LTCC SURFACE MOUNT

Diplexer

LDPQ-550-252+

50 Ω DC to 2500 MHz

THE BIG DEAL

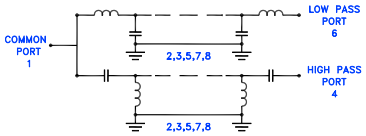
- Low Insertion loss, 0.4 dB Typ
- Stop Band Rejection, 37 dB Typ.
- 1008 Surface Mount Footprint
- Power Handling: 4 W

Generic photo used for illustration purposes only

APPLICATIONS

- Military Applications
- Communication Systems
- GSM and GPS
- IoT

FUNCTIONAL DIAGRAM



PRODUCT OVERVIEW

Mini-Circuits' LDPQ-550-252+ is a miniature low temperature co-fired ceramic (LTCC) diplexer with a low pass passband of DC-550 MHz and high pass passband of 1300-2500 MHz that supports a variety of applications. This model provides 0.4 dB typical insertion loss over a wide band due to its rugged monolithic construction. Housed in an 1008 ceramic form factor, it is ideal for dense signal chain PCB layouts where it complements MMIC size and performance. The LTCC fabrication process assures minimal RF performance variation while delivering a product that is well suited for environmental extremes of high humidity and temperature.

KEY FEATURES

Features	Advantages
Low Insertion loss	The low insertion loss of Low Pass and High Pass channels ensures less power dissipation in the diplexer.
LTCC Construction	The use of LTCC technology allows for repeatable performance in a rugged ceramic package, well suited for tough environments such as high humidity and temperature extremes. See Mini-Circuits Environmental Rating ENV06T11 for more information.
Small Size, 1008	1008 package allows for space to be saved in dense circuit board layouts, while also minimizing the effects of parasitics.
Good Power Handling, 4 W	Handles up to 4 Watts in a small 1008 package.

REV. B
ECO-021583
EDU4745
LDPQ-550-252+
URJ
240423

Diplexer

LDPQ-550-252+

50 Ω DC to 2500 MHz

ELECTRICAL SPECIFICATIONS[1,2,3] AT +25°C

Parameter		Function (Port)	Frequency (MHz)	Min.	Typ.	Max.	Unit
Passband	Insertion Loss	Low Pass (RF COM-RF1)	DC-550	—	0.6	1.2	dB
		High Pass (RF COM-RF2)	1300-1800	—	0.6	1.4	
			1800-2500		0.4	1.4	
	Return Loss	Low Pass (RF1)	DC-550	—	19		dB
		High Pass (RF2)	1300-1800	—	16	—	
			1800-2500		16		
		Common (COM)	DC-550	—	17	—	
			1300-1800	—	15	—	
			1800-2500		13		
Stop band	Rejection	Low Pass (RF COM-RF1)	1300-2500	25	37	—	dB
		High Pass (RF COM-RF2)	DC-550	28	35	—	

1. Tested on Evaluation Board P/N TB-LDPQ-550252+.
2. Bi-Directional. See S-Parameters for actual performance.
3. In applications where DC voltage and/or current is present at either the input or output ports, external DC blocking capacitors are required.

ABSOLUTE MAXIMUM RATINGS[3]

Parameter	Ratings
Operating Temperature	-55°C to +125°C
Storage Temperature	-55°C to +125°C
Input Power (RF COM)[4]	4 W
Input Power (RF1)[5]	4 W
Input Power (RF2)[6]	4 W

3. Permanent damage may occur if any of these limits are exceeded.
4. Power rating applies only to signals within the passband. Power rating above +25°C operating temperature decreases linearly to 1.3 W at +125°C.
5. Power rating applies only to signals within the passband. Power rating above +25°C operating temperature decreases linearly to 1.3 W at +125°C.
6. Power rating applies only to signals within the passband. Power rating above +25°C operating temperature decreases linearly to 1.3 W at +125°C.

