LTCC

Low Pass Filter

LPJC-252R+

50 2400 to 2500 MHz



CASE STYLE: JC0603C

+RoHS Compliant

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

Available Tape and Reel at no extra cost

Reel Size	Devices/Reel
7"	20, 50, 100, 200, 500,1000, 4000

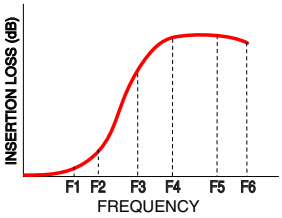
Features

- Miniature size 0603 (0.063"[1.6mm] x 0.031"[0.8mm] x 0.024"[0.6mm])
- Low Insertion Loss, 0.5 dB typ. and High rejection.
- Replaces one inductors and three capacitors
- Low cost
- Aqueous washable

Applications

- ISM Band
- WLAN
- Bluetooth
- Zigbee

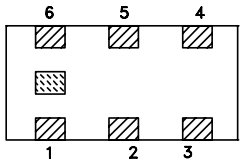
Specification Definition



Block Diagram



Top View



Pad Connections

Input	2
Output	5
Ground	1, 3, 4, 6

Electrical Specifications[1] at 25°C

Parameter		F#	Frequency (MHz)	Min.	Typ.	Max.	Unit
Pass Band	Insertion Loss	F1-F2	2400 - 2500	—	0.5	0.7	dB
	VSWR	F1-F2	2400 - 2500	—	1.2	1.5	:1
Stop Band	Rejection Loss	F3-F4	4800-5000	35	52	—	dB
		F5-F6	7200-7500	25	34	—	dB

1. Tested on Evaluation Board TB-1020+

Maximum Ratings

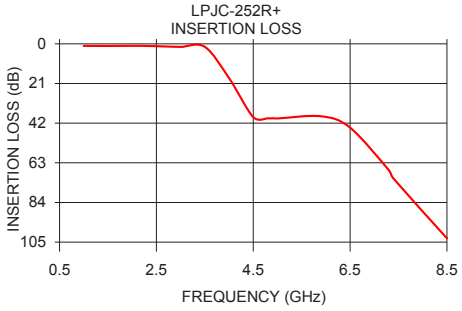
Operating Temperature	-40°C to +85°C
Storage Temperature[2]	-40°C to +85°C
RF Power Input[3]	2W at 25°C

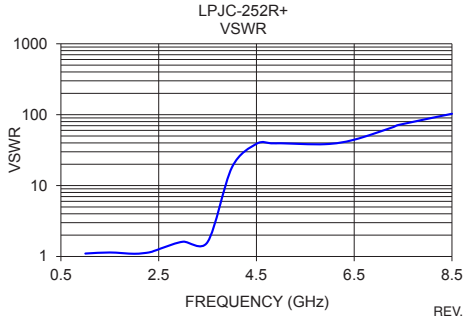
2.Refer to product storage temperature after installation
Suggestion for T&R unused product storage condition:
+5 ~ +35 °C, Humidity 45~75%RH, 12 month Max
3. Derate linearly to 1W at 85°C

Typical Performance Data at 25°C[4]

Frequency (GHz)	Insertion Loss (dB)	VSWR (:1)
1.00	0.17	1.10
1.50	0.25	1.14
2.00	0.33	1.09
2.30	0.40	1.14
2.40	0.44	1.20
2.44	0.46	1.22
2.50	0.49	1.26
2.60	0.55	1.34
3.00	0.88	1.62
3.50	1.65	1.60
4.00	14.94	18.13
4.50	38.16	38.81
4.80	53.32	39.45
4.90	51.41	39.40
5.00	48.51	39.52
5.90	32.69	38.36
6.50	31.90	44.37
7.20	33.72	63.63
7.50	35.09	76.83
8.50	34.70	103.00

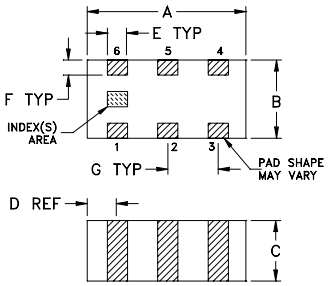
4. Measured with Agilent E5071B network analyzer using port extension.



