CERAMIC

Low Pass Filter

LFCV-700-75+

75Ω 5 to 700 MHz

THE BIG DEAL

- Low loss, 0.8 dB typ.
- Return loss, 15.6 dB typ.
- High power handling, 3.5W
- Small size 1210 (3.2mm x 2.5mm)

Generic photo used for illustration purposes only

CASE STYLE: JV1210C-2

+RoHS Compliant

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

APPLICATIONS

- CATV systems
- Harmonic rejection
- Transmitters / Receivers

PRODUCT OVERVIEW

Mini-Circuits' low pass filter LFCV-700-75+ is a LTCC based 75 Ohms elliptic filter with sharp roll-off characteristics. These filters are offered in a EIA 1210 package size. The high stopband rejection (40dB typ.) enables them to clean-up the spurious signal and improve the overall rejection in the CATV systems.

KEY FEATURES

Feature	Advantages
Small size (3.2mm x 2.5mm)	Available in the size of typical resistors (or) capacitors (EIA 1210), the ultra small LFCV filter integrates an elliptic section in a simple SMT chip sized form factor.
High power handling, 3.5W	This filter can withstand upto 3.5W CW signal without damage, making this filter ideal for use in medium power transmit paths.
Temperature stability	Over a 155°C operating temperature range(-55°C to 100°C), this filter typically exhibits less than 0.2dB passband insertion loss variation.
High rejection	With 40dB typical rejection, this filter ideally suits the CATV application to enhance the system dynamic range.

REV. A
ECO-015847
LFCV-700-75+
EDU4494
URJ
221026

CERAMIC

Low Pass Filter

LFCV-700-75+

ELECTRICAL SPECIFICATIONS[1,2] AT 25°C

Parameter		F#	Frequency (MHz)	Min.	Typ.	Max.	Units
Passband	Insertion Loss	F1-F2	5 - 700	—	0.8	1.0	dB
	Freq. Cut-Off	F3*	855	—	3.0	—	dB
	Return Loss	F1-F2	5 - 700	—	15.6	—	dB
Stop Band	Rejection	F4-F5	990 - 1950	30	—	—	dB
		F5-F6	1950 - 2150	25	—	—	dB

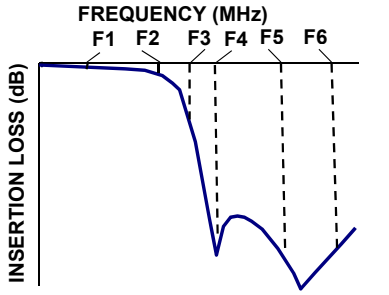
1 DC de-coupling capacitors are required in Applications where DC voltage and/or current is present at either input or output ports. Please contact Mini-Circuits for alternatives if DC pass from IN-OUT is required.
2 Measured on Mini-Circuits Characterization Test Board TB-LFCV-700-75+
* Typically, a ±5% frequency deviation from the stated value may occur on a unit-to-unit basis.

MAXIMUM RATINGS

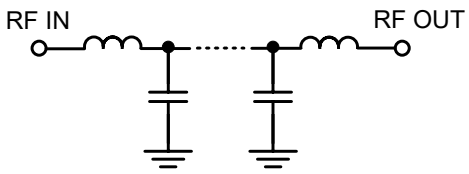
Parameter	Ratings
Operating temperature	-55°C to 100°C
Storage temperature*	-55°C to 100°C
RF Power Input**	3.5 W @25°C

* 12 month max.
**Passband rating, derate linearly to 0.9W at 100°C ambient
Permanent damage may occur if any of these limits are exceeded.

