

High Pass Filter

HFCN-5050D+

50Ω 5500 to 10000 MHz

NON-CATALOG



Maximum Ratings

Operating Temperature	-55°C to 100°C
Storage Temperature	-55°C to 100°C
RF Power Input*	7W max. at 25°C
Max. DC Voltage at pins 1&3	25 VDC

*Passband rating, derate linearly to 3W at 100°C ambient.
Permanent damage may occur if any of these limits are exceeded.

Pin Connections

RF IN	1
RF OUT	3
GROUND	2,4,5,6

Features

- Low cost
- Small size
- 5 sections
- Temperature stable
- Excellent power handling, 7W
- Hermetically sealed
- LTCC construction
- Protected by US Patent 7,760,485

CASE STYLE: FV1206-1

PRICE: Contact Sales Dept.

+ RoHS compliant in accordance with EU Directive (2002/95/EC)

The +Suffix has been added in order to identify RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications.

Applications

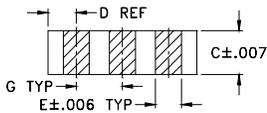
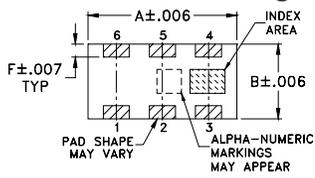
- Sub-harmonic rejection and DC blocking
- Transmitters / receivers

Electrical Specifications¹ at 25°C

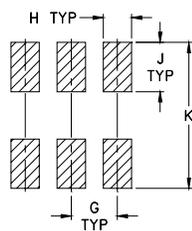
STOPBAND (MHz)		f _{co} , MHz Nom.	PASSBAND (MHz)		VSWR Typ.	POWER INPUT (W)	NO. OF SECTIONS
(Loss > 30dB) Typ.	(Loss > 20dB) Min.	(Loss 3 dB) Typ.	(Loss < 1.5dB) Max.	(Loss < 2dB) Max.	Frequency (MHz) 1.5:1	Max.	
3600	4200	5050	5650-9700	5500-10000	20:1	7	5

1. DC Resistance to ground is 100 Mohms min.

Outline Drawing



PCB Land Pattern

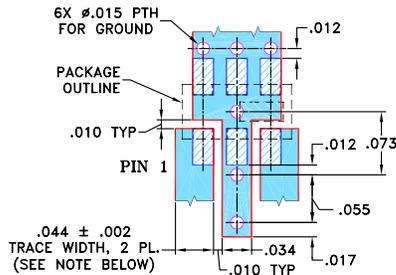


Suggested Layout, Tolerance to be within ±.002

Outline Dimensions (inch/mm)

A	B	C	D	E	F
.126	.063	.035	.024	.022	.011
3.20	1.60	0.89	0.61	0.56	0.28
G	H	J	K	wt	
.039	.024	.042	.123	grams	
0.99	0.61	1.07	3.12	.020	

Demo Board MCL P/N: TB-285 Suggested PCB Layout (PL-158)

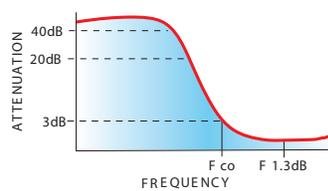


- NOTE: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350 WITH DIELECTRIC THICKNESS: .020 ± .0015; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

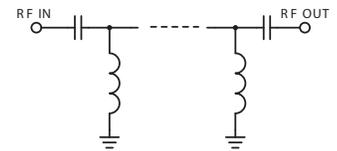
- DENOTES PCB COPPER LAYOUT
- DENOTES COPPER LAND PATTERN FREE OF SOLDERMASK

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typical frequency response

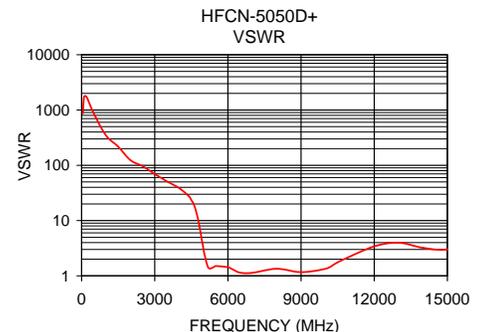
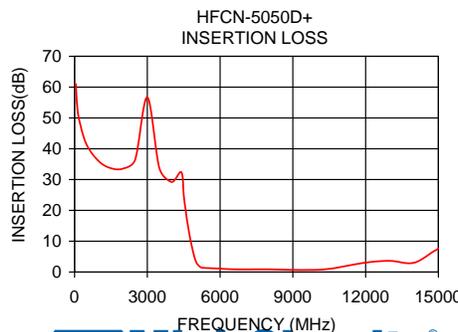


