

Ceramic Low Pass Filter

LFCG-1575+

50Ω DC to 1575 MHz



Generic photo used for illustration purposes only
CASE STYLE: GE0805C-2

The Big Deal

- Very good rejection, 50 dB typical
- Rugged, ceramic construction
- Tiny size, 0.079" x 0.049" x 0.037" (0805)
- Excellent power handling, 5.5W

Product Overview

Mini-Circuits' LFCG-1575+ is an LTCC low pass filter with a passband from DC to 1575 MHz, supporting a variety of applications. This model provides 0.9 dB typical passband insertion loss and provides a very good stopband rejection due to strategically constructed layout with minimal interaction between components. It handles up to 5.5W RF input power and provides a wide operating temperature range from -55°C. to 125°C. Housed in a tiny 0805 ceramic form factor with wraparound terminations, the filter is ideal for dense PCB layouts and with minimal performance variation due to parasitics.

Key Features

Feature	Advantages
Very good stopband rejection, 50 dB typical	The LTCC lowpass filter provides a very good stopband rejection until 12 GHz 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.
Excellent power handling, 5.5W	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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50Ω DC to 1575 MHz

LFCG-1575+



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CASE STYLE: GE0805C-2

+RoHS Compliant

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

Features

- Low loss, 0.9 dB typical
- High rejection 50 dB typical
- Excellent power handling, 5.5W
- Extremely small size 0805 (2.0mm x 1.25mm)
- Temperature stable
- LTCC construction

Applications

- Harmonic Rejection
- VHF/UHF transmitters / receivers
- Lab use

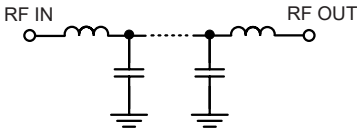
Electrical Specifications^{1,2} at 25°C

Parameter	F#	Frequency (MHz)	Min.	Typ.	Max.	Unit	
Pass Band	Insertion Loss	DC-F1	DC-1575	—	0.9	1.8	dB
	Freq. Cut-Off	F2	1850	—	3.0	—	dB
	Return Loss	DC-F1	DC-1575	—	18	—	dB
Stop Band	Rejection Loss	F3-F4	2175-2400	20	30	—	dB
		F4-F5	2400-7000	40	50	—	dB
		F5-F6	7000-12000	—	35	—	dB

¹ DC de-coupling capacitors are required in Applications where DC voltage and/or current is present at either input or output ports. Please contact Mini-Circuits for alternatives if DC pass from IN-OUT is required.

² Measured on Mini-Circuits Characterization Test Board TB-799+

Functional Schematic

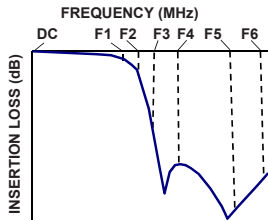


Maximum Ratings

Operating Temperature	-55°C to 125°C
Storage Temperature	-55°C to 125°C
RF Power Input*	5.5W max. @25°C

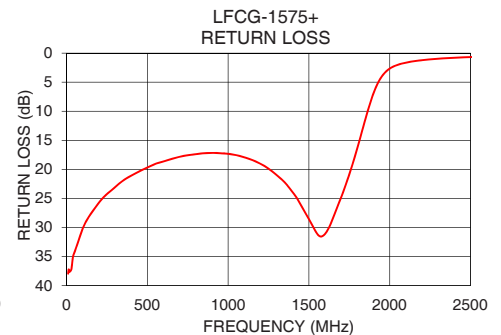
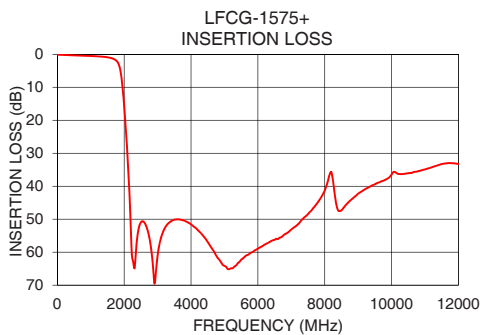
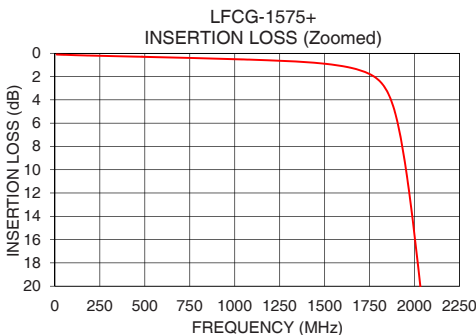
*Passband rating, derate linearly to 1W at 125°C ambient
Permanent damage may occur if any of these limits are exceeded.

