

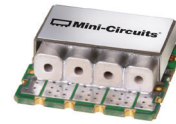
# Surface Mount Bandpass Filter

## CBP-1260C+

50Ω      1200 to 1320 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-1260C+ 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-1260C+ 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-1260C+ has been qualified over wide range of thermal, mechanical and environmental conditions including withstanding the stress of extensive solder reflow cycles.

#### Notes

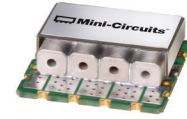
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## CBP-1260C+

50Ω 1200 to 1320 MHz



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CASE STYLE: MP1766

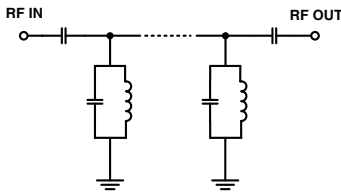
### Features

- Low Insertion loss
- High selectivity
- Miniature shielded package

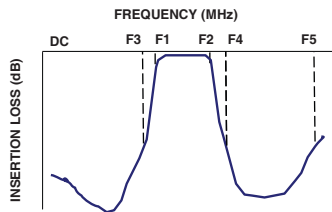
### Applications

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

### Functional Schematic



### Typical Frequency Response



### Electrical Specifications at 25°C

Parameter	F#	Frequency (MHz)	Min.	Typ.	Max.	Unit
Pass Band	Center Frequency	—	—	1260	—	MHz
	Insertion Loss	F1-F2	1200-1320	0.7	2	dB
	VSWR	F1-F2	1200-1320	1.3	—	:1
Stop Band, Lower	Insertion Loss	DC-F3	DC-1025	20	30	dB
	VSWR	DC-F3	DC-1025	—	20	:1
Stop Band, Upper	Insertion Loss	F4-F5	1640-2450	20	30	dB
	VSWR	F4-F5	1640-2450	—	20	:1

### Maximum Ratings

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

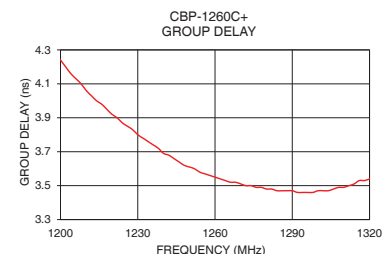
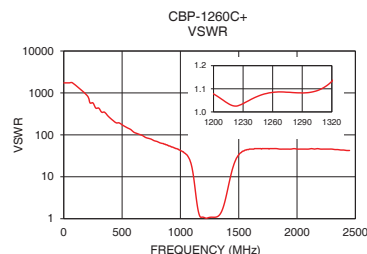
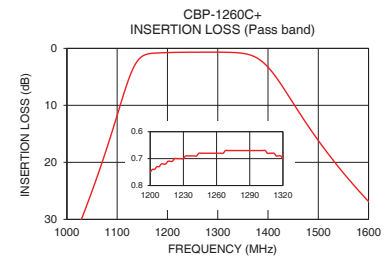
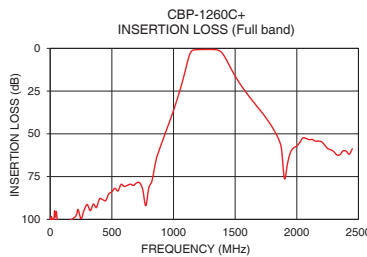
Permanent damage may occur if any of these limits are exceeded.

### Typical Performance Data at 25°C

Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)	Frequency (MHz)	Group Delay (nsec)
1	103.89	1737.18	1200	4.24
860	64.83	59.91	1204	4.16
1025	30.87	39.49	1208	4.10
1085	15.99	23.18	1214	4.00
1112	8.31	10.31	1218	3.95
1128	4.27	4.66	1220	3.92
1142	2.03	2.32	1236	3.74
1156	1.12	1.41	1230	3.80
1200	0.75	1.08	1234	3.76
1230	0.70	1.04	1238	3.72
1260	0.68	1.08	1244	3.66
1300	0.67	1.09	1250	3.61
1320	0.70	1.13	1260	3.55
1382	1.91	2.61	1264	3.53
1415	4.94	6.66	1276	3.49
1450	9.60	16.56	1284	3.47
1540	20.79	41.37	1296	3.46
1640	30.59	46.96	1300	3.47
2000	57.17	45.72	1310	3.49
2450	58.77	42.38	1320	3.54

