Ceramic

Diplexer

LDPQ-132-33+

50Ω DC to 3000 MHz (DC-1280, 1550-3000 MHz)

Generic photo used for illustration purposes only

CASE STYLE: NL1008C-4

+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 105°C
Storage Temperature*	-55°C to 105°C
RF Power Input**	2W at 25°C

* passband rating, derate linearly to 1W at 105°C ambient.
Permanent damage may occur if any of these limits are exceeded.

Pad Connections

Low Pass Port	5
High Pass Port	8
Common Port	3
Ground	1,2,4,6,7

Features

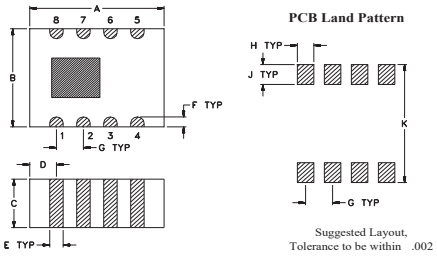
- small size 1008(2.5 x 2.0 mm)
- temperature stable
- LTCC construction

Applications

- communication systems
- GSM
- GPS
- IoT

Outline Drawing

Outline Dimensions



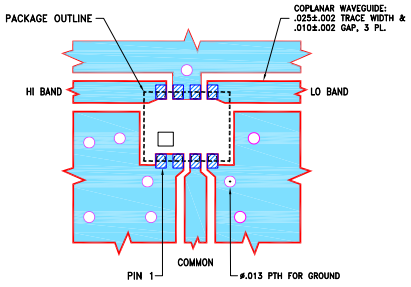
NOTES:
1. PIN NUMBERS DO NOT APPEAR ON UNIT. FOR REFERENCE ONLY.
2. METALLIZATION
3. PAD TOLERANCE IS NON-CUMULATIVE.

Outline Dimensions (inch / mm)

A	B	C	D	E	F
.098	.079	.039	.020	.010	.008
2.49	2.01	0.99	0.51	0.25	0.20

G	H	J	K		wt
.020	.012	.016	.095		grams
0.51	0.30	0.41	2.41		.019

Demo Board MCL P/N: TB-985+
Suggested PCB Layout (PL-646)



NOTES:
1. COPLANAR WAVEGUIDE PARAMETERS ARE SHOWN FOR FR4, GRADE IT-180TC (ITEQ CORP.) WITH DIELECTRIC THICKNESS .016±.0015, COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS LINE 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[1,2] at 25°C

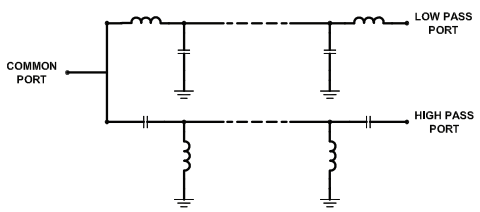
Parameter		Port	Frequency (MHz)	Min.	Typ.	Max.	Unit
Pass Band	Insertion Loss	Low Pass	DC - 1280	—	1	2.2	dB
		High Pass	1550 - 3000	—	1.5	2.2	
	Return Loss	Common	DC - 3000	—	15	—	dB
Stop Band Isolation		High Pass	DC - 1240	10	15	—	dB
		Low Pass	1620 - 3000	11	15	—	dB

[1] *In Application where DC voltage is present at either input or output port, coupling capacitors are required.*
[2] *Measured on Mini-Circuits Characterization Test Board TB-985+ with auto port extension*