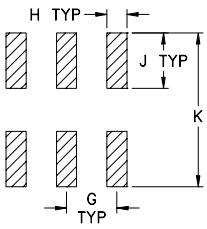


REV. OR
M172548
LPJC-252R+
RS/CP/AM
190320

Outline Drawing



PCB Land Pattern



Suggested Layout,
Tolerance to be within ±.002

Pad Connections

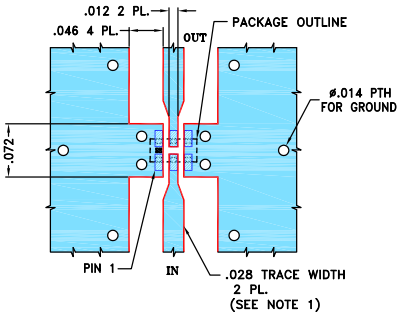
Input	2
Output	5
Ground	1, 3, 4, 6

Outline Dimensions (inch / mm)

A	B	C	D	E	F
.063	.031	.024	.012	.008	.006
1.60	0.79	0.61	0.30	0.20	0.15

G	H	J	K		wt
.020	.010	.022	.053		grams
0.51	0.25	0.56	1.35		0.005

Evaluation Board MCL P/N: TB-1020+
Suggested PCB Layout (PL-554)



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 & 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.

Additional 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

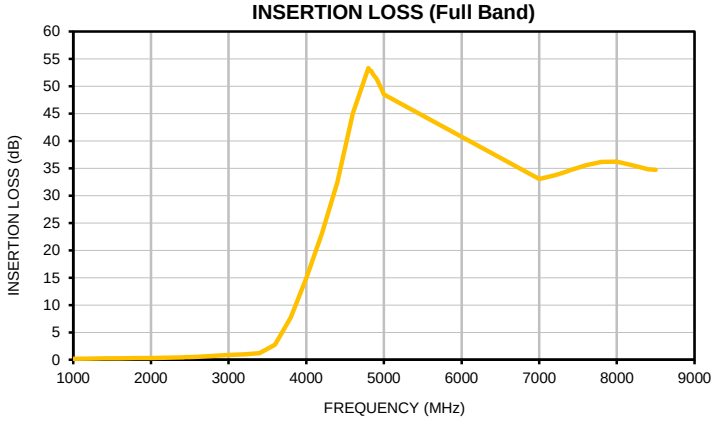
Ceramic Low Pass Filter LPJC-252R+

Typical Performance Data

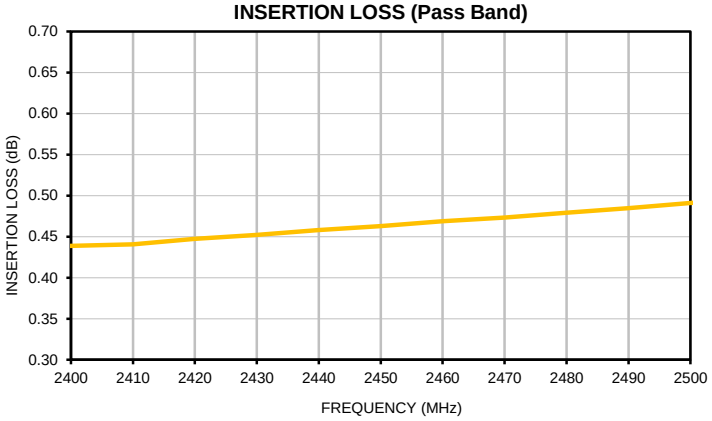
FREQUENCY (MHz)	INSERTION LOSS (dB)	INPUT VSWR (:1)	OUTPUT VSWR (:1)
1000	0.17	1.08	1.10
1200	0.21	1.10	1.13
1400	0.23	1.12	1.14
1600	0.27	1.12	1.14
1800	0.29	1.09	1.12
2000	0.33	1.04	1.09
2200	0.37	1.05	1.11
2400	0.44	1.16	1.20
2410	0.44	1.17	1.20
2420	0.45	1.18	1.21
2430	0.45	1.18	1.21
2440	0.46	1.19	1.22
2450	0.46	1.20	1.23
2460	0.47	1.21	1.23
2470	0.47	1.21	1.24
2480	0.48	1.22	1.25
2490	0.48	1.23	1.25
2500	0.49	1.23	1.26
2600	0.55	1.32	1.34
2800	0.71	1.49	1.50
3000	0.88	1.61	1.62
3200	1.00	1.55	1.53
3400	1.21	1.35	1.10
3600	2.74	2.45	2.15
3800	7.73	7.56	6.76
4000	14.94	18.13	16.13
4200	23.01	29.07	26.18
4400	32.40	36.82	33.19
4600	45.03	39.64	36.41
4800	53.32	39.45	36.93
4820	52.90	39.35	37.05
4840	52.77	39.44	37.12
4860	52.23	39.48	37.42
4880	51.81	39.57	37.10
4900	51.41	39.40	37.23
4920	50.96	39.30	37.48
4940	50.32	39.52	37.65
4960	49.75	39.39	38.14
4980	49.16	39.75	37.88
5000	48.51	39.52	37.33
7000	33.03	58.15	54.09
7050	33.18	59.31	55.59
7100	33.36	60.58	56.86
7150	33.53	62.28	60.17
7200	33.72	63.63	60.76
7250	33.95	65.42	62.79
7300	34.16	66.89	66.70
7350	34.39	68.95	68.42
7400	34.65	71.44	70.25
7450	34.85	73.32	71.10
7500	35.09	76.83	72.92
7600	35.56	81.61	74.87
7800	36.17	93.62	87.18
8000	36.19	98.42	90.45
8200	35.52	97.70	85.96
8400	34.84	99.92	85.40
8500	34.70	103.00	85.63