electrical schematic



Typical Performance Data at 25°C

Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)
50	61.01	868.59
1000	35.93	347.44
3600	32.03	48.26
4200	31.40	32.79
4700	13.75	14.38
4800	9.47	9.38
4950	4.60	4.01
5050	2.70	2.35
5200	1.55	1.40
5500	1.29	1.51
5650	1.27	1.55
9700	0.65	1.16
10000	0.72	1.34
10700	1.24	1.94
12000	3.06	3.42
14000	3.02	3.21
15000	7.56	3.00



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IF/RF MICROWAVE COMPONENTS

Notes: 1. Performance and quality attributes and conditions not expressly stated in this specification sheet are intended to be excluded and do not form a part of this specification sheet. 2. Electrical specifications and performance data contained herein are based on Mini-Circuit's applicable established test performance criteria and measurement instructions. 3. The parts covered by this specification sheet 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.

Ceramic High Pass Filter

HFCN-5050D+

Typical Performance Data

FREQ. (MHz)	INSERTION LOSS (dB)			INPUT RETURN LOSS (dB)			OUTPUT RETURNLOSS (dB)		
	@ -55° C	@ +25° C	@ +100° C	@ -55° C	@ +25° C	@ +100° C	@ -55° C	@ +25° C	@ +100° C
50	62.02	59.47	60.41	0.02	0.02	0.02	0.01	0.00	0.00
100	55.06	54.34	54.53	0.05	0.04	0.03	0.02	0.01	0.01
200	49.19	49.01	48.87	0.04	0.02	0.02	0.01	0.01	0.02
500	41.15	41.23	41.24	0.05	0.02	0.00	0.04	0.01	0.00
1000	35.81	35.84	35.93	0.05	0.01	0.05	0.03	0.01	0.03
2000	33.05	33.28	33.44	0.07	0.15	0.18	0.03	0.10	0.13
2500	35.56	36.10	36.39	0.10	0.18	0.20	0.09	0.16	0.19
3000	48.43	50.22	51.83	0.12	0.21	0.25	0.13	0.23	0.26
3600	32.21	31.87	31.45	0.22	0.34	0.41	0.22	0.34	0.41
4000	28.09	28.45	28.63	0.24	0.38	0.51	0.30	0.43	0.52
4200	29.60	30.58	31.40	0.28	0.45	0.61	0.35	0.50	0.60
4400	36.21	34.45	31.82	0.36	0.55	0.75	0.42	0.59	0.73
4500	28.81	26.10	23.98	0.46	0.67	0.89	0.47	0.67	0.84
4600	21.50	19.59	18.04	0.57	0.82	1.08	0.59	0.83	1.05
4700	15.92	14.42	13.18	0.76	1.08	1.43	0.79	1.11	1.43
4800	11.21	10.02	9.04	1.22	1.68	2.20	1.23	1.72	2.23
4950	5.62	4.93	4.43	3.03	4.03	5.04	3.15	4.16	5.22
5000	4.28	3.79	3.45	4.30	5.56	6.77	4.36	5.69	7.05
5050	3.16	2.88	2.69	5.91	7.44	8.88	6.13	7.77	9.47
5200	1.49	1.58	1.67	14.18	16.31	17.40	15.17	19.23	23.79
5400	1.09	1.30	1.47	18.86	16.48	15.68	19.23	17.35	16.65
5500	1.09	1.32	1.49	15.97	14.60	14.22	15.77	14.85	14.68
5650	1.04	1.27	1.43	14.25	13.53	13.42	13.75	13.45	13.57
6000	1.00	1.16	1.33	15.70	15.60	15.38	14.55	15.22	15.65
6500	0.78	0.94	1.09	20.87	24.11	24.01	20.28	24.55	27.08
7000	0.66	0.89	1.05	24.95	23.24	22.18	37.16	26.38	22.27
8000	0.77	0.93	1.07	14.71	16.84	18.17	14.29	16.34	17.65
9000	0.48	0.70	0.87	20.56	21.24	21.94	18.19	19.81	22.42
9700	0.37	0.62	0.80	22.61	26.63	30.22	21.04	24.81	34.50
10000	0.40	0.68	0.85	17.57	17.79	19.74	17.67	18.28	21.45
10700	0.78	1.22	1.48	10.68	10.16	9.84	11.23	10.31	10.21
12000	2.54	3.02	3.40	5.21	5.00	4.89	5.30	5.02	4.70
13000	4.06	3.80	3.83	3.34	4.04	4.42	3.16	4.07	4.35
14000	3.75	3.06	2.65	4.01	6.22	9.26	3.89	5.97	8.56
15000	5.61	7.53	8.41	6.56	6.00	5.78	6.48	6.31	6.87
16000	10.79	12.52	13.45	4.05	4.25	3.86	4.75	3.55	3.23
17000	12.83	12.28	12.33	2.25	3.35	4.38	2.46	2.74	2.39
18000	8.45	7.23	6.99	3.80	4.18	4.68	1.99	3.72	4.33
19000	4.14	5.32	6.79	16.91	7.85	5.12	5.66	8.07	8.26
20000	8.48	8.23	7.88	4.47	5.59	5.95	3.37	4.32	5.88