Typical Frequency Response



Typical Performance Data at 25°C

Frequency (MHz)	Insertion Loss (dB)	Return Loss (dB)
10	0.10	37.94
100	0.15	30.21
1000	0.51	17.32
1575	1.05	31.56
1850	3.35	11.30
1960	10.84	3.68
2035	20.48	2.15
2100	30.72	1.63
2175	46.14	1.29
2400	54.89	0.79
3000	61.07	0.39
4000	51.56	0.21
5000	64.15	0.12
6000	58.92	0.11
7000	53.15	0.18
8000	41.32	0.30
9000	42.26	0.32
10000	36.44	0.58
11000	34.91	0.23
12000	33.27	0.23



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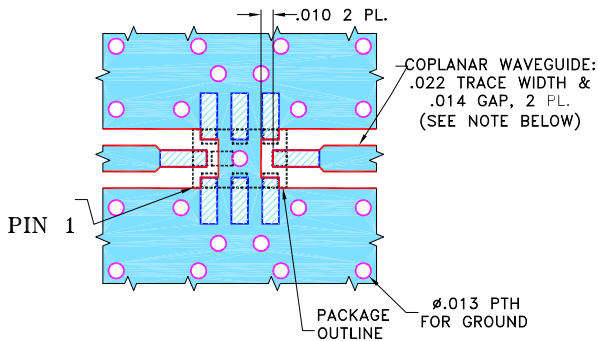
REV. B
ECO-007606
LFCG-1575+
EDU2884
URJ
210428
Page 2 of 3

Pad Connections

INPUT	8
OUTPUT	4
GROUND	1,2,3,5,6,7

Product Marking: KD

Demo Board MCL P/N: TB-799+
Suggested PCB Layout (PL-429)

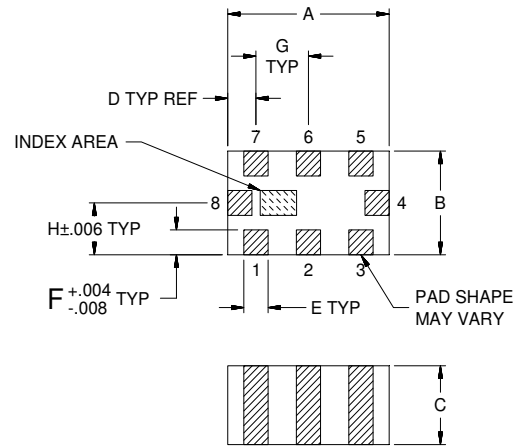


NOTES:

1. COPLANAR WAVEGUIDE IS SHOWN FOR ROGERS R04350B WITH DIELECTRIC THICKNESS $.010" \pm .001"$. 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	G	Wt.
.079	.049	.037	.014	.012	.012	.026	grams
2.00	1.25	0.95	0.35	0.30	0.30	0.65	.008