TYPICAL FREQUENCY RESPONSE



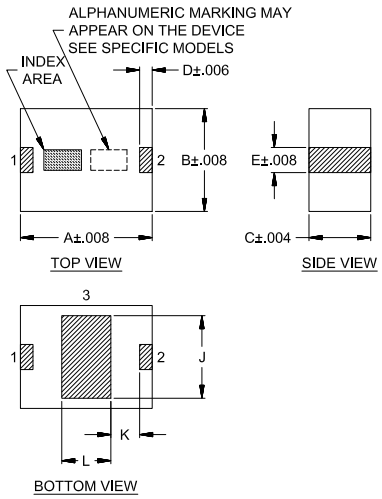
FUNCTIONAL SCHEMATIC



PAD CONNECTIONS

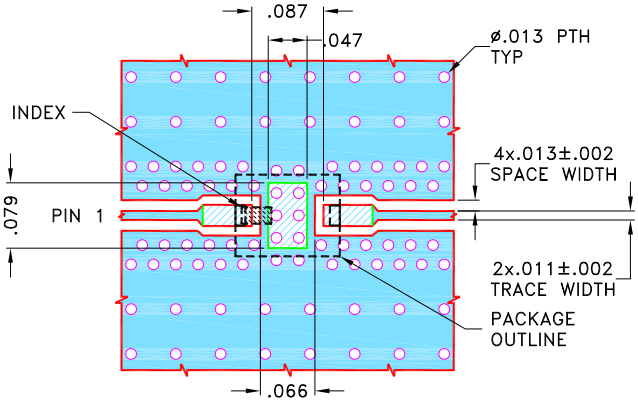
INPUT	1
OUTPUT	2
GROUND	3

OUTLINE DRAWING



PRODUCT MARKING: N/A

DEMO BOARD MCL P/N: TB-LFCV-700-75+
SUGGESTED PCB LAYOUT (PL-680)



NOTES:
1. COPLANAR WAVEGUIDE PARAMETERS ARE SHOWN FOR ROGERS (RO4350B) WITH DIELECTRIC THICKNESS .010±.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 PATTERN WITH SMOBC (SOLDER MASK OVER BARE COPPER)
DENOTES PCB COPPER PATTERN FREE OF SOLDERMASK

OUTLINE DIMENSIONS (Inches / mm)

A	B	C	D	E
.126	**.098**	**.059**	**.012**	**.024**
3.2	2.5	1.5	0.3	0.6

J	K	L	Wt.
.079	**.028**	**.047**	grams
2.0	0.70	1.2	.045

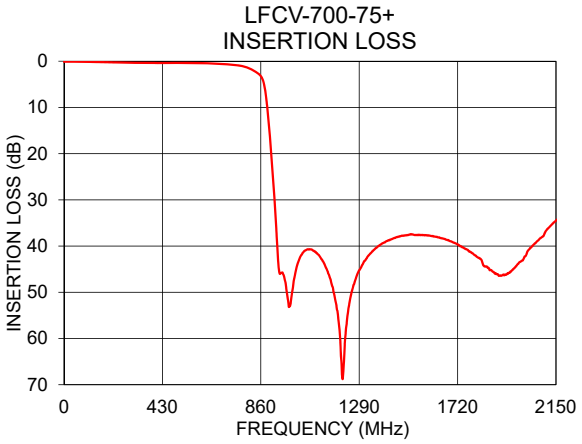
Note: Please refer to case style drawing for details

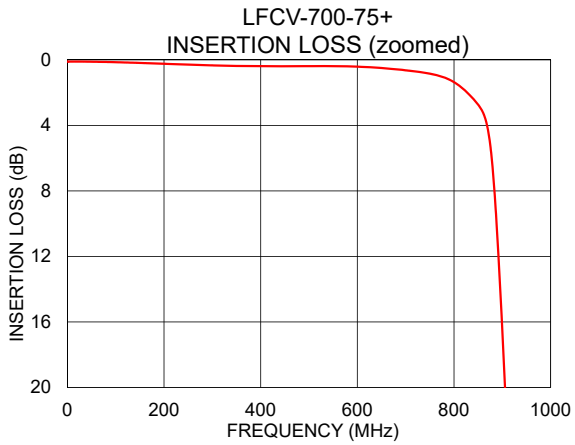
Low Pass Filter

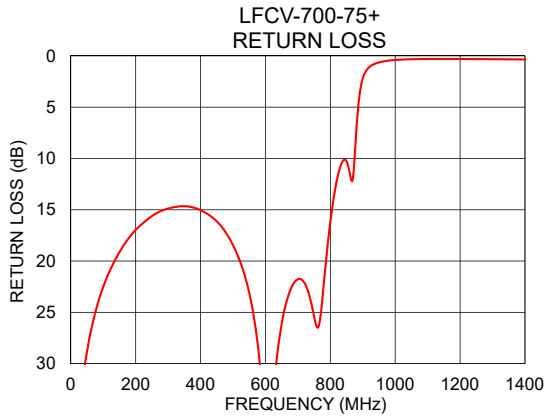
LFCV-700-75+

TYPICAL PERFORMANCE DATA AT 25°C

Frequency (MHz)	Insertion Loss (dB)	Return Loss (dB)
5	0.10	50.09
10	0.10	43.68
100	0.14	22.51
500	0.38	18.47
600	0.41	38.55
700	0.63	21.79
855	2.94	10.72
910	22.89	1.46
920	30.05	1.09
990	52.49	0.42
1000	49.07	0.40
1200	56.38	0.30
1500	37.63	0.36
1950	45.55	0.30
2150	34.49	0.21







