Ceramic

Bandpass Filter

BFCG-252+

50Ω 2400 to 2500 MHz

The Big Deal

- Rugged, ceramic construction
- Tiny size, 0.079" x 0.049" x 0.037" (0805)
- Good power handling



CASE STYLE: GE0805C-3

Product Overview

Mini-Circuits' BFCG-252+ is a LTCC band pass filter with a passband from 2400 to 2500 MHz, supporting a variety of applications. This model provides 1.7 dB typical passband insertion loss and provides a very good stopband rejection due to strategically constructed layout with minimal interaction between components. It provides a wide operating temperature range from -55 to +125°C. Housed in a tiny 0805 ceramic form factor with wrap-around terminations, the filter is ideal for dense PCB layouts and with minimal performance variation due to parasitics.

Key Features

Feature	Advantages
Ultra-wide stopband	The LTCC band pass filter provides a very good stopband rejection suitable for high end applications.
LTCC Construction	Provides repeatable performance in a rugged, ceramic package well suited for tough environments such as high humidity and temperature extremes.
Tiny size (0.079 x 0.049 x 0.037")	Saves space in dense circuit board layouts and minimizes the effects of parasitics.
Good power handling	Supports a wide range of system power requirements.
Wrap-around terminations	Provides excellent solderability and easy visual inspection

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-Circuit's 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/MCLStore/terms.jsp

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Bandpass Filter

50Ω 2400 to 2500 MHz

BFCG-252+



Generic photo used for illustration purposes only

CASE STYLE: GE0805C-3

+RoHS Compliant

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

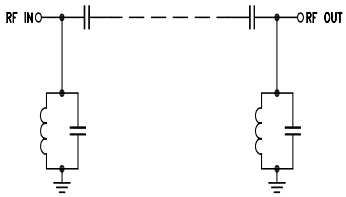
Features

- Miniature size 0805 (0.079"[2.0mm] x 0.049"[1.25mm] x 0.037"[0.95mm])
- High rejection
- Low cost
- Aqueous washable

Applications

- ISM Band
- WLAN
- Bluetooth
- Zigbee

Functional Schematic



Electrical Specifications[1,2] at 25°C

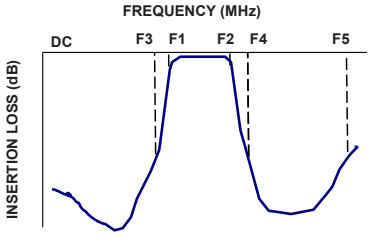
Parameter		F#	Frequency (MHz)	Min.	Typ.	Max.	Unit
Pass Band	Center Frequency	—		—	2450	—	dB
	Insertion Loss	F1-F2	2400 - 2500	—	1.7	3.5	dB
	Return Loss	F1-F2	2400 - 2500	—	10	—	dB
Stop Band, Lower	Insertion Loss	DC-F3	10 - 1350	25	35	—	dB
Stop Band, Upper	Insertion Loss	F4-F5	3400 - 3800	23	27	—	dB
		F5-F6	3800 - 7000	30	36	—	
		F6-F7	7000 - 8000	27	36	—	

1. Tested on Evaluation Board TB-BFCG-252+
2. This Filer is not intended for use as DC Blocking circuits element. In Application where DC Voltage is present at either input or output ports, blocking capacitors are required at the corresponding RF ports.

Maximum Ratings	
Operating Temperature	-55°C to 125°C
Storage Temperature[3]	-55°C to 125°C
RF Power Input[4]	2W at 25°C

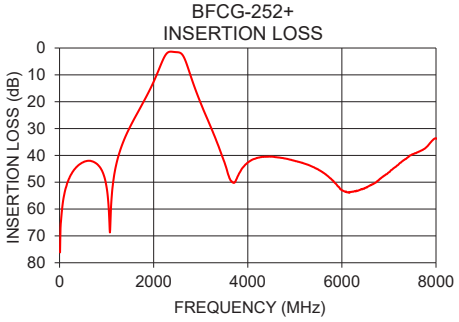
3. Refer to product storage temperature after installation.
Suggestion for T&R unused product storage condition +5 - +35°C.
Humidity 45-75% RH, 12 month Max.
4. Derate linearly to 0.5W@125°C.
Permanent damage may occur if any of these limits exceeded.

