

LTCC

# High Pass Filter

50Ω 4900 to 5850 MHz

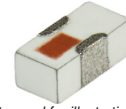
### Features

- Miniature size 0603
- Low Insertion Loss, 0.5 typ.
- Low cost
- Aqueous washable

### Applications

- ISM Band
- WLAN
- Bluetooth
- Zigbee

## HPJC-492R+



Generic photo used for illustration purposes only

CASE STYLE: JC0603C-7

**+RoHS Compliant**

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



Available Tape and Reel at no extra cost

Reel Size	Devices/Reel
7"	20, 50, 100, 200, 500, 1000, 3000

### Electrical Specifications at 25°C

Parameter	Frequency (MHz)	Min.	Typ.	Max.	Unit
Pass Band	Insertion Loss <sup>1</sup>	—	0.5	0.9	dB
	VSWR	—	1.2	2.0	:1
Stop Band	Rejection Loss	—	25	—	dB
		2400 - 2500	25	36	—

1. Tested on Evaluation Board TB-1027+

### Maximum Ratings

Operating Temperature	-40°C to 85°C
Storage Temperature <sup>2</sup>	-40°C to 85°C
RF Power Input <sup>3</sup>	2W at 25°C

2. Refer to product storage temperature after installation  
Suggestion for T&R unused product storage condition:  
+5 ~ +35 °C, Humidity 45~75%RH, 12 month Max  
3. Derate linearly to 1W at 85°C.

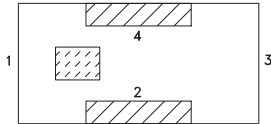
### Typical Performance Data at 25°C

Frequency (GHz)	Insertion Loss (dB)	VSWR (:1)
0.50	29.47	627.15
1.00	24.45	604.00
1.50	23.27	1110.07
2.40	43.28	122.82
2.50	32.96	109.17
3.00	14.28	31.83
3.50	5.03	6.30
4.50	0.54	1.18
4.90	0.44	1.12
5.00	0.43	1.12
5.50	0.40	1.22
5.90	0.44	1.36
6.00	0.44	1.39
7.00	0.40	1.18
8.00	0.54	1.31

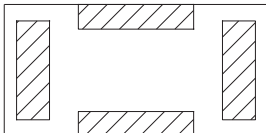
### Block Diagram



### Top View

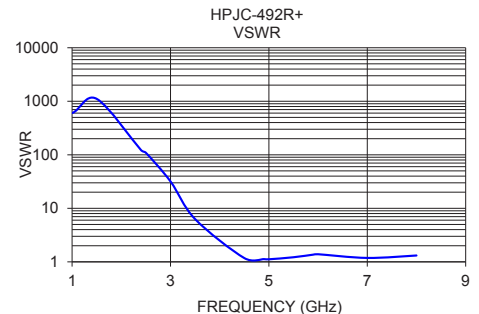
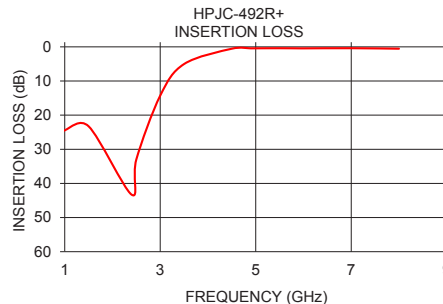