Typical Performance Curves

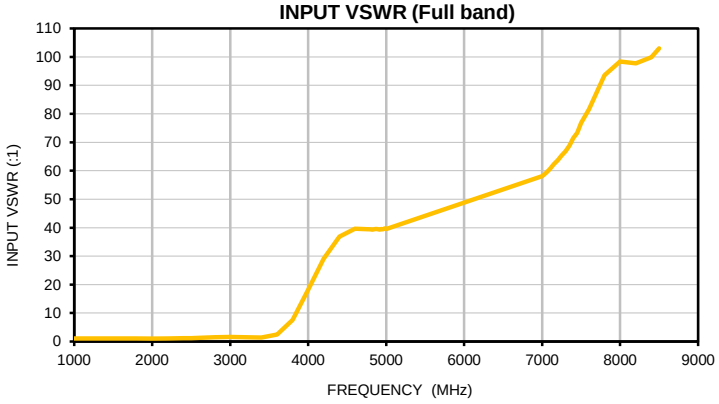
INSERTION LOSS (Full Band)



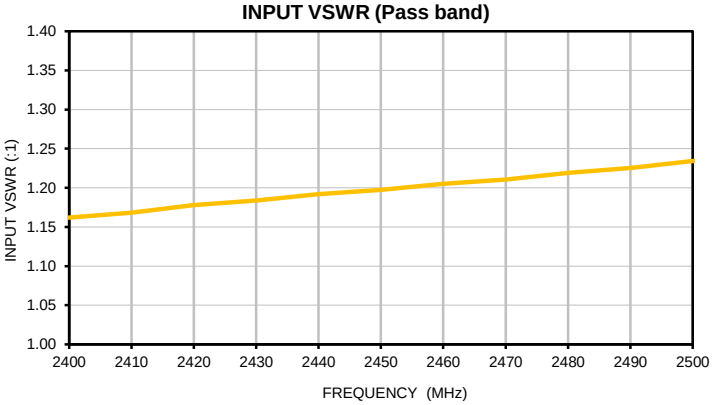
INSERTION LOSS (Pass Band)



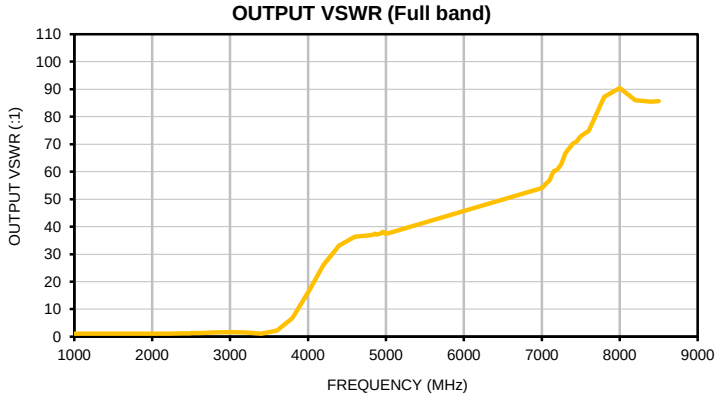
INPUT VSWR (Full band)



