LTCC

Bandpass Filter

BPJC-252R+

50Ω 2400 to 2500 MHz

Generic photo used for illustration purposes only

CASE STYLE: JC0603C-1

+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, 3000

Features

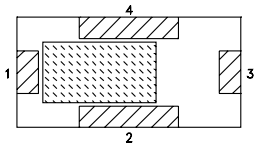
- High Rejection.
- Miniature size 0603
- Low cost
- Aqueous washable

Applications

- ISM Band
- WLAN
- Bluetooth
- Zigbee

Block Diagram

Top View



Pad Connections

Input	1
Output	3
Ground	2,4

Electrical Specifications at 25°C

Parameter		F#	Frequency (MHz)	Min.	Typ.	Max.	Unit
Pass Band	Center Frequency		—	—	2450	—	MHz
	Insertion Loss	F1-F2	2400 – 2500	—	2.3	3.2	dB
	VSWR	F1-F2	2400 – 2500	—	1.4	2	:1
Stop Band, Lower	Rejection		695 – 880	25	46	—	dB
			1910	20	26	—	dB
Stop Band, Upper	Rejection		3200	35	38	—	dB
			4800 - 5000	20	29	—	dB
			7200 - 7500	20	43	—	dB

1. Tested on Evaluation Board TB-1023+.

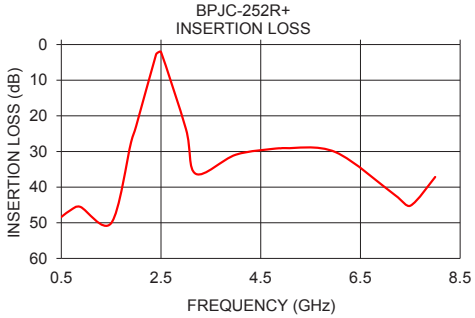
Maximum Ratings

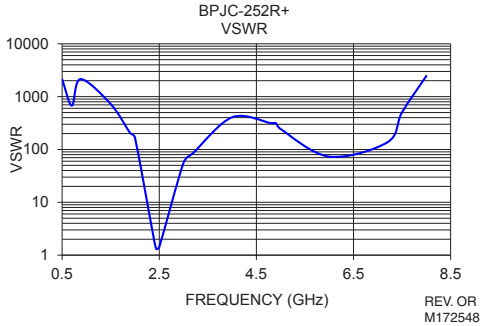
Operating Temperature	-40°C to +85°C
Storage Temperature*	-40°C to +85°C
RF Power Input**	0.5W at 25°C

* 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
**Derate linearly to 0.25W at 85°C.

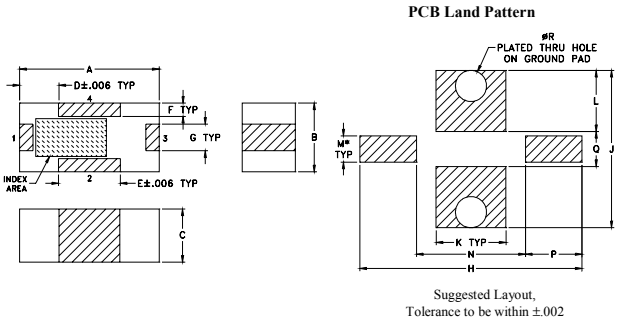
Typical Performance Data at 25°C

Frequency (GHz)	Insertion Loss (dB)	VSWR (:1)
0.50	48.37	2136.92
0.70	46.33	677.41
0.88	45.53	2146.38
1.50	50.11	725.50
1.90	27.37	204.87
2.00	22.95	167.73
2.40	2.81	1.80
2.44	2.23	1.30
2.50	2.11	1.42
3.00	23.70	55.93
3.20	36.29	85.70
4.00	30.90	407.47
4.80	29.18	315.18
4.90	29.11	315.66
5.00	29.05	243.46
6.00	30.18	73.23
7.20	42.31	137.13
7.50	45.22	505.84
8.00	37.15	2458.98

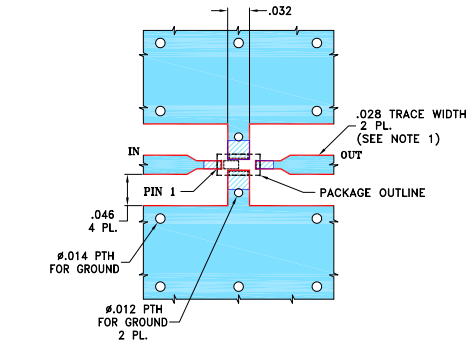




Outline Drawing



Demo Board MCL P/N: TB-1023+
Suggested PCB Layout (PL-563)



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.