### +RoHS Compliant

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



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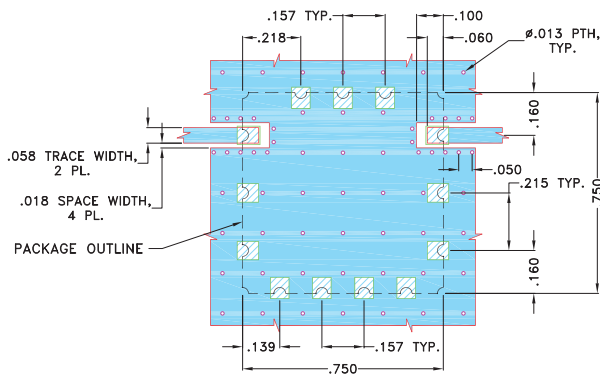
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Page 2 of 3

## 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)**

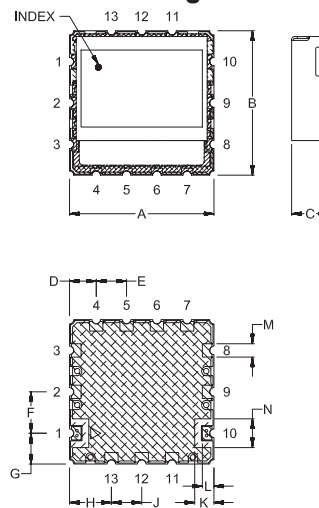


### NOTES:

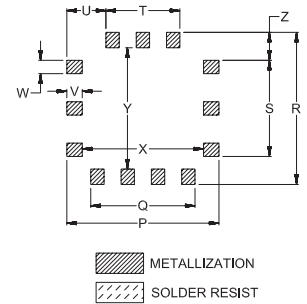
- TRACE WIDTH IS SHOWN FOR OAK (OAK-602) WITH DIELECTRIC THICKNESS .022"±.0015". COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
- BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