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

Ceramic Low Pass Filter LFCV-700-75+

Typical Performance Data

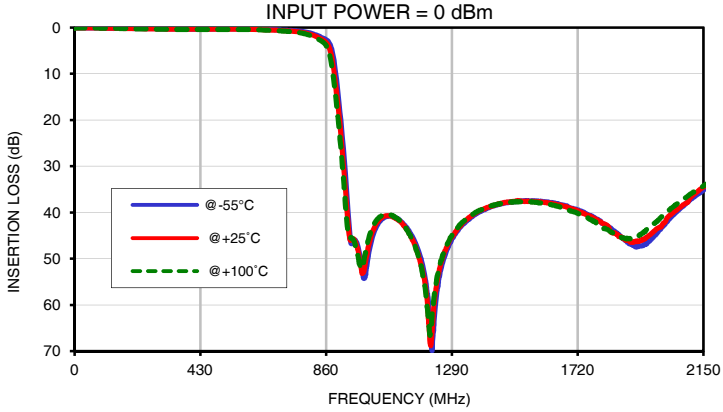
FREQ.	INSERTION LOSS			INPUT RETURN LOSS			OUTPUT RETURN LOSS		
(MHz)	(dB)			(dB)			(dB)		
	@-55°C	@+25°C	@+100°C	@-55°C	@+25°C	@+100°C	@-55°C	@+25°C	@+100°C
5	0.10	0.10	0.10	48.00	50.09	50.47	46.47	48.12	48.00
10	0.10	0.10	0.10	41.74	43.68	45.07	41.24	43.09	44.18
30	0.10	0.10	0.10	32.01	33.50	34.96	31.74	33.36	34.90
50	0.11	0.11	0.11	27.61	28.77	29.95	27.36	28.69	29.99
70	0.12	0.12	0.12	24.85	25.70	26.55	24.56	25.56	26.56
100	0.13	0.14	0.14	22.30	22.51	22.84	22.04	22.40	22.84
130	0.15	0.16	0.17	20.64	20.29	20.16	20.37	20.17	20.10
150	0.16	0.18	0.19	19.80	19.15	18.74	19.55	19.01	18.65
170	0.18	0.20	0.22	19.02	18.14	17.53	18.84	18.06	17.45
190	0.19	0.22	0.25	18.33	17.31	16.55	18.20	17.26	16.47
210	0.20	0.24	0.28	17.70	16.65	15.79	17.56	16.57	15.67
230	0.22	0.26	0.30	17.14	16.10	15.20	17.00	16.02	15.05
250	0.24	0.28	0.33	16.54	15.62	14.71	16.47	15.58	14.59
270	0.26	0.30	0.35	15.99	15.24	14.37	15.95	15.23	14.26
300	0.28	0.33	0.38	15.40	14.88	14.12	15.32	14.85	13.99
320	0.30	0.35	0.39	15.07	14.74	14.09	15.00	14.72	13.97
340	0.32	0.36	0.40	14.81	14.66	14.13	14.75	14.66	14.04
360	0.33	0.37	0.41	14.68	14.67	14.26	14.62	14.69	14.21
380	0.34	0.38	0.41	14.68	14.80	14.52	14.64	14.83	14.49
400	0.35	0.38	0.42	14.82	15.04	14.89	14.79	15.07	14.88
420	0.35	0.38	0.41	15.09	15.39	15.37	15.06	15.42	15.38
440	0.35	0.38	0.41	15.48	15.85	15.96	15.47	15.89	16.00
460	0.34	0.38	0.41	16.08	16.47	16.71	16.15	16.56	16.80
480	0.33	0.38	0.41	16.91	17.33	17.71	17.02	17.43	17.85
500	0.33	0.38	0.41	18.01	18.47	19.03	18.08	18.55	19.14
600	0.33	0.41	0.46	37.47	38.55	38.68	40.34	39.04	37.11
700	0.52	0.63	0.72	21.00	21.79	21.13	20.84	21.74	20.87