Outline Dimensions (inch / mm)

A	B	C	D	E	F	G	H	J
.063	.031	.024	.018	.028	.006	.012	.100	.071
1.60	0.79	0.61	0.46	0.71	0.15	0.30	2.54	1.80

K	L	M	N	P	Q	R	wt
.032	.028	.012	.049	.026	.016	.014	grams
0.81	0.71	0.30	1.24	0.66	0.41	0.36	0.005

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 Bandpass Filter BPJC-252R+

Typical Performance Data

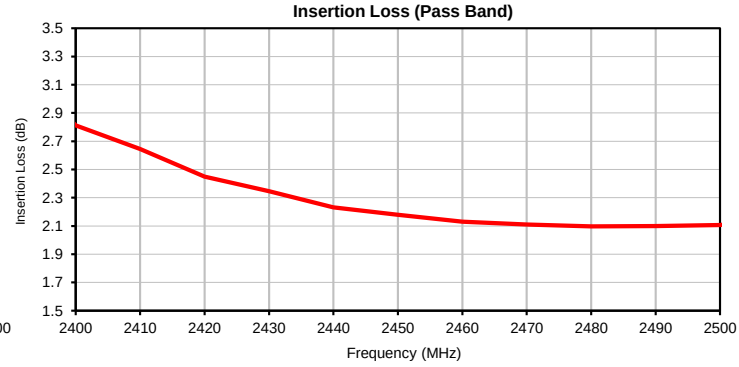
FREQUENCY (MHz)	INSERTION LOSS (dB)	INPUT VSWR (:1)	OUTPUT VSWR (:1)
500	48.37	418.72	2136.92
600	47.13	666.70	373.60
700	46.33	677.41	407.40
800	45.76	3108.80	269.56
900	45.55	3194.05	1688.03
1000	45.77	4322.72	541.95
1100	46.54	1731.85	325.99
1200	48.32	1001.83	1052.26
1300	52.44	446.65	2201.81
1400	69.45	409.70	313.73
1500	50.11	293.05	725.50
1600	42.00	264.79	28019.30
1700	36.45	197.82	243.02
1800	31.74	169.41	330.50
1900	27.37	123.54	204.87
2000	22.95	85.71	167.73
2100	18.29	48.07	66.46
2200	13.06	21.82	23.67
2300	7.23	7.03	6.97
2400	2.81	1.80	1.73
2410	2.65	1.65	1.58
2420	2.45	1.47	1.41
2430	2.35	1.38	1.32
2440	2.23	1.30	1.25
2450	2.18	1.28	1.24
2460	2.13	1.29	1.26
2470	2.11	1.31	1.29
2480	2.10	1.36	1.33
2490	2.10	1.39	1.36
2500	2.11	1.42	1.39
2600	2.67	1.54	1.30
2700	6.40	4.85	4.46
2800	12.43	14.83	14.56
2900	18.24	31.12	32.15
3000	23.70	50.58	55.93
3100	29.38	70.16	73.85
3200	36.29	85.70	82.41
3300	45.18	100.50	106.89
3400	41.72	110.13	126.42
3500	37.33	125.35	156.15
3600	34.90	134.61	158.91
3700	33.34	143.11	139.12
3800	32.30	139.26	147.29
3900	31.49	140.06	217.77
4000	30.90	138.26	407.47
4100	30.41	138.85	439.33
4200	30.08	132.86	458.97
4300	29.84	131.41	282.30
4400	29.61	125.89	296.43
4500	29.44	122.21	360.73
4600	29.32	119.10	334.41
4700	29.22	112.04	572.00
4800	29.18	105.09	315.18
4900	29.11	100.60	315.66
5000	29.05	97.16	243.46
5100	29.00	93.73	229.25
5200	28.95	89.56	305.62
5300	28.96	86.23	237.52
5400	28.99	80.97	230.19
5500	29.08	76.65	131.76
5600	29.22	71.79	102.71
5700	29.38	68.29	91.53
5800	29.57	64.75	86.01
5900	29.85	62.75	81.97
6000	30.18	61.54	73.23
6200	31.06	60.74	67.96
6400	32.29	61.10	71.28
6600	33.92	65.76	70.56
6800	36.00	75.76	75.46
7000	38.74	92.44	88.69
7200	42.31	115.67	137.13
7400	45.52	159.11	233.85
7600	43.68	245.45	1222.97
7800	40.03	506.19	289.55
8000	37.15	2458.98	185.75

