Ceramic

Diplexer

LDPW-272-452+

50Ω 10 to 2700 MHz (4500 to 6000 MHz)

The Big Deal

- Low insertion loss
- High stopband isolation
- Very small size, 0603
- Low cost

CASE STYLE: JC0603C-3

Product Overview

Mini-Circuits' LDPW-272-452+ is a tiny, surface-mount diplexer with a low pass channel from 10 to 2700 MHz and a high pass channel from 4500 to 6000 MHz. This model provides low passband insertion loss, high stopband rejection, and RF input power handling up to 2W. Fabricated using LTCC technology, the unit comes housed in a tiny, 0603 ceramic package with excellent thermal stability from -55 to +125°C.

Key Features

Feature	Advantages
Good stopband isolation	Eliminates unwanted spurious signals out of band.
Tiny size	Saves space in dense circuit board layouts and minimizes the effects of parasitics.
Wrap-around terminations	Provides excellent solderability and easy visual inspection.
Wide operating temperature range, -55 to +125°C	Enables reliable performance in extreme environments.

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Generic photo used for illustration purposes only

CASE STYLE: JC0603C-3

+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

Maximum Ratings

Operating Temperature	-55°C to 125°C
Storage Temperature*	-55°C to 125°C
RF Power Input**	2W

*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.
Permanent damage may occur if any of these limits are exceeded.
** Derate linearly to 0.5W at 125°C.

Pad Connections

Low Pass Port	1
Band Pass Port	3
Common Port	2
Ground	4

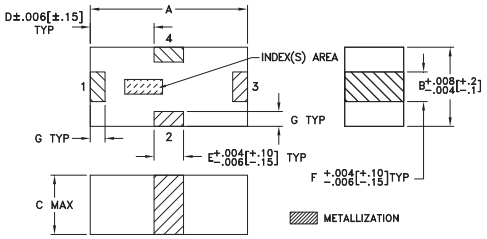
Features

- low insertion loss
- miniature size 0603
- low cost
- aqueous washable

Applications

- ISM Band
- WLAN
- Bluetooth
- Zigbee

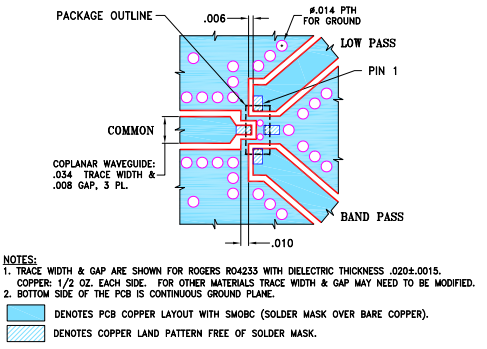
Outline Drawing



Outline Dimensions (inch / mm)

A	B	C	D	E	F	G	wt
.063	.032	.024	.026	.012	.012	.006	grams
1.60	0.81	0.61	0.66	0.30	0.30	0.15	.005

Evaluation Board MCL P/N: TB-LDPW-272452+
Suggested PCB Layout (PL-570)



NOTES:
1. TRACE WIDTH & GAP ARE SHOWN FOR ROGERS RO4233 WITH DIELECTRIC THICKNESS .020±.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.

Electrical Specifications[1] at 25°C

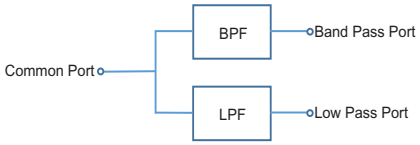
Parameter		Port	Frequency (MHz)	Min.	Typ.	Max.	Unit
Pass Band	Insertion Loss	Low Pass	10 - 2700	-	1.3	1.8	dB
		Band Pass	4500 - 6000	-	1.2	1.7	
	Return Loss	Low Pass	10 - 2700	-	11	-	dB
		Band Pass	4500 - 6000	-	11	-	
		Common	10 - 2700	-	11	-	
			4500 - 6000	-	11	-	
Stop Band Rejection		Band Pass	10 - 2500	20	25	-	dB
			10000 - 11400	18	25	-	
		Low Pass	5000 - 7700	20	25	-	dB