Note: Please refer to case style drawing for details

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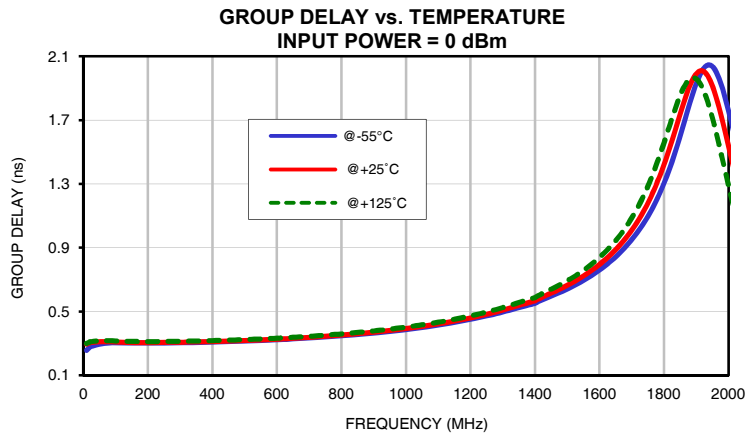
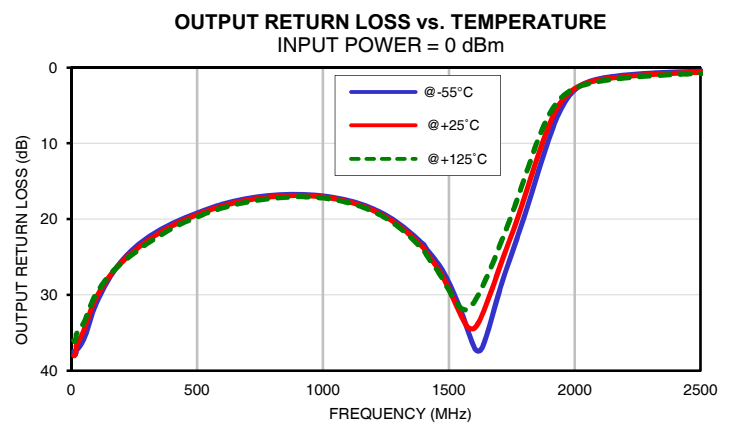
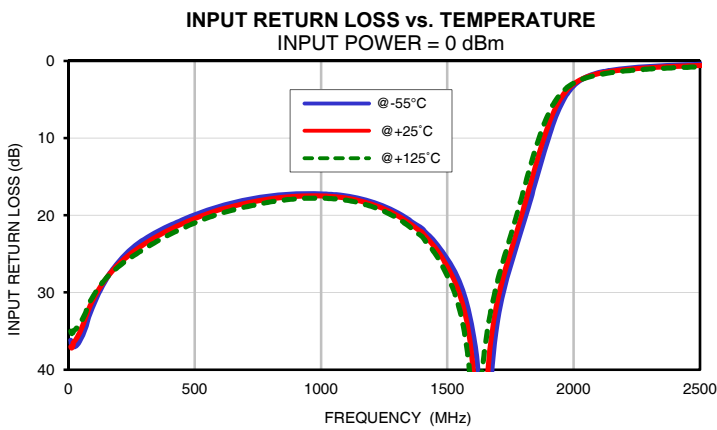
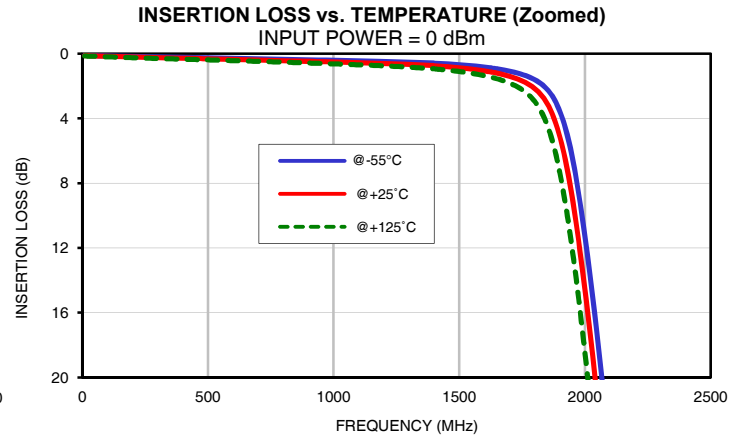
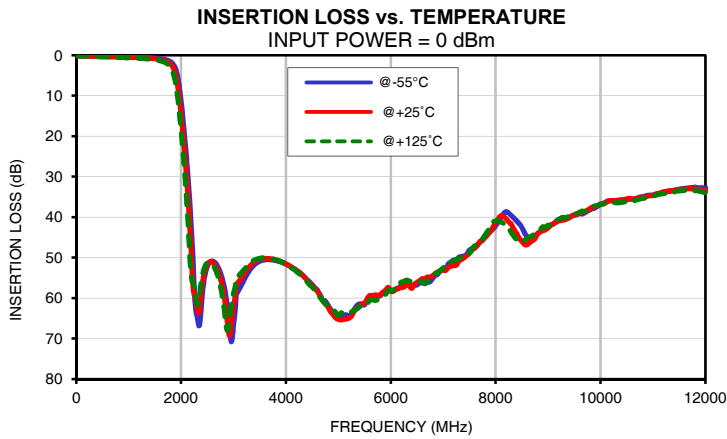
Typical Performance Data