Typical Performance Data at 25°C

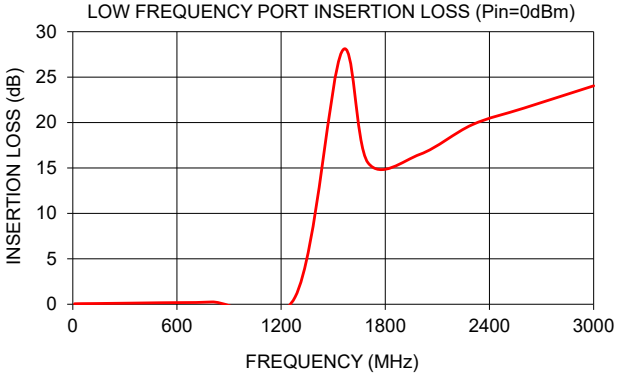
Frequency (MHz)	Insertion Loss (dB)		Return Loss (dB)		
	Low Pass Port	High Pass Port	Common Port	Low Pass Port	High Pass Port
10	0.05	52.87	53.16	50.32	0.04
50	0.07	38.81	46.33	45.68	0.03
100	0.08	32.86	41.80	42.06	0.02
200	0.09	26.91	36.25	36.84	0.03
500	0.17	19.66	31.13	31.91	0.15
800	0.25	17.21	34.38	38.16	0.34
1280	0.78	16.95	22.95	25.61	1.35
1550	27.81	0.77	24.28	1.06	22.06
1700	15.58	0.63	23.15	0.74	18.42
2000	16.51	0.51	24.78	0.40	21.92
2300	19.76	0.51	20.75	0.19	25.15
2600	21.60	0.75	13.25	0.13	14.63
3000	24.04	1.67	7.24	0.16	7.99

Functional Schematic

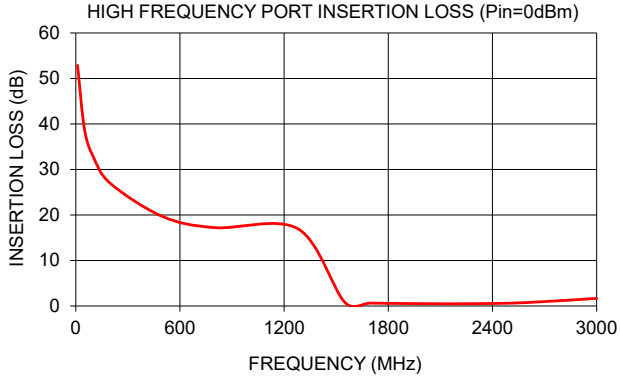


Notes
A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's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

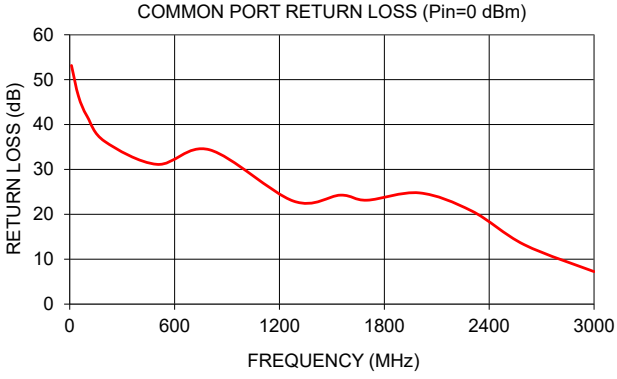
LDPQ-132-33+
LOW FREQUENCY PORT INSERTION LOSS (Pin=0dBm)



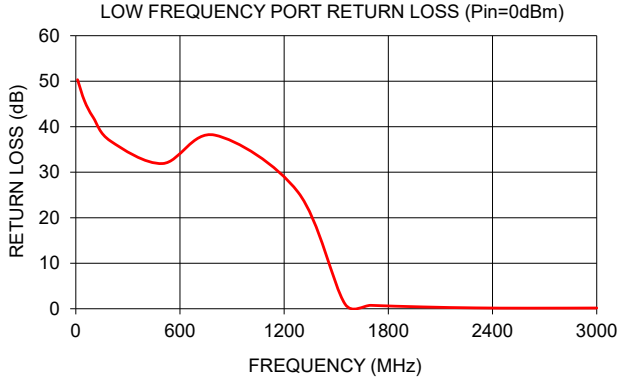
LDPQ-132-33+
HIGH FREQUENCY PORT INSERTION LOSS (Pin=0dBm)



