

Surface Mount Bandpass Filter

CBP-A1230C+

50Ω 1160 to 1300 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-A1230C+ 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-A1230C+ 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-A1230C+ 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



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CBP-A1230C+

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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

Electrical Specifications at 25°C

Parameter	F#	Frequency (MHz)	Min.	Typ.	Max.	Unit
Pass Band	Center Frequency	—	—	1230	—	MHz
	Insertion Loss	F1-F2	1160-1300	0.8	2	dB
	VSWR	F1-F2	1160-1300	1.3	—	:1
Stop Band, Lower	Insertion Loss	DC-F3	DC-950	20	29	dB
	VSWR	DC-F3	DC-950	—	20	:1
Stop Band, Upper	Insertion Loss	F4-F5	1670-2400	20	30	dB
	VSWR	F4-F5	1670-2400	—	20	:1

Maximum Ratings

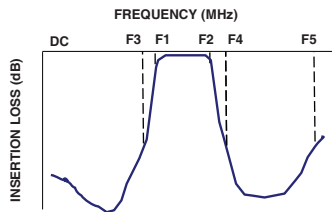
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power Input	5W

Permanent damage may occur if any of these limits are exceeded.

Functional Schematic



Typical Frequency Response

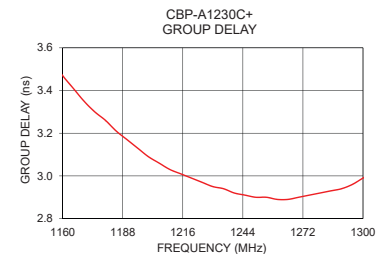
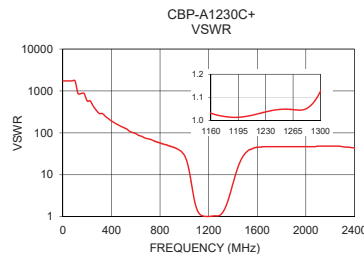
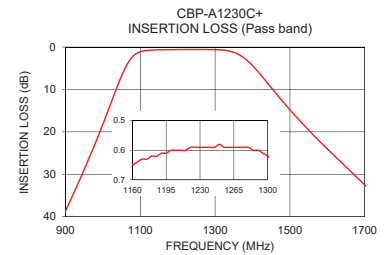
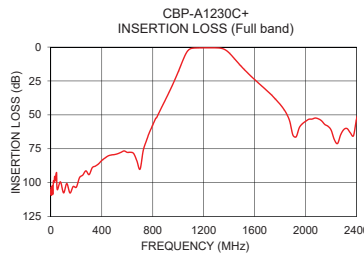


Typical Performance Data at 25°C

Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)	Frequency (MHz)	Group Delay (nsec)
1	103.53	1737.18	1160	3.47
830	52.07	54.29	1165	3.41
950	28.90	40.41	1175	3.30
1015	14.75	23.49	1180	3.26
1050	6.79	8.68	1185	3.21
1070	3.33	3.92	1190	3.17
1095	1.29	1.79	1195	3.13
1160	0.65	1.03	1200	3.09
1230	0.59	1.04	1210	3.03
1285	0.60	1.06	1220	2.99
1300	0.62	1.13	1225	2.97
1360	1.63	2.46	1230	2.95
1400	4.38	6.15	1235	2.94
1440	8.48	14.74	1245	2.91
1515	16.28	35.46	1255	2.90
1670	29.95	46.96	1260	2.89
1875	54.76	46.96	1270	2.90
2200	61.26	48.26	1280	2.92
2300	60.73	46.96	1290	2.94
2400	52.70	43.44	1300	2.99

+RoHS Compliant

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



Notes

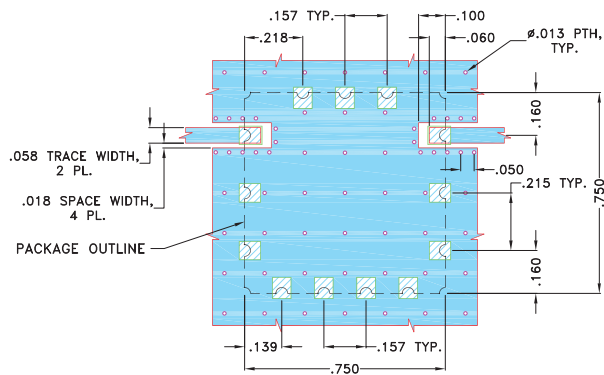
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Pad Connections