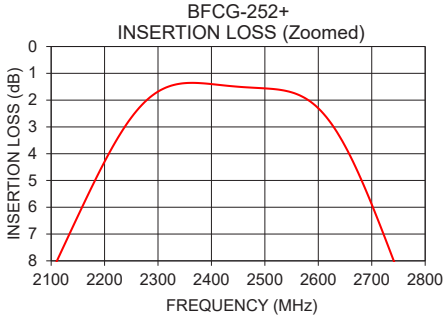
Typical Frequency Response

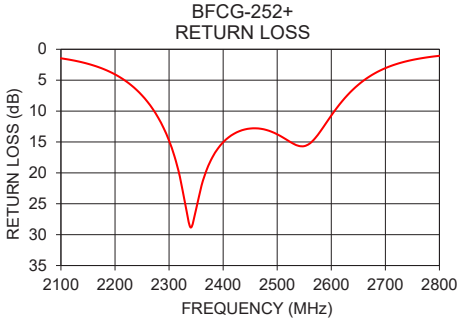


Typical Performance Data at 25°C

Frequency (MHz)	Insertion Loss (dB)	Return Loss (dB)
10	76.14	0.05
100	54.55	0.05
500	42.58	0.06
1000	51.94	0.09
1500	29.33	0.15
1860	17.55	0.34
2000	12.54	0.69
2400	1.40	15.05
2500	1.56	13.76
3000	20.55	0.30
4000	42.69	0.21
5000	42.04	0.39
6000	52.98	0.39
7000	46.28	0.23
8000	33.64	0.29







Notes

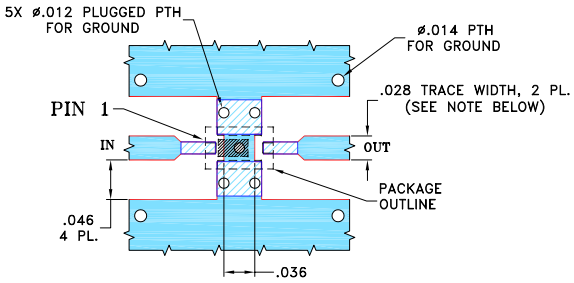
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Pad Connections

INPUT	1
OUTPUT	3
GROUND	2,4

Product Marking: N/A

Evaluation Board MCL P/N: TB-BFCG-252+
Suggested PCB Layout (PL-547)



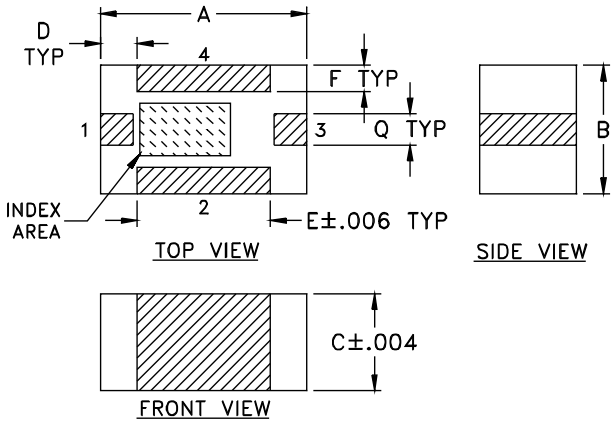
NOTES:

1. TRACE WIDTH IS SHOWN FOR FR4, GRADE IT-180TC (ITEQ CORP.) WITH DIELECTRIC THICKNESS .016±.0015. 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.