[1] *Tested on Evaluation Board TB-LDPW-272452+*

Typical Performance Data at 25°C

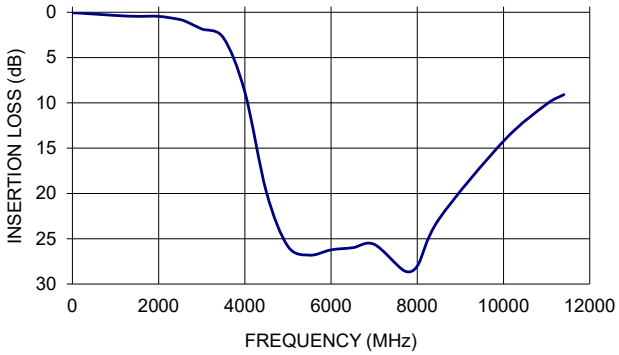
Frequency (MHz)	Insertion Loss (dB)		Return Loss (dB)		
	Low Pass Port	Band Pass Port	Common Port	Low Pass Port	Band Pass Port
10	0.08	66.41	47.63	47.89	0.03
100	0.07	46.42	33.56	33.21	0.01
1000	0.35	29.89	14.34	14.49	0.07
1500	0.45	30.54	14.52	14.67	0.13
2000	0.45	33.35	24.81	23.51	0.21
2500	0.81	27.95	14.14	13.43	0.34
2700	1.17	22.15	10.62	9.98	0.45
3000	1.85	15.45	8.24	7.23	0.82
3500	2.80	8.44	11.02	8.07	2.88
4000	8.81	2.40	22.42	3.89	17.76
4500	19.85	1.03	17.89	0.88	18.82
5000	25.85	0.81	21.20	0.67	23.22
5500	26.81	0.79	24.59	0.65	26.78
6000	26.22	0.97	15.80	0.64	16.13
6500	25.99	1.35	11.55	0.61	11.35
7000	25.62	2.18	8.13	0.72	7.49
7700	28.54	5.29	3.73	0.68	3.05
8000	28.02	7.79	2.52	0.55	1.89
8500	22.85	13.31	1.49	0.56	0.99
10000	14.23	30.29	0.96	1.10	0.74
11000	10.14	25.55	1.29	2.52	1.08
11400	9.10	22.92	1.64	2.98	1.40

Block Diagram

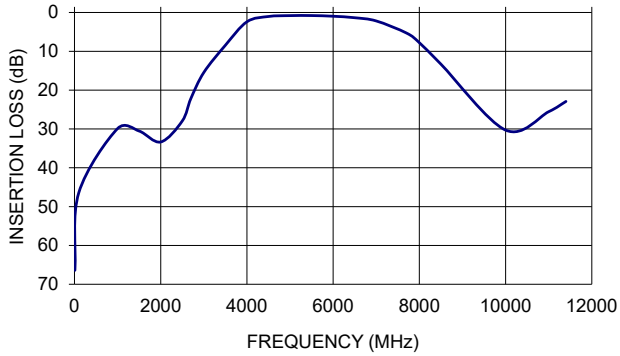


Notes
A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's 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

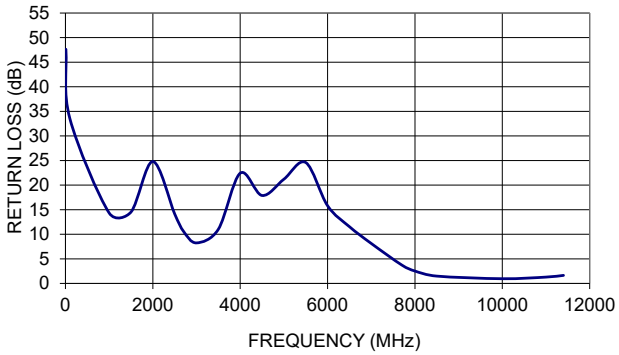
LDPW-272-452R+
LOW PASS PORT INSERTION LOSS