Ceramic Bandpass Filter BPJC-252R+

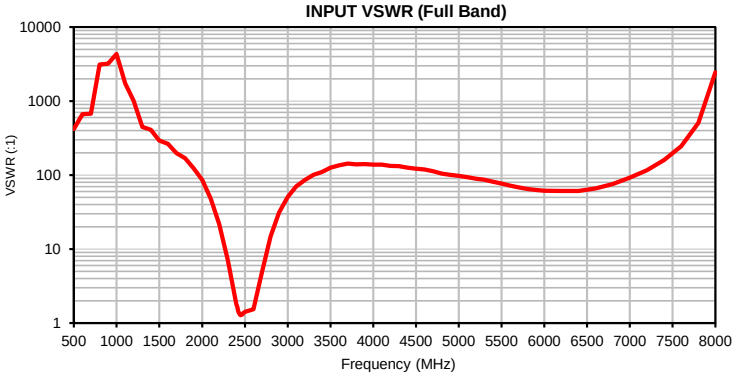
Typical Performance Curves

Insertion Loss (Full Band)

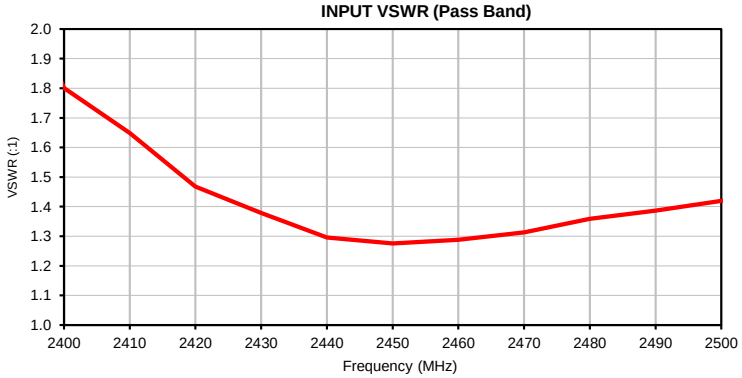
Insertion Loss (Pass Band)



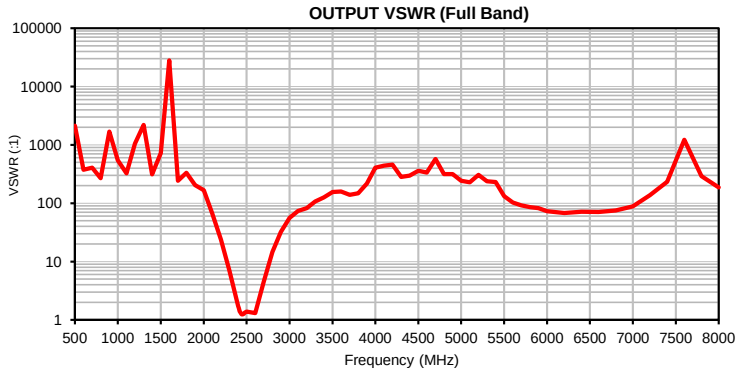
INPUT VSWR (Full Band)



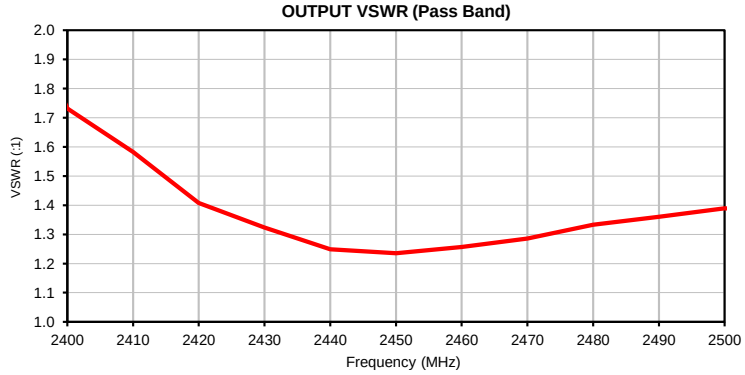
INPUT VSWR (Pass Band)



OUTPUT VSWR (Full Band)



