



LTCC SURFACE MOUNT

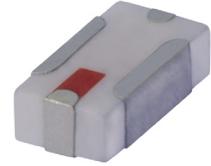
Band Pass Filter

BFCN-1860AT+

50Ω 1580 to 2200 MHz

THE BIG DEAL

- Small Size, 3.2 x 1.6 mm
- Good VSWR, 1.5:1 Typ. at Passband
- Temperature Stable
- Hermetically Sealed
- LTCC Construction
- AEC-Q200 Qualified Component Family



Generic photo used for illustration purposes only

CASE STYLE: FV1206-4

+RoHS Compliant

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

APPLICATIONS

- Automotive

PRODUCT OVERVIEW

The BFCN-1860AT+ LTCC bandpass filter covers the 1580 to 2200 MHz passband with 2 dB passband insertion loss and 20 dB upper/lower stopband rejection. This model handles up to 2.5W RF input power and provides a wide operating temperature range from -40 to +105°C. Utilizing LTCC multi-layer construction, the filter achieves excellent repeatability of performance and comes in a tiny 1206 ceramic package with wraparound terminations, minimizing performance variations due to parasitics and saving space in dense PCB layouts.

KEY FEATURES

Features	Advantages
Small Size, 3.2x1.6 mm	Saves space in dense circuit boards and minimizes the effects of parasitics.
LTCC Construction	Provides a rugged package that is well suited for tough environments including high humidity and high temperature extremes.
Wrap-Around Terminations	Provides excellent solderability and easy visual inspection capability.
Wide operating temperature range, -40 to +105°C	Enables reliable performance in extreme environments



ELECTRICAL SPECIFICATIONS^{1,2} AT +25°C

Parameter	F#	Frequency (MHz)	Min.	Typ.	Max.	Units
Passband	Center Frequency	-		1860		MHz
	Insertion Loss	F1-F2	1580-2200	2.0	3.5	dB
	VSWR	F1-F2	1580-2200	1.5	2.5	:1
Stop Band, Lower	Insertion Loss	DC-F3	1300	20		dB
	VSWR	DC-F3	1300	20		:1
Stop Band, Upper	Insertion Loss	F4-F5	2600-4800	20		dB
	VSWR	F4-F5	2600-4800	15		:1

1. Measured on Mini-Circuits Characterization Test Board TB-BFCN-1860+ using BFCN-1860+.

2. This filter is not intended for use as a DC Blocking circuit element. In Applications where DC voltage is present at either input or output ports, blocking capacitors are required at the corresponding RF port.

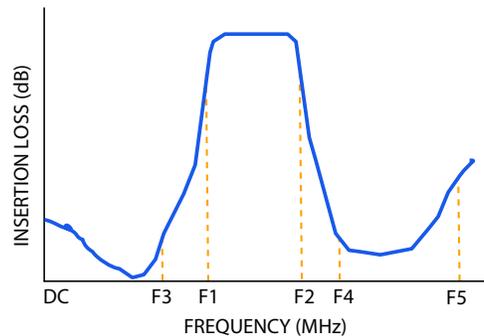
ABSOLUTE MAXIMUM RATINGS

Parameter	Ratings
Operating Temperature	-40°C to +105°C
Storage Temperature	-40°C to +105°C
RF Power Input ³	2.5 W at +25°C