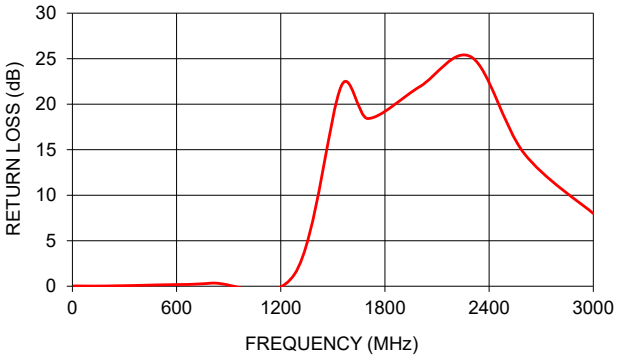
LDPQ-132-33+
COMMON PORT RETURN LOSS (Pin=0 dBm)



LDPQ-132-33+
LOW FREQUENCY PORT RETURN LOSS (Pin=0dBm)



LDPQ-132-33+
HIGH FREQUENCY PORT RETURN LOSS (Pin=0dBm)



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Ceramic Diplexer LDPQ-132-33+

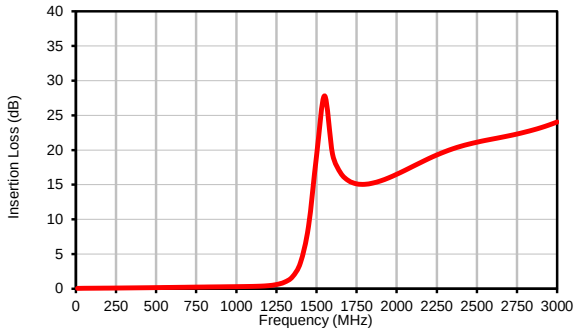
Typical Performance Data

FREQUENCY (MHz)	INSERTION LOSS (dB)		RETURN LOSS (dB)		
	Low Pass port	High Pass port	Common port	Low Pass port	High Pass port
10	0.05	52.87	53.16	50.32	0.04
50	0.07	38.81	46.33	45.68	0.03
100	0.08	32.86	41.80	42.06	0.02
150	0.09	29.37	38.96	38.65	0.02
200	0.09	26.91	36.25	36.84	0.03
250	0.10	25.05	35.11	35.24	0.04
300	0.11	23.55	33.32	33.72	0.06
350	0.13	22.32	32.61	33.13	0.08
400	0.14	21.28	31.75	32.11	0.09
450	0.15	20.40	31.16	32.29	0.12
500	0.17	19.66	31.13	31.91	0.15
550	0.18	19.02	30.60	32.40	0.18
600	0.19	18.48	31.30	33.29	0.21
650	0.21	18.03	31.02	33.78	0.24
700	0.22	17.66	32.27	35.98	0.27
750	0.24	17.39	32.94	36.40	0.30
800	0.25	17.21	34.38	38.16	0.34
850	0.27	17.15	37.38	36.36	0.37
900	0.28	17.24	40.35	35.42	0.40
950	0.29	17.54	48.38	32.92	0.43
1000	0.30	18.16	43.65	31.96	0.45
1050	0.32	19.31	36.88	31.02	0.48
1100	0.34	21.48	33.48	31.09	0.53
1150	0.37	26.11	30.23	30.69	0.60
1200	0.45	33.19	27.64	29.30	0.74
1250	0.61	21.34	24.91	26.67	1.03
1300	0.94	14.61	21.83	25.17	1.65
1350	1.72	9.73	18.71	18.82	3.00
1400	3.76	5.35	16.80	9.13	6.07
1450	8.97	2.26	17.70	3.56	12.35
1500	19.09	1.09	21.45	1.62	20.06
1550	27.81	0.77	24.28	1.06	22.06
1600	19.40	0.68	24.69	0.88	20.61
1650	16.71	0.65	24.28	0.80	19.24
1700	15.58	0.63	23.15	0.74	18.42
1750	15.13	0.62	23.15	0.69	18.23
1800	15.06	0.59	22.80	0.62	18.27
1850	15.23	0.57	23.08	0.56	18.84
1900	15.56	0.55	23.49	0.51	19.43
1950	15.99	0.53	23.61	0.45	20.56
2000	16.51	0.51	24.78	0.40	21.92
2050	17.05	0.50	24.72	0.35	23.50
2100	17.63	0.49	24.94	0.31	25.76
2150	18.21	0.48	24.78	0.27	27.81
2200	18.77	0.48	23.42	0.24	29.11
2250	19.29	0.49	22.52	0.21	27.98
2300	19.76	0.51	20.75	0.19	25.15
2350	20.18	0.53	19.29	0.17	22.77
2400	20.54	0.56	18.06	0.15	20.69
2450	20.86	0.59	16.49	0.14	18.70
2500	21.13	0.64	15.50	0.14	17.28
2550	21.38	0.69	14.25	0.13	15.80
2600	21.60	0.75	13.25	0.13	14.63
2650	21.82	0.83	12.34	0.13	13.53
2700	22.06	0.91	11.35	0.14	12.50
2750	22.31	1.00	10.67	0.14	11.66
2800	22.59	1.12	9.79	0.15	10.76
2850	22.89	1.23	9.13	0.15	10.03
2900	23.23	1.36	8.45	0.15	9.28
2950	23.61	1.51	7.78	0.16	8.61
3000	24.04	1.67	7.24	0.16	7.99