Outline Drawing



Outline Dimensions (inch / mm)

A	B	C	D	E	F	Q	wt
.079	.049	.037	.014	.051	.010	.012	grams
2.01	1.24	0.94	0.36	1.30	0.25	0.30	.020

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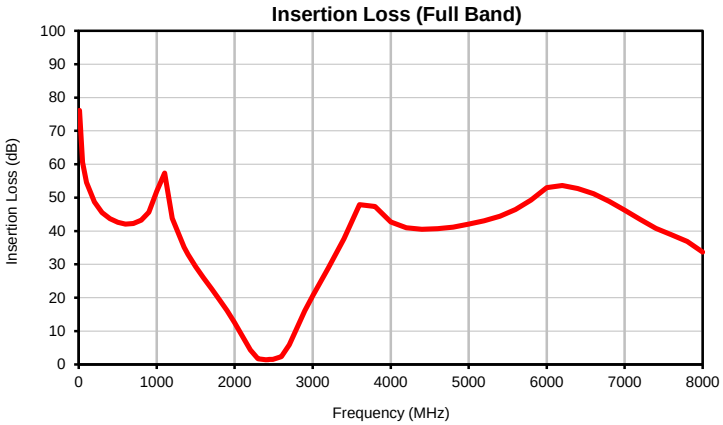
Ceramic Bandpass Filter BFCG-252+

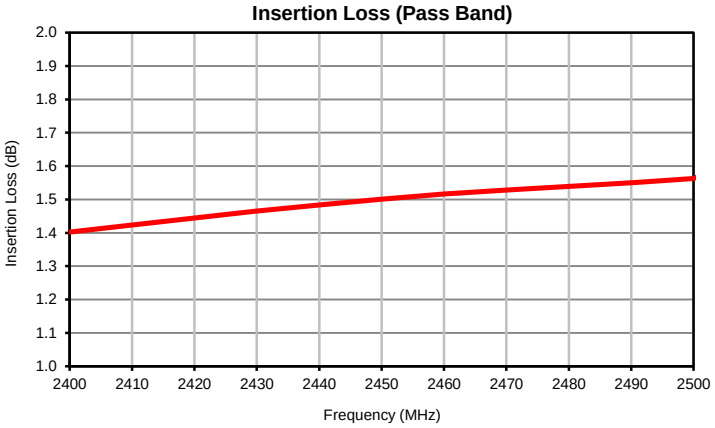
Typical Performance Data

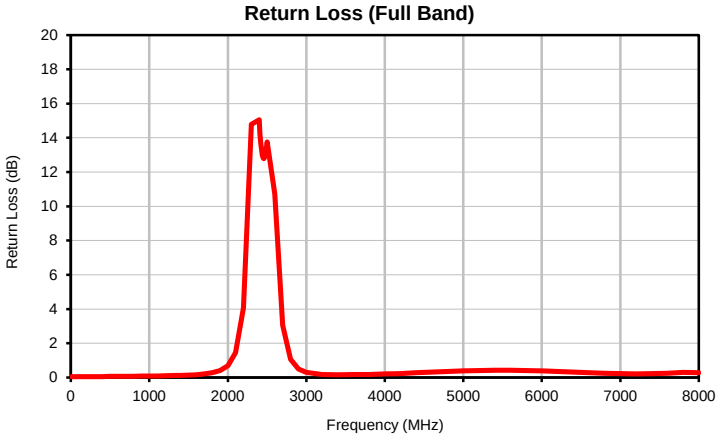
FREQUENCY (MHz)	INSERTION LOSS (dB)	RETURN LOSS (dB)
10	76.14	0.05
50	60.58	0.05
100	54.55	0.05
200	48.68	0.05
300	45.57	0.05
400	43.68	0.06
500	42.58	0.06
600	42.02	0.07
700	42.23	0.07
800	43.25	0.07
900	45.61	0.08
1000	51.94	0.09
1100	57.33	0.10
1200	43.78	0.11
1350	35.13	0.12
1400	32.99	0.13
1500	29.33	0.15
1600	25.96	0.17
1700	22.77	0.21
1800	19.53	0.28
1900	16.19	0.41
2000	12.54	0.69
2100	8.46	1.46
2200	4.30	4.07
2300	1.68	14.79
2400	1.40	15.05
2410	1.42	14.26
2420	1.44	13.68
2430	1.47	13.26
2440	1.48	12.98
2450	1.50	12.83
2460	1.52	12.79
2470	1.53	12.87
2480	1.54	13.06
2490	1.55	13.36
2500	1.56	13.76
2600	2.31	10.72
2700	5.89	3.05
2800	11.10	1.06
2900	16.05	0.50
3000	20.55	0.30
3200	28.87	0.18
3400	37.65	0.16
3600	47.88	0.17
3800	47.36	0.18
4000	42.69	0.21
4200	40.96	0.24
4400	40.51	0.28
4600	40.66	0.32
4800	41.17	0.35
5000	42.04	0.39
5200	43.06	0.41
5400	44.41	0.42
5600	46.42	0.42
5800	49.29	0.41
6000	52.98	0.39
6200	53.60	0.35
6400	52.74	0.32
6600	51.16	0.28
6800	48.86	0.25
7000	46.28	0.23
7200	43.46	0.22
7400	40.75	0.23
7600	38.87	0.25
7800	36.87	0.31
8000	33.64	0.29