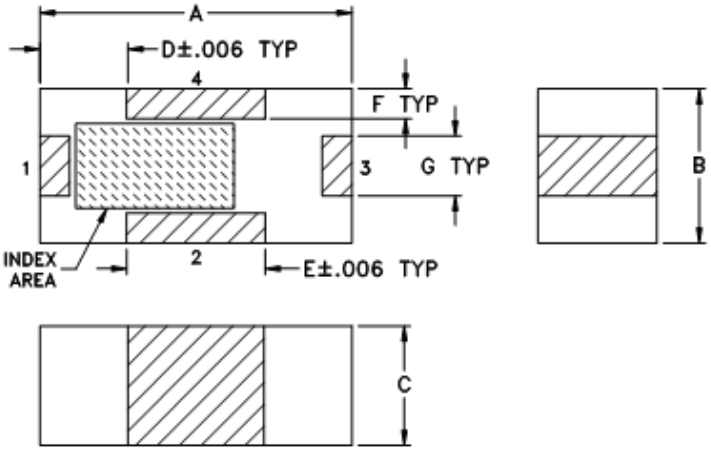
OUTPUT VSWR (Pass Band)



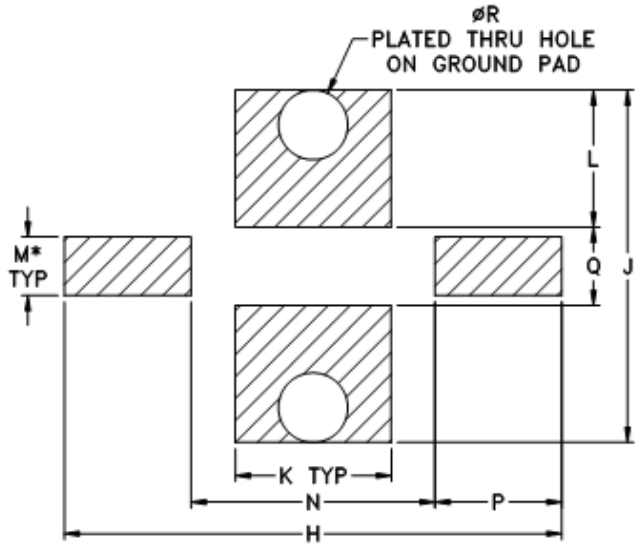
Case Style JC

Outline Dimensions

JC0603C-1



PCB Land Pattern



Suggested Layout,
Tolerance to be within ±.002

CASE #	A	B	C	D	E	F	G	H	J	K	L
JC0603C-1	.063 (1.60)	.031 (0.80)	.024 (0.60)	.018 (0.45)	.028 (0.70)	.006 (0.15)	.012 (0.30)	.100 (2.54)	.071 (1.80)	.032 (0.80)	.028 (0.70)

CASE #	M*	N	P	Q	R	WT. GRAMS
JC0603C-1	.012 (0.30)	.049 (1.24)	.026 (0.65)	.016 (0.40)	.014 (0.35)	.005

Dimensions are in inches (mm). Tolerances: 3 Pl. ± .004

Notes:

1. Open style, ceramic base.
2. Termination finish:
   For RoHS Case Styles: Tin plate over Nickel plate. All models, (+) suffix.
3. * - Line width should be designed to match 50 OHMS characteristic impedance, depending on PCB material & thickness.

Tape & Reel Packaging TR-F114

DEVICE ORIENTATION IN T&R

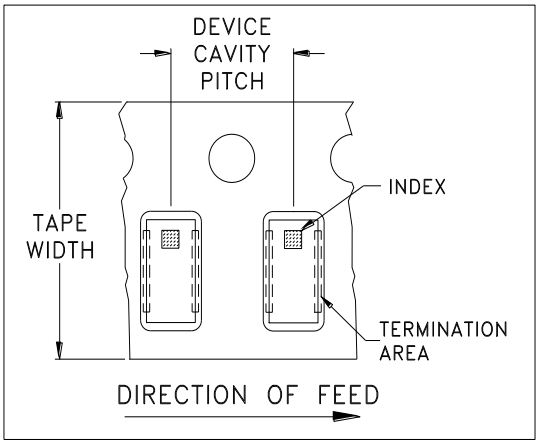


ILLUSTRATION 1

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

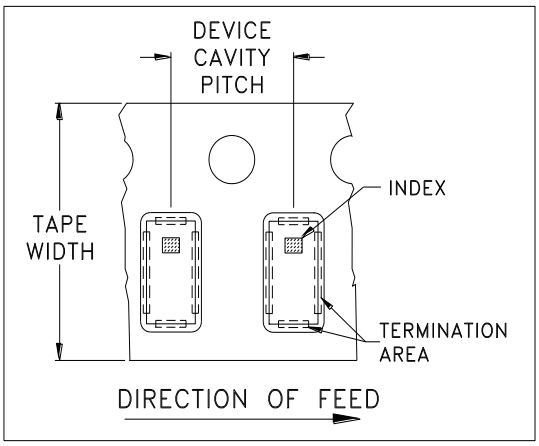


ILLUSTRATION 2

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.