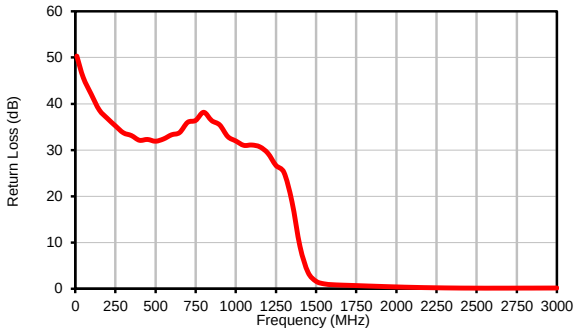
Ceramic Diplexer LDPQ-132-33+

Typical Performance Curves

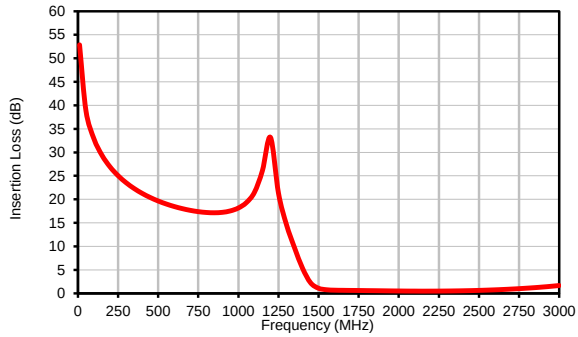
Low Pass Port Insertion Loss



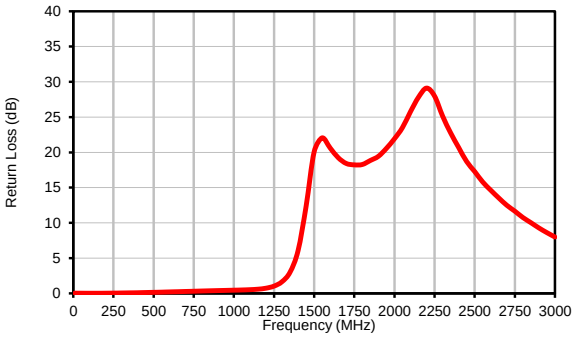
Low Pass Port Return Loss



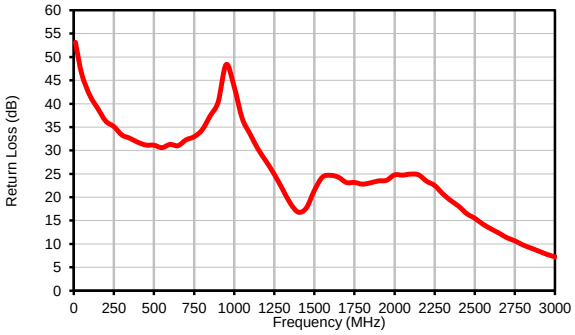
High Pass Port Insertion Loss



High Pass Port Return Loss



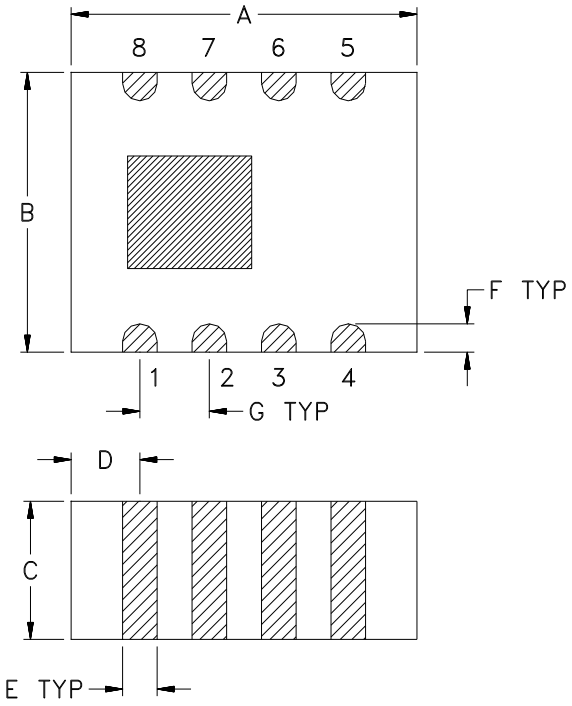
Common Port Return Loss