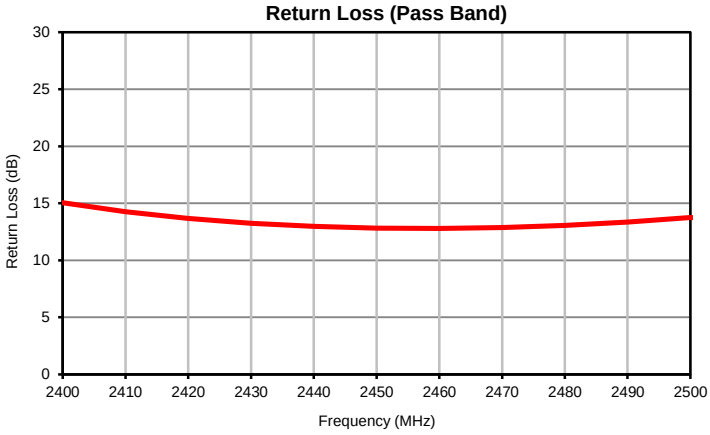
Ceramic Bandpass Filter BFCG-252+

Typical Performance Curves



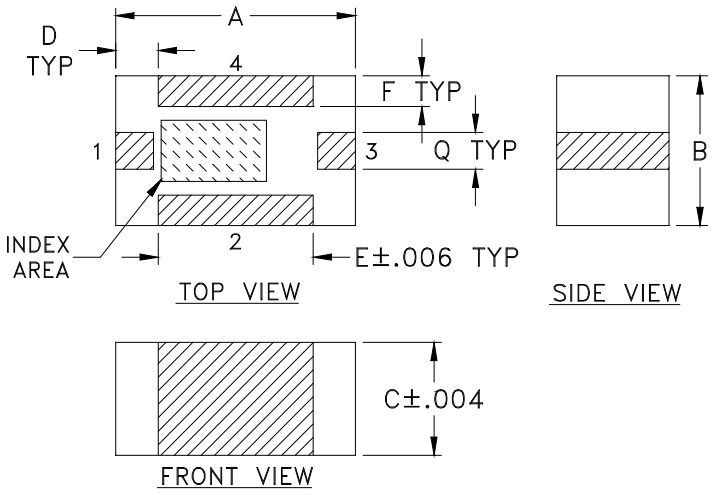




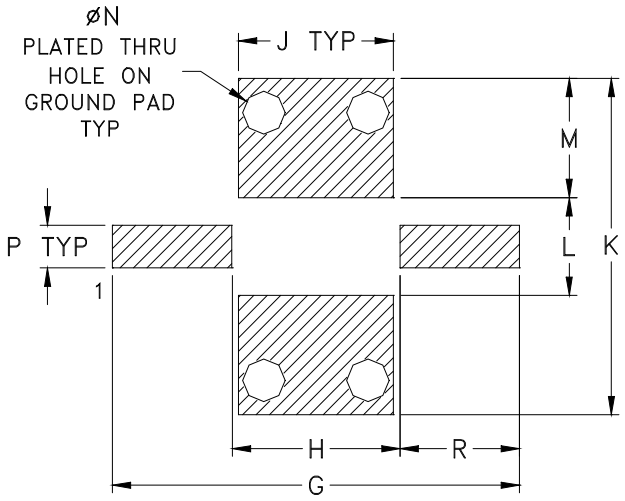


GE0805C-3

Outline Dimensions



PCB Land Pattern



Suggested Layout,
Tolerance to be within ±.002

CASE #	A	B	C	D	E	F	G	H	J	K	L
GE0805C-3	.079 (2.00)	.049 (1.25)	.037 (0.95)	.014 (0.35)	.051 (1.30)	.010 (0.25)	.134 (3.40)	.055 (1.40)	.051 (1.30)	.110 (2.80)	.032 (0.80)

CASE #	M	N	P	Q	R	WT. GRAM
GE0805C-3	.039 (1.00)	.014 (0.35)	.014 (0.35)	.012 (0.30)	.039 (1.00)	.020

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

Notes:

1. Open style, ceramic base.