REV. X1

HFCN-5050D+

071010

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IF/RF MICROWAVE COMPONENTS • ISO 9001 ISO 14001 AS 9100 CERTIFIED • RoHS compliant

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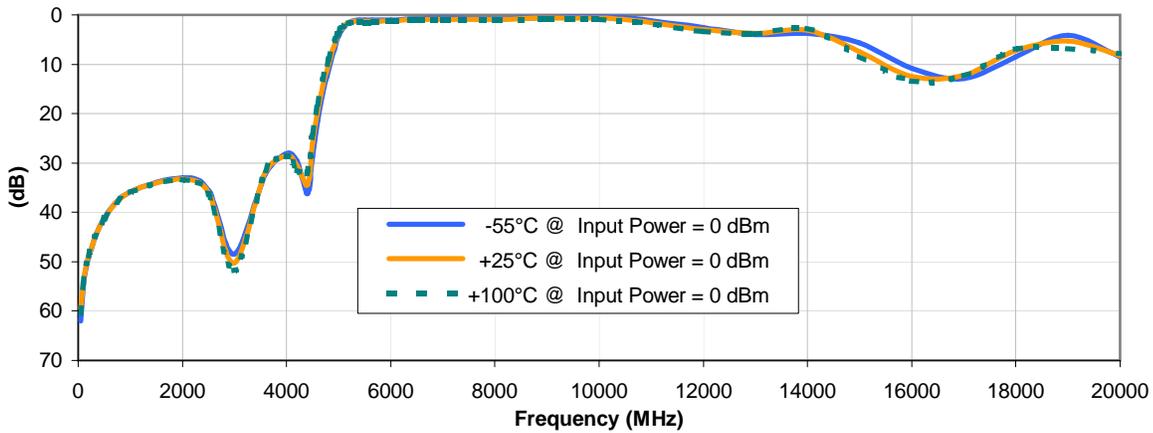