### Bottom View



### Pad Connections

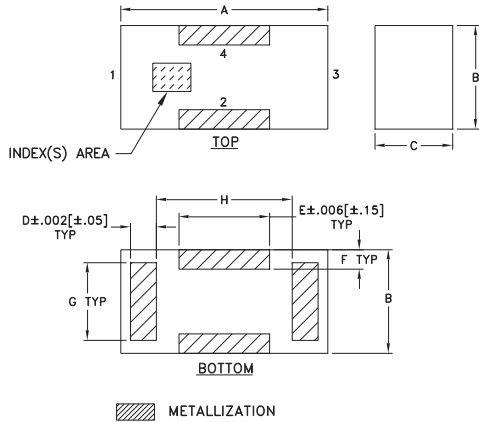
Input	1
Output	3
Ground	2,4



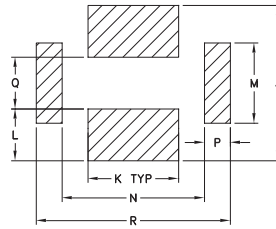
# High Pass Filter

# HPJC-492R+

## Outline Drawing

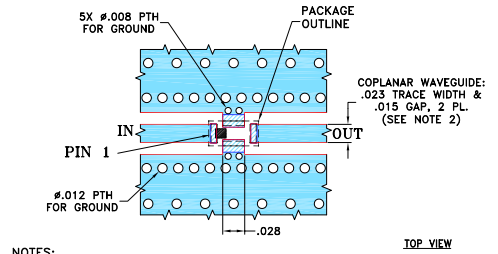


## PCB Land Pattern



Suggested Layout,  
Tolerance to be within .002

## Evaluation Board MCL P/N: TB-1027+ Suggested PCB Layout (PL-565)



### NOTES:

1. PCB IS MULTILAYER PCB, SEE STACK-UP DIAGRAM.
  2. TRACE WIDTH & GAP PARAMETERS ARE SHOWN FOR FR4 WITH DIELECTRIC THICKNESS  $.008 \pm .001$ ; COPPER: 1/2 OZ. FOR OTHER MATERIALS TRACE WIDTH AND GAP MAY NEED TO BE MODIFIED.
  3. LAYER 3 AND LAYER 4 OF THE PCB ARE CONTINUOUS GROUND PLANES.
- DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER).
- DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK.

## Outline Dimensions (inch/mm)

A	B	C	D	E	F	G	H	J
.063	.032	.024	.008	.028	.006	.024	.041	.047
1.60	0.81	0.61	0.20	0.71	0.15	0.6096	1.04	1.19
K	L	M	N	P	Q	R	wt	
.028	.016	.024	.043	.008	.016	0.059	grams	
0.71	0.41	0.61	1.09	0.20	0.41	1.50	.005	