855	2.46	2.94	3.50	10.24	10.72	10.94	10.46	11.29	11.73
890	8.52	10.93	13.45	4.63	3.80	3.21	5.07	4.20	3.49
910	20.02	22.89	25.85	1.47	1.46	1.44	1.54	1.57	1.51
920	26.92	30.05	33.24	1.04	1.09	1.11	1.07	1.16	1.15
950	46.61	45.77	45.63	0.56	0.63	0.68	0.55	0.66	0.68
970	47.68	48.64	49.74	0.44	0.50	0.54	0.43	0.53	0.54
990	54.24	52.49	49.93	0.36	0.42	0.46	0.36	0.45	0.46
1010	47.44	46.01	44.66	0.33	0.37	0.41	0.31	0.40	0.40
1030	43.32	42.61	41.89	0.31	0.35	0.38	0.29	0.37	0.37
1040	42.21	41.75	41.12	0.30	0.33	0.37	0.29	0.36	0.36
1060	41.01	40.79	40.51	0.28	0.32	0.34	0.27	0.34	0.34
1080	40.77	40.71	40.53	0.26	0.30	0.33	0.26	0.32	0.32
1100	41.17	41.28	41.20	0.26	0.30	0.32	0.26	0.32	0.32
1120	42.16	42.41	42.36	0.26	0.30	0.32	0.27	0.32	0.32
1140	43.75	44.14	44.12	0.27	0.30	0.32	0.27	0.32	0.32
1160	45.96	46.57	46.70	0.26	0.30	0.31	0.26	0.32	0.32
1180	49.22	50.28	50.54	0.26	0.29	0.31	0.27	0.32	0.32
1200	54.78	56.38	57.27	0.26	0.30	0.31	0.28	0.32	0.33
1220	68.87	67.60	64.33	0.27	0.30	0.32	0.28	0.32	0.33
1240	56.56	54.72	53.74	0.28	0.31	0.32	0.28	0.33	0.33
1260	50.52	49.40	49.00	0.28	0.31	0.33	0.29	0.33	0.34
1280	47.11	46.35	46.12	0.28	0.31	0.33	0.29	0.33	0.34
1300	44.73	44.43	44.04	0.28	0.32	0.33	0.29	0.34	0.35
1350	41.40	41.05	40.85	0.30	0.33	0.35	0.30	0.35	0.36
1400	39.40	39.21	39.14	0.30	0.34	0.36	0.30	0.35	0.37
1450	38.24	38.13	38.15	0.30	0.35	0.37	0.31	0.36	0.38
1500	37.70	37.63	37.70	0.30	0.36	0.38	0.30	0.36	0.38
1550	37.49	37.63	37.68	0.31	0.36	0.38	0.29	0.36	0.39
1600	37.64	37.76	38.02	0.30	0.36	0.39	0.30	0.36	0.39
1650	38.11	38.32	38.63	0.30	0.36	0.39	0.28	0.35	0.39
1700	39.08	39.18	39.75	0.29	0.36	0.39	0.26	0.35	0.39
1950	46.91	45.55	44.16	0.21	0.30	0.34	0.16	0.29	0.34
2150	35.15	34.49	34.25	0.10	0.21	0.27	0.07	0.23	0.28

