



LTCC SURFACE MOUNT

# Bandpass Filter

**BFCN-2555+**

50Ω

2500 to 2610 MHz

**THE BIG DEAL**

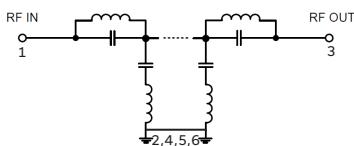
- Good Rejection, 30 dB Typ.
- 1206 Surface Mount Footprint
- Power Handling: 1.5 Watts



Generic photo used for illustration purposes only

**APPLICATIONS**

- Harmonic Rejection
- Transmitters / Receivers

**FUNCTIONAL DIAGRAM****PRODUCT OVERVIEW**

Mini-Circuits' BFCN-2555+ LTCC Band Pass Filter is constructed with multiple layers in order to achieve a miniature size and high repeatability of performance. Wrap-around terminations minimize variations in performance due to parasitics. Covering 110 MHz passband, these units offer low insertion loss and good rejection.

**KEY FEATURES**

Features	Advantages
Small Size, 1206	Allows for high layout density of circuit boards, while minimizing the effects of parasitics.
Wrap around termination	Provides excellent solderability and easy visual inspection capability.
LTCC construction	Provides a rugged package that is well suited for tough environments including high humidity and high temperature extremes.
Rugged Power handling	Handles up to 1.5 Watts in a small package.

REV. E  
ECO-021096  
BFCN-2555+  
URJ  
240430

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PAGE 1 OF 5



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**ELECTRICAL SPECIFICATIONS<sup>1,2</sup> AT +25°C**

Parameter	F#	Frequency (MHz)	Min.	Typ.	Max.	Units
Passband	Center Frequency <sup>3</sup>	—	—	2555	—	MHz
	Insertion Loss	F1-F2	2500 - 2610	—	7	dB
	Return Loss	F1-F2	2500 - 2610	6.49	12.74	dB
Stop Band, Lower	Rejection	DC-F3	DC - 1970	20	—	dB
		F4	2000	—	30	dB
Stop Band, Upper	Rejection	F5	3200	20	—	dB
		F6-F7	3250 - 5500	—	30	dB

1. Tested in Evaluation Board P/N TB-BFCN-2555+.

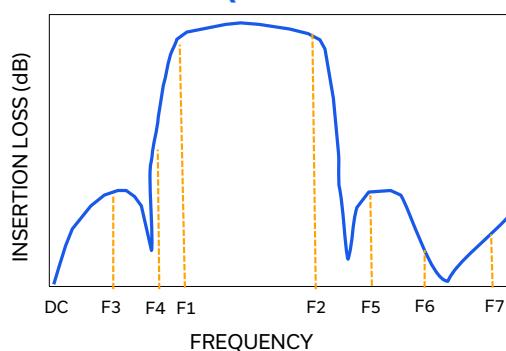
2. This component should not be used as a DC-block. In applications where DC voltage and/or current is present at either the input or output ports, external DC blocking capacitors are required.

3. Typical variation  $\pm 5\%$ **ABSOLUTE MAXIMUM RATINGS<sup>4</sup>**

Parameter	Ratings
Operating Temperature	-55°C to 100°C
Storage Temperature	-55°C to 100°C
Input Power <sup>5</sup>	1.5W @25°C

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

5. Power rating applies only to signals within the passband. Power rating above +25°C operating temperature decreases linearly to 0.25W at +100°C.