- 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*

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*Typical Performance Data*

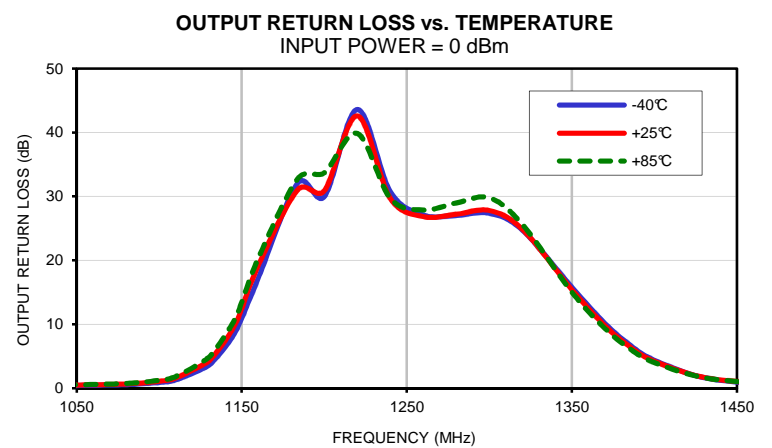
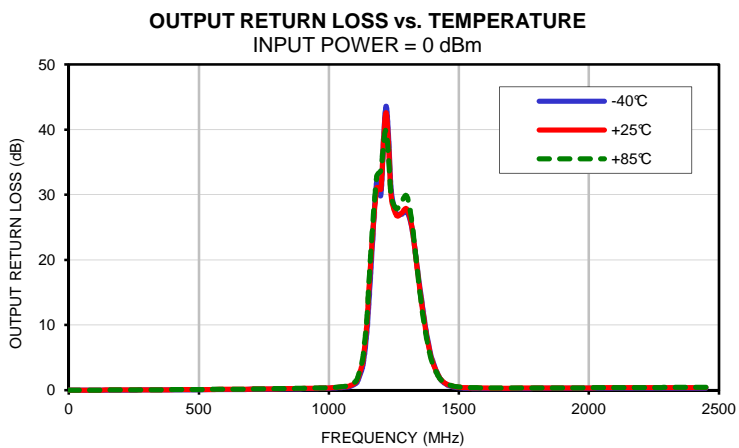
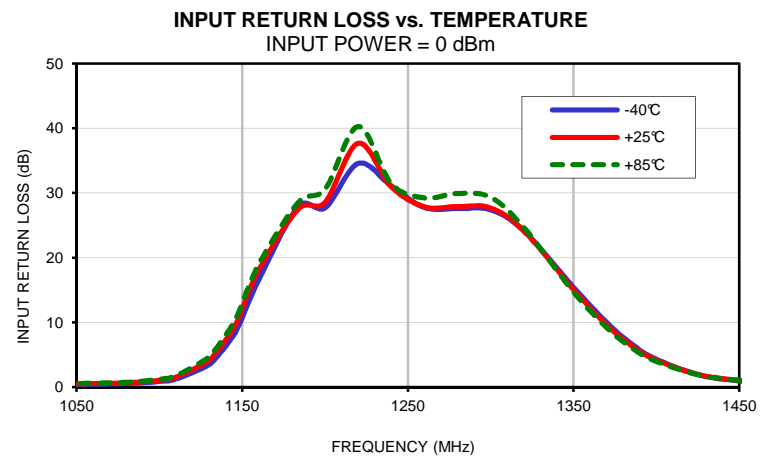
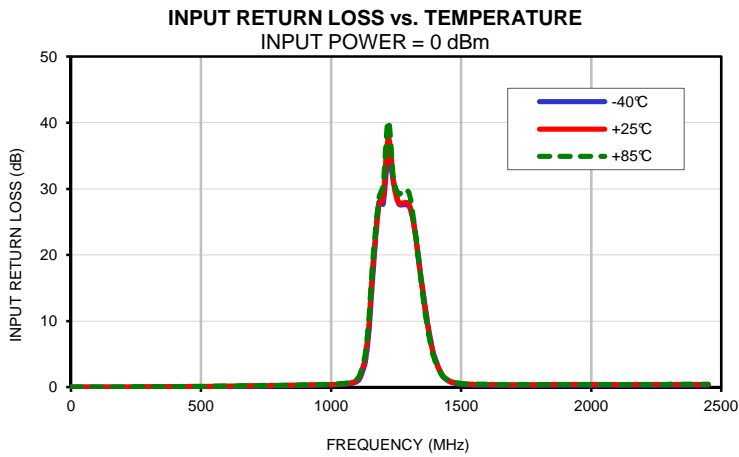
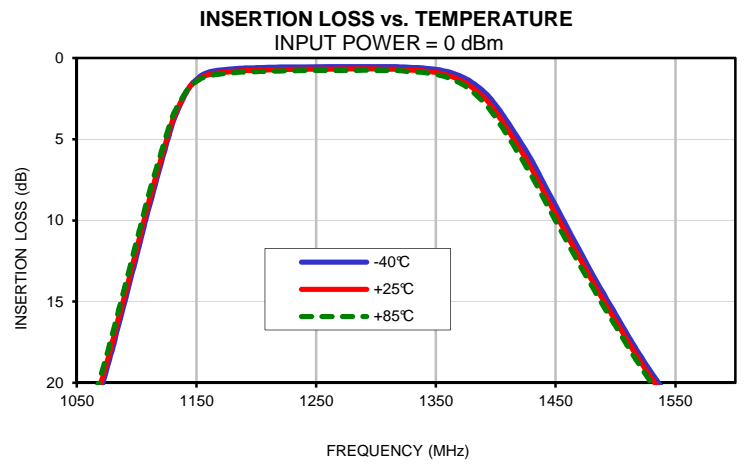
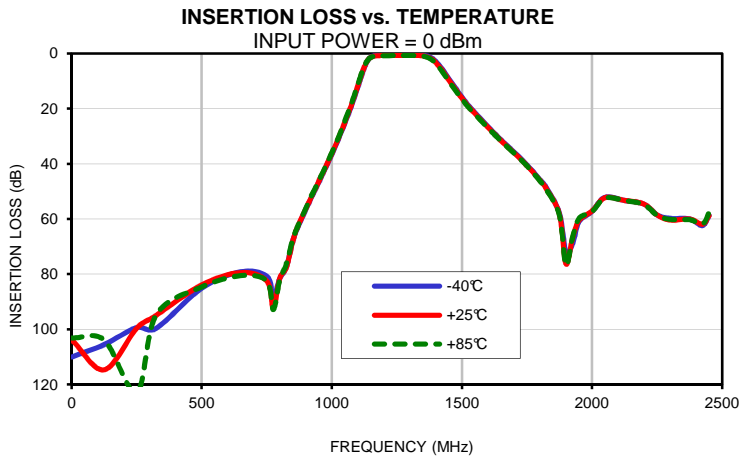
FREQ.  (MHz)	INSERTION LOSS			INPUT RETURN LOSS			OUTPUT RETURN LOSS		
	(dB)			(dB)			(dB)		
	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C
1	110.00	103.89	103.10	0.00	0.00	0.00	0.00	0.00	0.00
125	105.55	114.67	103.90	0.00	0.01	0.01	0.00	0.01	0.01
250	99.37	99.66	122.83	0.01	0.03	0.04	0.01	0.03	0.03
325	99.65	94.94	94.78	0.02	0.05	0.05	0.02	0.04	0.05
500	85.10	83.89	84.63	0.07	0.10	0.11	0.06	0.09	0.10
650	79.17	79.42	80.56	0.12	0.17	0.18	0.10	0.14	0.15
750	80.72	82.43	82.45	0.17	0.22	0.24	0.14	0.18	0.19
775	87.95	92.05	92.84	0.18	0.24	0.26	0.15	0.19	0.20
800	81.59	81.47	82.02	0.20	0.25	0.27	0.16	0.20	0.22
825	77.55	77.68	76.46	0.21	0.27	0.29	0.17	0.22	0.23
850	68.08	68.16	67.45	0.22	0.28	0.30	0.18	0.23	0.24
870	62.90	62.51	62.49	0.24	0.29	0.31	0.19	0.24	0.26
915	53.53	53.32	53.04	0.27	0.33	0.35	0.22	0.27	0.29