3. Passband rating, derate linearly to 0.7 W at +105°C ambient.

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

TYPICAL FREQUENCY RESPONSE





LTCC SURFACE MOUNT

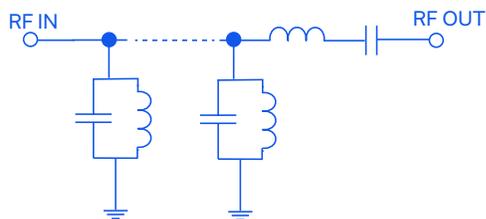
Band Pass Filter

BFCN-1860AT+

Mini-Circuits

50Ω 1580 to 2200 MHz

FUNCTIONAL SCHEMATIC

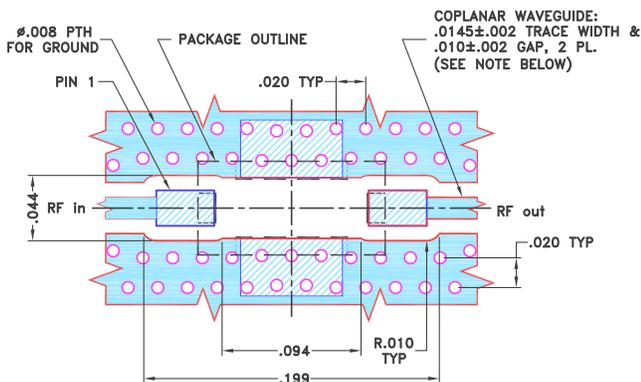


PIN CONNECTIONS

RF IN	1
RF OUT	3
GROUND	2,4

PRODUCT MARKING: F8

DEMO BOARD P/N: TB-BFCN-1860+
SUGGESTED PCB LAYOUT (PL-454)

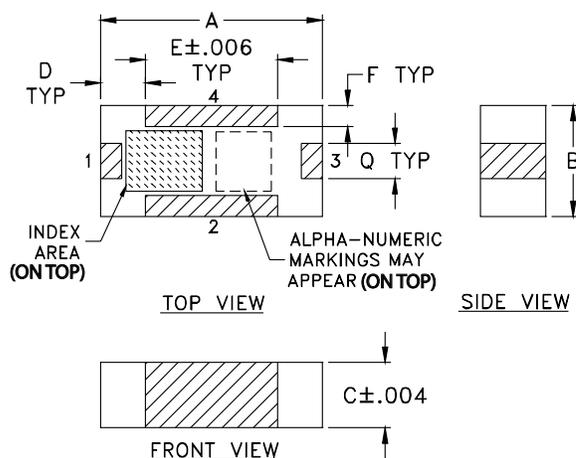


NOTES:

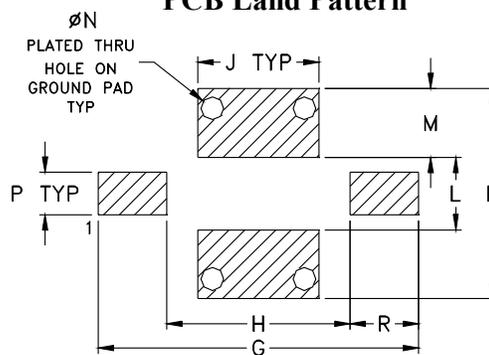
1. TRACE WIDTH PARAMETERS ARE SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .0066"±.0007". COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH AND GAP MAY NEED TO BE MODIFIED.
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

- DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER).
- DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK.

CASE STYLE DRAWING



PCB Land Pattern



Suggested Layout,
Tolerance to be within ±.002

OUTLINE DIMENSIONS (Inches / mm)