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)

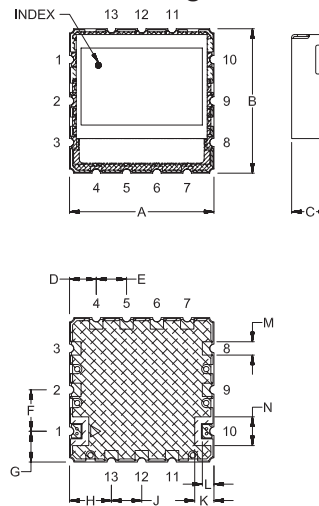


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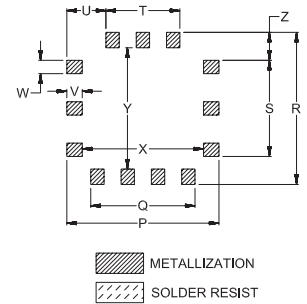
- TRACE WIDTH IS SHOWN FOR OAK (OAK-602) WITH DIELECTRIC THICKNESS .022"±.0015". COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
- BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

- DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)
- DENOTES COPPER LAND PATTERN FREE OF SOLDERMASK

Outline Drawing



PCB Land Pattern



Outline Dimensions (inch)

A	B	C	D	E	F	G	H	J	K	L	M	N
.750	.750	.210	.139	.157	.215	.160	.218	.157	.100	.060	.069	.149
19.05	19.05	5.33	3.53	3.99	5.46	4.06	5.54	3.99	2.54	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	5.16	2.03	1.75	16.00	16.00	3.68	4.6	

Note: Please refer to case style drawing for details.