2. Termination finish: For RoHS Case Styles: Tin plate over Nickel plate. All models, (+) suffix.
   For RoHS-5 Case Styles: Tin-Lead plate over Nickel plate. All models, no (+) suffix.

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Tape & Reel Packaging TR-F114

DEVICE ORIENTATION IN T&R

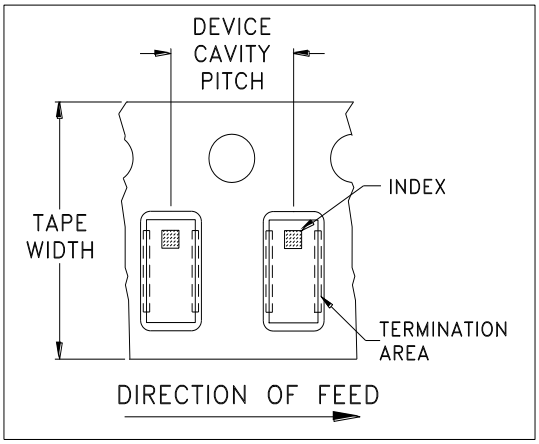


ILLUSTRATION 1

Applicable Case Styles	
GE0805C	JC0603C
GE0805C-1	JC0603C-4
GE0805C-1AP	JC0603C-6
GE0805C-7	
GE0805C-9	
GE0805C-10	
GE0805C-11	
GE0805C-12	

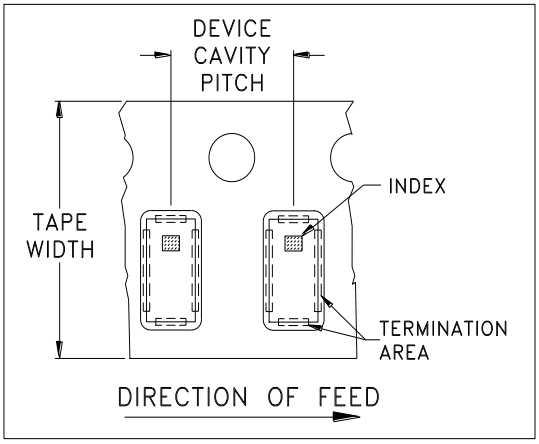


ILLUSTRATION 2

Applicable Case Styles	
GE0805C-2	JC0603C-1
GE0805C-3	JC0603C-2
GE0805C-4	JC0603C-3
GE0805C-5	JC0603C-5
GE0805C-6	JC0603C-7
GE0805C-8	
GE0805C-15	

