

LTCC

High Pass Filter

50Ω 4900 to 5850 MHz

Features

- Miniature size 0202 (0.026"[0.65mm] x 0.020"[0.5mm] x 0.015"[0.37mm])
- Low Insertion Loss, 0.4 dB typ.
- Low cost
- Aqueous washable

Applications

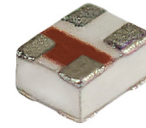
- ISM Band
- WLAN
- Bluetooth
- Zigbee

Block Diagram



Pad Connections

Input	2
Output	1
Ground	3,4

HPSC-492R+


CASE STYLE: SC0202C

+RoHS Compliant

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

Electrical Specifications at 25°C

Parameter		Frequency (MHz)	Min.	Typ.	Max.	Unit
Pass Band	Insertion Loss ¹	4900 - 5850	—	0.4	0.65	dB
	VSWR	4900 - 5850	—	1.2	2.0	:1
Stop Band	Rejection Loss	500 - 2400	—	25	—	dB
		2400 - 2500	20	34	—	

1. Tested on Evaluation Board TB-1029+

Maximum Ratings

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

2. Refer to product storage temperature after installation
Suggestion for T&R unused product storage condition:

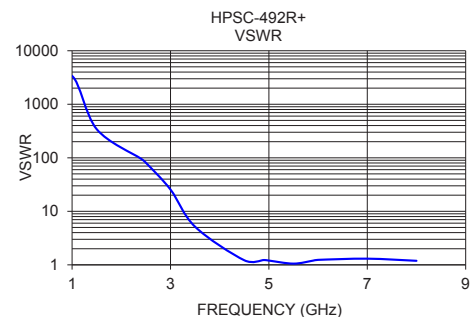
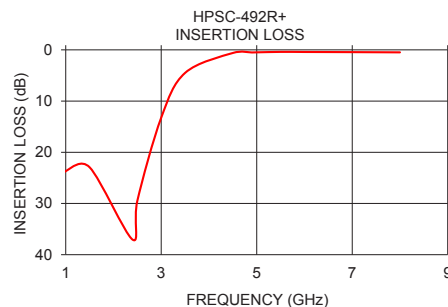
+5 ~ +35 °C, Humidity 45~75%RH, 12 month Max

3. Derate linearly to 1W at 85°C

Typical Performance Data at 25°C⁴

Frequency (GHz)	Insertion Loss (dB)	VSWR (:1)
0.50	28.43	1801.42
1.00	23.69	3371.52
1.50	22.93	342.70
2.40	37.06	96.25
2.50	29.47	80.87
3.00	13.24	25.53
3.50	4.50	5.15
4.50	0.61	1.22
4.90	0.51	1.23
5.00	0.48	1.20
5.50	0.40	1.05
5.90	0.41	1.20
6.00	0.41	1.24
7.00	0.44	1.30
8.00	0.49	1.19

4. Measured with Agilent E5071B network analyzer using impedance conversion and port extension.



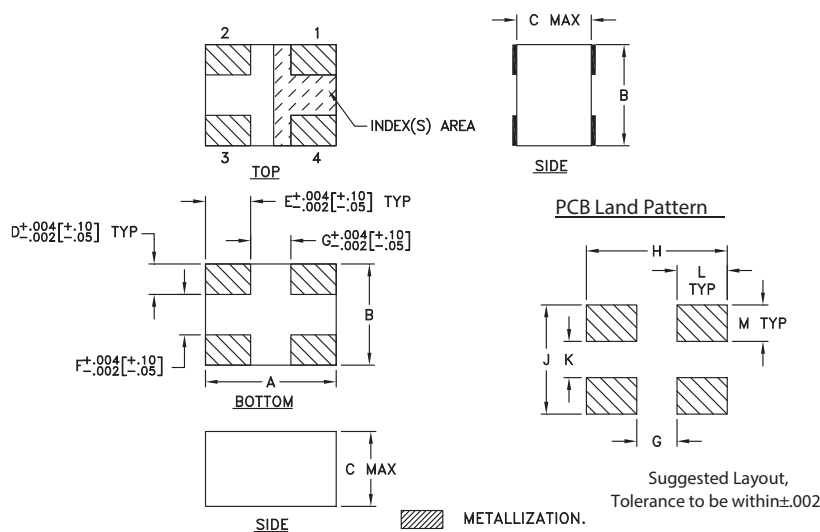
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REV. OR
M172548
HPSC-492R+
SL/CP/AM
190405
Page 1 of 2