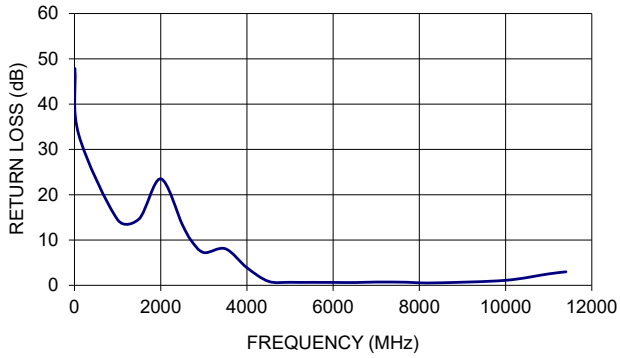
LDPW-272-452R+
BAND PASS PORT INSERTION LOSS



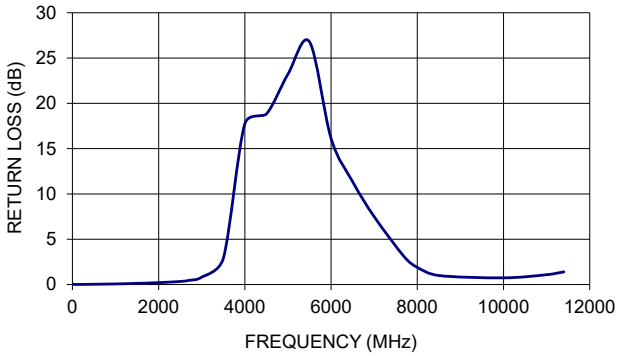
LDPW-272-452R+
COMMON PORT RETURN LOSS



LDPW-272-452R+
LOW PASS PORT RETURN LOSS



LDPW-272-452R+
BAND PASS PORT RETURN LOSS



Ceramic Diplexer LDPW-272-452+

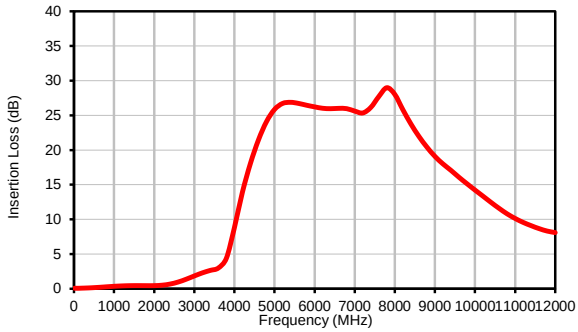
Typical Performance Data

FREQUENCY (MHz)	INSERTION LOSS (dB)		RETURN LOSS (dB)		
	Low Pass port	Band Pass port	Common port	Low Pass port	Band Pass port
10	0.08	66.41	47.63	47.89	0.03
100	0.07	46.42	33.56	33.21	0.01
200	0.09	40.50	27.06	26.87	0.02
300	0.11	37.13	23.30	23.23	0.02
400	0.13	34.87	20.79	20.83	0.02
500	0.16	33.25	19.00	19.02	0.02
600	0.20	32.05	17.56	17.63	0.02
700	0.23	31.17	16.45	16.50	0.01
800	0.28	30.54	15.53	15.62	0.00
900	0.32	30.12	14.86	14.96	0.03
1000	0.35	29.89	14.34	14.49	0.07
1200	0.41	29.86	13.84	14.03	0.12
1400	0.45	30.25	14.08	14.24	0.13
1600	0.45	30.91	15.23	15.35	0.15
1800	0.45	31.88	17.93	17.92	0.18
2000	0.45	33.35	24.81	23.51	0.21
2200	0.51	34.57	28.32	23.90	0.24
2400	0.68	31.06	16.90	15.97	0.30
2600	0.97	24.92	12.11	11.50	0.39
2800	1.38	19.67	9.51	8.81	0.54
3000	1.85	15.45	8.24	7.23	0.82
3200	2.29	12.03	8.14	6.54	1.31
3400	2.65	9.42	9.48	6.98	2.19
3600	2.99	7.60	13.62	10.74	3.86
3800	4.40	5.10	29.40	15.42	8.04
4000	8.81	2.40	22.42	3.89	17.76