FREQ. (MHz)	INSERTION LOSS			INPUT RETURN LOSS			OUTPUT RETURN LOSS		
	(dB)			(dB)			(dB)		
	@-55°C	@+25°C	@+125°C	@-55°C	@+25°C	@+125°C	@-55°C	@+25°C	@+125°C
10	0.11	0.12	0.14	36.22	37.05	35.02	37.45	37.98	36.00
60	0.12	0.14	0.17	35.26	34.01	33.20	34.98	33.74	32.89
100	0.14	0.16	0.20	31.61	30.80	30.40	31.10	30.30	29.81
140	0.15	0.18	0.22	28.89	28.63	28.53	28.43	28.10	27.88
180	0.16	0.20	0.24	26.83	26.99	27.17	26.35	26.39	26.41
200	0.17	0.21	0.25	25.99	26.32	26.61	25.52	25.70	25.81
240	0.18	0.22	0.27	24.64	25.17	25.64	24.13	24.48	24.73
300	0.20	0.25	0.30	23.12	23.75	24.36	22.50	22.91	23.26
400	0.23	0.28	0.34	21.36	21.88	22.52	20.60	20.88	21.23
500	0.26	0.32	0.39	19.97	20.43	20.99	19.19	19.41	19.70
800	0.35	0.43	0.53	17.48	17.86	18.27	16.85	17.04	17.26
1000	0.41	0.51	0.63	17.23	17.50	17.78	16.95	17.08	17.22
1575	0.78	1.01	1.28	31.20	33.46	36.72	34.62	34.24	31.87
1700	1.08	1.40	1.82	33.47	30.86	28.40	29.60	26.55	23.70
1850	2.21	3.09	4.42	15.58	13.50	11.31	14.33	12.06	9.92
1900	3.56	5.12	7.36	10.00	8.29	6.86	9.18	7.47	6.14
2000	11.29	14.59	18.49	3.23	2.97	2.87	2.96	2.77	2.75
2030	14.94	18.58	22.84	2.44	2.38	2.42	2.26	2.26	2.36
2035	15.59	19.28	23.60	2.34	2.30	2.35	2.17	2.19	2.31
2050	17.59	21.44	25.95	2.08	2.10	2.18	1.94	2.02	2.17
2075	21.12	25.24	30.13	1.75	1.83	1.95	1.67	1.79	1.97
2100	24.88	29.33	34.73	1.52	1.62	1.77	1.47	1.62	1.82
2175	38.03	44.43	51.51	1.08	1.22	1.40	1.09	1.27	1.47
2400	59.80	56.99	54.80	0.55	0.70	0.88	0.60	0.75	0.92
2500	52.21	51.64	51.29	0.44	0.59	0.76	0.49	0.63	0.78
2750	53.76	55.16	57.08	0.28	0.42	0.58	0.34	0.45	0.57
2800	55.92	57.96	60.68	0.26	0.40	0.56	0.32	0.43	0.54
3000	66.83	62.03	58.93	0.19	0.33	0.47	0.26	0.36	0.46
3250	54.42	53.18	52.25	0.15	0.28	0.41	0.21	0.30	0.39
3500	50.93	50.48	50.17	0.12	0.24	0.35	0.17	0.25	0.34
3600	50.57	50.25	50.04	0.12	0.23	0.33	0.16	0.24	0.32
4000	51.58	51.53	51.64	0.09	0.19	0.28	0.12	0.21	0.30
4250	53.58	53.65	53.92	0.08	0.17	0.25	0.10	0.19	0.29
4500	56.64	56.92	57.24	0.07	0.15	0.24	0.08	0.18	0.29
4750	60.74	61.41	61.37	0.05	0.14	0.22	0.06	0.17	0.30
5000	64.35	65.27	64.28	0.04	0.13	0.22	0.04	0.16	0.31
5250	63.90	64.47	63.46	0.04	0.13	0.22	0.03	0.16	0.33
5500	61.65	61.29	61.80	0.03	0.13	0.23	0.02	0.16	0.35
5750	59.60	59.36	60.36	0.01	0.12	0.24	0.01	0.17	0.37
6000	58.14	58.32	58.00	0.00	0.12	0.25	0.01	0.18	0.40
6250	56.70	57.29	55.95	0.00	0.13	0.28	0.02	0.20	0.43
6500	56.76	56.15	55.92	0.01	0.14	0.31	0.02	0.21	0.46
6750	55.98	54.90	55.43	0.01	0.15	0.34	0.03	0.23	0.48
7000	52.86	53.15	52.57	0.00	0.17	0.39	0.05	0.25	0.51
7500	48.14	48.85	48.95	0.02	0.21	0.47	0.07	0.27	0.53
8000	42.17	41.42	40.93	0.06	0.29	0.60	0.08	0.31	0.58
8500	42.52	45.97	46.00	0.11	0.31	0.64	0.15	0.28	0.48
9000	42.48	42.63	41.99	0.11	0.34	0.68	0.04	0.21	0.40
9500	39.48	39.45	38.99	0.14	0.37	0.70	0.01	0.18	0.34
10000	36.81	36.80	36.84	0.17	0.38	0.68	0.15	0.33	0.46
10250	35.88	35.86	36.35	0.18	0.40	0.67	0.16	0.28	0.33
10500	35.74	35.49	36.18	0.19	0.41	0.66	0.00	0.15	0.27
10750	35.05	35.16	35.54	0.20	0.41	0.64	0.04	0.13	0.26
11000	34.52	34.67	34.81	0.20	0.41	0.62	0.05	0.13	0.26
11250	33.77	33.69	34.09	0.22	0.42	0.61	0.06	0.13	0.28
11500	33.09	33.20	33.53	0.23	0.44	0.62	0.04	0.16	0.33
11750	32.69	33.03	33.41	0.25	0.47	0.64	0.03	0.18	0.38
11800	32.61	33.01	33.44	0.25	0.47	0.65	0.02	0.18	0.39
11900	32.77	33.12	33.65	0.25	0.49	0.68	0.02	0.19	0.41
12000	32.87	33.41	34.00	0.27	0.51	0.71	0.03	0.19	0.43