950	46.65	46.37	46.11	0.29	0.36	0.38	0.25	0.30	0.32
980	40.73	40.44	40.14	0.32	0.38	0.41	0.28	0.33	0.35
1025	31.19	30.87	30.49	0.37	0.44	0.48	0.34	0.40	0.43
1070	20.43	20.03	19.55	0.49	0.60	0.66	0.47	0.57	0.63
1085	16.42	15.99	15.49	0.61	0.75	0.83	0.60	0.73	0.82
1100	12.18	11.74	11.24	0.88	1.07	1.22	0.89	1.08	1.23
1110	9.29	8.88	8.41	1.27	1.55	1.78	1.30	1.58	1.81
1128	4.51	4.27	4.00	3.19	3.79	4.30	3.25	3.88	4.42
1134	3.27	3.13	2.96	4.49	5.26	5.90	4.58	5.38	6.06
1142	2.04	2.03	1.98	7.01	8.01	8.82	7.14	8.22	9.09
1148	1.44	1.51	1.53	9.56	10.75	11.64	9.76	11.07	12.05
1160	0.86	1.02	1.09	16.62	18.13	19.02	17.22	19.18	20.31
1184	0.64	0.80	0.88	27.97	27.54	28.59	32.11	31.05	32.79
1200	0.59	0.75	0.83	27.68	28.54	30.57	29.96	30.87	33.69
1220	0.55	0.71	0.79	34.57	37.68	40.27	43.61	42.60	39.85
1240	0.54	0.69	0.76	31.10	30.96	31.44	30.72	29.66	29.69
1260	0.53	0.68	0.75	27.75	27.85	29.23	27.08	26.84	27.87
1280	0.52	0.67	0.75	27.59	27.91	29.92	27.01	27.20	28.98
1300	0.52	0.67	0.75	27.40	27.68	29.33	27.37	27.79	29.77
1320	0.54	0.70	0.78	24.13	24.15	24.65	24.73	24.85	25.61
1350	0.69	0.88	1.00	15.44	15.09	14.69	15.78	15.41	15.01
1370	1.09	1.35	1.53	9.97	9.62	9.19	10.13	9.77	9.33
1384	1.70	2.03	2.30	6.89	6.63	6.29	6.98	6.70	6.36
1398	2.70	3.11	3.46	4.55	4.40	4.17	4.60	4.43	4.20