Notes

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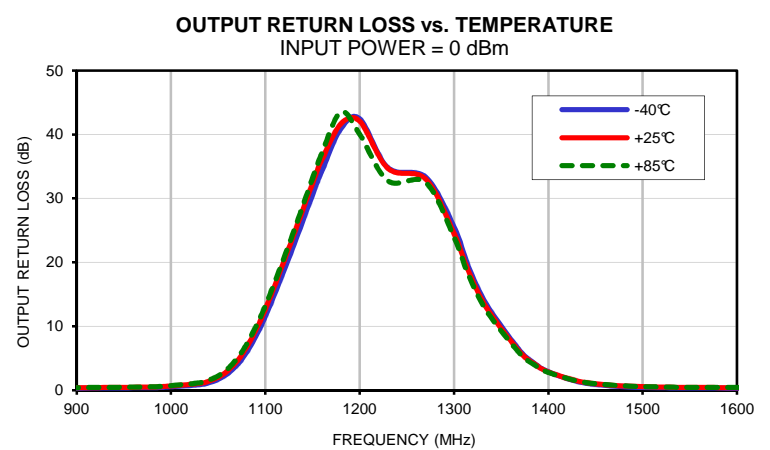
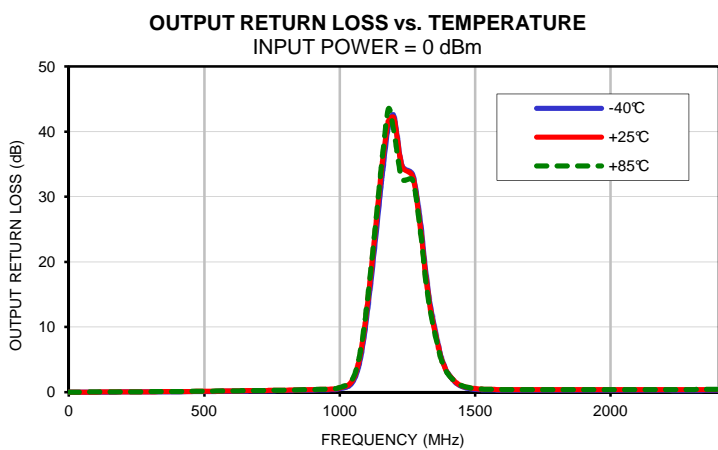
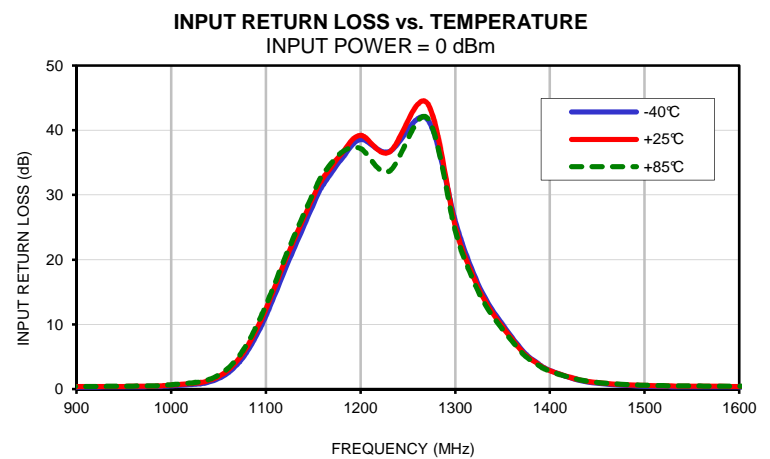
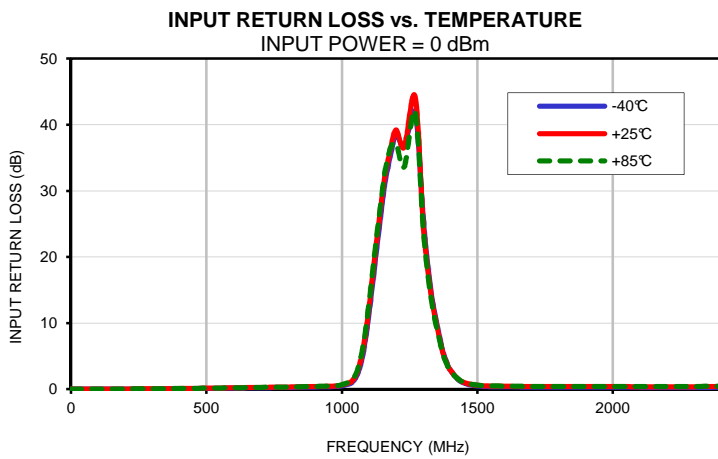
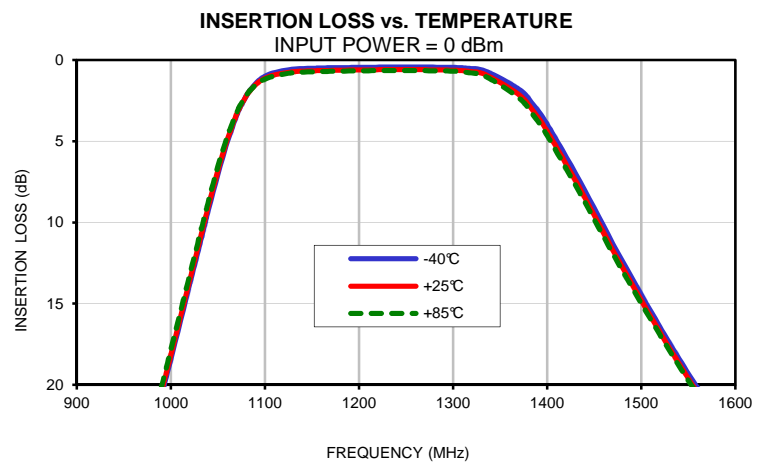
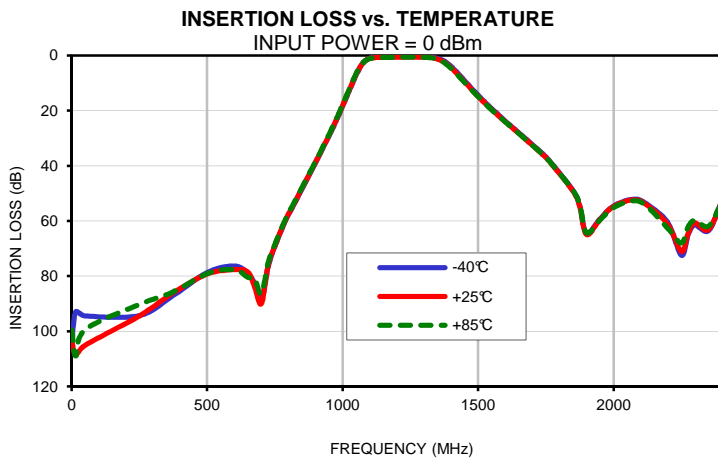
Typical Performance Data