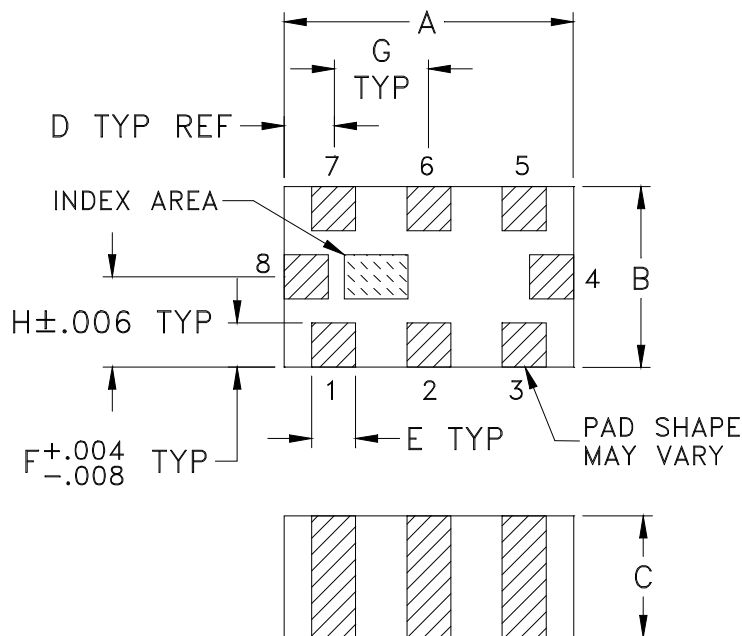
Typical Performance Data

FREQ. (MHz)	GROUP DELAY		
	(nsec)		
	@-55°C	@+25°C	@+125°C
10	0.26	0.29	0.30
50	0.29	0.31	0.32
100	0.30	0.31	0.32
110	0.30	0.31	0.31
140	0.30	0.31	0.31
170	0.30	0.31	0.31
200	0.30	0.31	0.31
230	0.30	0.31	0.31
260	0.30	0.31	0.31
290	0.30	0.31	0.31
320	0.30	0.31	0.31
350	0.31	0.31	0.31
380	0.31	0.31	0.32
410	0.31	0.31	0.32
440	0.31	0.31	0.32
470	0.31	0.32	0.32
500	0.31	0.32	0.32
530	0.32	0.32	0.33
560	0.32	0.32	0.33
590	0.32	0.33	0.33
620	0.32	0.33	0.33
650	0.33	0.33	0.34
680	0.33	0.34	0.34
710	0.33	0.34	0.35
740	0.34	0.34	0.35
770	0.34	0.35	0.35
800	0.35	0.35	0.36
830	0.35	0.36	0.36
850	0.36	0.36	0.37
900	0.36	0.37	0.38
950	0.38	0.38	0.39
1000	0.39	0.39	0.40
1050	0.40	0.41	0.42
1100	0.41	0.42	0.43
1150	0.43	0.44	0.45
1200	0.45	0.46	0.47
1250	0.47	0.48	0.50
1300	0.50	0.51	0.52
1500	0.64	0.66	0.69
1525	0.67	0.69	0.72
1575	0.73	0.76	0.80