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	4000

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

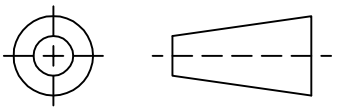
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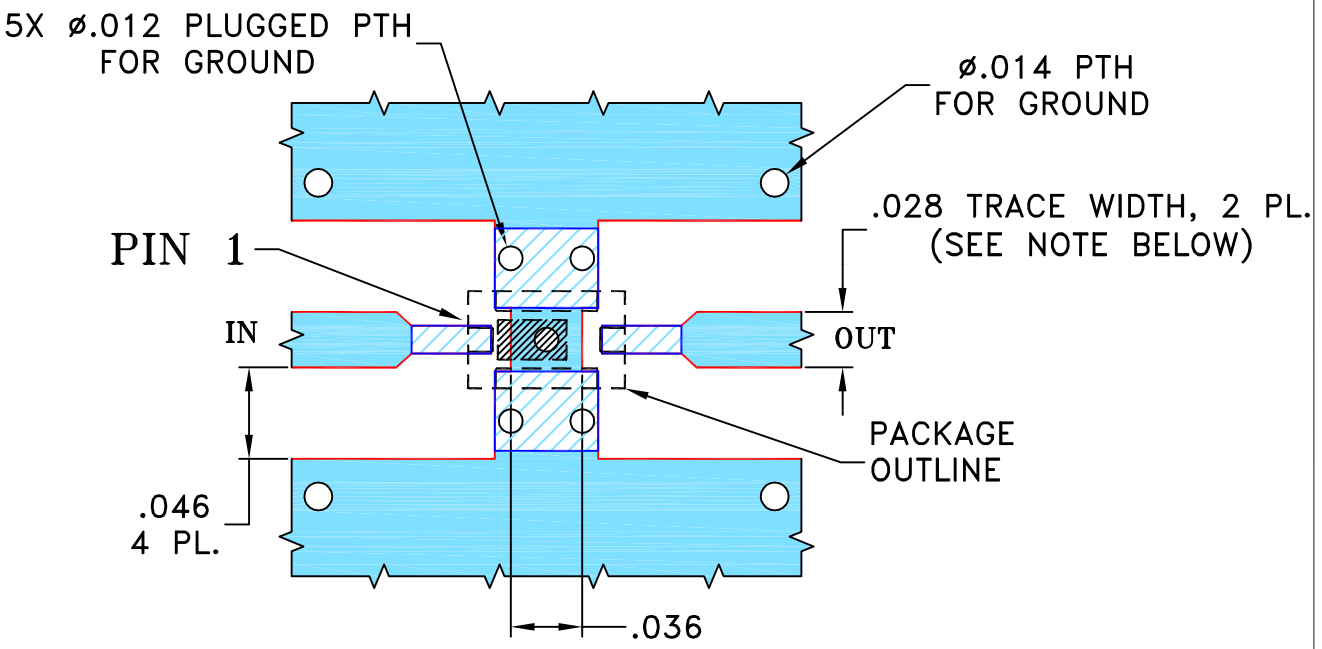
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THIRD ANGLE PROJECTION



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

SUGGESTED MOUNTING CONFIGURATION FOR GE0805C-3 CASE STYLE, "04FL01" PIN CODE



NOTES:

1. TRACE WIDTH IS SHOWN FOR FR4, GRADE IT-180TC (ITEQ CORP.) WITH DIELECTRIC THICKNESS .016±.0015. 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.

UNLESS OTHERWISE SPECIFIED		INITIALS	DATE
DIMENSIONS ARE IN INCHES	DRAWN	NP	05/30/18
TOLERANCES ON:	CHECKED	GF	05/30/18
2 PL DECIMALS ±	APPROVED	SL	05/31/18
3 PL DECIMALS ± .005			
ANGLES ±			
FRACTIONS ±			