1425	5.68	6.19	6.63	1.95	1.97	1.92	1.95	1.96	1.90
1450	9.09	9.60	10.04	0.97	1.05	1.07	0.93	1.01	1.02
1475	12.53	12.99	13.38	0.58	0.68	0.72	0.53	0.62	0.65
1500	15.76	16.16	16.51	0.41	0.52	0.56	0.36	0.45	0.49
1535	19.90	20.24	20.52	0.33	0.43	0.47	0.27	0.36	0.39
1635	29.87	30.14	30.28	0.29	0.37	0.40	0.23	0.30	0.32
1690	34.83	35.09	35.21	0.30	0.37	0.40	0.24	0.30	0.32
1745	39.87	40.15	40.24	0.30	0.37	0.40	0.25	0.31	0.33
1800	45.72	46.00	46.17	0.30	0.37	0.39	0.26	0.32	0.33
1825	48.77	49.16	49.36	0.30	0.37	0.39	0.26	0.32	0.34
1875	57.96	58.40	58.77	0.30	0.38	0.40	0.27	0.33	0.34
1900	72.18	76.24	76.66	0.31	0.38	0.40	0.28	0.33	0.35
1925	69.16	67.22	66.83	0.30	0.38	0.40	0.28	0.34	0.35
1950	61.03	60.61	59.84	0.30	0.38	0.40	0.28	0.34	0.35
2000	57.29	57.17	57.35	0.31	0.38	0.40	0.29	0.35	0.36
2050	52.13	52.31	52.41	0.31	0.38	0.40	0.30	0.36	0.37
2125	53.29	53.27	53.32	0.30	0.37	0.40	0.29	0.36	0.38
2200	54.64	54.59	54.78	0.29	0.38	0.40	0.29	0.37	0.39
2250	58.51	58.58	58.63	0.29	0.38	0.41	0.29	0.37	0.40
2300	59.77	60.41	60.16	0.29	0.38	0.42	0.29	0.38	0.41
2375	59.98	59.99	60.27	0.30	0.40	0.44	0.29	0.39	0.43
2425	62.40	61.91	61.81	0.30	0.41	0.45	0.30	0.39	0.44
2450	58.74	58.77	57.73	0.31	0.41	0.46	0.29	0.40	0.45