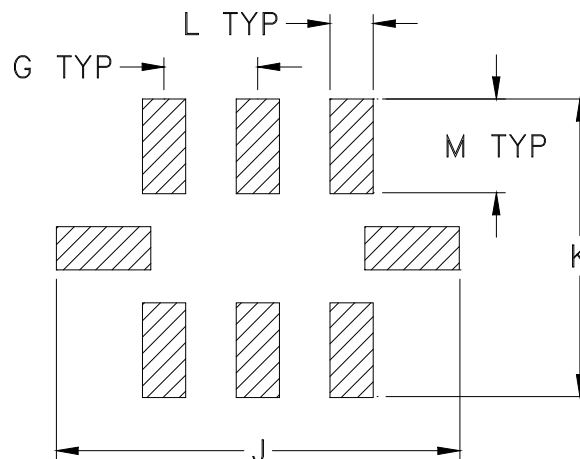
Typical Performance Curves



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
GE0805C-2	.079 (2.00)	.049 (1.25)	.037 (0.95)	.014 (0.35)	.012 (0.30)	.012 (0.30)	.026 (0.65)	.025 (0.63)	.134 (3.40)	.110 (2.80)	.014 (0.35)

CASE #	M	WT. GRAM
GE0805C-2	.039 (1.00)	.008

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

Notes:

- Open style, ceramic base.
- 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.
- Pad tolerance to be non-cumulative. Minimum spacing between each pad is .004 (0.1).



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



Provides ACTUAL Data Instantly From MINI-CIRCUITS At: www.minicircuits.com

RF/IF MICROWAVE COMPONENTS

Tape & Reel Packaging TR-F114

DEVICE ORIENTATION IN T&R

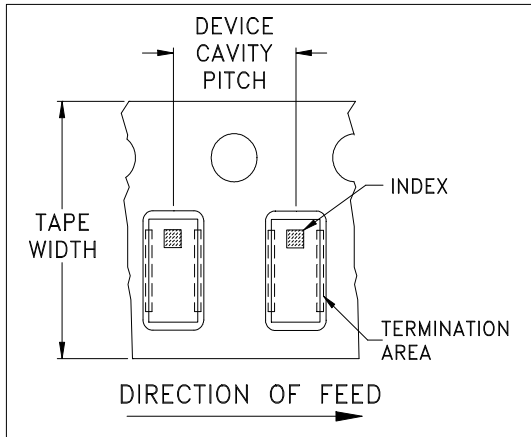


ILLUSTRATION 1

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

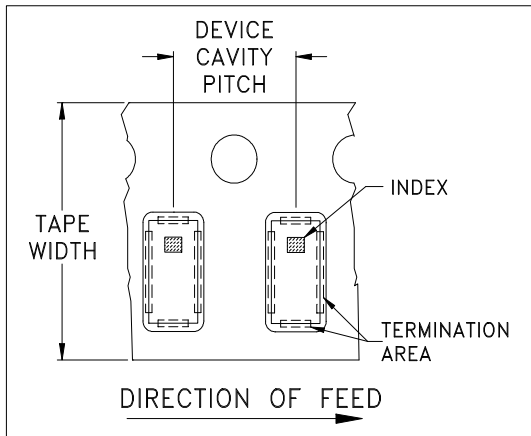


ILLUSTRATION 2

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	JV1210C-1
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.