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	103.60	103.53	99.57	0.00	0.00	0.00	0.00	0.00	0.00
15	92.93	108.66	108.95	0.00	0.00	0.00	0.00	0.00	0.00
50	94.42	105.05	99.38	0.00	0.00	0.01	0.00	0.00	0.01
250	94.31	94.40	90.26	0.02	0.04	0.04	0.02	0.04	0.05
375	87.00	86.03	85.70	0.05	0.08	0.08	0.04	0.08	0.09
500	78.73	79.23	79.10	0.10	0.14	0.14	0.09	0.13	0.14
600	76.30	77.64	77.63	0.15	0.19	0.20	0.13	0.18	0.19
650	78.94	78.51	80.43	0.18	0.23	0.23	0.15	0.21	0.22
675	82.70	83.85	80.83	0.19	0.24	0.25	0.17	0.23	0.23
700	88.40	89.99	86.35	0.20	0.26	0.26	0.18	0.24	0.24
725	76.68	76.24	75.14	0.22	0.27	0.28	0.19	0.25	0.26
750	69.18	69.04	68.44	0.23	0.29	0.30	0.20	0.27	0.28
790	59.78	59.58	59.25	0.26	0.31	0.32	0.23	0.30	0.30
840	50.36	50.08	49.75	0.28	0.35	0.36	0.26	0.33	0.34
890	40.76	40.58	40.30	0.31	0.38	0.40	0.29	0.37	0.38
940	31.12	30.92	30.63	0.35	0.42	0.45	0.33	0.42	0.44
975	23.92	23.69	23.38	0.39	0.48	0.52	0.38	0.48	0.52
990	20.67	20.43	20.11	0.43	0.53	0.57	0.43	0.54	0.58
1030	11.51	11.25	10.93	0.81	1.00	1.11	0.83	1.03	1.14
1040	9.21	8.96	8.66	1.12	1.36	1.51	1.15	1.40	1.56
1050	7.01	6.79	6.54	1.64	1.96	2.17	1.68	2.01	2.23
1060	5.03	4.88	4.69	2.51	2.94	3.23	2.56	3.01	3.31
1070	3.40	3.33	3.22	3.86	4.44	4.81	3.93	4.53	4.92
1075	2.75	2.72	2.65	4.75	5.41	5.83	4.83	5.52	5.96
1085	1.78	1.82	1.81	6.98	7.81	8.30	7.10	7.96	8.48
1100	0.99	1.11	1.16	11.32	12.37	12.93	11.51	12.63	13.20
1125	0.59	0.75	0.81	20.12	21.46	21.99	20.67	22.23	22.76
1155	0.49	0.65	0.71	30.14	31.29	31.90	32.53	34.36	35.20
1160	0.48	0.65	0.70	31.46	32.52	33.16	34.31	36.06	37.11
1180	0.46	0.62	0.68	35.56	36.40	36.58	40.89	41.67	43.51
1200	0.45	0.60	0.66	38.57	39.21	37.17	42.46	42.10	40.04
1230	0.43	0.59	0.64	36.69	36.60	33.64	34.80	34.69	32.74
1270	0.43	0.59	0.65	41.77	44.28	41.97	33.33	33.02	32.49
1300	0.45	0.62	0.68	26.02	25.15	24.50	25.56	24.55	23.95
1315	0.50	0.68	0.76	19.48	18.82	18.20	19.48	18.74	18.14
1335	0.69	0.91	1.02	13.23	12.75	12.27	13.28	12.77	12.29
1370	1.79	2.13	2.33	6.13	5.93	5.70	6.14	5.93	5.70
1385	2.73	3.12	3.36	4.23	4.13	3.99	4.22	4.12	3.98
1400	3.95	4.38	4.64	2.89	2.87	2.80	2.87	2.85	2.77
1435	7.50	7.94	8.21	1.25	1.33	1.34	1.21	1.30	1.30
1475	11.85	12.24	12.45	0.62	0.73	0.76	0.58	0.69	0.71
1515	15.95	16.28	16.44	0.42	0.53	0.56	0.38	0.49	0.50
1555	19.76	20.05	20.17	0.36	0.46	0.49	0.32	0.42	0.43
1625	25.90	26.16	26.22	0.33	0.42	0.44	0.29	0.38	0.39
1675	30.14	30.38	30.42	0.32	0.41	0.42	0.29	0.37	0.37
1735	35.40	35.61	35.62	0.32	0.40	0.41	0.29	0.37	0.37
1765	38.40	38.64	38.61	0.31	0.40	0.41	0.29	0.37	0.37
1850	48.94	49.18	48.94	0.31	0.39	0.40	0.29	0.37	0.38
1875	54.57	54.76	54.34	0.31	0.39	0.40	0.29	0.37	0.37
1900	64.51	64.93	64.35	0.30	0.39	0.40	0.29	0.37	0.37
1950	59.23	59.42	59.60	0.30	0.38	0.39	0.29	0.37	0.38
2000	54.57	54.71	55.12	0.29	0.38	0.39	0.28	0.37	0.37
2075	52.07	52.31	52.65	0.28	0.37	0.39	0.27	0.37	0.38
2125	54.08	54.39	54.89	0.27	0.37	0.39	0.26	0.36	0.38
2200	60.63	61.26	62.69	0.27	0.37	0.39	0.26	0.36	0.39
2250	72.45	71.09	67.96	0.26	0.37	0.40	0.25	0.36	0.39
2275	64.95	64.57	62.05	0.26	0.37	0.40	0.25	0.36	0.40
2300	61.44	60.73	59.78	0.26	0.37	0.40	0.25	0.37	0.40
2350	63.49	63.16	61.89	0.27	0.39	0.43	0.26	0.38	0.42
2400	52.70	52.70	52.97	0.29	0.41	0.46	0.27	0.40	0.45