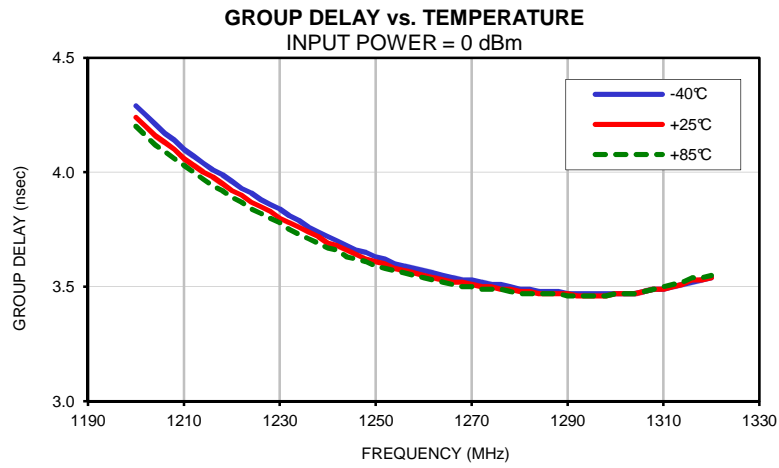
*Typical Performance Data*

FREQ.  (MHz)	GROUP DELAY		
	(nsec)		
	@-40°C	@+25°C	@+85°C
1200	4.29	4.24	4.20
1202	4.25	4.20	4.16
1204	4.21	4.16	4.12
1206	4.17	4.13	4.09
1208	4.14	4.10	4.06
1210	4.10	4.06	4.03
1212	4.07	4.03	4.00
1214	4.04	4.00	3.97
1216	4.01	3.98	3.94
1218	3.99	3.95	3.92
1220	3.96	3.92	3.89
1222	3.93	3.90	3.87
1224	3.91	3.87	3.84
1226	3.88	3.85	3.82
1228	3.86	3.83	3.80
1230	3.84	3.80	3.78
1232	3.81	3.78	3.75
1234	3.79	3.76	3.73
1236	3.76	3.74	3.71
1238	3.74	3.72	3.69
1240	3.72	3.69	3.67
1242	3.70	3.68	3.66
1244	3.68	3.66	3.63
1246	3.66	3.64	3.62
1248	3.65	3.62	3.61
1250	3.63	3.61	3.59
1252	3.62	3.60	3.58
1254	3.60	3.58	3.57
1256	3.59	3.57	3.56
1258	3.58	3.56	3.55
1260	3.57	3.55	3.54
1262	3.56	3.54	3.53
1264	3.55	3.53	3.52
1266	3.54	3.52	3.51
1268	3.53	3.52	3.50
1270	3.53	3.51	3.50
1272	3.52	3.50	3.49
1274	3.51	3.50	3.49
1276	3.51	3.49	3.49
1278	3.50	3.49	3.48
1280	3.49	3.48	3.47
1282	3.49	3.48	3.47
1284	3.48	3.47	3.47
1286	3.48	3.47	3.47
1288	3.48	3.47	3.47
1290	3.47	3.47	3.46
1292	3.47	3.46	3.46
1294	3.47	3.46	3.46
1296	3.47	3.46	3.46
1298	3.47	3.46	3.46
1300	3.47	3.47	3.47
1304	3.47	3.47	3.47
1306	3.48	3.48	3.48
1308	3.49	3.49	3.49
1310	3.49	3.49	3.50
1312	3.50	3.50	3.51
1314	3.51	3.51	3.52
1316	3.52	3.53	3.54
1318	3.53	3.53	3.54
1320	3.54	3.54	3.55