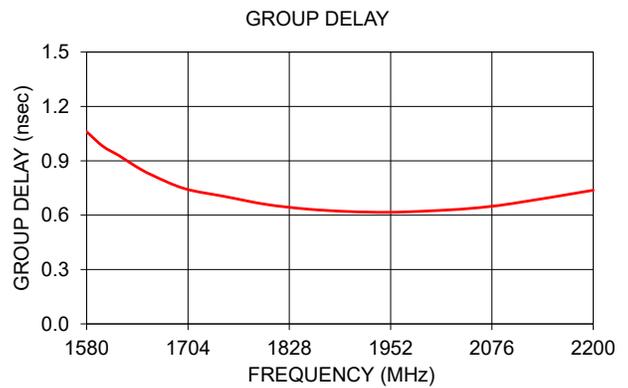
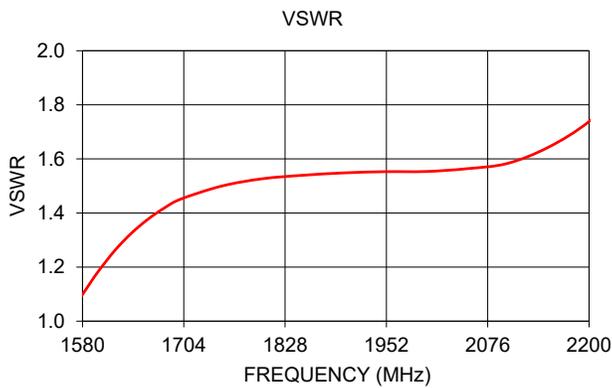
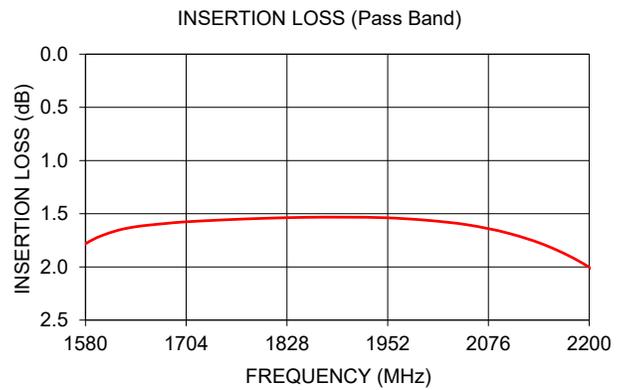
A	B	C	D	E	F	G	H	J
.126	.063	.037	.026	.075	.012	.182	.104	.069
3.20	1.60	0.94	0.66	1.91	0.30	4.62	2.64	1.75
K	L	M	N	P	Q	R		wt
.119	.041	.039	.013	.024	.020	.039		grams
3.02	1.04	0.99	0.33	0.61	0.51	0.99		.020

TAPE & REEL INFORMATION: F75



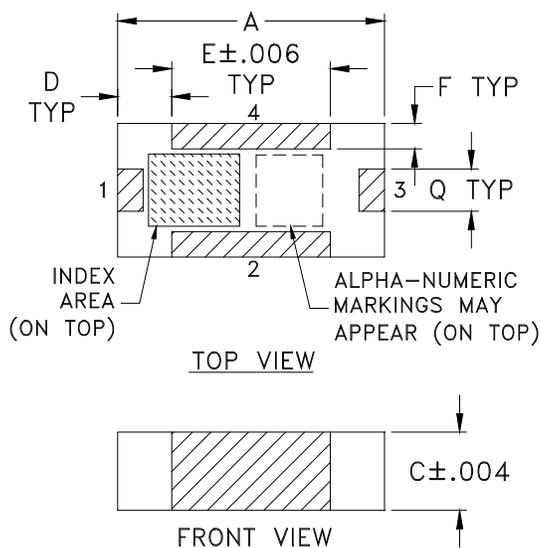
TYPICAL PERFORMANCE DATA AT +25°C

Full Band Performance			Pass Band Performance		
Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)	Frequency (MHz)	Insertion Loss (dB)	Group Delay (nsec)
10	81.30	72.38	1580	1.78	1.06
40	72.24	67.32	1600	1.71	0.98
100	57.92	60.68	1620	1.66	0.93
400	35.41	43.01	1640	1.62	0.87
1000	24.12	22.58	1660	1.61	0.82
1300	19.87	10.75	1700	1.58	0.75
1580	1.78	1.10	1750	1.56	0.70
1660	1.61	1.38	1800	1.54	0.66
2000	1.56	1.55	1850	1.53	0.63
2200	2.00	1.74	1900	1.53	0.62
2600	24.98	5.02	1950	1.54	0.62
3000	27.70	17.47	2000	1.56	0.62
3500	37.29	23.88	2050	1.60	0.64
4100	31.00	24.03	2100	1.68	0.66
4800	30.01	2.93	2200	2.00	0.74