**TYPICAL FREQUENCY RESPONSE**



LTCC SURFACE MOUNT

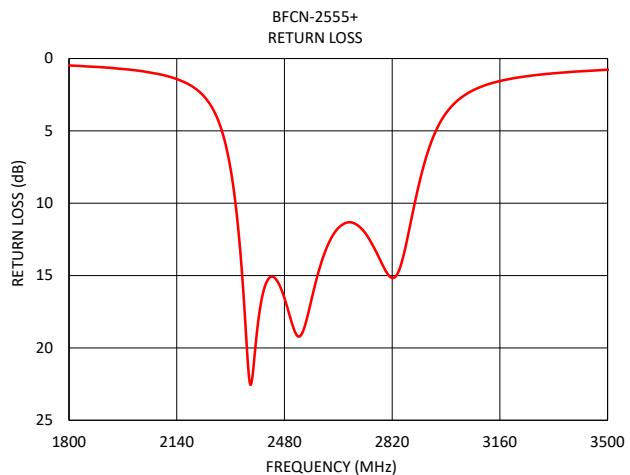
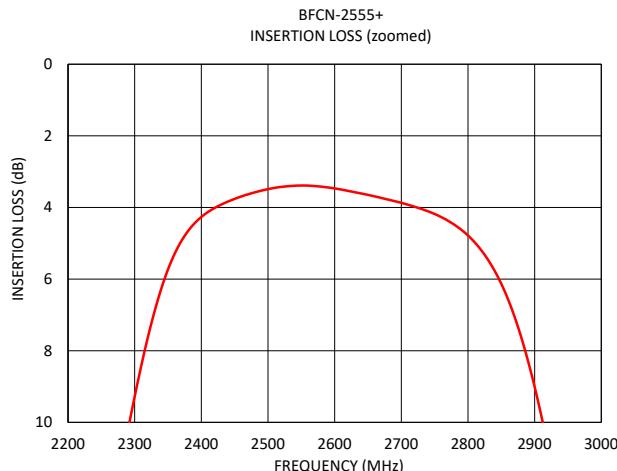
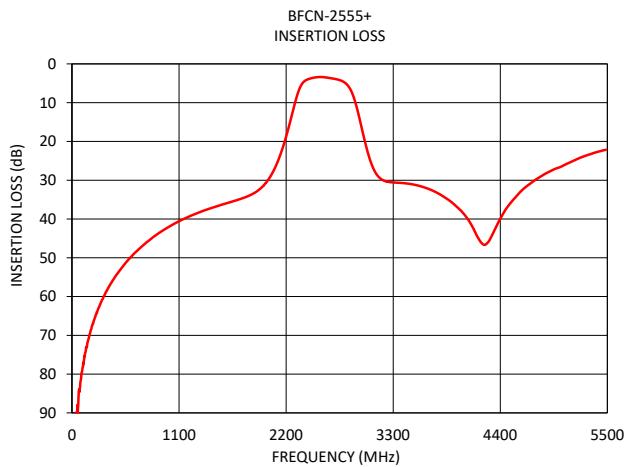
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## TYPICAL PERFORMANCE GRAPHS AT +25°C



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LTCC SURFACE MOUNT

# Bandpass Filter

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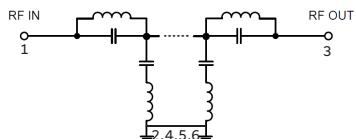
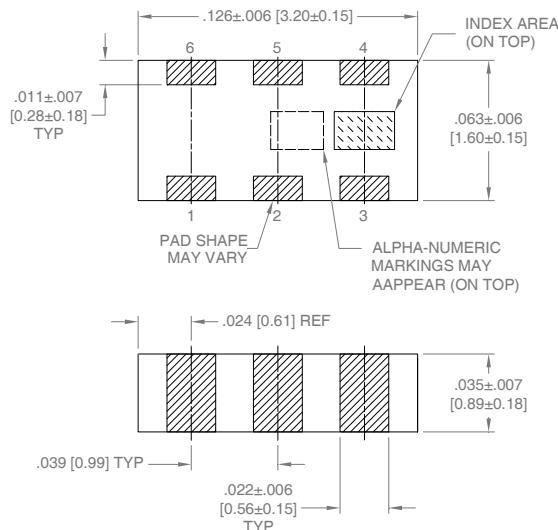
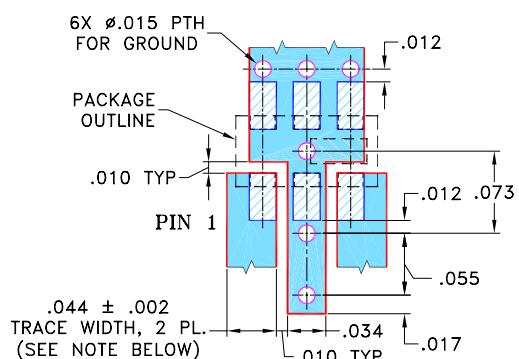
**FUNCTIONAL DIAGRAM**

Figure 1. BFCN-2555+ Functional Diagram

**CASE STYLE DRAWING**
 METALLIZATION
**SUGGESTED PCB LAYOUT (PL-158)**

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

Weight : .020 grams.