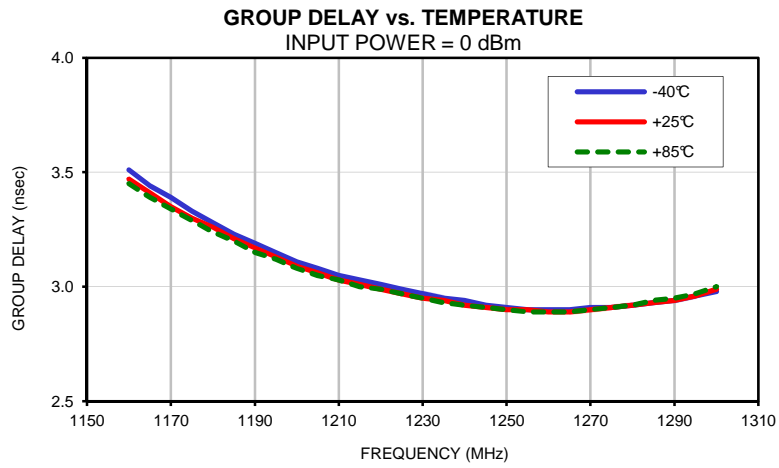
Typical Performance Data

FREQ. (MHz)	GROUP DELAY		
	(nsec)		
	@-40°C	@+25°C	@+85°C
1160	3.51	3.47	3.45
1165	3.44	3.41	3.39
1170	3.39	3.35	3.34
1175	3.33	3.30	3.29
1180	3.28	3.26	3.24
1185	3.23	3.21	3.20
1190	3.19	3.17	3.15
1195	3.15	3.13	3.12
1200	3.11	3.09	3.08
1205	3.08	3.06	3.05
1210	3.05	3.03	3.03
1215	3.03	3.01	3.00
1220	3.01	2.99	2.99
1225	2.99	2.97	2.97
1230	2.97	2.95	2.95
1235	2.95	2.94	2.93
1240	2.94	2.92	2.92
1245	2.92	2.91	2.91
1250	2.91	2.90	2.90
1255	2.90	2.90	2.89
1260	2.90	2.89	2.89
1265	2.90	2.89	2.89
1270	2.91	2.90	2.90
1275	2.91	2.91	2.91
1280	2.92	2.92	2.92
1285	2.93	2.93	2.94
1290	2.94	2.94	2.95
1295	2.96	2.96	2.97
1300	2.98	2.99	3.00