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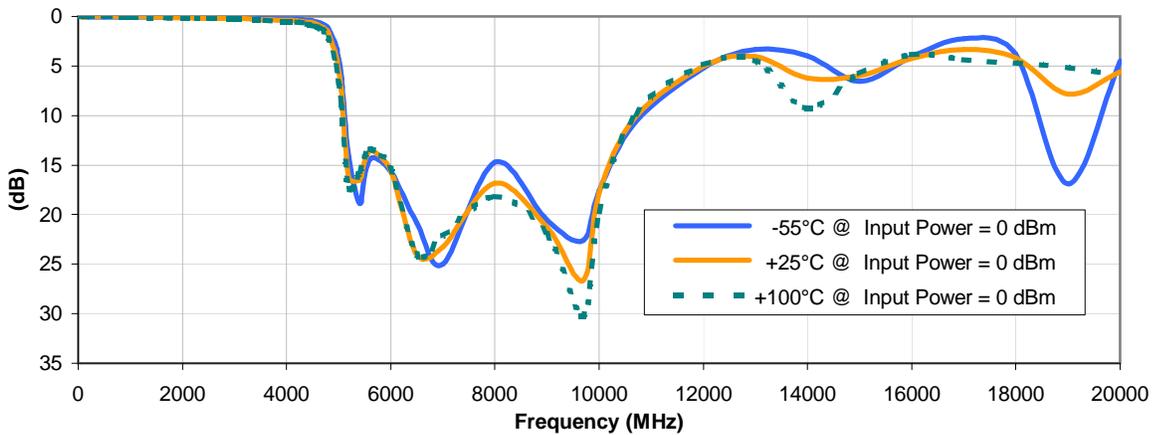


