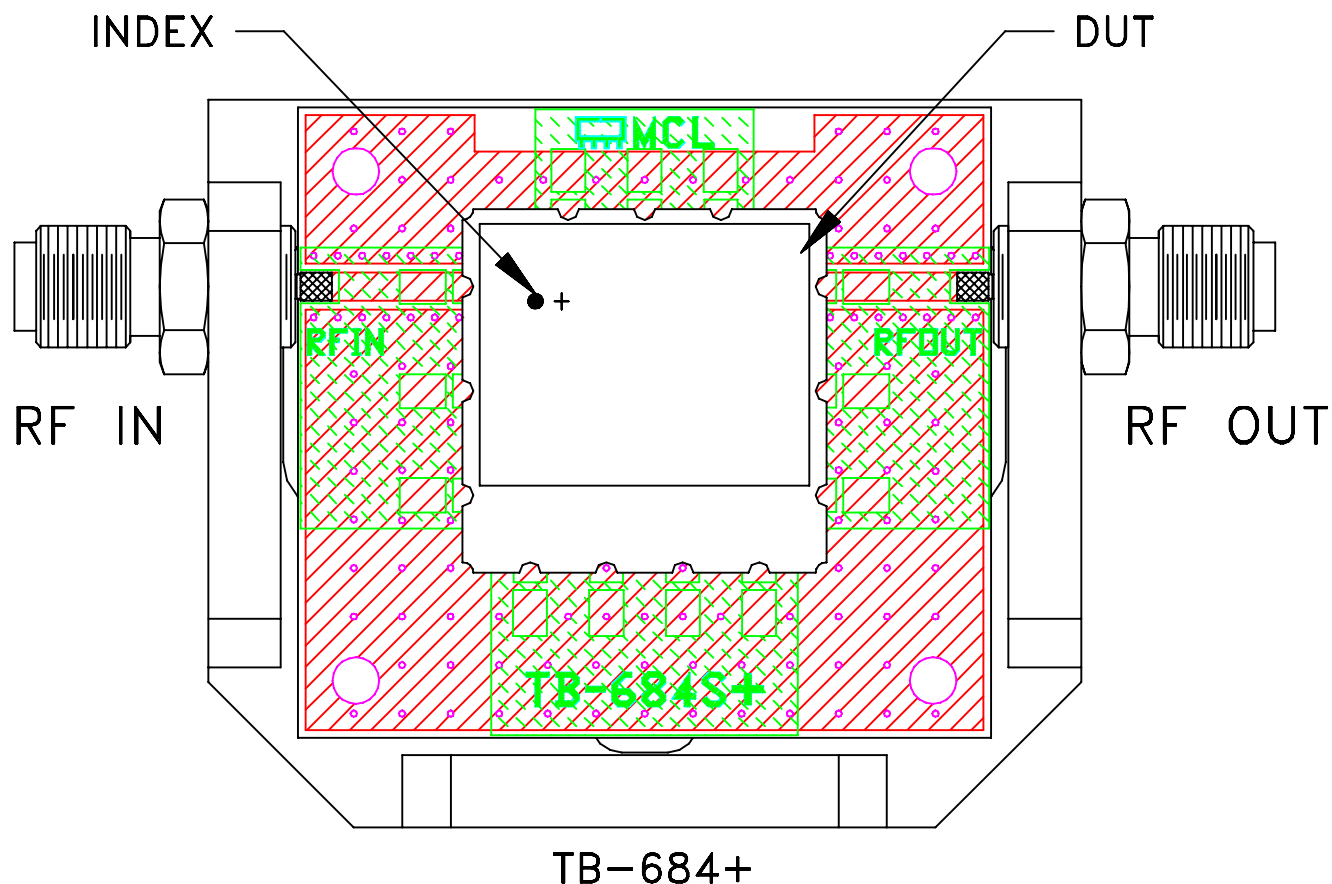
ASHEETA1.DWG REV:A DATE:01/12/95

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

PL, 13FL01, MP1766, BPF,
TB-684+, 50 Ohm

SIZE	CODE IDENT	DRAWING NO:	REV:
A	15542	98-PL-373	OR
FILE:	98PL373	SCALE:	SHEET: 1 OF 1

Evaluation Board and Circuit



Schematic Diagram

Notes:

1. 50 Ohm SMA Female connectors.
2. PCB Material: OAK-602 OR Equivalent
Dielectric Constant= $2.50 \pm .04$, Thickness=.022 inch.

 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