Typical Performance Curves



Typical Performance Curves

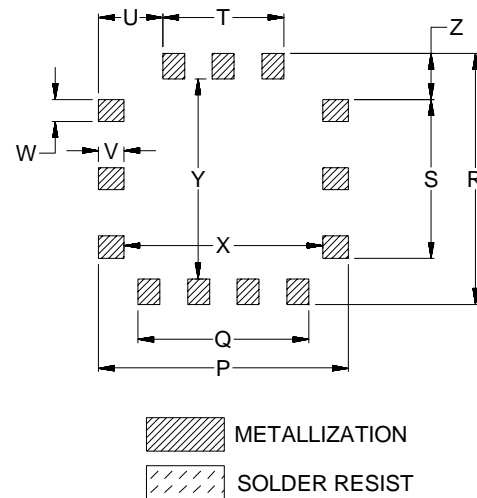


Outline Dimensions

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.

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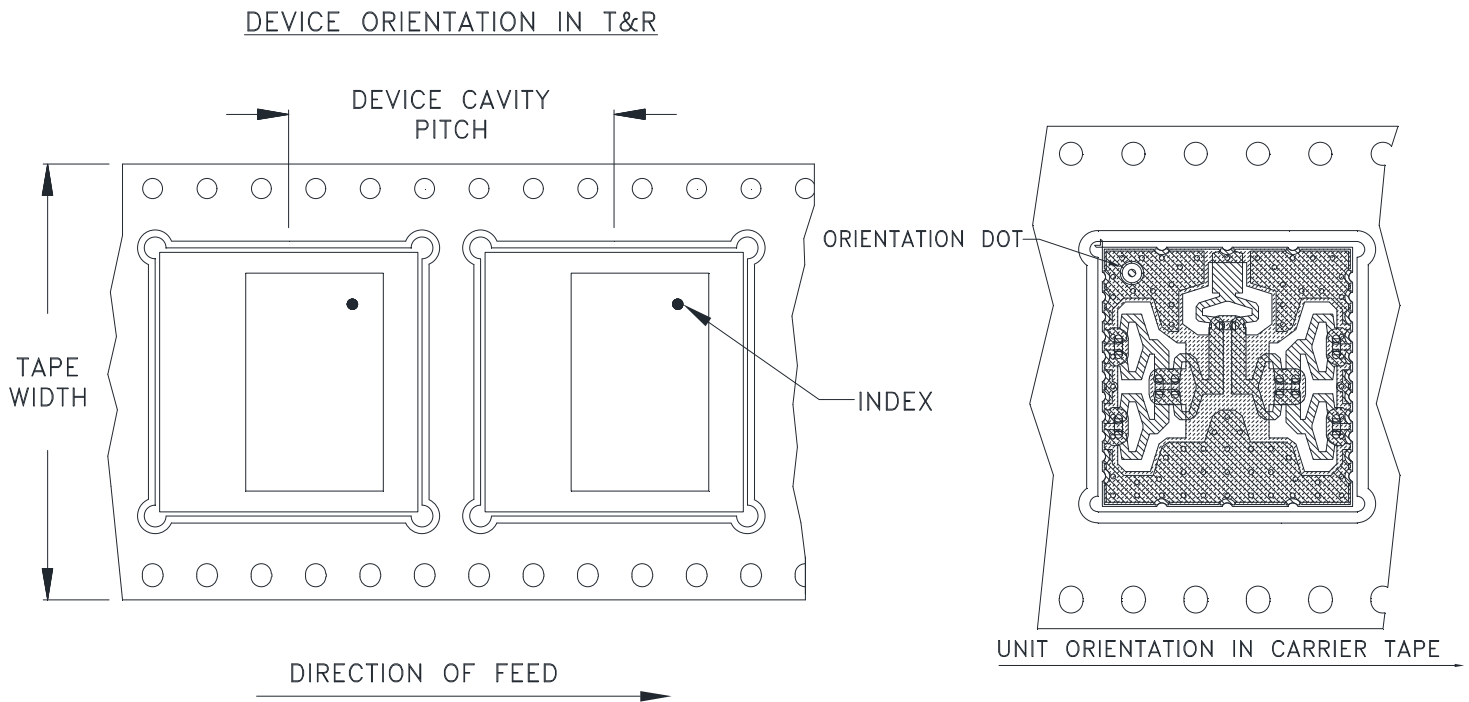
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RF/IF MICROWAVE COMPONENTS