Typical Performance Curves

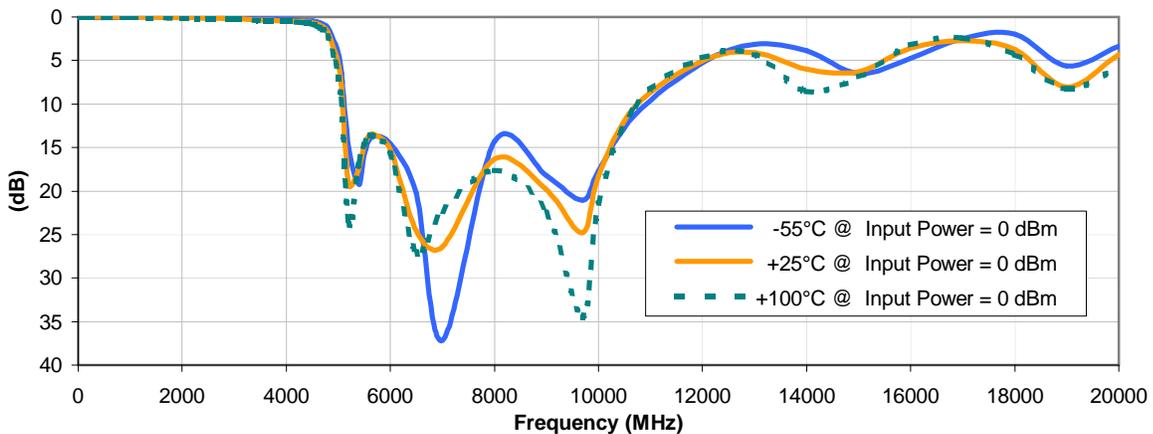
INSERTION LOSS vs. TEMPERATURE



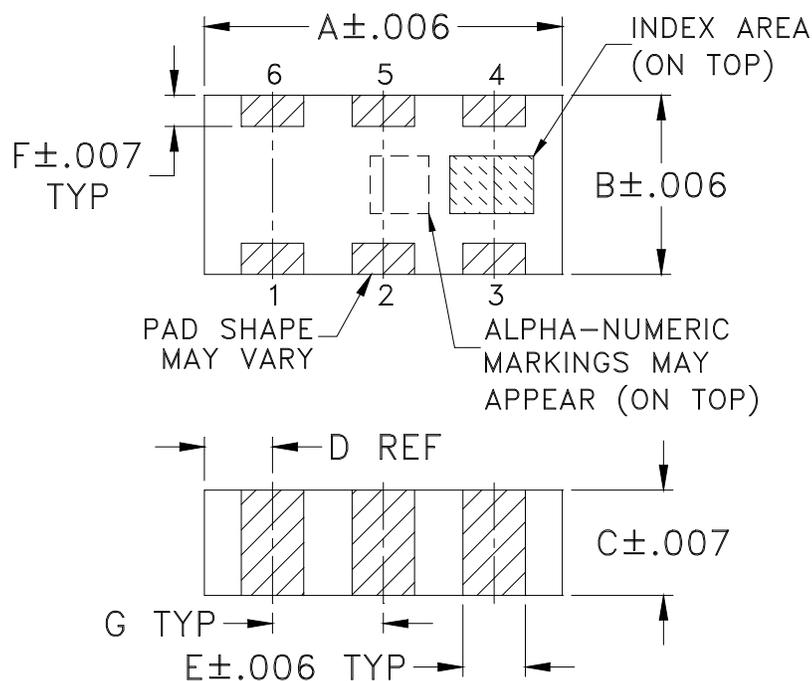
INPUT RETURN LOSS vs. TEMPERATURE



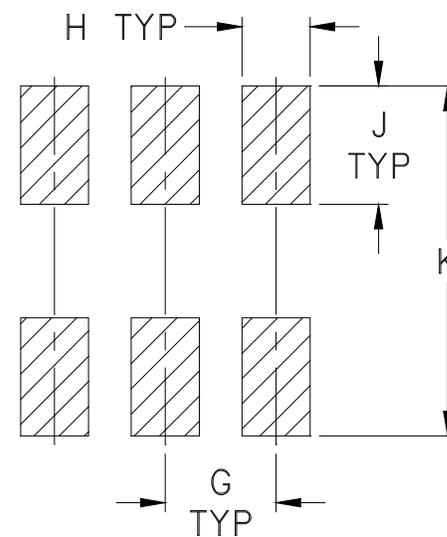
OUTPUT RETURN LOSS vs. TEMPERATURE



Outline Dimensions



PCB Land Pattern



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

CASE #	A	B	C	D	E	F	G	H	J	K	L	M	N	P	WT. GRAM
FV1206-1	.126 (3.20)	.063 (1.60)	.035 (0.89)	.024 (0.61)	.022 (0.56)	.011 (0.28)	.039 (0.99)	.024 (0.61)	.042 (1.07)	.123 (3.12)	--	--	--	--	.020

Dimensions are in inches (mm). Tolerances: 2 Pl. $\pm .01$; 3 Pl. $\pm .005$

Notes:

- Open style, ceramic base.
- Termination finish: **as shown below or indicated on Data Sheet.**
 For RoHS Case Styles: Tin plate over Nickel plate. All models, (+) suffix.
 For RoHS-5 Case Styles: Tin-Lead plate. All models, no (+) suffix.



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RF/IF MICROWAVE COMPONENTS

DEVICE ORIENTATION IN T&R

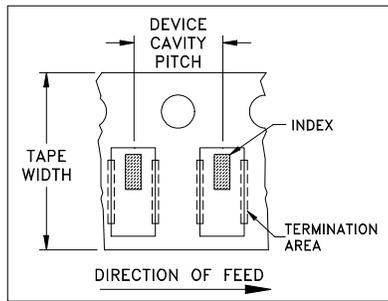


ILLUSTRATION 1

Applicable Case Styles
FV1206-1 FV1206-3

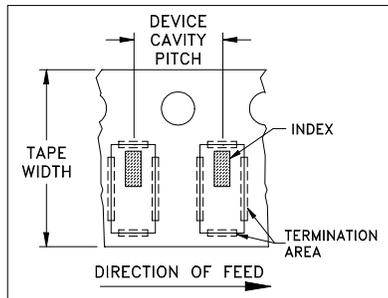


ILLUSTRATION 2

Applicable Case Styles
FV1206-4 FV1206-5 FV1206-6 FV1206-7 FV1206-9

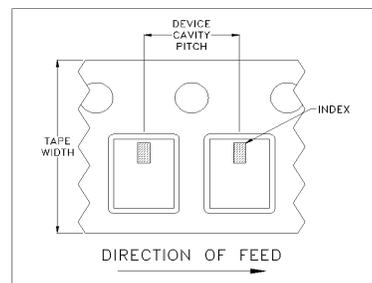


ILLUSTRATION 3

Applicable Case Styles
FV1206-11 FV1206-12 GE0805C-18 NL1008C-6 NL1008C-7 NL1008C-9 NL1008C-10 NL1008C-12

Tape Width, mm	Device Cavity Pitch, mm	Reel Size, inches	Devices per Reel	
8	4	7	Small quantity standards (see note)	20
				50
				100
				200
				500
				1000
			Standard	3000