4200	13.92	1.44	19.81	1.65	21.92
4400	18.07	1.12	18.22	1.03	19.30
4600	21.46	0.97	17.95	0.80	18.85
4800	24.09	0.87	18.90	0.70	20.11
5000	25.85	0.81	21.20	0.67	23.22
5200	26.71	0.78	25.24	0.65	29.79
5400	26.88	0.78	26.57	0.65	31.65
5600	26.72	0.81	22.22	0.65	23.45
5800	26.46	0.88	18.35	0.65	19.01
6000	26.22	0.97	15.80	0.64	16.13
6200	26.02	1.09	13.85	0.63	13.96
6400	25.96	1.25	12.27	0.62	12.16
6600	26.01	1.47	10.84	0.62	10.51
6800	25.97	1.76	9.47	0.66	8.98
7000	25.62	2.18	8.13	0.72	7.49
7200	25.35	2.76	6.78	0.73	6.05
7400	26.13	3.56	5.45	0.72	4.74
7600	27.70	4.64	4.26	0.72	3.59
7800	28.99	6.04	3.27	0.62	2.62
8000	28.02	7.79	2.52	0.55	1.89
8200	25.82	9.83	1.99	0.54	1.41
8400	23.77	12.11	1.62	0.55	1.10
8600	21.98	14.52	1.37	0.58	0.91
8800	20.43	17.00	1.21	0.60	0.80
9000	19.09	19.50	1.11	0.65	0.72
9200	18.00	22.04	1.11	0.70	0.67
9400	17.07	24.70	1.09	0.77	0.65
9600	16.07	27.22	1.03	0.85	0.67
9800	15.14	29.24	0.99	0.96	0.70
10000	14.23	30.29	0.96	1.10	0.74
10200	13.34	30.39	0.96	1.30	0.77
10400	12.45	29.57	0.99	1.55	0.79
10600	11.60	28.31	1.06	1.82	0.82
10800	10.80	26.97	1.15	2.17	0.91
11000	10.14	25.55	1.29	2.52	1.08
11200	9.57	24.15	1.47	2.83	1.29
11400	9.10	22.92	1.64	2.98	1.40
11600	8.67	22.09	1.78	3.04	1.44
11800	8.32	21.44	1.92	3.03	1.56
12000	8.10	20.86	2.06	2.96	1.72