Typical Performance Data

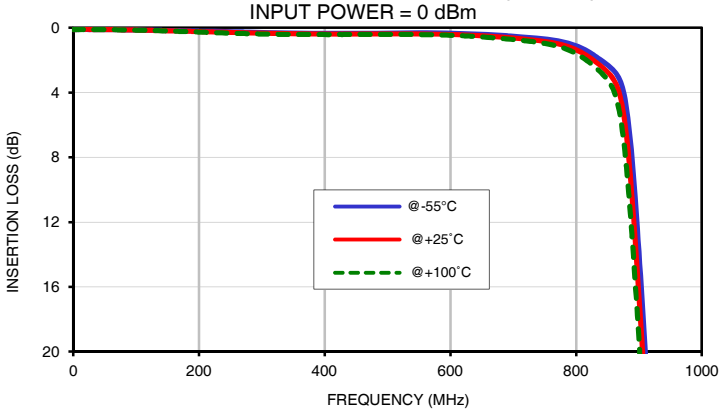
FREQ. (MHz)	GROUP DELAY (nsec)		
	@-55°C	@+25°C	@+100°C
5	0.91	0.94	0.90
20	0.43	0.42	0.42
35	0.43	0.42	0.41
50	0.42	0.42	0.41
65	0.42	0.42	0.41
80	0.42	0.41	0.41
95	0.42	0.42	0.41
110	0.42	0.41	0.41
125	0.42	0.41	0.41
140	0.42	0.41	0.41
155	0.43	0.42	0.41
170	0.43	0.42	0.41
185	0.43	0.42	0.41
200	0.44	0.42	0.41
220	0.44	0.43	0.41
240	0.45	0.43	0.42
260	0.45	0.44	0.42
280	0.46	0.44	0.43
300	0.47	0.45	0.44
320	0.47	0.46	0.45
340	0.48	0.47	0.46
360	0.49	0.48	0.47
380	0.51	0.50	0.49
400	0.52	0.52	0.51
420	0.54	0.53	0.53
440	0.56	0.56	0.55
460	0.59	0.58	0.58
480	0.62	0.61	0.61
500	0.65	0.64	0.64
520	0.68	0.68	0.67
540	0.72	0.71	0.71
560	0.76	0.76	0.76
580	0.81	0.81	0.80
600	0.86	0.86	0.86
610	0.89	0.89	0.89
620	0.92	0.92	0.92
640	0.98	0.98	0.98
660	1.06	1.06	1.06
680	1.15	1.15	1.16
700	1.25	1.26	1.28

Typical Performance Curves

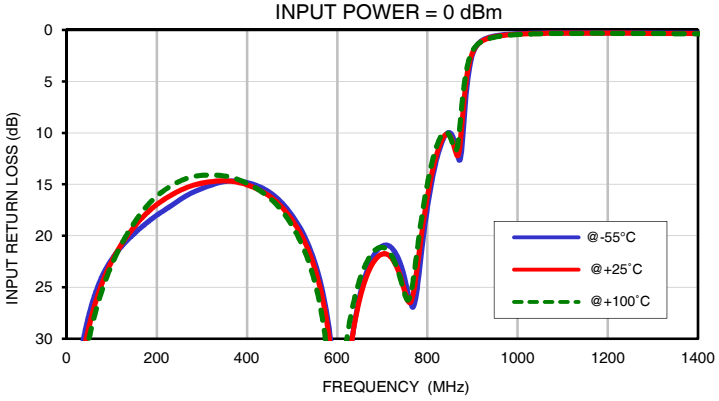
INSERTION LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



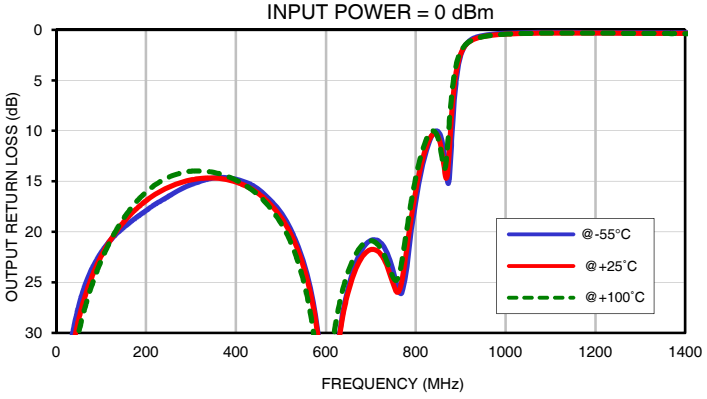
INSERTION LOSS vs. TEMPERATURE (Zoomed)
INPUT POWER = 0 dBm



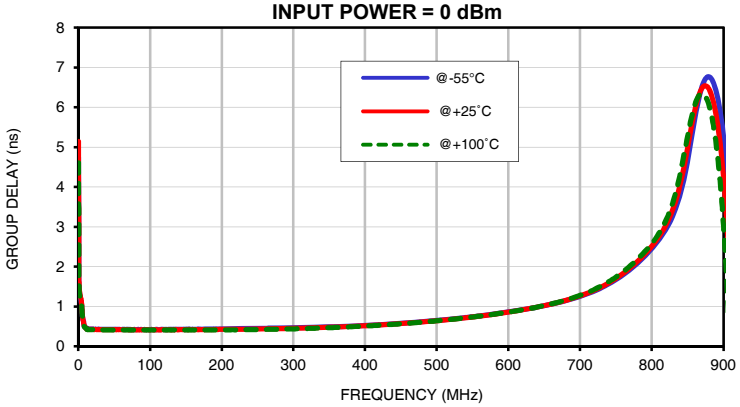
INPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



OUTPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



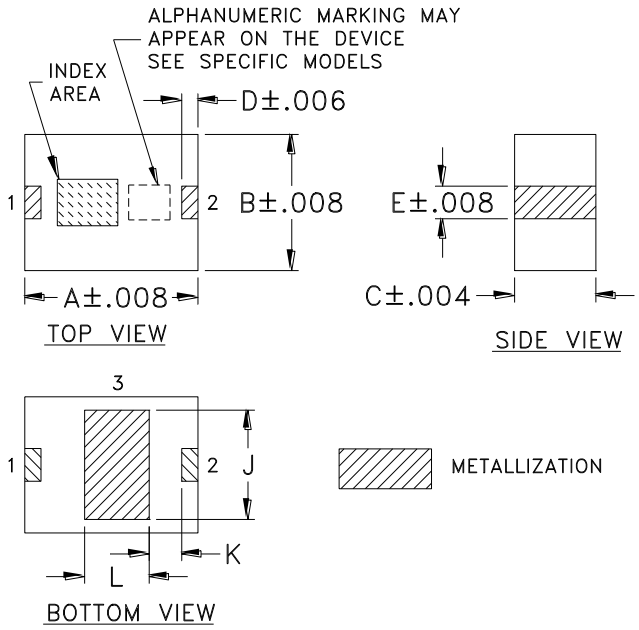
GROUP DELAY vs. TEMPERATURE
INPUT POWER = 0 dBm

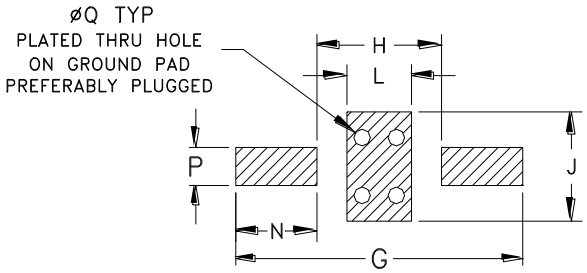


Case Style JV

Outline Dimensions JV1210C-2

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	Q	WT. GRAM
JV1210C-2	.126 (3.2)	.098 (2.5)	.059 (1.5)	.012 (0.3)	.024 (0.6)	-- --	.205 (5.2)	.087 (2.2)	.079 (2.0)	.028 (0.70)	.047 (1.2)	-- --	.059 (1.5)	.026 (0.65)	.012 (0.3)	.045

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.
3. Pad tolerance is non-cumulative. Minimum spacing between each pad is .004.

Tape & Reel Packaging TR-F74

DEVICE ORIENTATION IN T&R

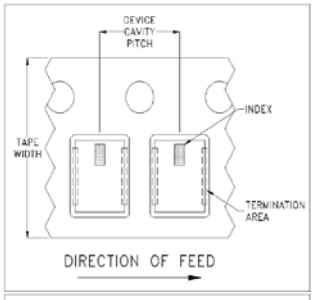


ILLUSTRATION 1

Applicable Case Styles
GE0805C-1
GE0805C-1AP
JV1210C-1
GU2939

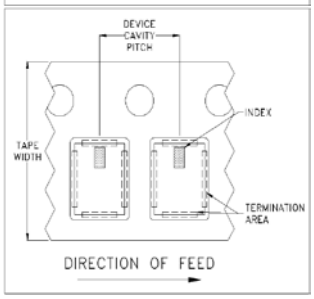


ILLUSTRATION 2

Applicable Case Styles
JV1210C
JV1210C-2
JV1210C-3
JV1210C-4
JV1210C-5
JV1210C-6
JV1210C-11

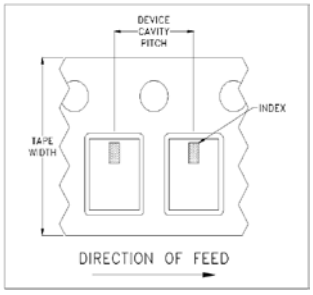


ILLUSTRATION 3

Applicable Case Styles
JC0603C-8
JV1210C-7
JV1210C-8
JV1210C-9
JV1210C-10
JV1210C-13
GE0805C-13

Tape Width, mm	Device Cavity Pitch, mm	Real Size, inches	Devices per Reel	
8	4	7	Small quantity standards **(see note)**	20
				50
				100
				200
				500
				1000
			Standard	2000
				4000

Note: Small reel availability varies by model. Refer to pricing and availability on individual model dashboard.