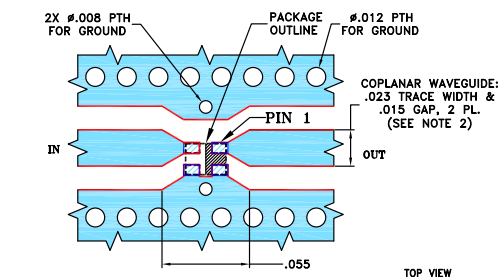
High Pass Filter

HPSC-492R+

Outline Drawing



Evaluation Board MCL P/N: TB-1029+ Suggested PCB Layout (PL-567)



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.

Outline Dimensions (inch mm)

A	B	C	D	E	F	G
.026	.020	.015	.006	.009	.008	.008
0.66	0.51	0.38	0.15	0.23	0.20	0.20

H	J	K	L	M	wt
.028	.021	.007	.010	0.007	grams
0.71	0.53	0.18	0.25	0.18	0.0005

Additional Notes

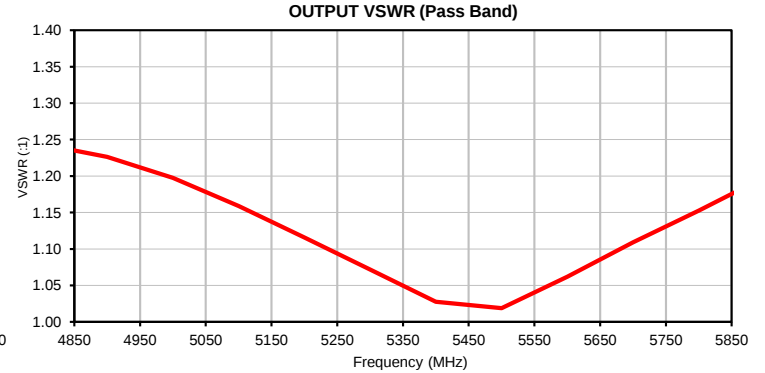
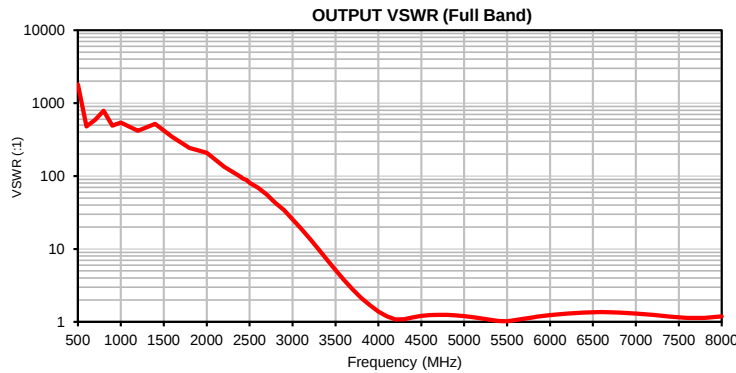
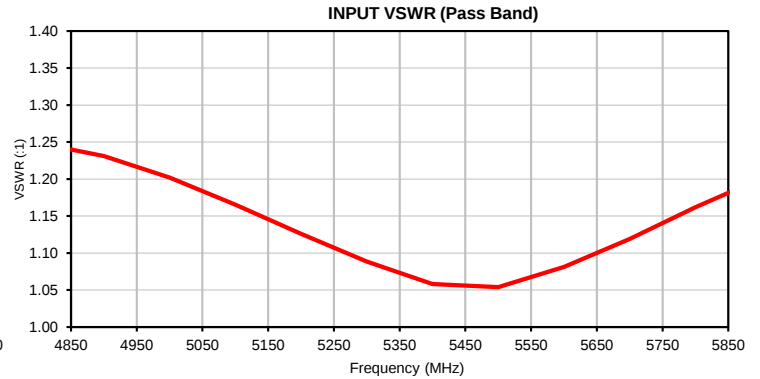
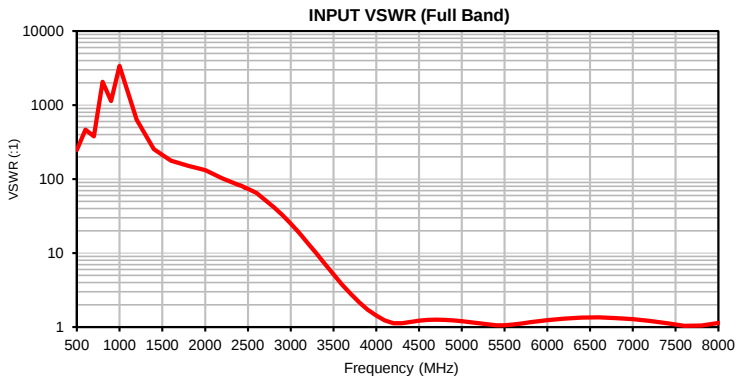
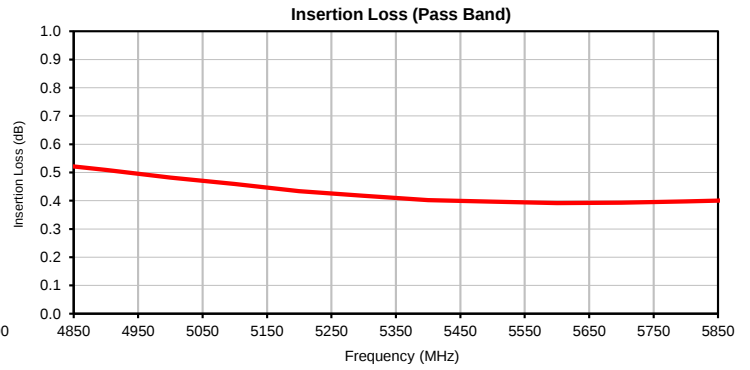
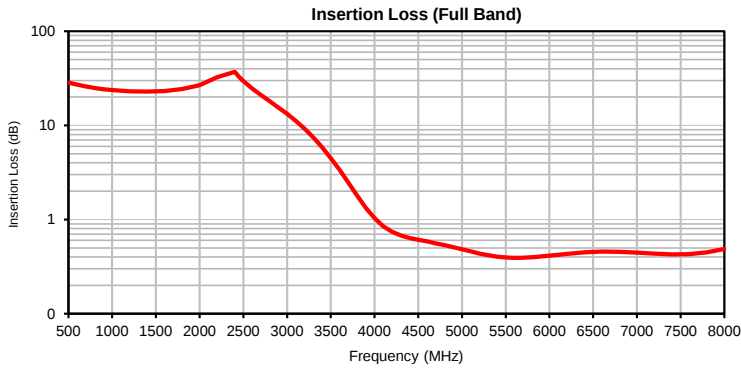
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Typical Performance Data