## Additional Notes

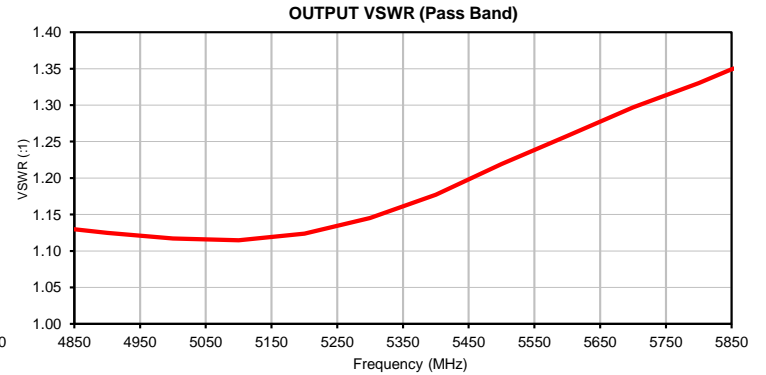
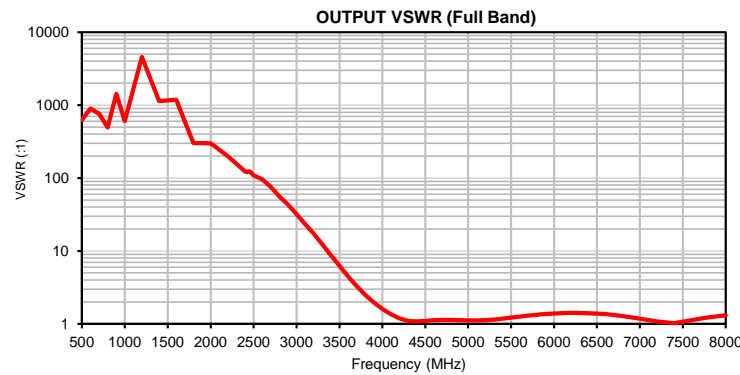
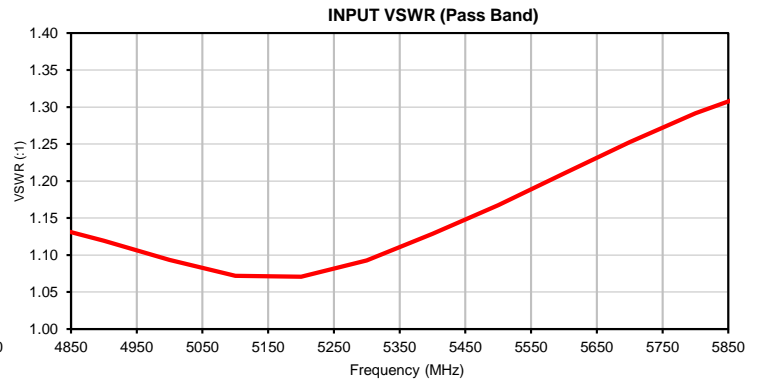
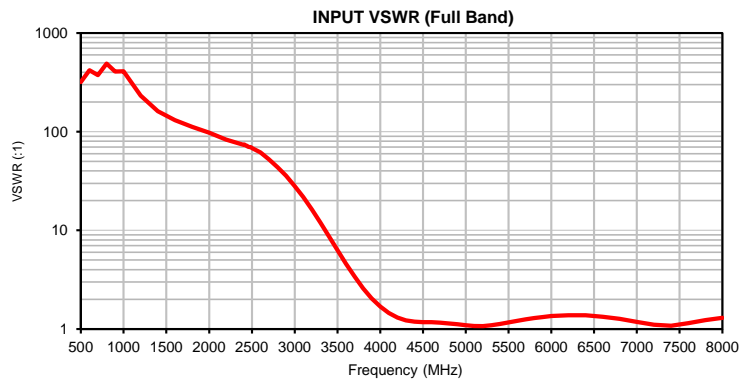
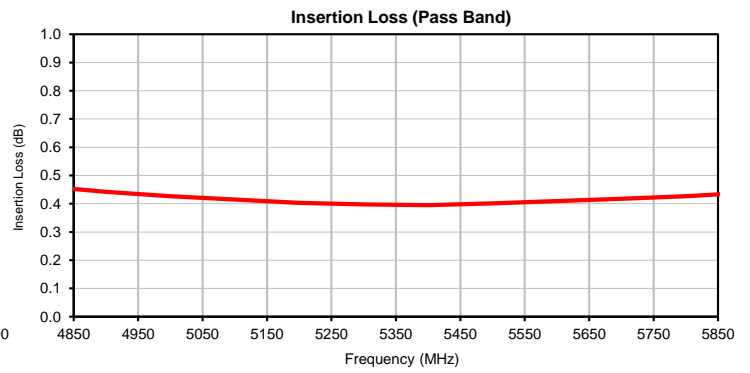
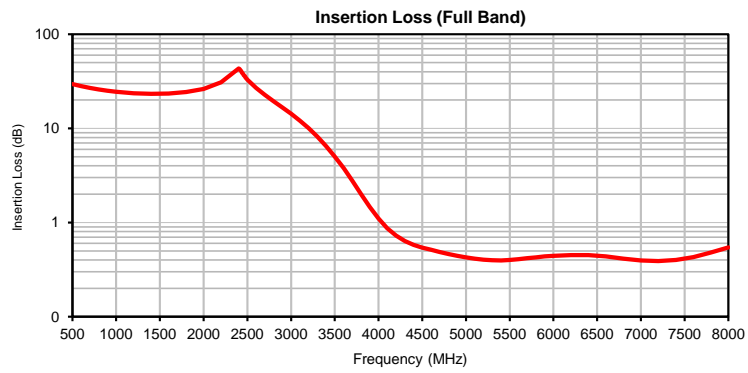
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Typical Performance Data