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



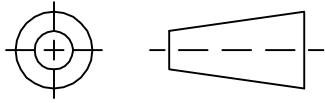
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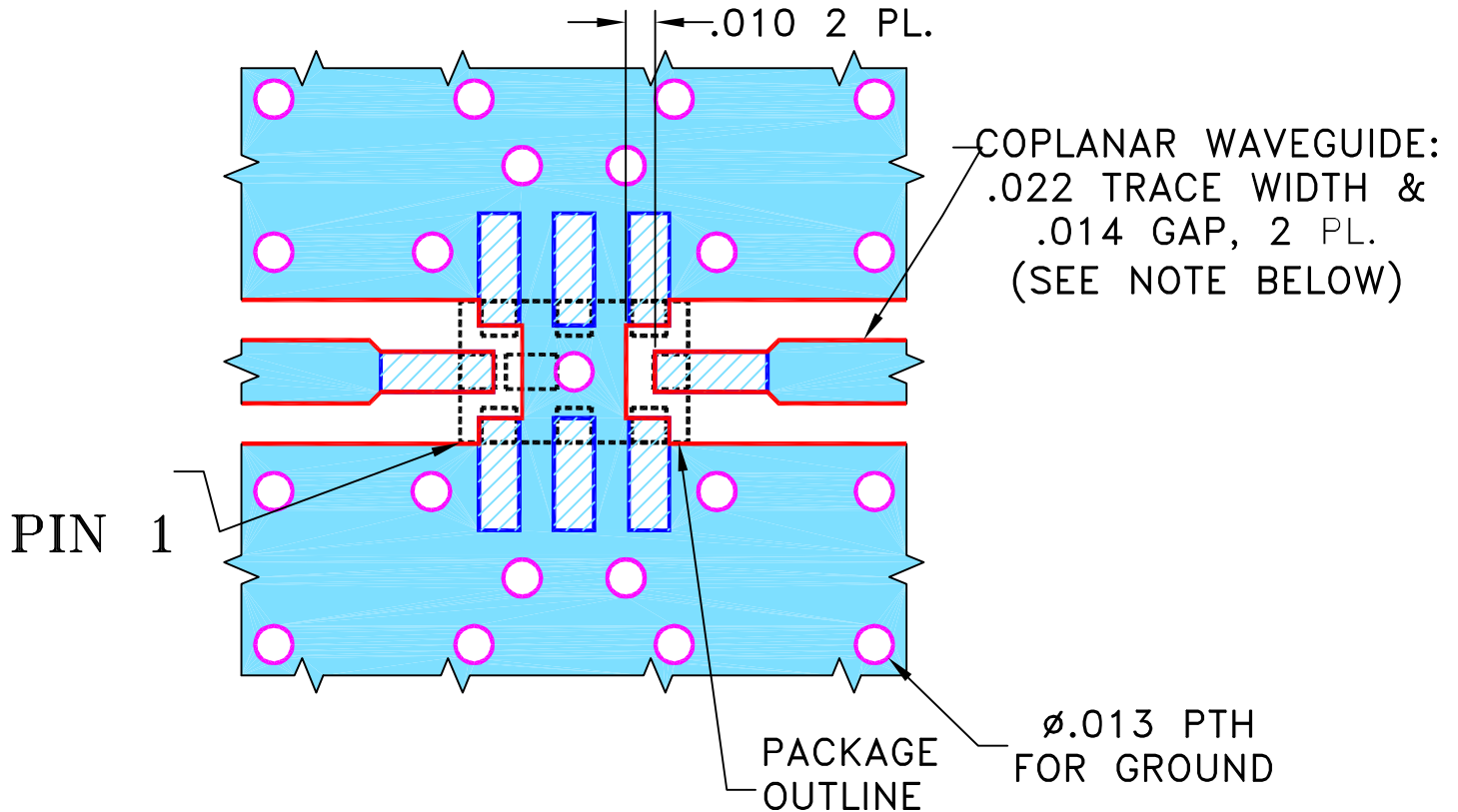
THIRD ANGLE PROJECTION



REVISIONS

REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	M148457	NEW RELEASE	10/14/14	GF	MY

SUGGESTED MOUNTING CONFIGURATION
FOR GE0805C-4 CASE STYLE, "08FL07" PIN CODE



NOTES:

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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 GF	10/01/14
TOLERANCES ON:	CHECKED IL	10/14/14
2 PL DECIMALS ±	APPROVED MY	10/14/14
3 PL DECIMALS ± .005		
ANGLES ±		
FRACTIONS ±		