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

**PRODUCT MARKING\*: N/A**

\*Marking may contain other features or characters for internal lot control.

Figure 2. Suggested PCB Layout PL-158

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LTCC SURFACE MOUNT

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ADDITIONAL DETAILED INFORMATION IS AVAILABLE ON OUR DASH BOARD.

[CLICK HERE](#)

Performance Data & Graphs	Data Graphs S-Parameter (S2P Files) Data Set (.zip file) De-embedded to device pads
Case Style	FV1206-1 Lead Finish: Nickel Tin
RoHS Status	Compliant
Tape and Reel	TR-F75
Suggested Layout for PCB Design	PL-158
Evaluation Board	TB-BFCN-2555+ Gerber File
Environmental Rating	ENV06

**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-Circuits' applicable established test performance criteria and measurement instructions.
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# Ceramic Band Pass Filter

BFCN-2555+

## Typical Performance Data

FREQUENCY (MHz)	INSERTION LOSS (dB)	RETURN LOSS (dB)
50	81.46	0.06
200	82.15	0.14
500	62.32	0.23
1000	52.18	0.31
1970	37.86	0.74
2000	36.18	0.80
2200	20.62	1.82
2300	10.23	5.06
2350	6.16	11.04
2500	3.78	18.11
2555	3.73	16.46
2610	3.87	12.77
2850	7.85	17.08
2920	14.80	5.83
3000	24.74	2.69
3200	39.85	1.20
3250	40.88	1.11
3700	44.06	0.74
4500	39.38	0.62
5500	29.82	0.63