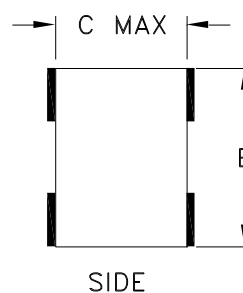
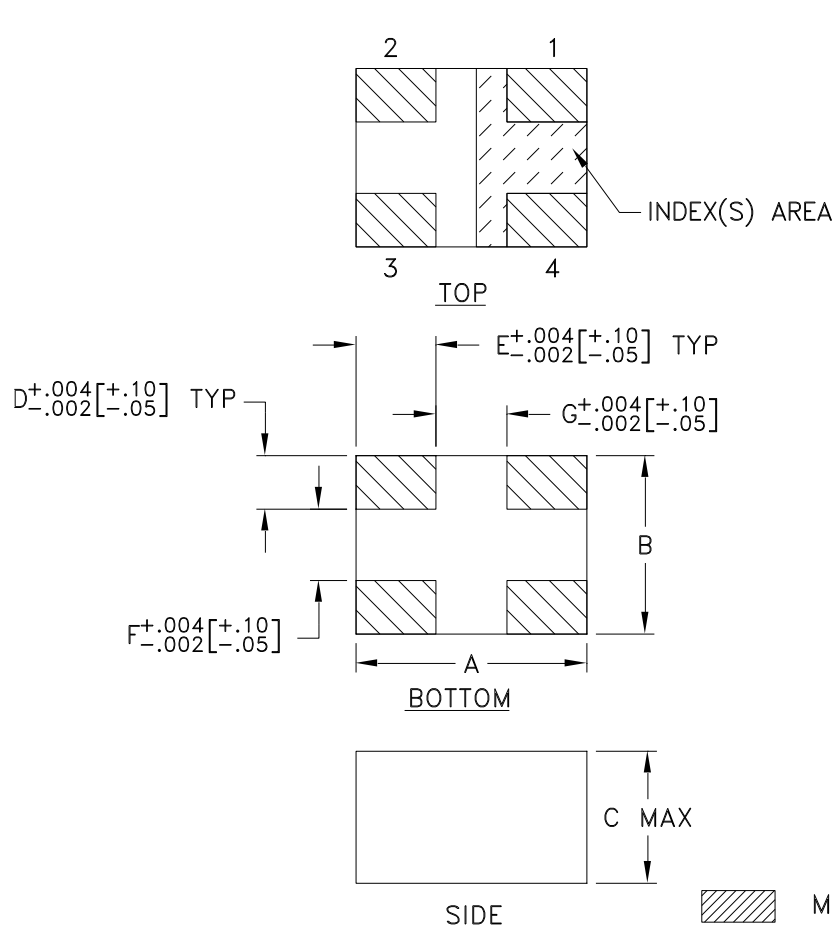
FREQUENCY (MHz)	INSERTION LOSS (dB)	INPUT VSWR (:1)	OUTPUT VSWR (:1)
500	28.43	247.58	1801.42
600	27.02	464.07	478.29
700	25.90	378.89	588.81
800	24.98	2064.52	785.48
900	24.26	1131.02	491.87
1000	23.69	3371.52	540.61
1200	22.98	635.05	418.98
1400	22.81	253.88	520.78
1600	23.20	177.10	345.06
1800	24.34	150.83	243.01
2000	26.76	132.21	208.86
2200	32.49	102.51	134.43
2400	37.06	82.53	96.25
2410	36.28	82.45	93.95
2420	35.20	81.37	92.79
2430	34.50	80.33	91.30
2440	33.54	79.07	90.76
2450	32.92	77.87	90.12
2460	32.04	76.93	88.27
2470	31.48	76.70	87.67
2480	30.68	75.13	85.18
2490	30.18	75.09	83.18
2500	29.47	73.48	80.87
2600	24.63	64.65	68.76
2700	21.03	52.24	55.93
2800	18.09	41.80	42.66
2900	15.53	32.88	34.30
3000	13.24	24.86	25.53
3100	11.14	18.67	19.06
3200	9.22	13.51	13.90
3300	7.45	9.88	10.06
3400	5.88	7.12	7.15
3500	4.50	5.15	5.14
3600	3.36	3.76	3.74
3700	2.46	2.81	2.78
3800	1.79	2.15	2.13
3900	1.33	1.72	1.69
4000	1.03	1.42	1.39
4100	0.85	1.23	1.19
4200	0.74	1.13	1.08
4300	0.68	1.13	1.09
4400	0.64	1.17	1.15
4500	0.61	1.22	1.21
4600	0.58	1.25	1.24
4700	0.56	1.26	1.25
4800	0.53	1.25	1.24
4900	0.51	1.23	1.23
5000	0.48	1.20	1.20
5100	0.46	1.17	1.16
5200	0.43	1.13	1.12
5300	0.42	1.09	1.07
5400	0.40	1.06	1.03
5500	0.40	1.05	1.02
5600	0.39	1.08	1.06
5700	0.39	1.12	1.11
5800	0.40	1.16	1.15
5850	0.40	1.18	1.18
5900	0.41	1.20	1.20
6000	0.41	1.24	1.23
6200	0.43	1.30	1.30
6400	0.45	1.34	1.34
6600	0.46	1.35	1.36
6800	0.46	1.32	1.34
7000	0.44	1.28	1.30
7200	0.43	1.21	1.24
7400	0.43	1.12	1.18
7600	0.43	1.04	1.13
7800	0.45	1.05	1.14
8000	0.49	1.14	1.19