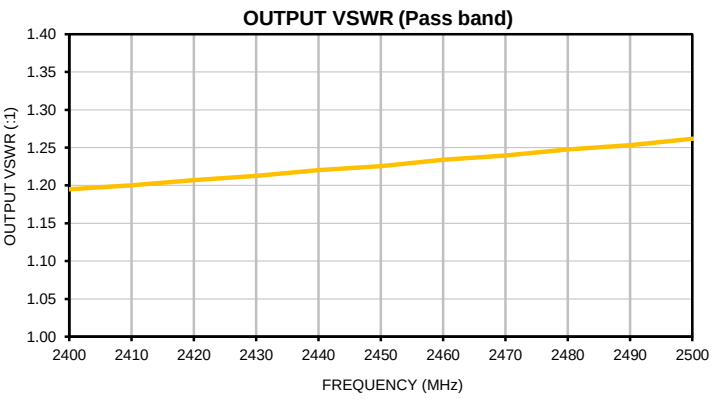
INPUT VSWR (Pass band)



OUTPUT VSWR (Full band)



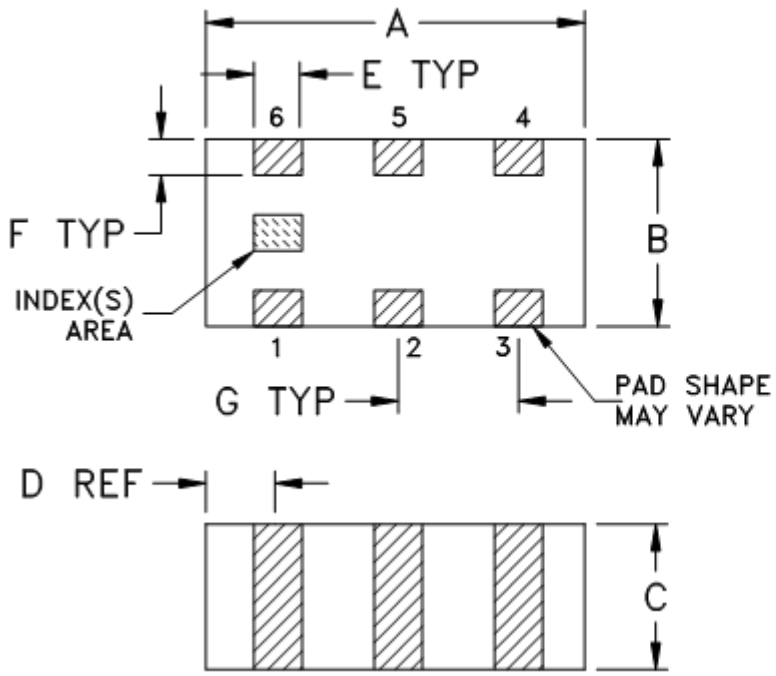
OUTPUT VSWR (Pass band)



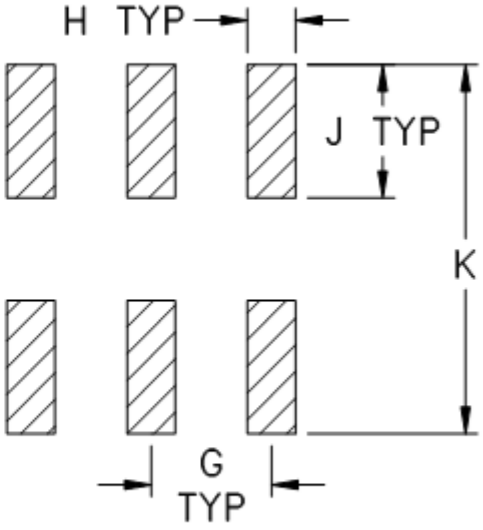
Case Style JC

Outline Dimensions

JC0603C



PCB Land Pattern



Suggested Layout,
Tolerance to be within ±.002

CASE #	A	B	C	D	E	F	G	H	J	K	WT. GRAM
JC0603C	.063 (1.60)	.031 (0.80)	.024 (0.60)	.012 (0.30)	.008 (0.20)	.006 (0.15)	.020 (0.50)	.010 (0.25)	.022 (0.55)	0.053 (1.35)	.005

Dimensions are in inches (mm). Tolerances: 2 Pl. ± .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.