REV. X1  
BFCN-2555+  
080219  
Page 1 of 1

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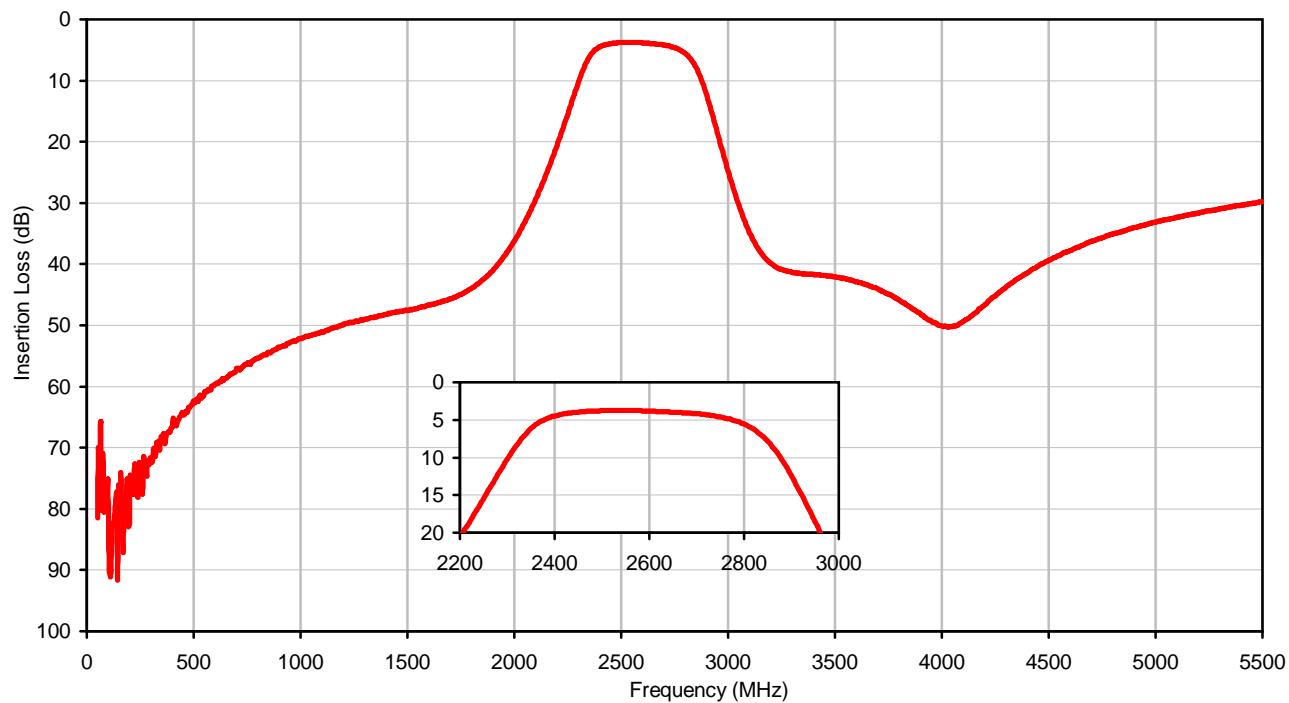
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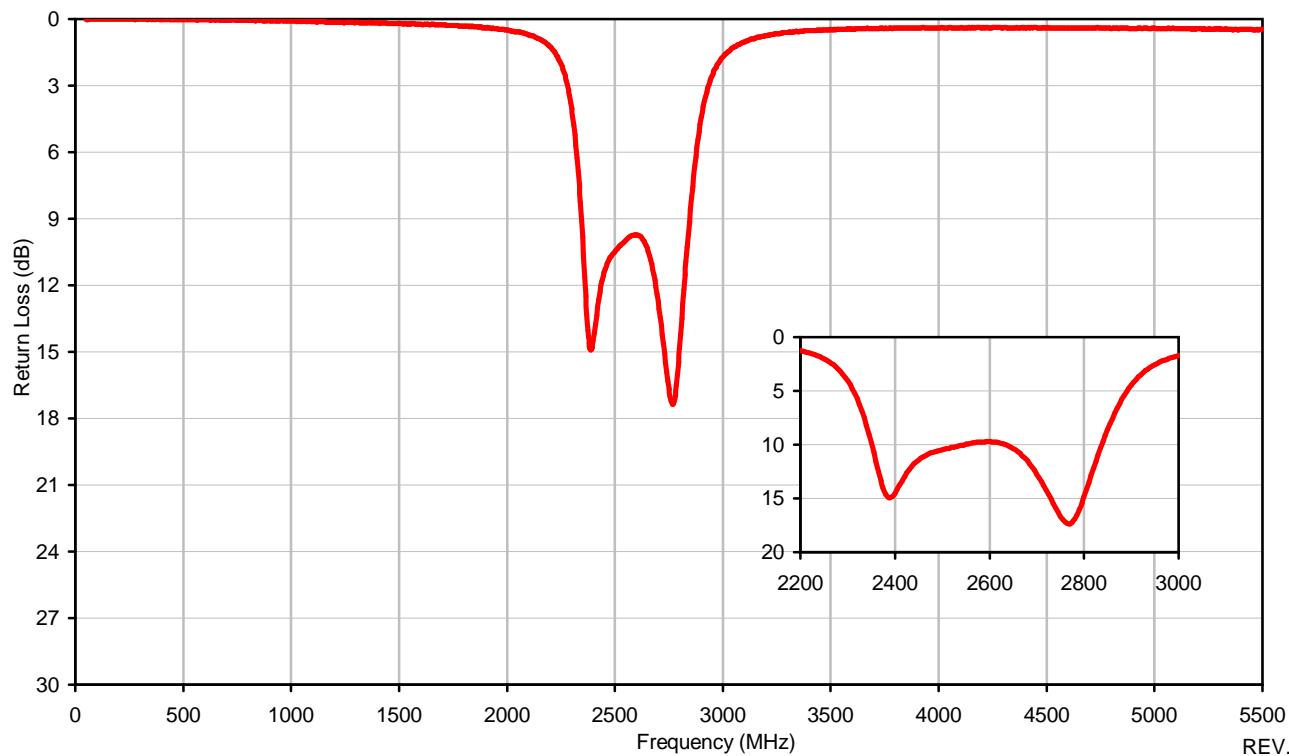
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## Typical Performance Curves