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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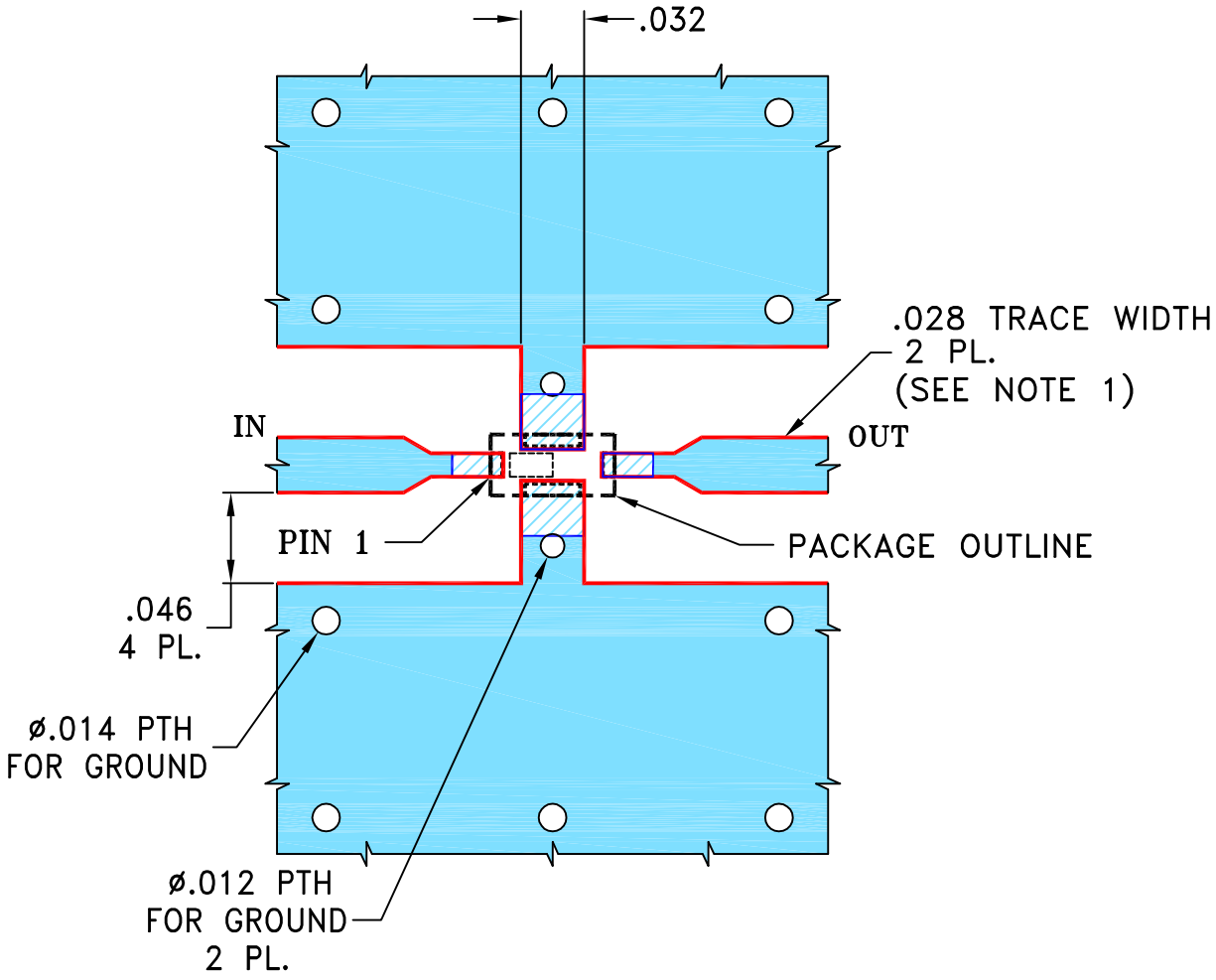
Mini-Circuits ISO 9001 & ISO 14001 Certified