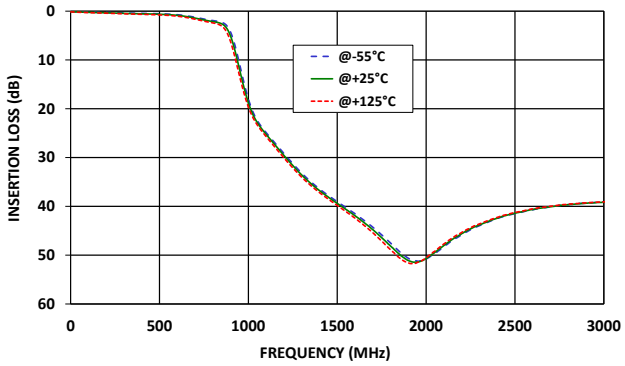
Diplexer

LDPQ-550-252+

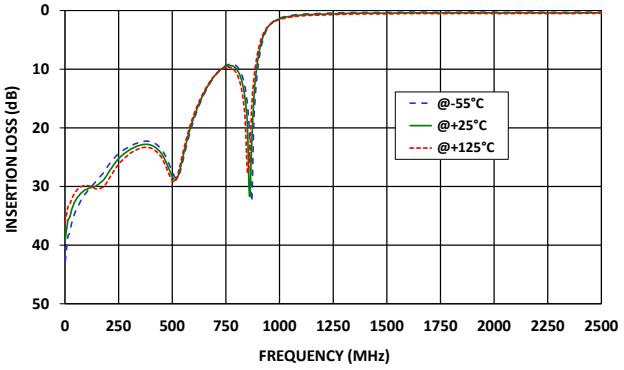
50 Ω DC to 2500 MHz

TYPICAL PERFORMANCE GRAPHS

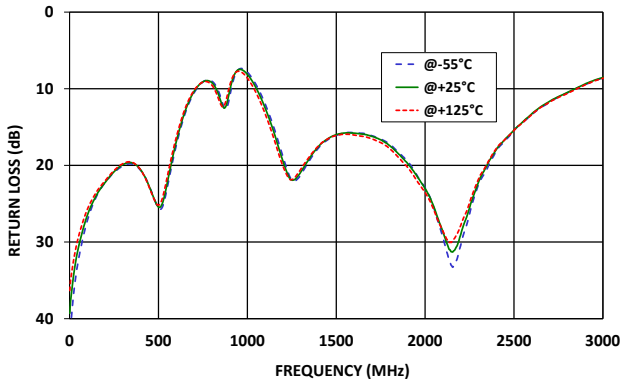
LDPQ-550-252+LOW PASS
INSERTION LOSS



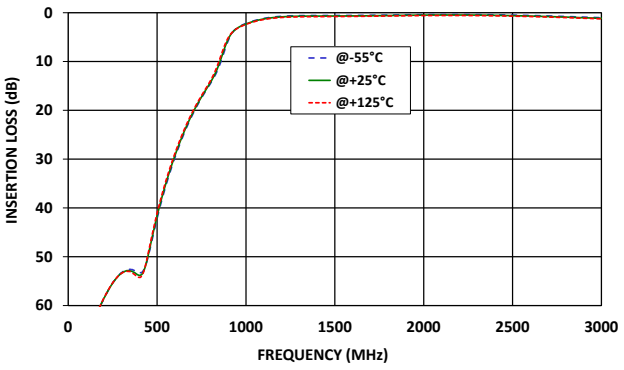
LDPQ-550-252+LOW PASS
RETURN LOSS



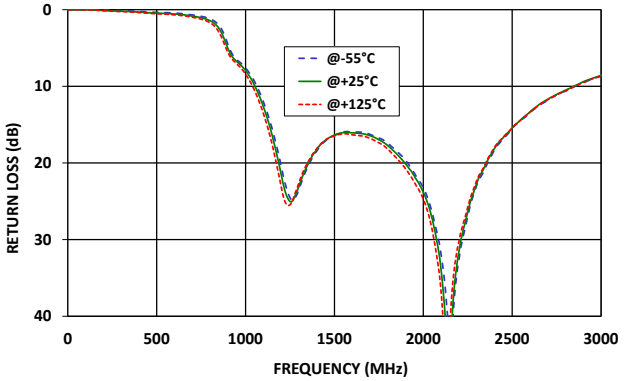
LDPQ-550-252+ COMMON PORT



LDPQ-550-252+HIGH PASS
INSERTION LOSS



LDPQ-550-252+HIGH PASS
RETURN LOSS



Diplexer

LDPQ-550-252+

50 Ω DC to 2500 MHz

FUNCTIONAL DIAGRAM

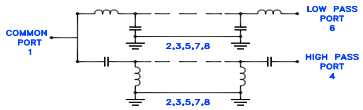
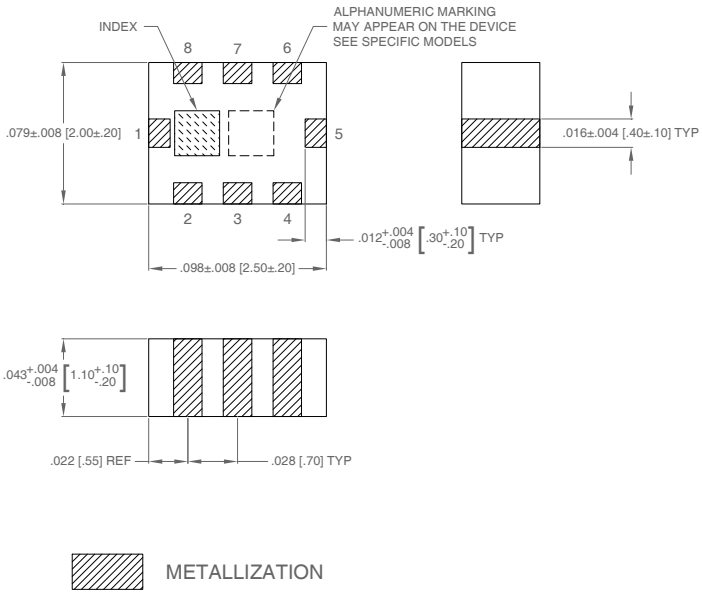


Figure 1.LDPQ-550-252+ Functional Diagram

CASE STYLE DRAWING

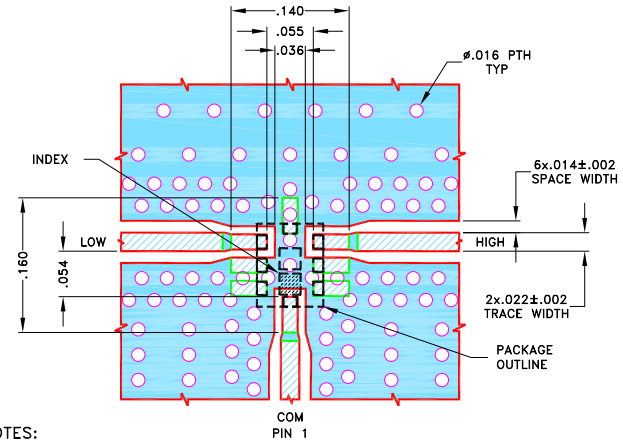


Weight : .019 grams.
Dimensions are in inches (mm). Tolerances: 2Pl. ± .01; 3Pl. ± .005

PAD DESCRIPTION

Function	Pad Number	Description
RF COM	1	Connects to RF COM Port.
LOW PASS PORT	6	Connects to Low Pass Port.
HIGH PASS PORT	4	Connects to High Pass Port.
GND	2, 3, 5, 7, 8	Connects to Ground on PCB, (See drawing PL-762).

SUGGESTED PCB LAYOUT (PL-762)



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

Figure 2. Suggested PCB Layout PL-762

PRODUCT MARKING*: YA

*Marking may contain other features or characters for internal lot control.

Diplexer

LDPQ-550-252+

50 Ω DC to 2500 MHz

ADDITIONAL DETAILED INFORMATION IS AVAILABLE ON OUR DASH BOARD. CLICK HERE

Performance Data & Graphs	Data Graphs S-Parameter (S3P Files) Data Set (.zip file) De-embedded to device pads (if applicable)
Case Style	NL1008C-8 Lead Finish: Tin over Nickel Plating.
RoHS Status	Compliant
Tape and Reel	F71
Suggested Layout for PCB Design	PL-762
Evaluation Board	TB-LDPQ-550252+ Gerber File
Environmental Rating	ENV06T11

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-Circuits' 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/terms/viewterm.html

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Mini-Circuits:

LDPQ-550-252+