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

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Go to: www.minicircuits.com/pages/pdfs/tape.pdf



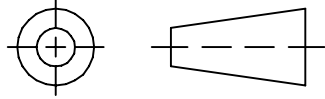
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THIRD ANGLE PROJECTION



REVISIONS

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

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



NOTES:

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- 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 ± 3 PL DECIMALS ± .005" ANGLES ± FRACTIONS ±	DRAWN	DDR	22 JUN 12
	CHECKED	MD	22 JUN 12
	APPROVED	GM	22 JUN 12

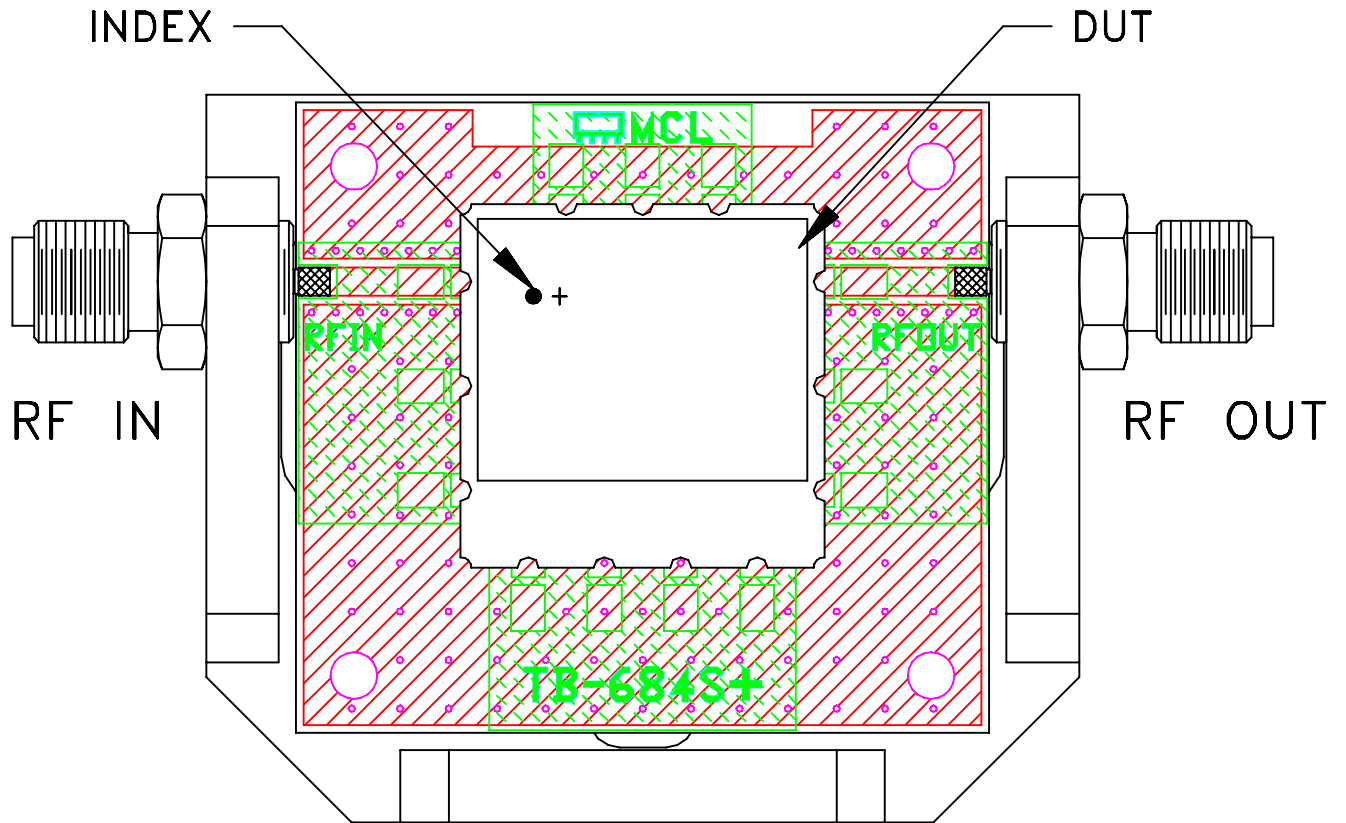
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Brooklyn NY 11235