Mini-Circuits®

13 Neptune Avenue
Brooklyn NY 11235

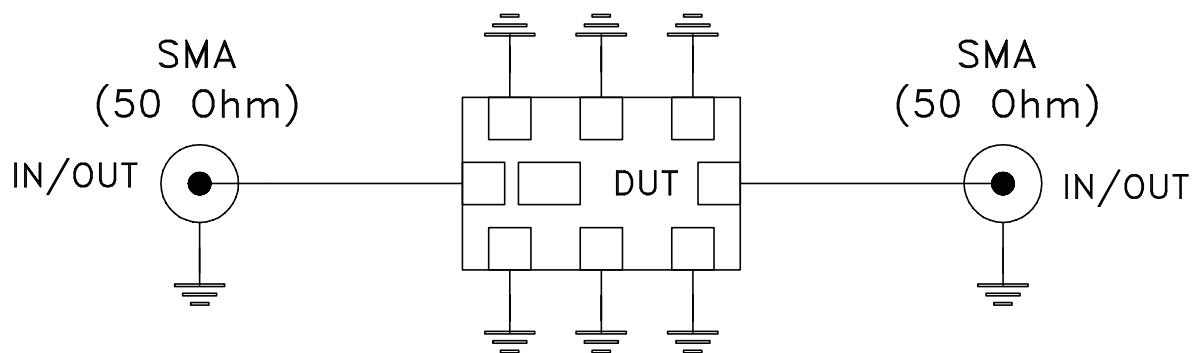
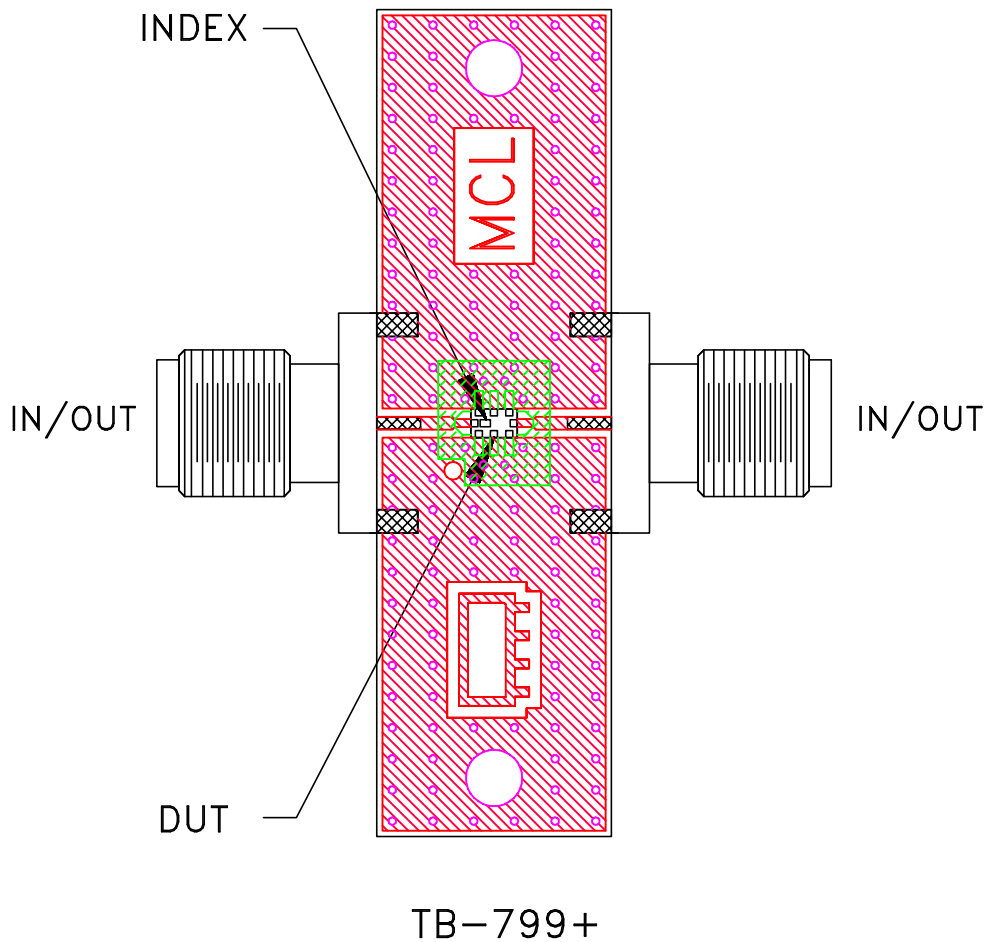
PL, 08FL07, GE0805C-4, TB-799+

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

SIZE	CODE IDENT	DRAWING NO:	REV:
A	15542	98-PL-429	OR
FILE:	98PL429	SCALE: 15:1	SHEET: 1 OF 1


Evaluation Board and Circuit



Schematic Diagram

Notes:

1. 50 Ohm SMA Female connectors.
2. PCB Material: R04350 or equivalent,
Dielectric Constant=3.5, Thickness=.010 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