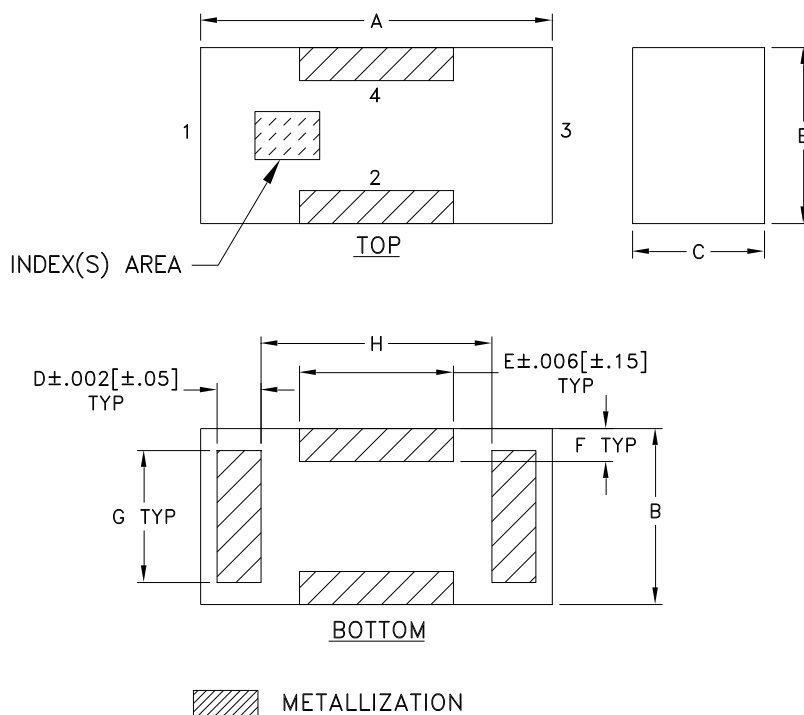
FREQUENCY (MHz)	INSERTION LOSS (dB)	INPUT VSWR (:1)	OUTPUT VSWR (:1)
500	29.47	318.52	627.16
600	28.03	418.60	901.45
700	26.86	373.48	759.22
800	25.87	490.06	493.31
900	25.09	406.88	1424.62
1000	24.45	409.85	604.01
1200	23.61	231.92	4581.17
1400	23.25	161.03	1137.05
1600	23.43	130.54	1184.66
1800	24.31	112.21	301.69
2000	26.30	97.90	298.54
2200	30.86	83.16	199.18
2400	43.28	73.96	122.82
2410	42.65	74.27	121.84
2420	41.32	73.48	121.42
2430	40.30	72.56	121.57
2440	38.89	71.89	123.66
2450	37.90	70.65	123.11
2460	36.59	70.48	122.49
2470	35.78	69.89	119.59
2480	34.64	69.92	115.57
2490	33.94	69.33	111.14
2500	32.96	68.39	109.17
2600	26.86	61.60	95.60
2700	22.71	52.55	76.12
2800	19.47	43.66	55.70
2900	16.71	35.89	43.44
3000	14.28	28.09	31.83
3100	12.08	21.74	23.52
3200	10.06	16.24	17.26
3300	8.19	12.03	12.43
3400	6.52	8.72	8.79
3500	5.03	6.30	6.25
3600	3.78	4.57	4.49
3700	2.78	3.39	3.30
3800	2.00	2.58	2.50
3900	1.46	2.05	1.96
4000	1.10	1.69	1.60
4100	0.87	1.45	1.35
4200	0.73	1.31	1.19
4300	0.64	1.22	1.10
4400	0.58	1.19	1.08
4500	0.54	1.18	1.10
4600	0.51	1.17	1.12
4700	0.49	1.16	1.14
4800	0.46	1.14	1.13
4900	0.44	1.12	1.12
5000	0.43	1.09	1.12
5100	0.41	1.07	1.11
5200	0.40	1.07	1.12
5300	0.40	1.09	1.15
5400	0.39	1.13	1.18
5500	0.40	1.17	1.22
5600	0.41	1.21	1.26
5700	0.42	1.25	1.30
5800	0.43	1.29	1.33
5850	0.43	1.31	1.35
5900	0.44	1.32	1.36
6000	0.44	1.35	1.39
6200	0.45	1.38	1.42
6400	0.45	1.38	1.40
6600	0.44	1.33	1.36
6800	0.41	1.27	1.28
7000	0.40	1.18	1.18
7200	0.39	1.10	1.08
7400	0.40	1.08	1.02
7600	0.43	1.14	1.12
7800	0.48	1.23	1.23
8000	0.54	1.30	1.31

## Typical Performance Curves

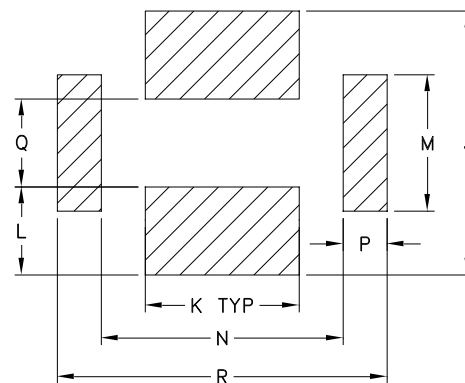


## Outline Dimensions

JC0603C-7



## PCB Land Pattern



Suggested Layout,  
Tolerance to be within  $\pm .002$

CASE #	A	B	C	D	E	F	G	H	J	K	L
JC0603C-7	.063 (1.60)	.032 (.80)	.024 (.60)	.008 (.20)	.028 (.70)	.006 (.15)	.024 (.60)	.041 (1.05)	.047 (1.20)	.028 (.70)	.016 (.40)