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

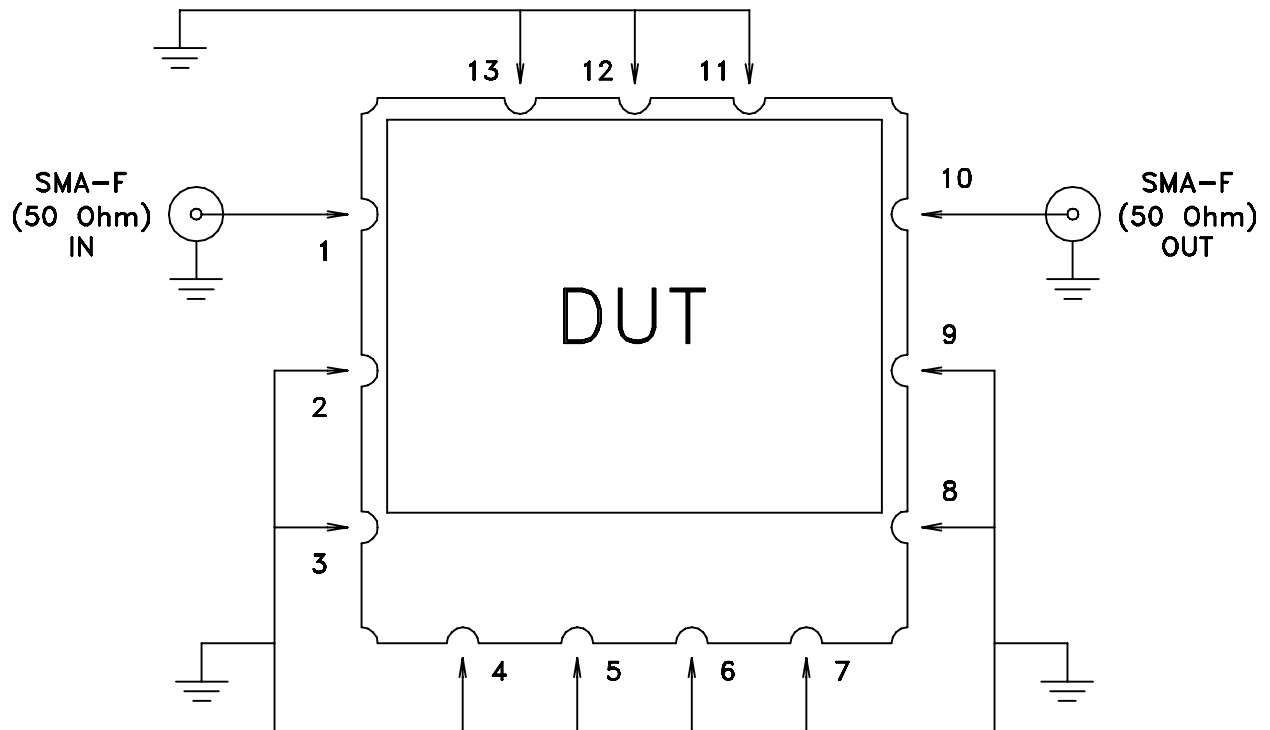
SIZE A	CODE IDENT 15542	DRAWING NO: 98-PL-373	REV: OR
FILE: 98PL373	SCALE: 4:1	SHEET: 1 OF 1	

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Evaluation Board and Circuit



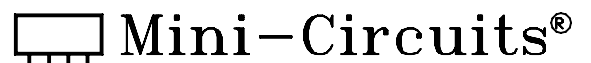
TB-684+



Schematic Diagram

Notes:

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



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