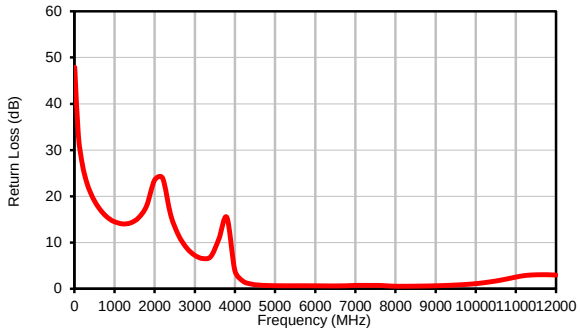
Ceramic Diplexer LDPW-272-452+

Typical Performance Curves

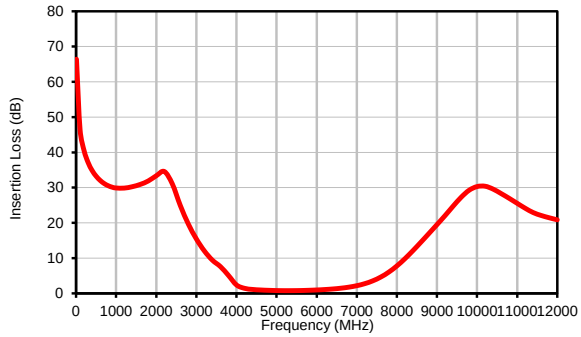
Low Pass Port Insertion Loss



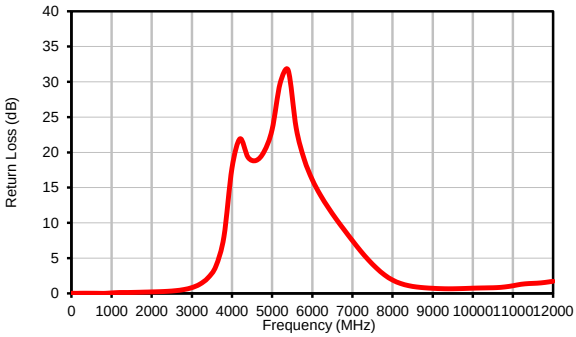
Low Pass Port Return Loss



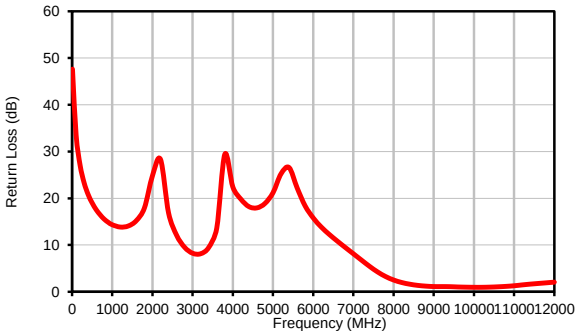
Band Pass Port Insertion Loss



Band Pass Port Return Loss



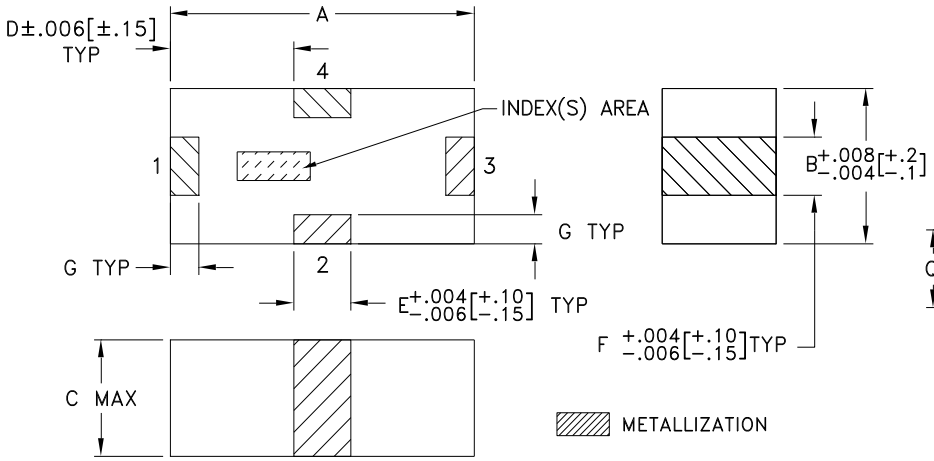
Common Port Return Loss



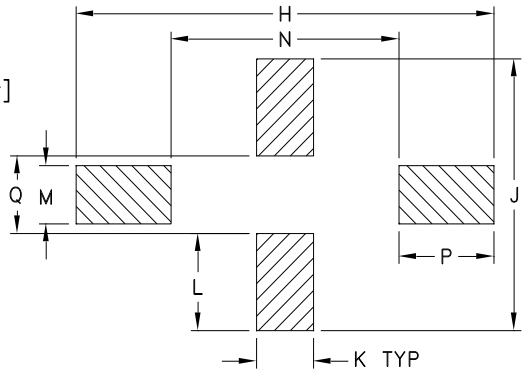
Case Style JC

Outline Dimensions

JC0603C-3



PCB Land Pattern



Suggested Layout,
Tolerance to be within ±.002

CASE #	A	B	C	D	E	F	G	H	J	K	L
JC0603C-3	.063 (1.60)	.032 (.80)	.024 (.60)	.026 (.65)	.012 (.30)	.012 (.30)	.006 (.15)	.087 (2.20)	.055 (1.40)	.012 (.30)	.020 (.50)