Typical Performance Curves

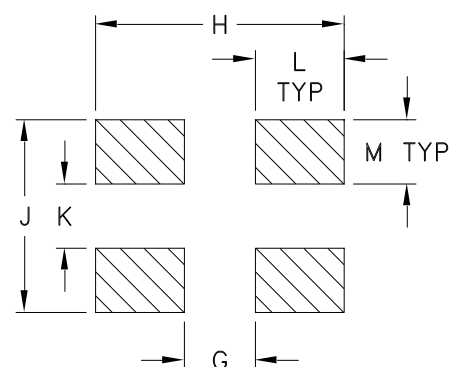


Outline Dimensions

SC0202C



PCB Land Pattern



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

CASE#	A	B	C	D	E	F	G	H	J	K	L	M	WT. GRAMS
SC0202C	.026 (0.65)	.020 (0.50)	.015 (0.37)	.006 (0.15)	.009 (0.225)	.008 (0.20)	.008 (0.20)	.028 (0.70)	.021 (0.54)	.007 (0.18)	.010 (0.25)	.007 (0.18)	.0005

Dimensions are in inches (mm). Tolerances: 2 Pl. $\pm .01$; 3 Pl. $\pm .002$

Notes:

1. Open style, ceramic base.
2. Termination finish:
For RoHS Case Styles: Matte Tin over Nickel plating. Models with (+) suffix.
3. *Line width should be designed to match 50 Ω characteristic impedance, depending on PCB material and 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



Tape & Reel Packaging TR-F114-1

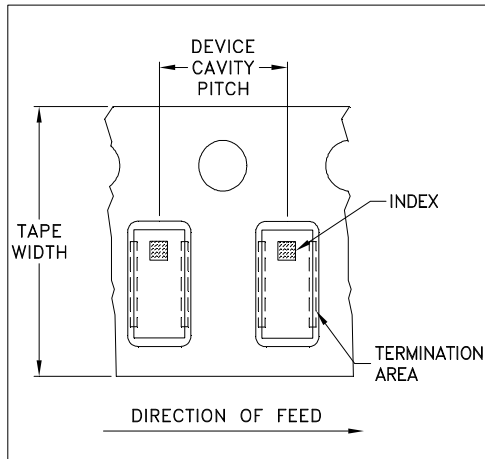


ILLUSTRATION 1

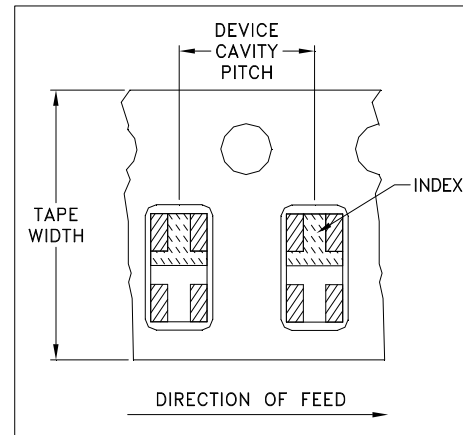


ILLUSTRATION 3

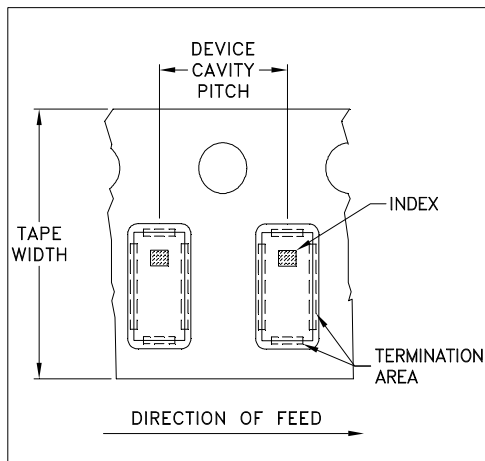


ILLUSTRATION 2

Tape Width, mm	Device Cavity Pitch, mm	Reel Size, inches	Devices per Reel	
8	2	7	Small quantity standards (see note)	20
				50
				100
				200
				500
				1000
			Standard	4000

Note: Please Consult individual model data sheet to determine device per reel availability.