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-1 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 & 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 ±			

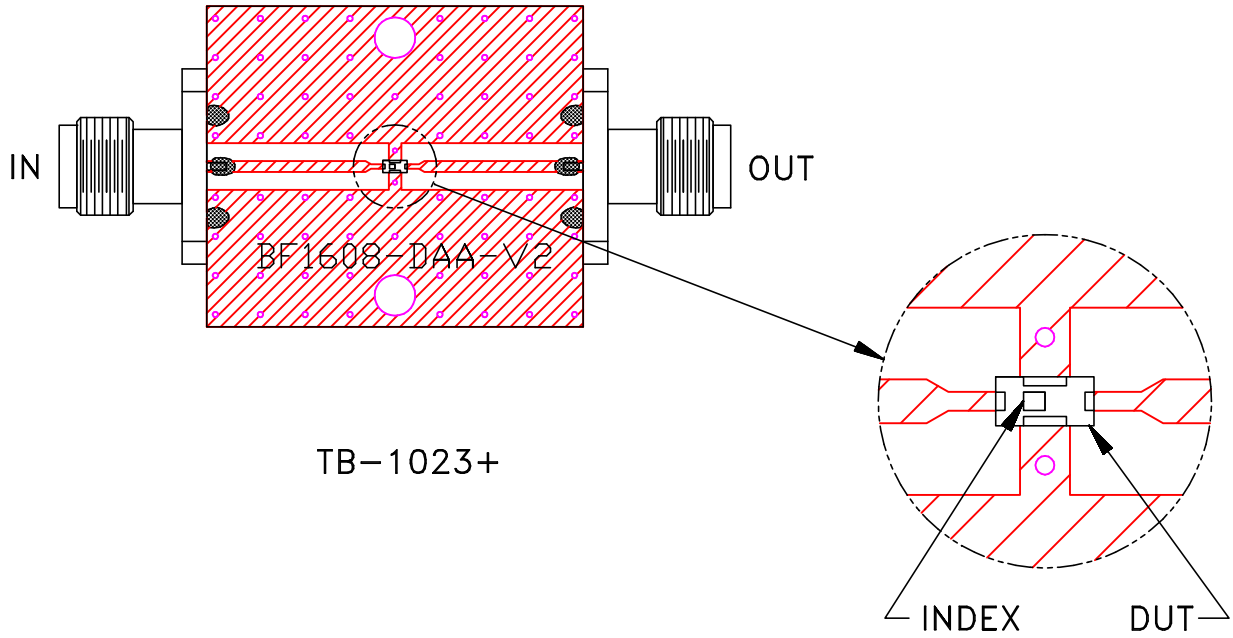
ASHEETA1.DWG REV:A DATE:01/12/95

Mini-Circuits® 13 Neptune Avenue Brooklyn NY 11235

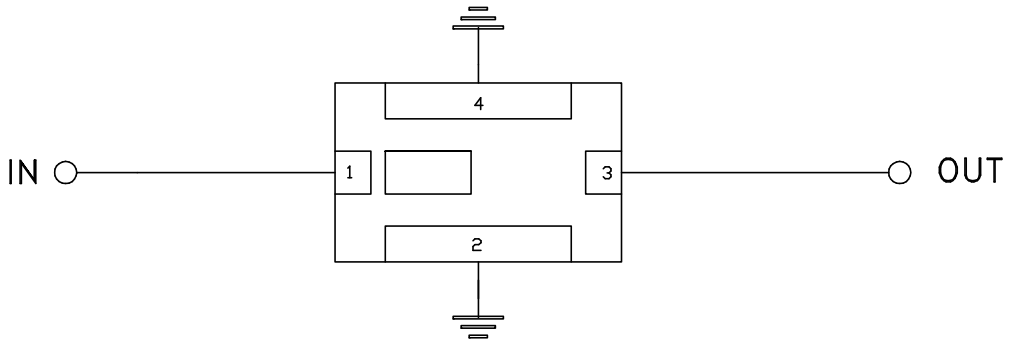
PL, 04FL01, JC0603C-1, TB-1023+

SIZE	CODE IDENT	DRAWING NO:	REV:
A	15542	98-PL-563	OR
FILE: 98PL563		SCALE: 10:1	SHEET: 1 OF 1

Evaluation Board and Circuit



TB-1023+



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