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

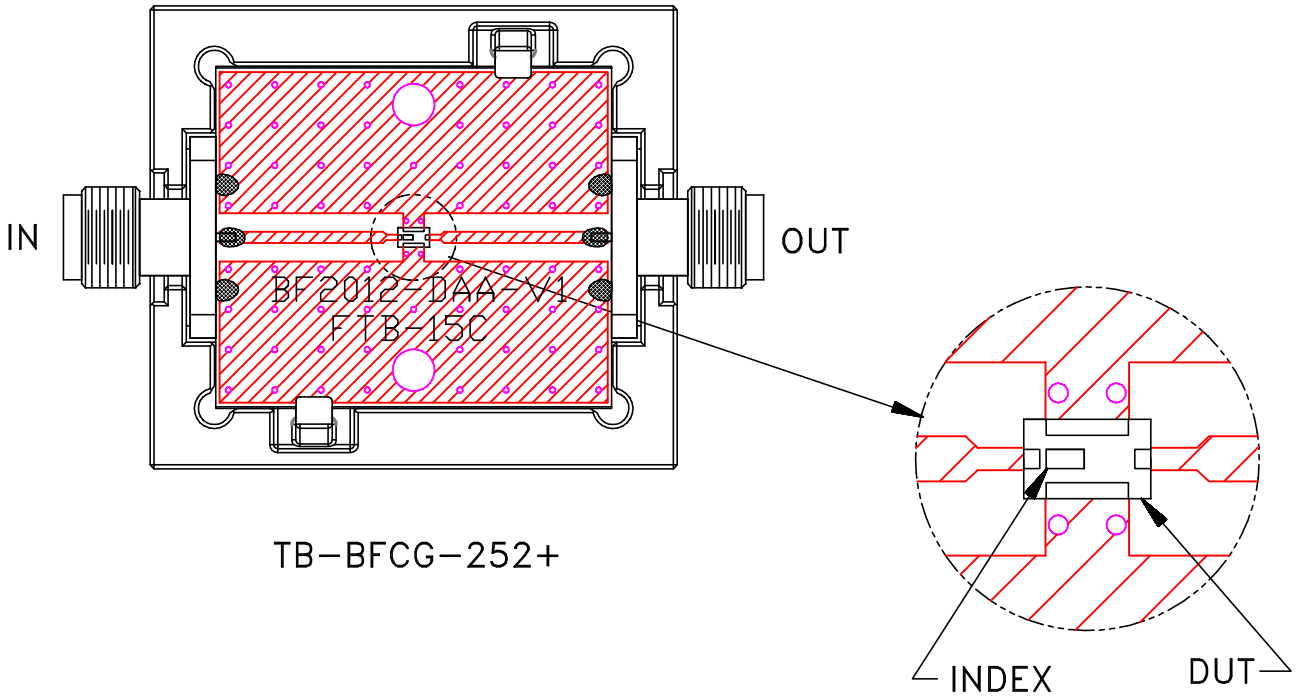
Mini-Circuits® 13 Neptune Avenue Brooklyn NY 11235

PL, 04FL01, GE0805C-3, TB-1022+

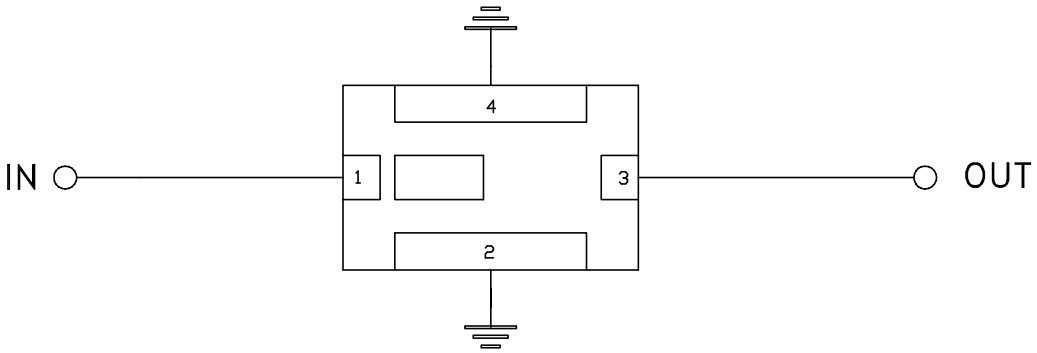
SIZE	CODE IDENT	DRAWING NO:	REV:
A	15542	98-PL-547	OR

FILE:	SCALE:	SHEET:
98PL547	10:1	1 OF 1

Evaluation Board and Circuit



TB-BFCG-252+



Schematic Diagram

Notes:

1. 50 Ohm SMA Female connectors.
2. PCB Material: FR4 or equivalent,
   Dielectric Constant=4.5, Thickness=.016 inch.

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Specification	Test/Inspection Condition	Reference/Spec
Operating Temperature	-55° to 125° C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-55° to 125° 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 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

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