Insertion Loss



Return Loss



REV. X1  
BFCN-2555+  
080219

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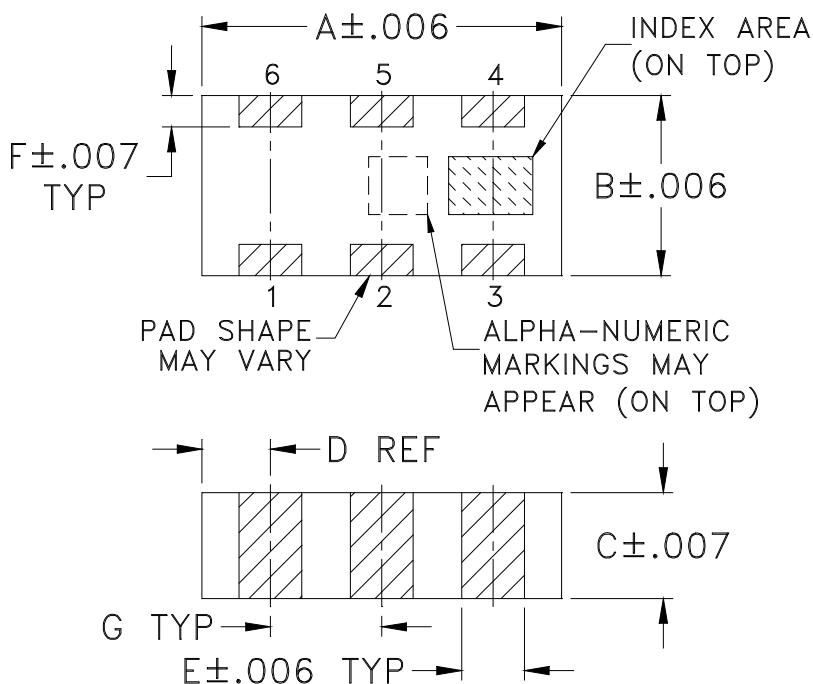
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# Case Style

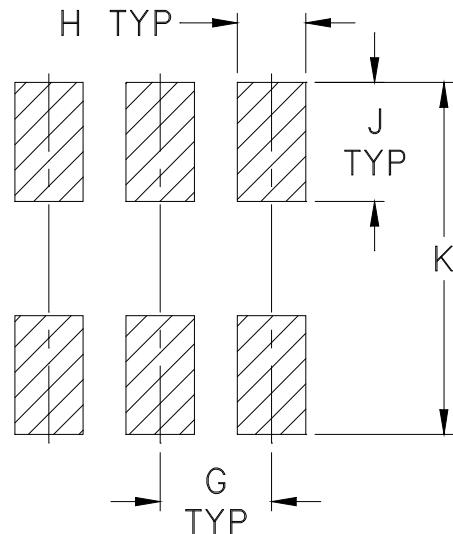
FV

FV1206-1

## Outline Dimensions



## PCB Land Pattern



Suggested Layout,  
Tolerance to be within ±.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. ± .01; 3 Pl. ± .005