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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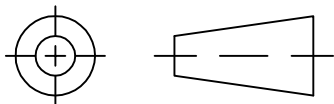
RF/IF MICROWAVE COMPONENTS

98-TR-F114-1 Rev.: OR (01/24/19) M172100 File: 98-TR-F114-1.docx

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Sheet 1 of 1

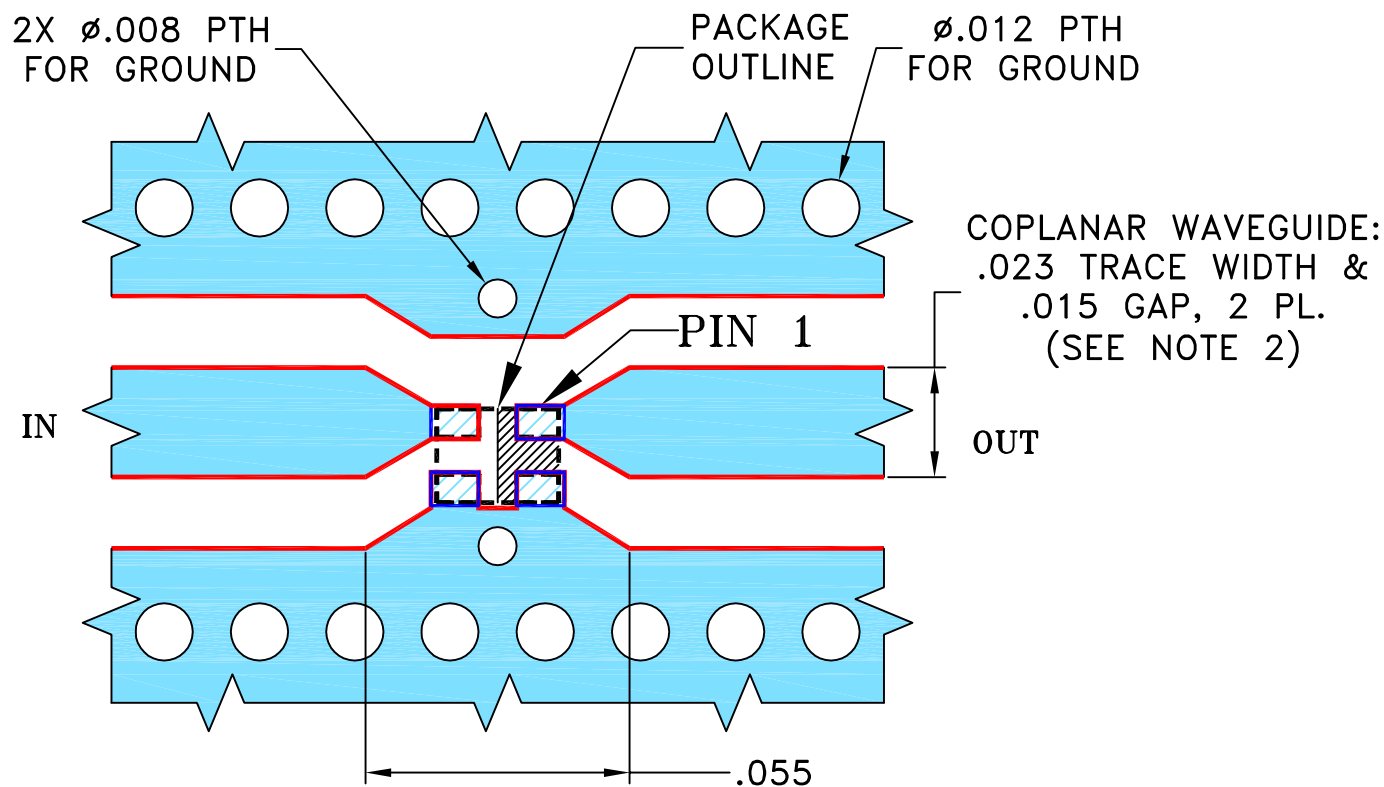
THIRD ANGLE PROJECTION



REVISIONS

REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	M168200	NEW RELEASE	05/31/18	NP	SL