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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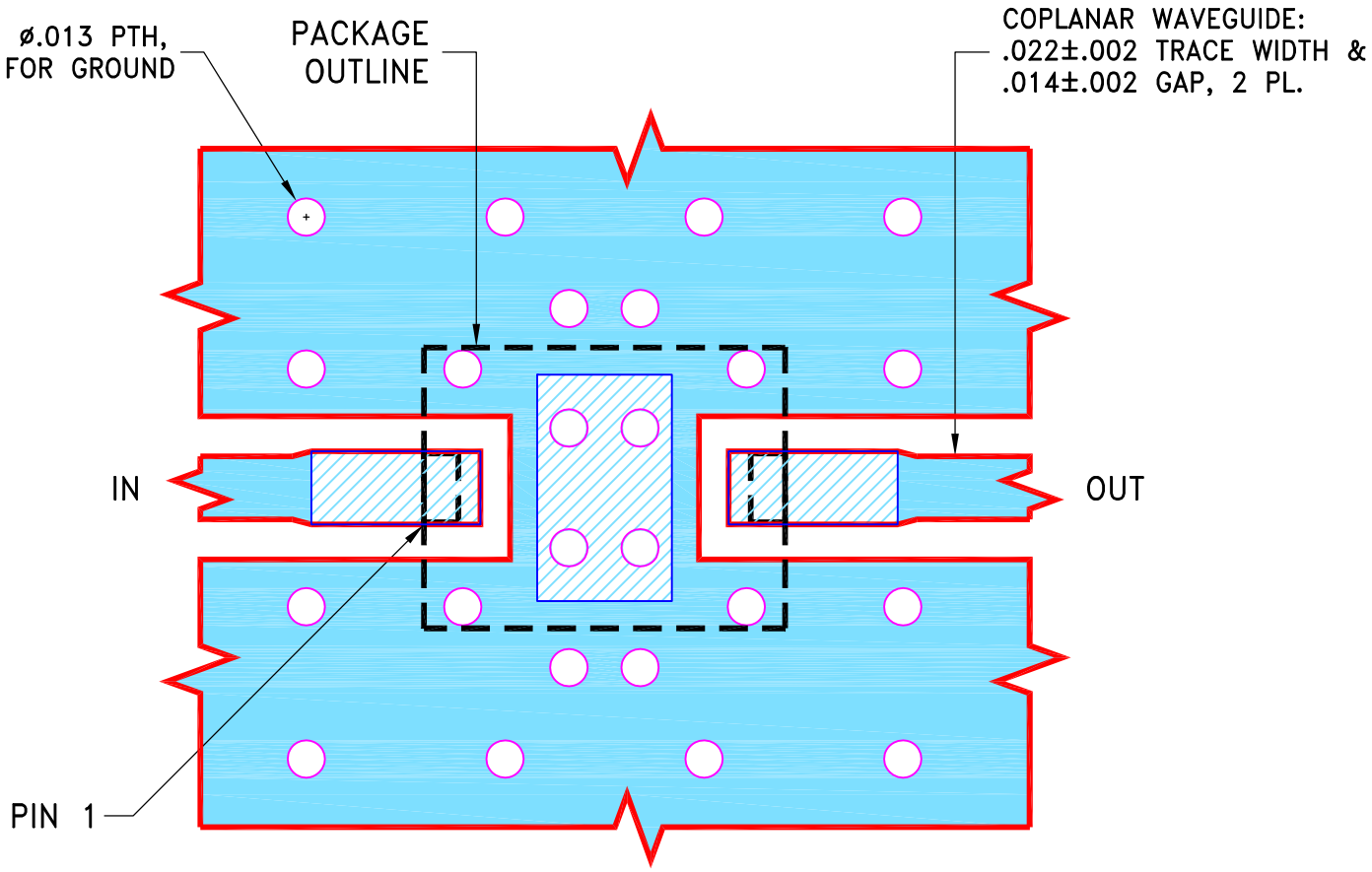
THIRD ANGLE PROJECTION

REVISIONS					
REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	M173313	NEW RELEASE	03/19/19	ITG	SL