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Tape & Reel Packaging TR-F114

DEVICE ORIENTATION IN T&R

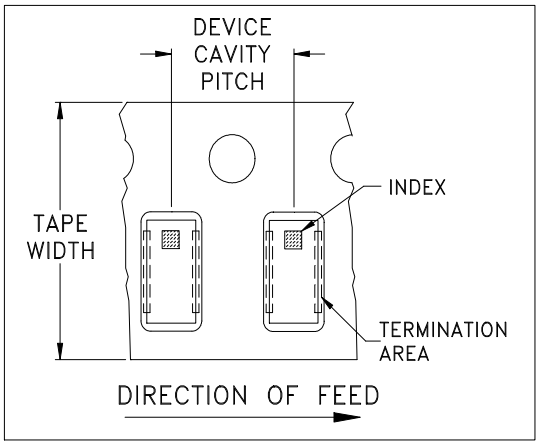

ILLUSTRATION 1

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

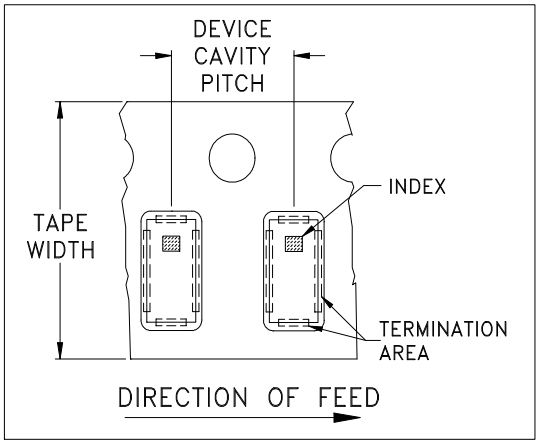

ILLUSTRATION 2

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	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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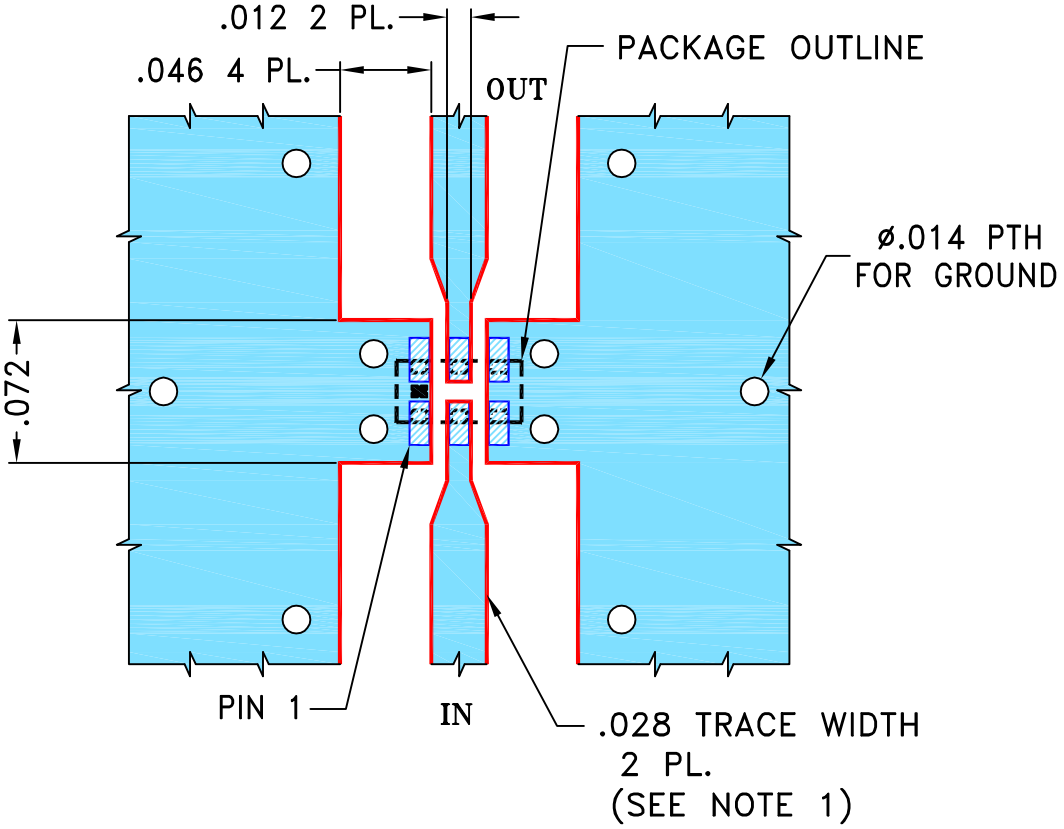
THIRD ANGLE PROJECTION