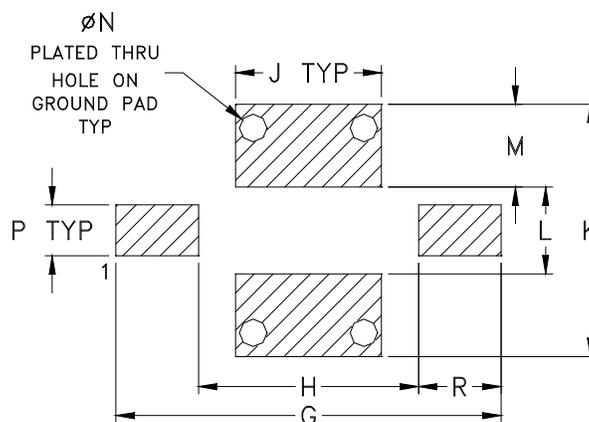


- NOTES**
- A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
 - B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuits' applicable established test performance criteria and measurement instructions.
 - C. The parts covered by this specification document 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/terms/viewterm.html

Outline Dimensions



PCB Land Pattern



CASE #	A	B	C	D	E	F	G	H	J	K	L	M
FV1206-4	.126 (3.20)	.063 (1.60)	.037 (0.94)	.026 (0.66)	.075 (1.91)	.012 (0.30)	.182 (4.62)	.104 (2.64)	.069 (1.75)	.119 (3.02)	.041 (1.04)	.039 (0.99)

CASE #	N	P	Q	R	WT. GRAM
FV1206-4	.013 (0.33)	.024 (0.61)	.020 (0.51)	.039 (0.99)	.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.



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



The Design Engineers Search Engine Provides ACTUAL Data Instantly From MINI-CIRCUITS At: www.minicircuits.com

RF/IF MICROWAVE COMPONENTS

DEVICE ORIENTATION IN T&R

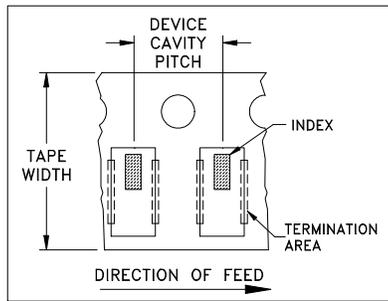


ILLUSTRATION 1

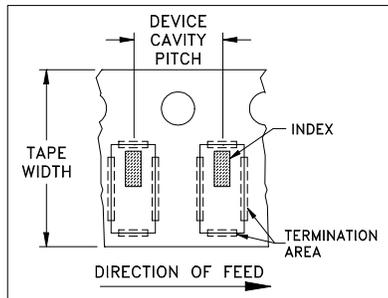


ILLUSTRATION 2

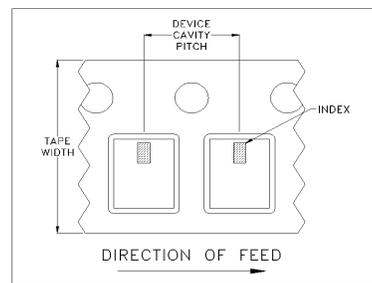


ILLUSTRATION 3

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.

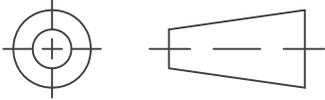
Mini-Circuits carrier tape materials provide protection from ESD (Electro-Static Discharge) during handling and transportation. Tapes are static dissipative and comply with industry standards EIA-481/EIA-541.