SUGGESTED MOUNTING CONFIGURATION
FOR SC0202 CASE STYLE, "04FL03" PIN CODE



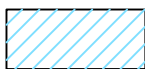
TOP VIEW

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

DIMENSIONS ARE IN INCHES
 TOLERANCES ON:
 2 PL DECIMALS ±
 3 PL DECIMALS ± .005
 ANGLES ±
 FRACTIONS ±



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



Mini-Circuits®

13 Neptune Avenue
Brooklyn NY 11235

PL, 04FL03, SC0202C, TB-1029+

SIZE
ACODE IDENT
15542

DRAWING NO:

98-PL-567

REV:

OR

FILE:

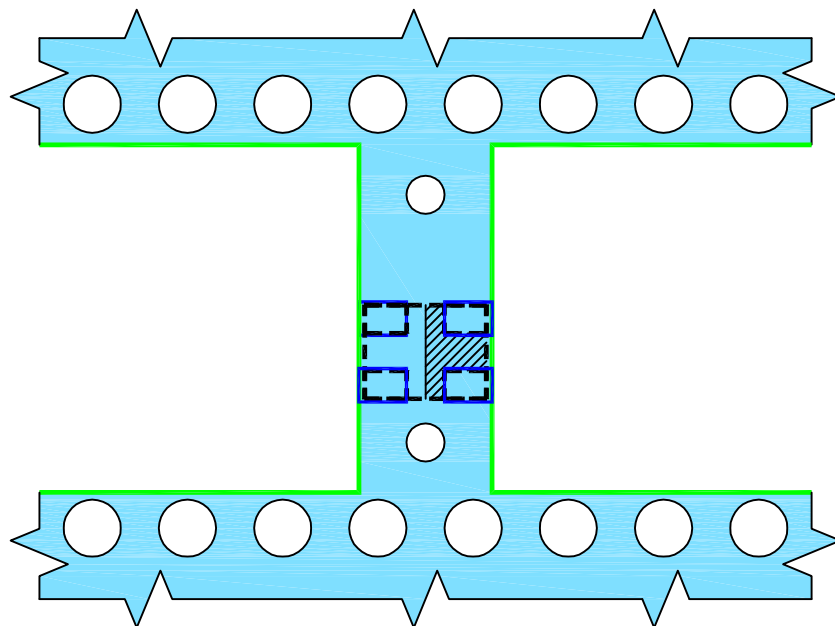
98PL567

SCALE:

24:1

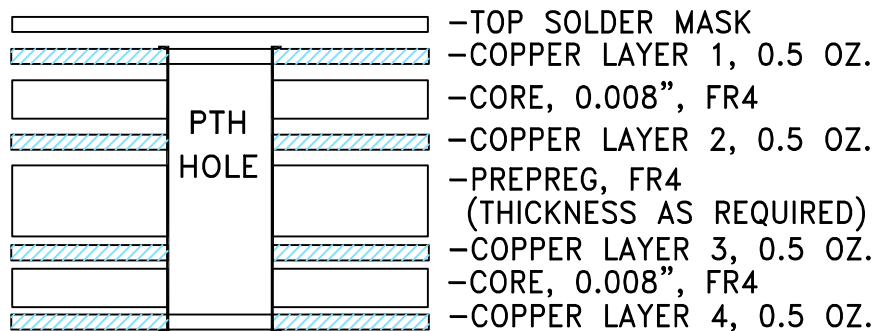
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1 OF 2