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

SUGGESTED MOUNTING CONFIGURATION
FOR JC0603C CASE STYLE, "06FL12" 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 & 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

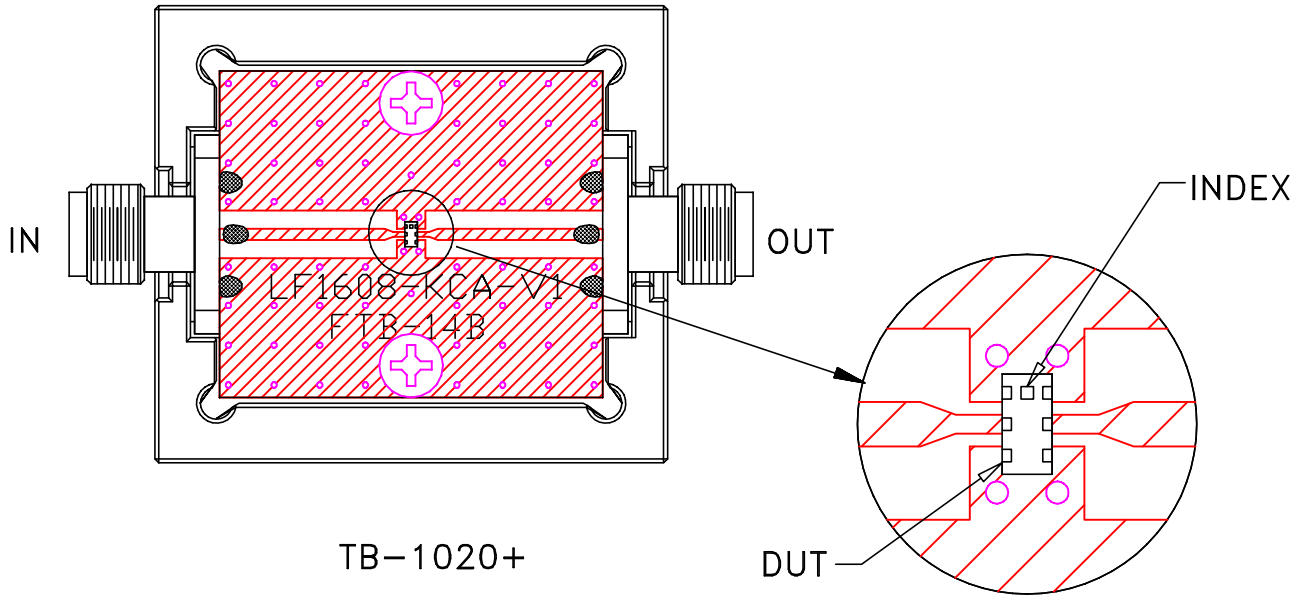
Mini-Circuits® 13 Neptune Avenue Brooklyn NY 11235

PL, 06FL12, JC0603C, TB-1020+

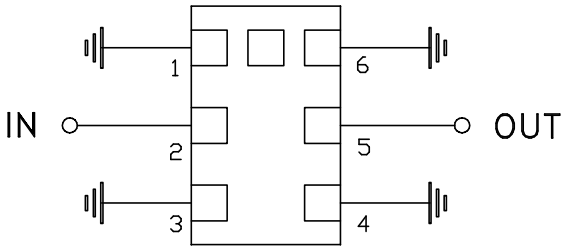
SIZE	CODE IDENT	DRAWING NO:	REV:
A	15542	98-PL-554	OR

FILE:	SCALE:	SHEET:
98PL554	10:1	1 OF 1

Evaluation Board and Circuit



TB-1020+



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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Environmental Specifications **ENV06T4**

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	-40° to 85° C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-40° to 85° 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
Thermal Shock	-55° to 100°C, 100 cycles	MIL-STD-202, Method 107, Condition A-3, except +100°C
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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