SUGGESTED MOUNTING CONFIGURATION
FOR JV1210C-2 CASE STYLE, "03FL01" PIN CODE



NOTES:
1. TRACE WIDTH & GAP ARE SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .010"±.001". COPPER: 1/2 OZ. EACH SIDE.
   FOR OTHER MATERIALS TRACE WIDTH & 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	ITG	03/19/19
TOLERANCES ON:	CHECKED	GF	03/19/19
2 PL DECIMALS ±	APPROVED	SL	03/19/19
3 PL DECIMALS ± .005			
ANGLES ±			
FRACTIONS ±			

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

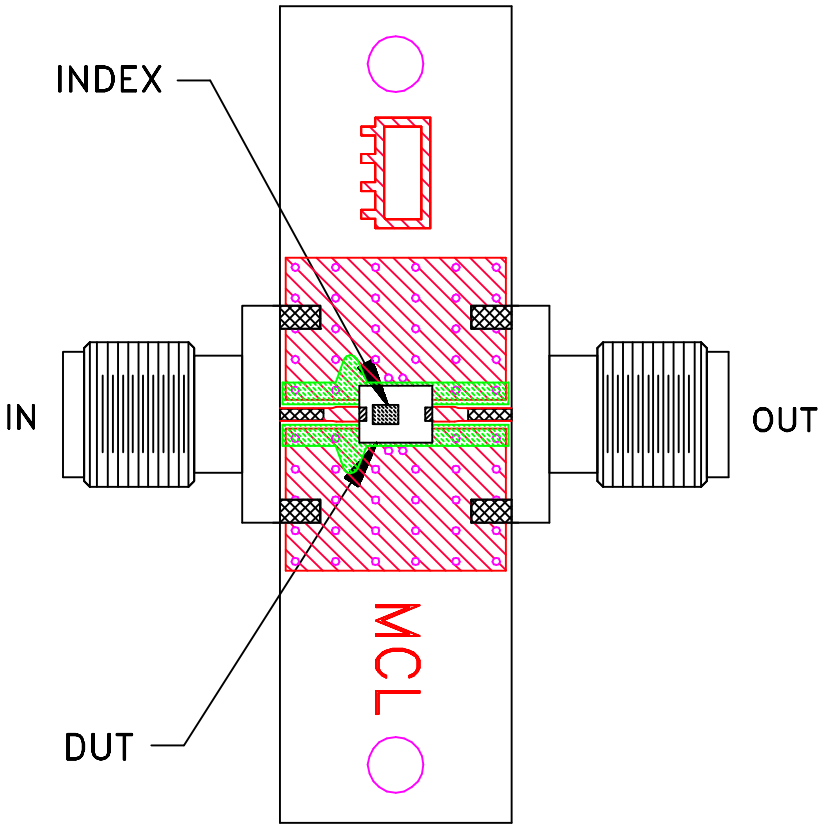
Mini-Circuits® 13 Neptune Avenue Brooklyn NY 11235

PL, 03FL01, JV1210C-2, TB-801+

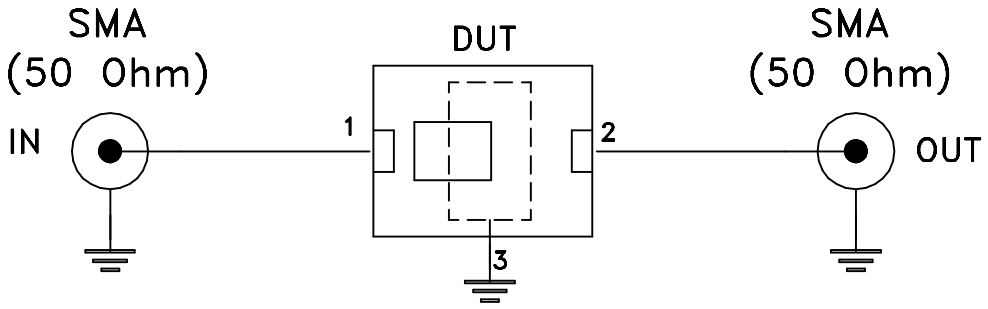
SIZE	CODE IDENT	DRAWING NO:	REV:
A	15542	98-PL-631	OR

FILE:	SCALE:	SHEET:
98PL631	15:1	1 OF 1

Evaluation Board and Circuit



TB-801+



Schematic Diagram

Notes:

1. 50 Ohm SMA Female connectors.
2. PCB Material: RO4350 or equivalent,
   Dielectric Constant=3.5, Thickness=.010 inch.

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Environmental Specifications ENV06

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