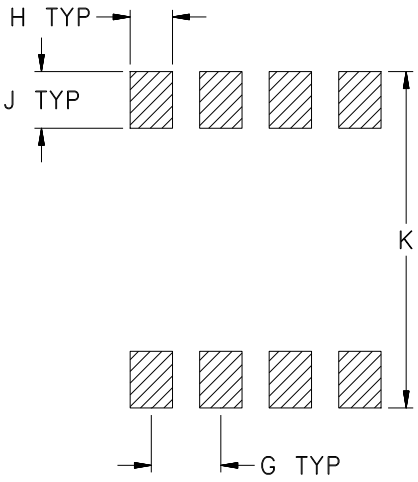
Case Style NL

Outline Dimensions

NL1008C-4



PCB Land Pattern



Suggested Layout,
Tolerance to be within ±.002

NOTES:

1. PIN NUMBERS DO NOT APPEAR ON UNIT. FOR REFERENCE ONLY.
2. METALLIZATION
3. PAD TOLERANCE IS NON-CUMULATIVE.

CASE #	A	B	C	D	E	F	G	H	J	K	M	WT. GRAM
NL1008C-4	.098 (2.50)	.079 (2.00)	.039 (.99)	.020 (.49)	.010 (.25)	.008 (.20)	.020 (.49)	.012 (.30)	.016 (.41)	.095 (2.41)	-- --	.019