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

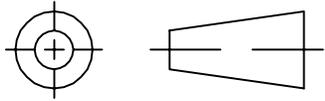
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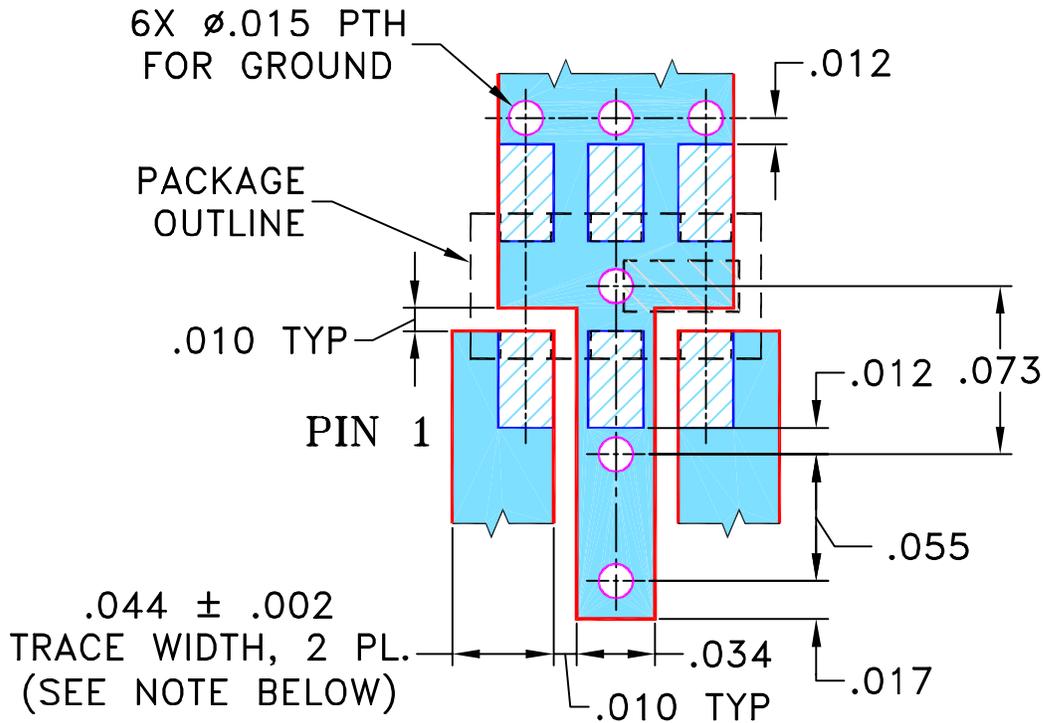
THIRD ANGLE PROJECTION



REVISIONS

REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	M92199	NEW RELEASE	05/24/04	AV	ABD
A	M99247	ADD GROUND PTH	06/05	RZ	RZ
A	R60782	ADD GROUND PTH	06/05	RZ	RZ
B	M102713	ADDED "...WITH SMOBC"	01/12/06	GF	IL

SUGGESTED MOUNTING CONFIGURATION
FOR FV1206-1 CASE STYLE, "pr" PIN CONNECTION.



- NOTE:** 1. TRACE WIDTH IS SHOWN FOR ROGERS R04350B WITH DIELECTRIC THICKNESS .020" ± .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 SOLDER MASK