## Typical Performance Curves



## Typical Performance Curves

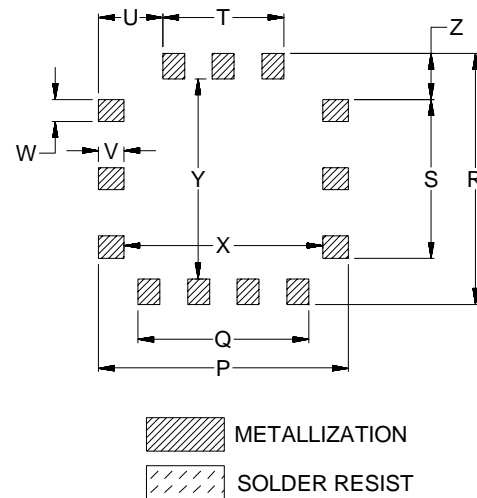


## Outline Dimensions

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  $\mu$  inch (.05-.13 microns) Gold over 120-240  $\mu$  inch (3.05-6.10 microns) Nickel plate.  
All models, (+) suffix.

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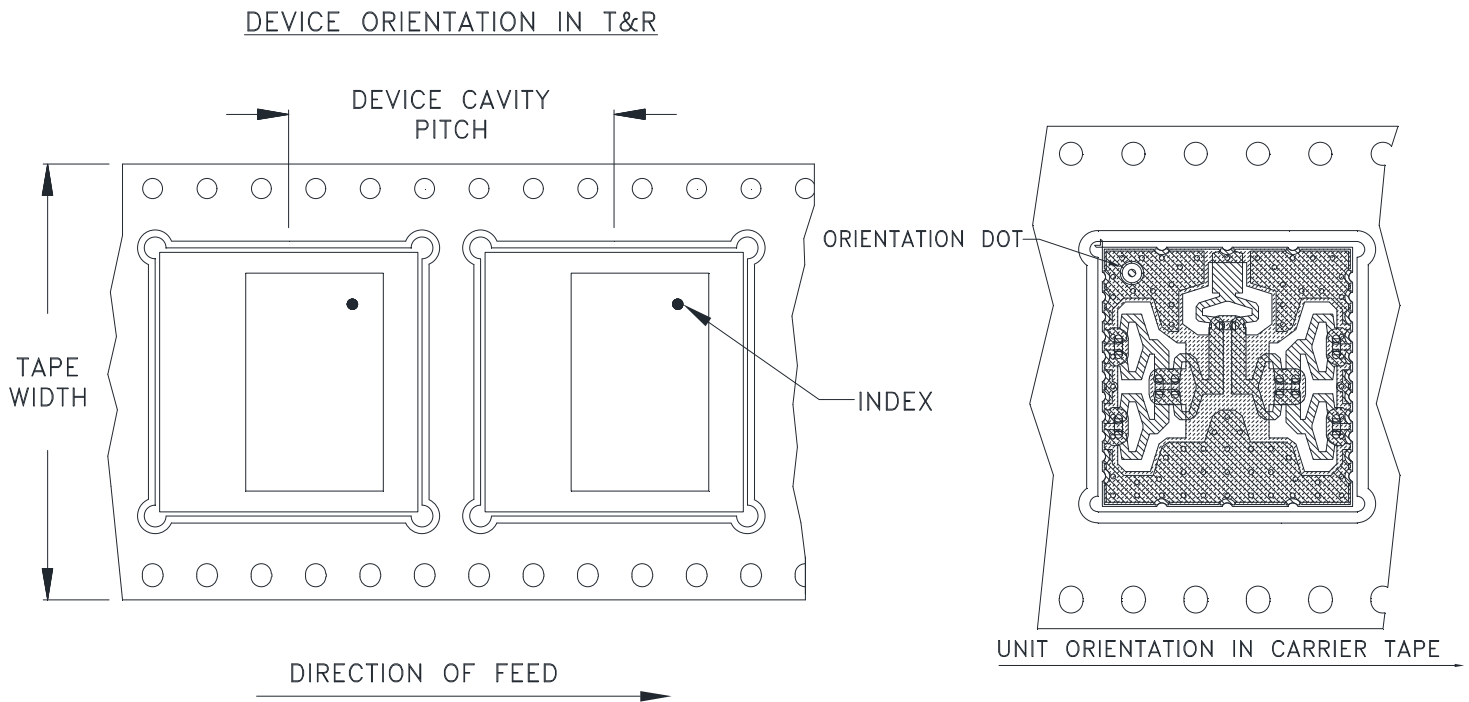