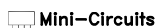


LAYER 2

STACK-UP DIAGRAM



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



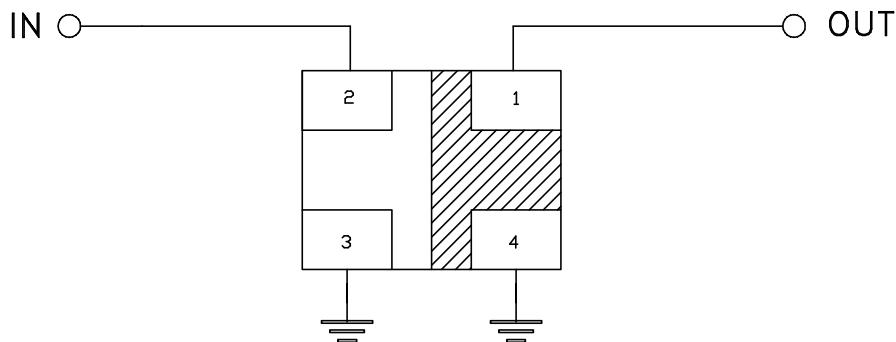
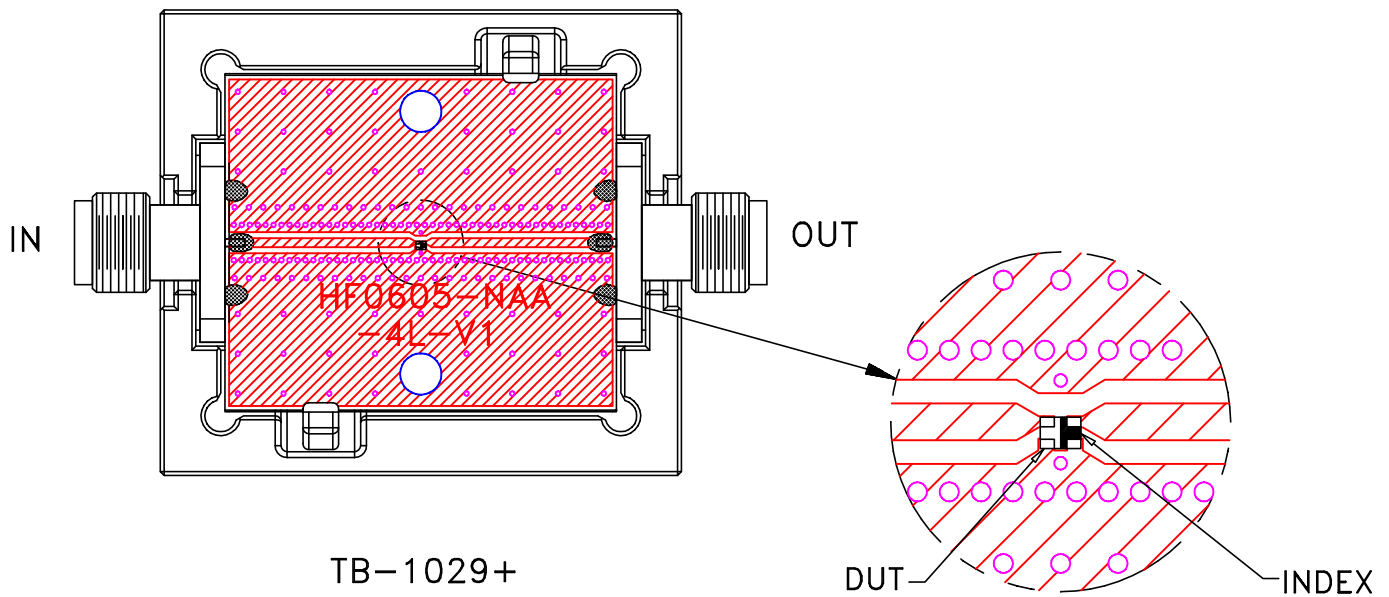
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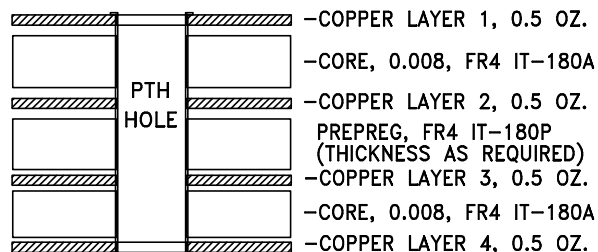
ALL DIMENSIONS ARE IN INCHES EXCEPT OTHERWISE SPECIFIED

SIZE	CODE IDENT	DRAWING NO:	REV:
A	15542	98-PL-567	OR
FILE:	98PL567	SCALE:	SHEET:
		24:1	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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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
Thermal Shock	-40° to 125°C, 100 cycles	MIL-STD-202 Method 107, Condition A-3 except -40°C instead of -55° C and +125° C instead of -85° C
Solder Reflow Heat	Pb-Free Process 245° -250°C peak,	J-STD-020, 4-2 and 5-2, Figure 5-1
Solderability	10X Magnification	J-STD-002, Para 4.2.5, Test S, 95% Coverage
Shelf Life	Shelf life is 12 months when kept in sealed bags. Unused parts are to be resealed to preserve shelf life for proper solderability.	