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

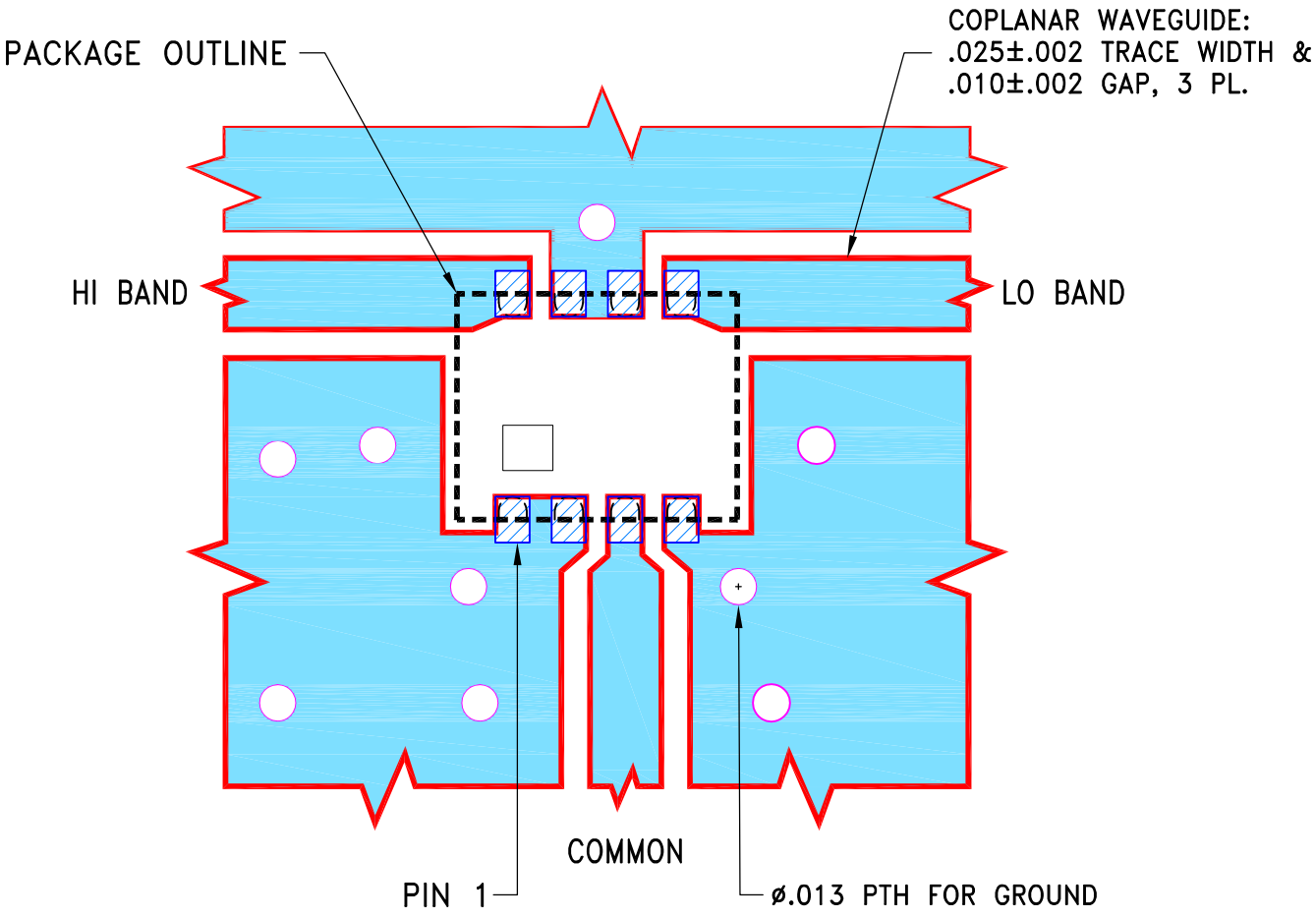
Notes:

1. Open style, ceramic base.
2. Termination finish:
   For RoHS Case Styles: Tin plate over Nickel plate. All models, (+) suffix.
   For RoHS-5 Case Styles: Tin-Lead plate. All models, no (+) suffix.
3. Line width should be designed to match 50Ω characteristic depending on PCB material and thickness.

THIRD ANGLE PROJECTION

REVISIONS					
REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
0R	M175911	NEW RELEASE	08/19/19	ITG	SL

SUGGESTED MOUNTING CONFIGURATION FOR NL1008C-4 CASE STYLE



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	ITG	08/12/19
TOLERANCES ON:	CHECKED	GF	08/16/19
2 PL DECIMALS ±	APPROVED	SL	08/19/19
3 PL DECIMALS ± .005			
ANGLES ±			
FRACTIONS ±			

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

Mini-Circuits® 13 Neptune Avenue Brooklyn NY 11235

PL, NL1008C-4, TB-LDPQ132252+

SIZE	CODE IDENT	DRAWING NO:	REV:
A	15542	98-PL-646	0R

FILE:	SCALE:	SHEET:
98PL646	15:1	1 OF 1

Mini-Circuits

Environmental Specifications ENV06T6

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 105°C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-55° to 105°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 245° - 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