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RF/IF MICROWAVE COMPONENTS



# 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

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.

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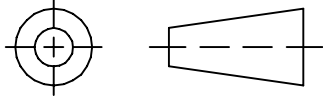
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THIRD ANGLE PROJECTION



REVISIONS

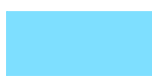
REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	M137721	NEW RELEASE	JUN 12	DDR	KG

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



**NOTES:**

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

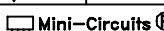
 DENOTES COPPER LAND PATTERN FREE OF SOLDERMASK

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

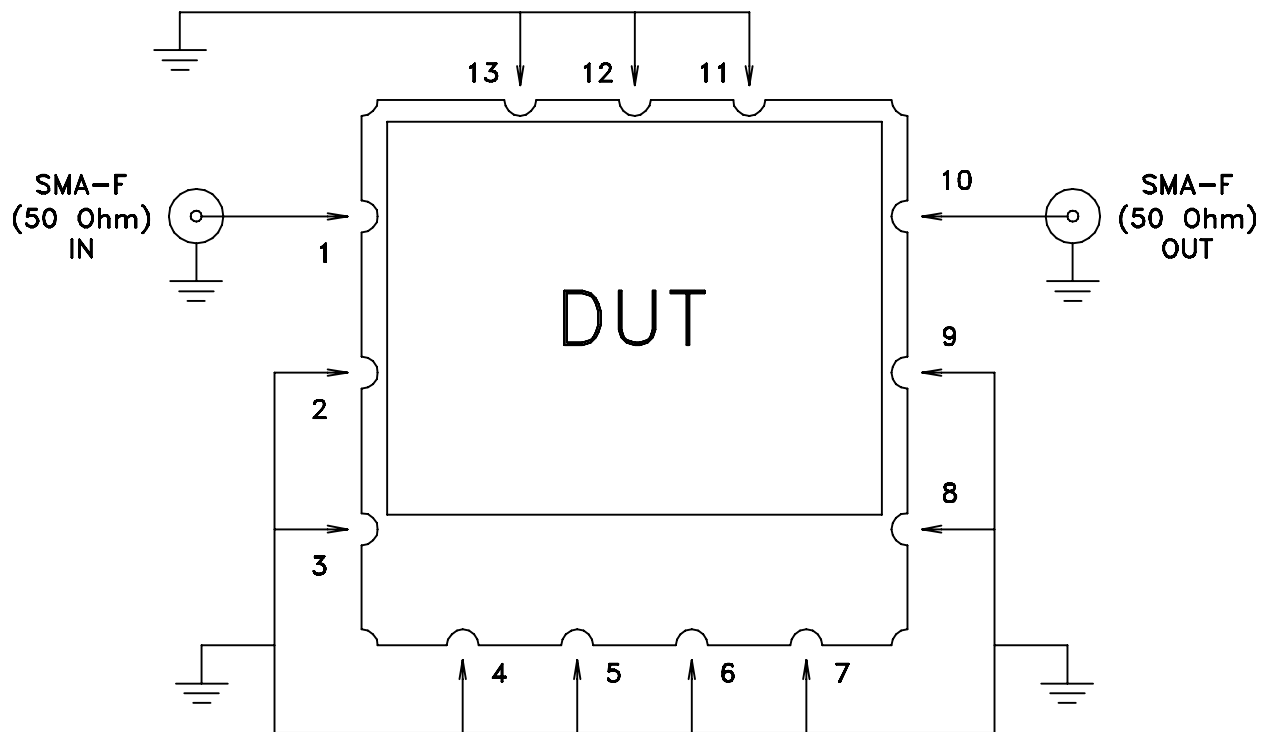
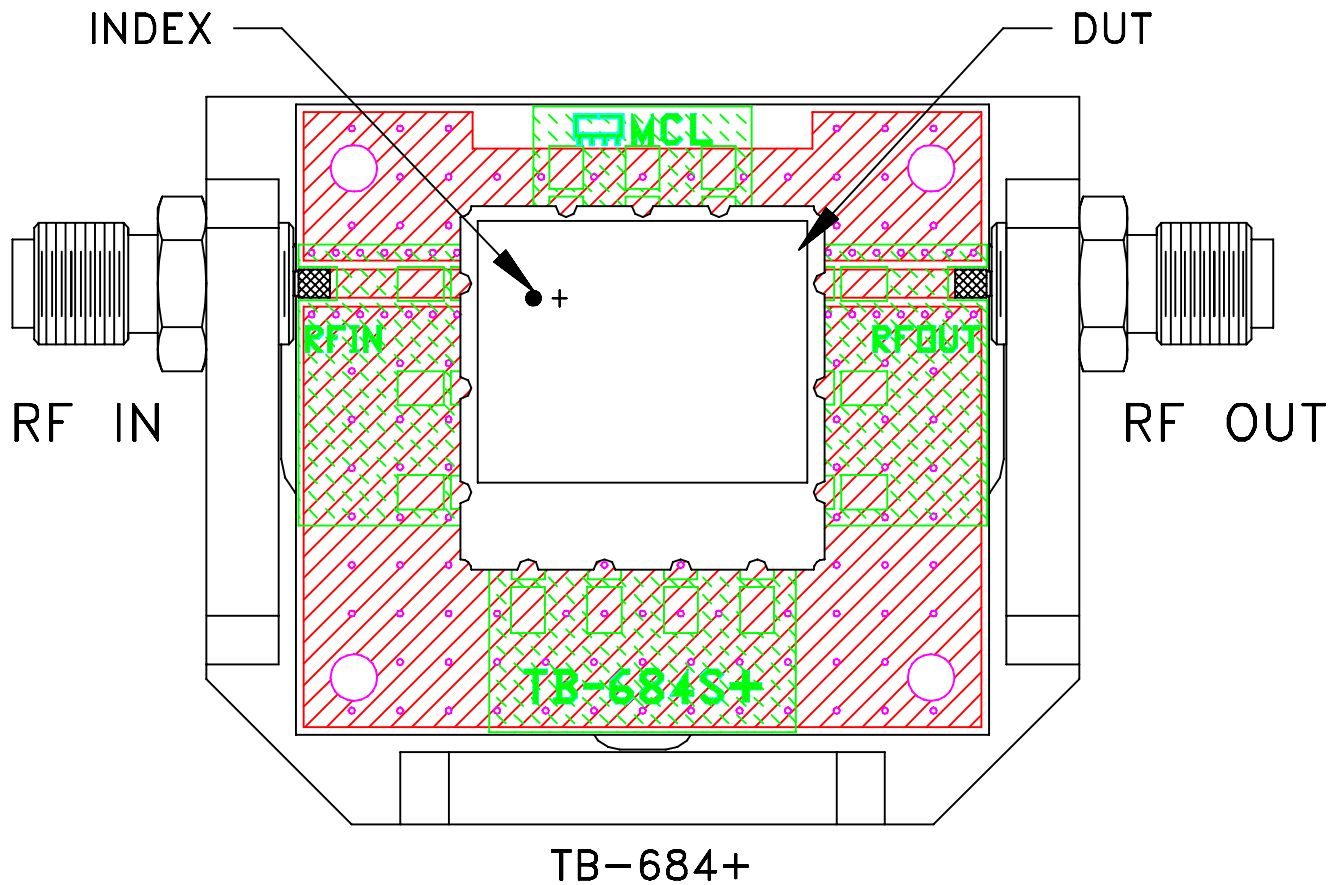
 **Mini-Circuits®** 13 Neptune Avenue  
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**PL, 13FL01, MP1766, BPF,  
TB-684+, 50 Ohm**

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



Schematic Diagram

**Notes:**

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