### Notes:

1. Open style, ceramic base.
2. 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

98-FV Rev.: V (12/1118) M171394 File: 98-FV.docx

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Sheet 2 of 8

# Tape & Reel Packaging

TR-F75

## DEVICE ORIENTATION IN T&R

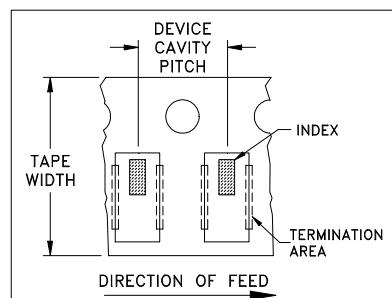


ILLUSTRATION 1

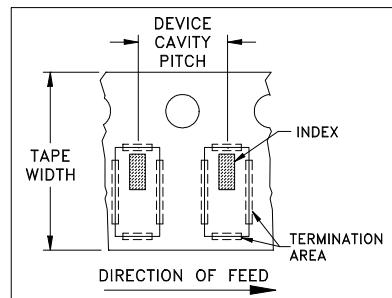


ILLUSTRATION 2

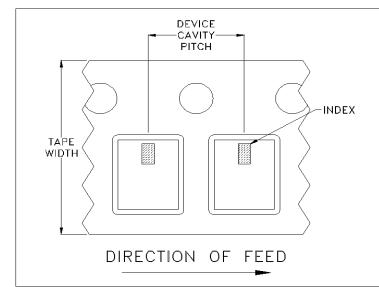


ILLUSTRATION 3

### Applicable Case Styles

FV1206-1  
FV1206-3

### Applicable Case Styles

FV1206-4  
FV1206-5  
FV1206-6  
FV1206-7  
FV1206-9

### 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.

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.

Go to: [www.minicircuits.com/pages/pdfs/tape.pdf](http://www.minicircuits.com/pages/pdfs/tape.pdf)



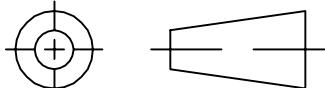
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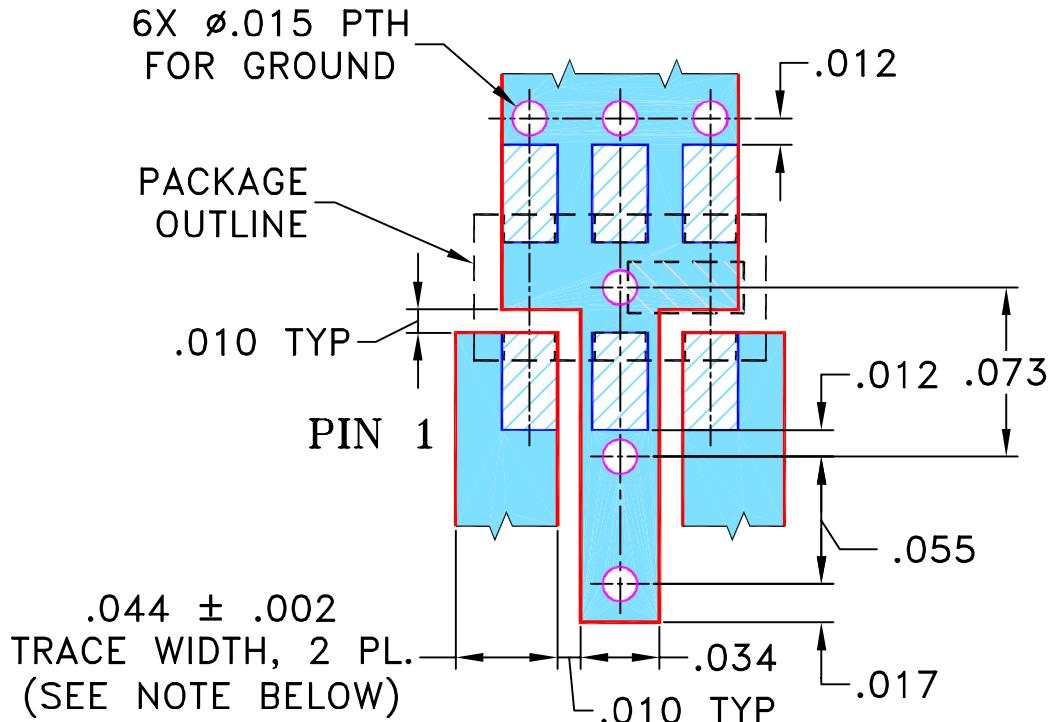
## THIRD ANGLE PROJECTION