CASE#	M*	N	P	Q	R	WT.GRAMS
JC0603C-7	.024 (.62)	.043 (1.10)	.008 (.20)	.016 (.40)	.059 (1.50)	.005

Dimensions are in inches (mm). Tolerances: 3 Pl.  $\pm .004$

### Notes:

- Open style, ceramic base.
- Termination finish:  
For RoHS Case Styles: Tin plate over Nickel plate. All models, (+) suffix.
- Line width should be designed to match 50 OHMS characteristic impedance, depending on PCB material & thickness.



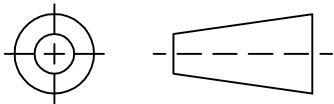
P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661 For detailed performance specs & shopping online see Mini-Circuits web site



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RF/IF MICROWAVE COMPONENTS

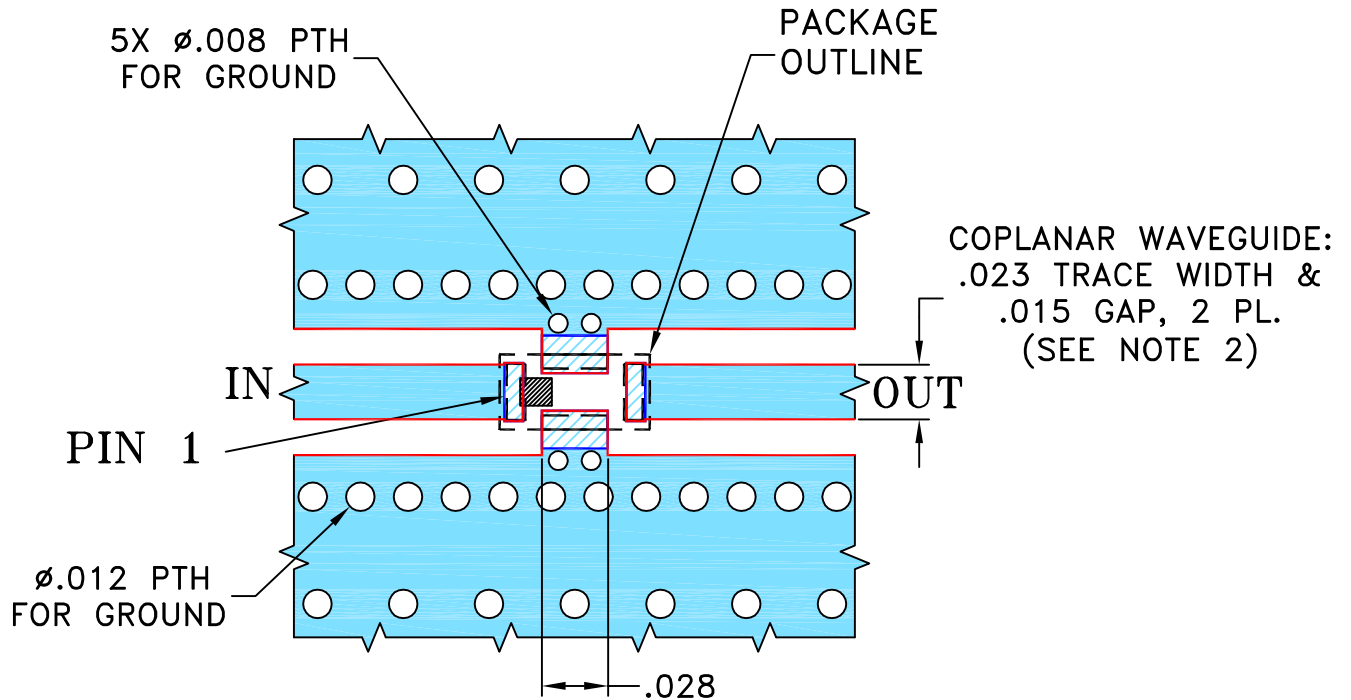
THIRD ANGLE PROJECTION



REVISIONS

REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	M168200	NEW RELEASE	05/31/18	NP	SL
A	M173497	MOVED PIN 1	04/02/19	NP	CM

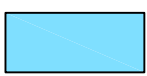
SUGGESTED MOUNTING CONFIGURATION  
 FOR JC0603C-7 CASE STYLE, "04FL02" PIN CODE



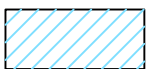
TOP VIEW

NOTES:

1. PCB IS MULTILAYER PCB, SEE STACK-UP DIAGRAM.
2. TRACE WIDTH & GAP PARAMETERS ARE SHOWN FOR FR4 WITH DIELECTRIC THICKNESS .008"±.001"; COPPER: 1/2 OZ. FOR OTHER MATERIALS TRACE WIDTH AND GAP MAY NEED TO BE MODIFIED.
3. LAYER 3 AND LAYER 4 OF THE PCB ARE CONTINUOUS GROUND PLANES.



DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER).



DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK.

UNLESS OTHERWISE SPECIFIED	INITIALS	DATE
DRAWN	NP	05/30/18
CHECKED	GF	05/30/18
APPROVED	SL	05/31/18



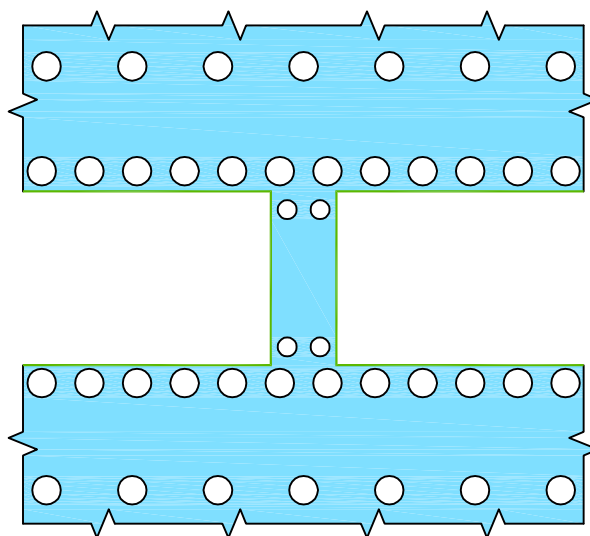
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 Brooklyn NY 11235

PL, 04FL02, JC0603C-7, TB-1027+

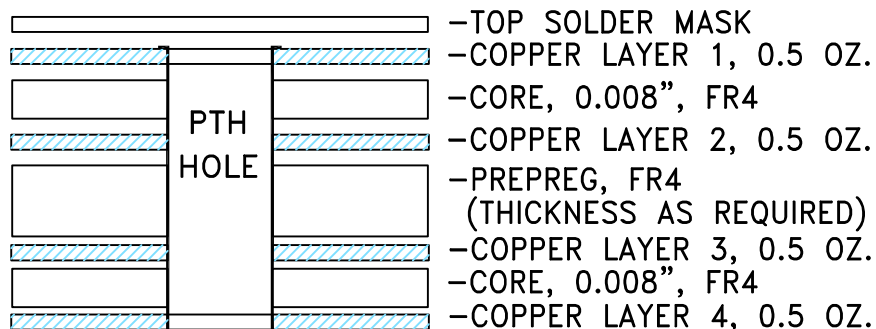
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SIZE	CODE IDENT	DRAWING NO:	REV:
A	15542	98-PL-565	A
FILE:	98PL565	SCALE:	12:1
SHEET:	1	OF	2