UNLESS OTHERWISE SPECIFIED

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

	INITIALS	DATE
DRAWN	AV	05/03/04
CHECKED	IL	05/24/04
APPROVED	ABD	05/24/04



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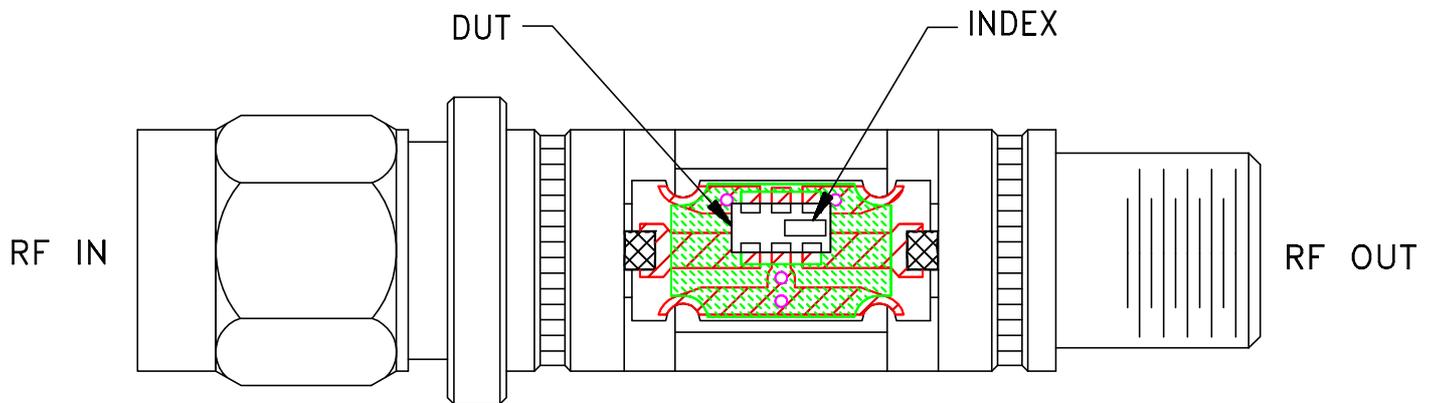
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PL, pr, FV1206-1, HFCN, TB-285

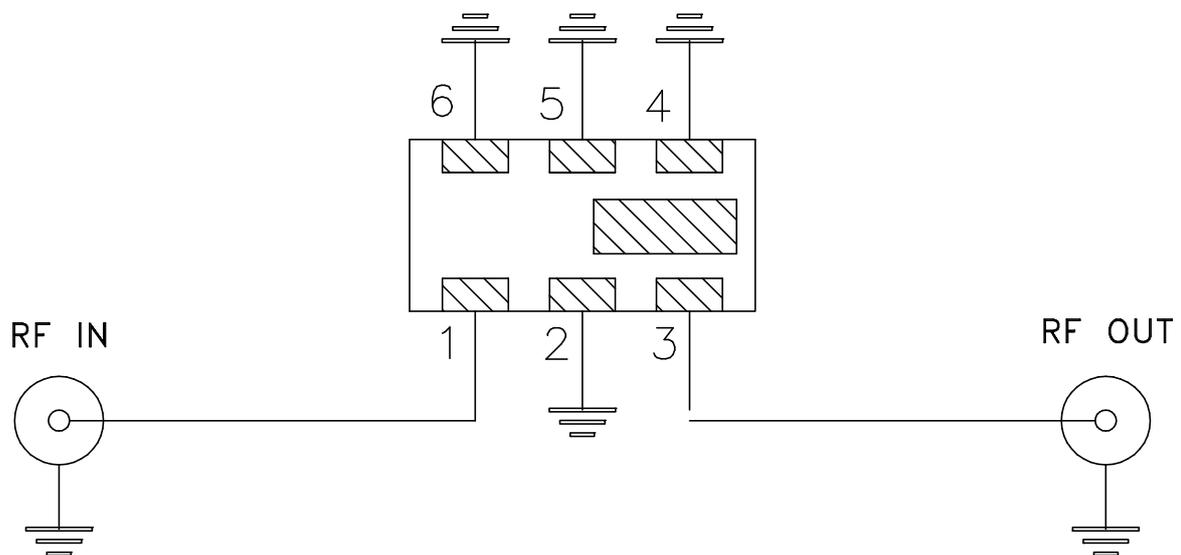
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SIZE A	CODE IDENT 15542	DRAWING NO: 98-PL-158	REV: B
FILE: 98PL158	SCALE: 12:1	SHEET: 1 OF 1	

Evaluation Board and Circuit



TB-285



Schematic Diagram

Notes:

1. SMA Female connectors.
2. PCB Material: Rogers R04350 or equivalent,
Dielectric Constant=3.5, Thickness=.020 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	-55° to 100°C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-55° to 100° 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
Solder Reflow Heat	Sn-Pb Eutetic Process: 225°C peak Pb-Free Process 245° - 250°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, 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