## REV. 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

INITIALS

DATE

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

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

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

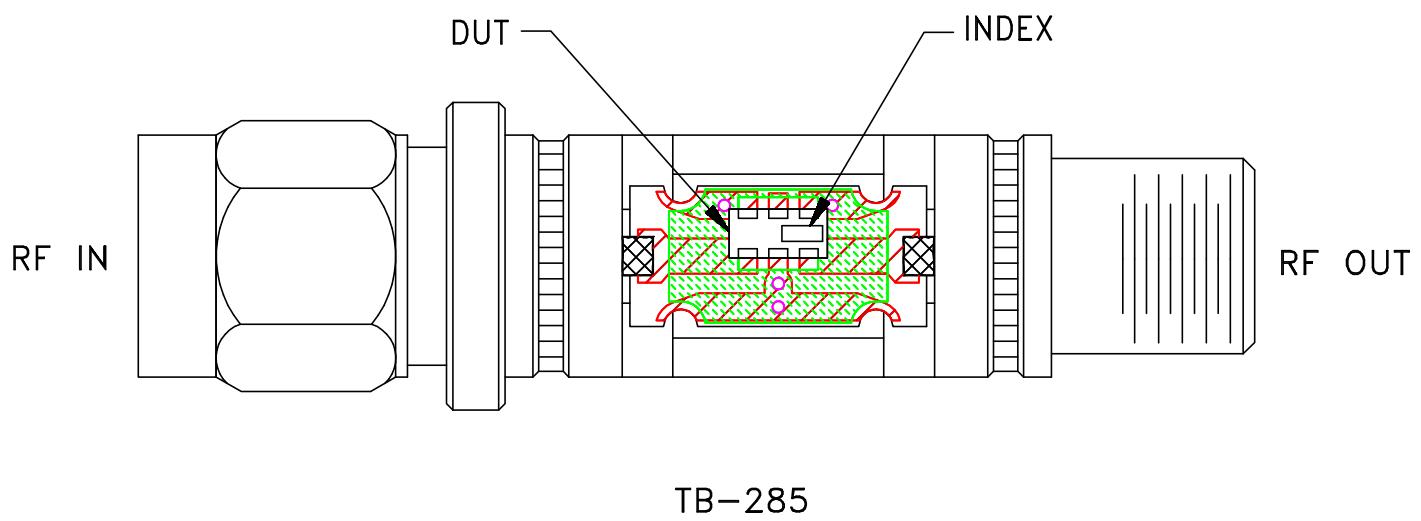
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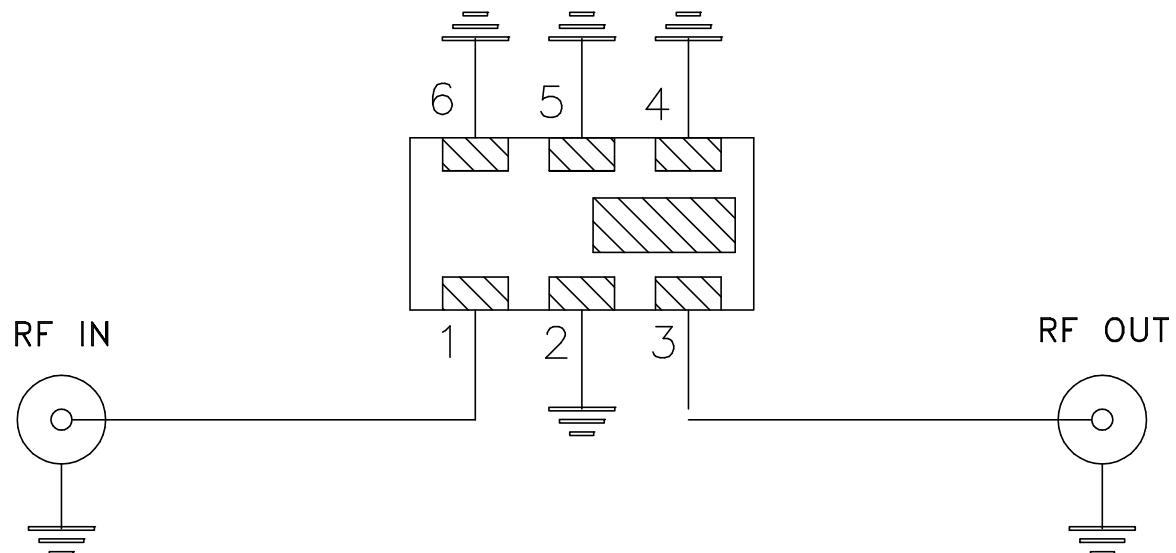
SCALE: 12:1

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.

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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	-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