CASE #	M*	N	P	Q	WT. GRAMS
JC0603C-3	.012 (.30)	.047 (1.20)	.020 (.50)	.016 (.40)	.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

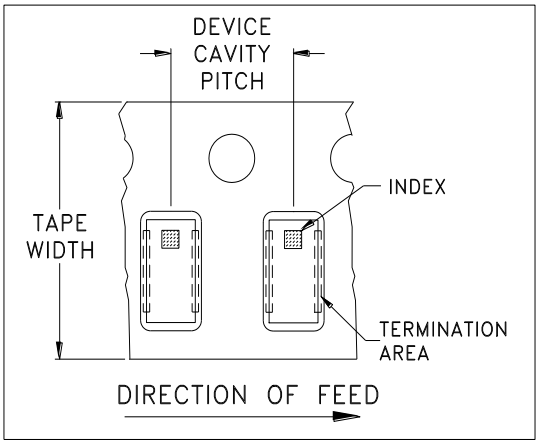


ILLUSTRATION 1

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

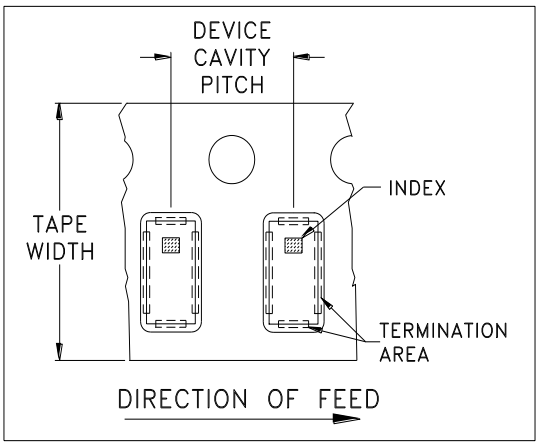


ILLUSTRATION 2

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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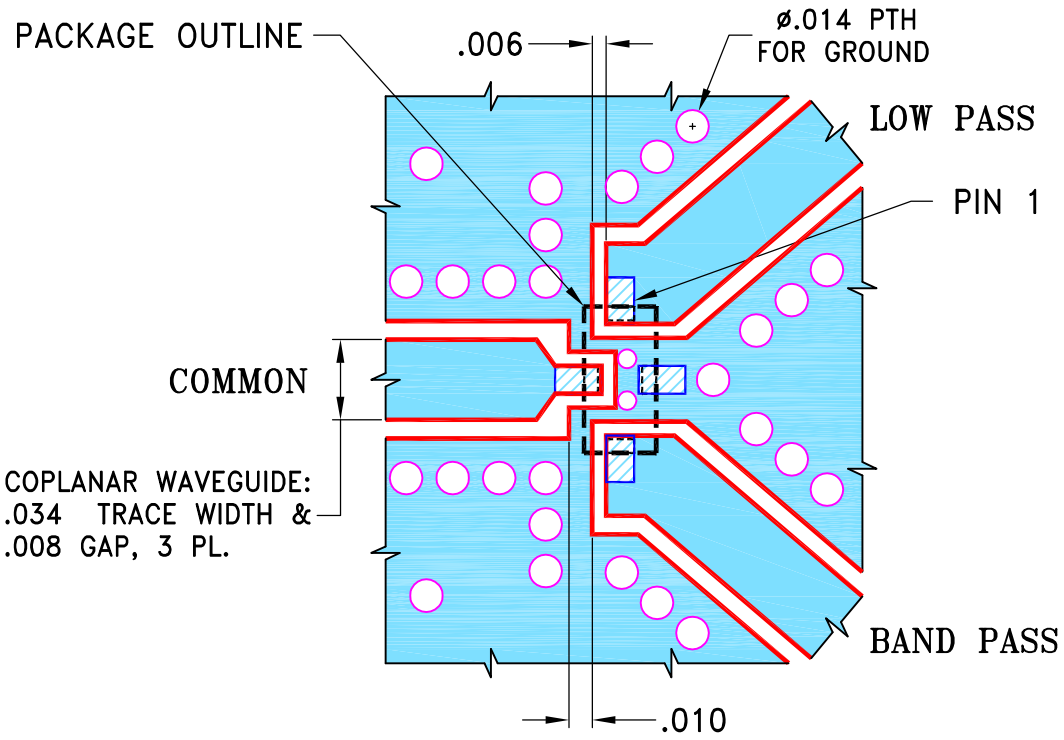
Mini-Circuits ISO 9001 & ISO 14001 Certified