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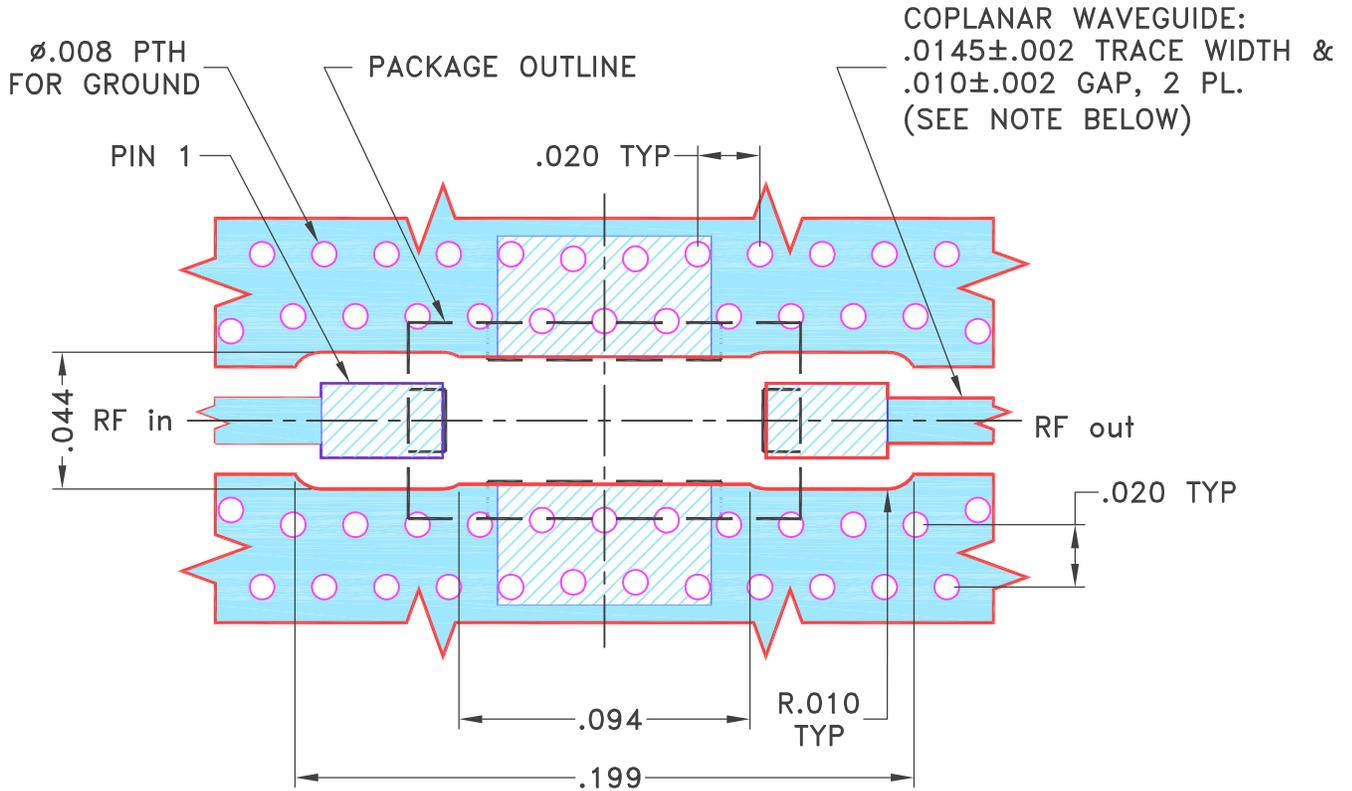
THIRD ANGLE PROJECTION



REVISIONS

REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	M152168	NEW RELEASE	07/31/15	ITG	AVB

SUGGESTED MOUNTING CONFIGURATION
FOR FV1206-4 CASE STYLE, "04FL01" PIN CODE



NOTES:

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- 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	ITG	07/30/15
	CHECKED	GF	07/31/15
	APPROVED	AVB	07/31/15

Mini-Circuits® 13 Neptune Avenue
Brooklyn NY 11235

PL, 04FL01, FV1206-4, TB-824+

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