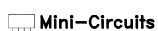


LAYER 2

STACK-UP DIAGRAM



1. TOTAL FINISHED THICKNESS 0.020" ± 10%.
2. PTH HOLES PRESENT FROM COPPER LAYER 1 TO 4.

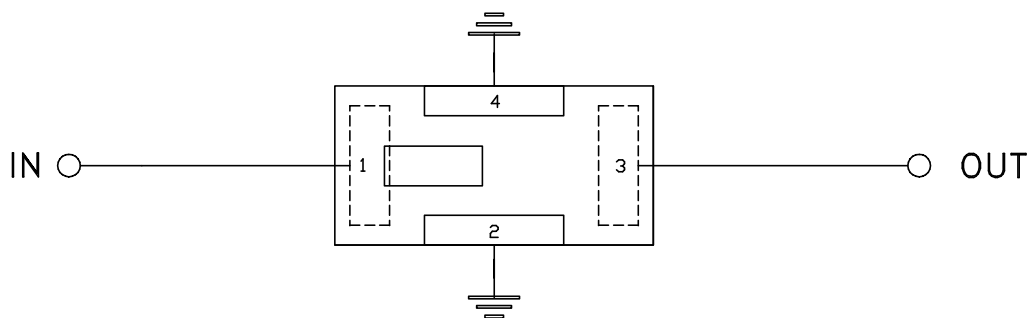
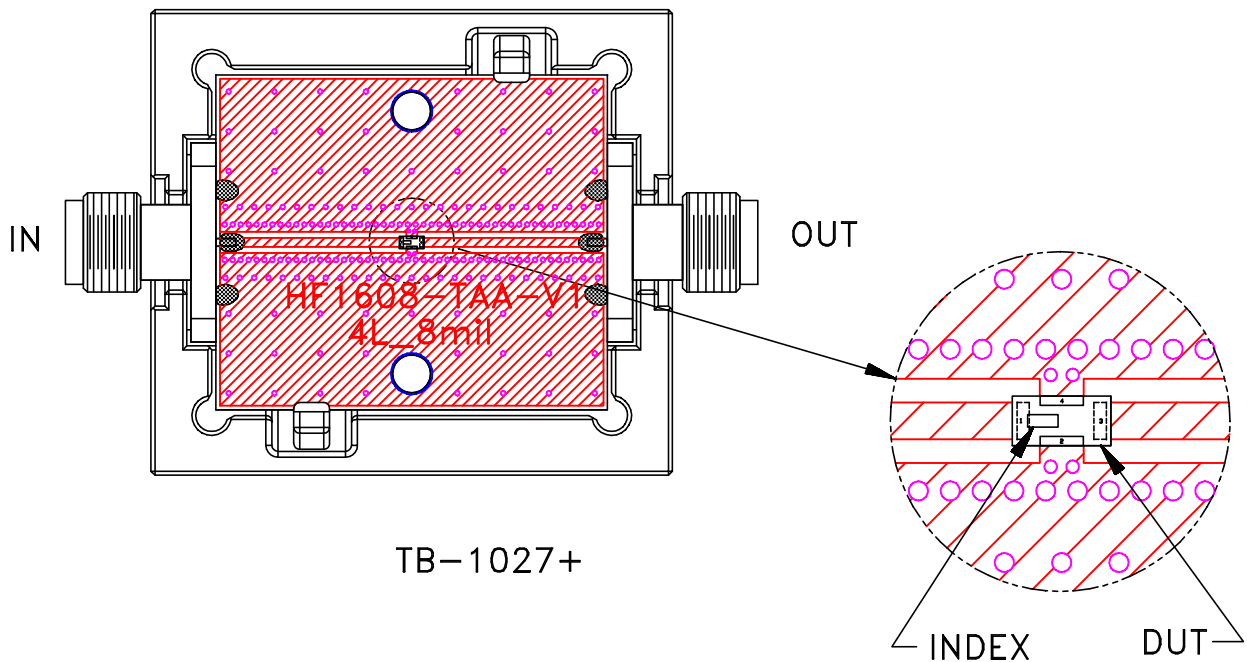


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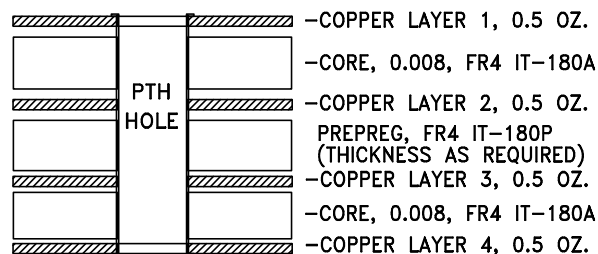
ALL DIMENSIONS ARE IN INCHES EXCEPT OTHERWISE SPECIFIED

SIZE A	CODE IDENT 15542	DRAWING NO: 98-PL-565	REV: A
FILE: 98PL565	SCALE: 12:1	SHEET: 2 OF 2	

# Evaluation Board and Circuit




Schematic Diagram



Stack-up Diagram

Notes:

1. 50 Ohm SMA Female connectors.
2. PCB Material: FR4 or equivalent,  
Dielectric Constant=4.5,  
Total finished Thickness = .025 inch.

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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	-40° to 85° C Ambient Environment	Individual Model Data Sheet
Humidity	90 to 95% RH, 240 hours, 50°C	MIL-STD-202, Method 103, Condition A, Except 50°C and end-point electrical test done within 12 hours
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: 250°C peak	J-STD-020C, 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, 12 times in each of three perpendicular directions (total 36)	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