THIRD ANGLE PROJECTION

REVISIONS					
REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	M168200	NEW RELEASE	05/31/18	NP	SL
A	M174015	UPDATED DESCRIPTION OF THE PORTS	04/25/19	ITG	SL

SUGGESTED MOUNTING CONFIGURATION
FOR JC0603C-3 CASE STYLE, "04DP01" PIN CODE



NOTES:
1. TRACE WIDTH & GAP ARE SHOWN FOR ROGERS RO4233 WITH DIELECTRIC THICKNESS .020±.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

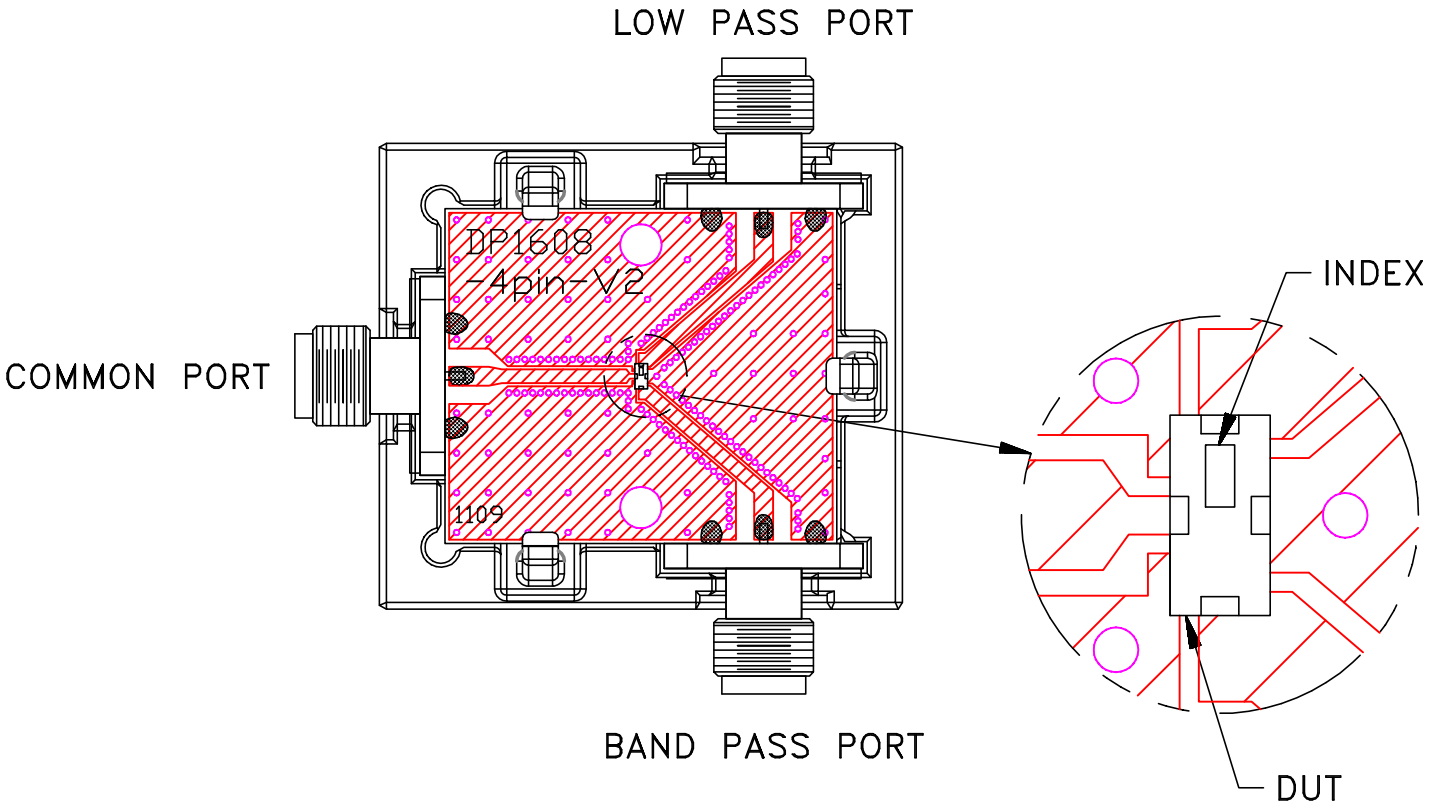
Mini-Circuits® 13 Neptune Avenue Brooklyn NY 11235

PL, 04DP01 JC0603C-3, TB-1030+

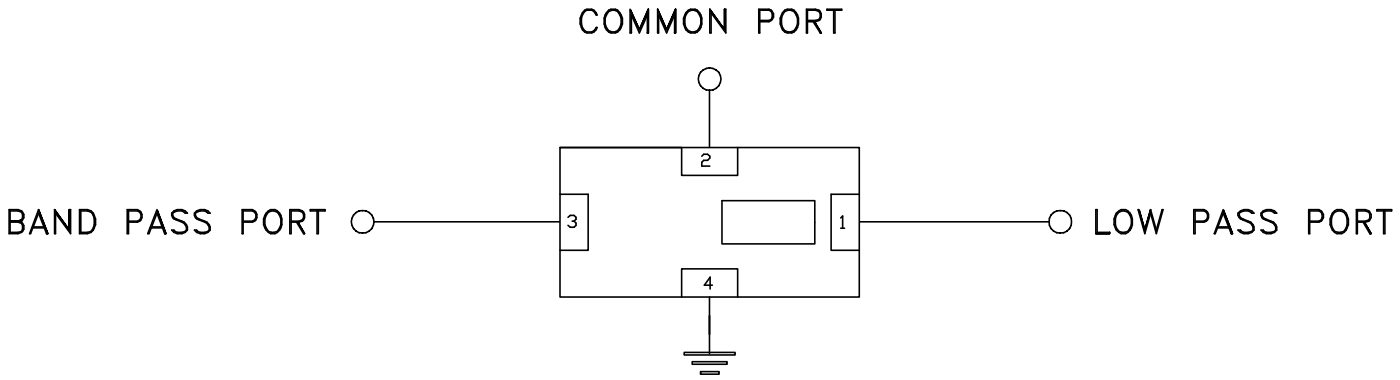
SIZE	CODE IDENT	DRAWING NO:	REV:
A	15542	98-PL-570	A

FILE:	SCALE:	SHEET:
98PL570	12:1	1 OF 1

Evaluation Board and Circuit



TB-1030+



Schematic Diagram

Notes:

1. 50 Ohm SMA Female connectors.
2. PCB Material: RO4233 or equivalent, Dielectric Constant=3.5, Thickness=.020 inch.

Mini-Circuits®

Environmental Specifications ENV06T9

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 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