LTCC SURFACE MOUNT

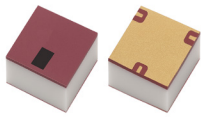
Diplexer

LDPV-11163+

50Ω DC to 19 GHz (DC - 11, 16.8 - 19 GHz)

THE BIG DEAL

- Low Insertion loss, 1.4 dB Typ
- Stopband Rejection, 55 dB Typ.
- 1210 Surface Mount Footprint
- Power Handling: 2.8 W

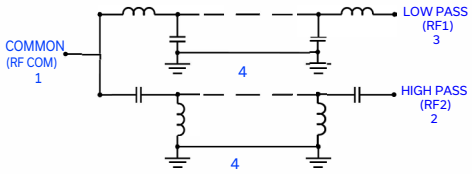


Generic photo used for illustration purposes only

APPLICATIONS

- Ku-Band Satellite Communication
- Radar and EW Systems
- Test and Measurement

FUNCTIONAL DIAGRAM



PRODUCT OVERVIEW

Mini-Circuits' LDPV-11163+ is a miniature low temperature co-fired ceramic (LTCC) diplexer with a low pass passband of DC-11 GHz and high pass passband of 16.8 - 19 GHz that supports a variety of applications. This model provides 1.4 dB typical insertion loss over a wide band due to its rugged monolithic construction. Housed in an 1210 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 ENV06T10 for more information.
Small Size, 1210	1210 package allows for space to be saved in dense circuit board layouts, while also minimizing the effects of parasitics.
Good Power Handling, 2.8 W	Handles up to 2.8 Watts in a small 1210 package.

REV. OR
ECO-027800
EDU4873
LDPV-11163+
URJ
251209

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

Parameter		Function (Port)	Frequency (GHz)	Min.	Typ.	Max.	Unit
Passband	Insertion Loss	Low Pass (RF COM-RF1)	DC - 11	—	1.4	2.5	dB
		High Pass (RF COM-RF2)	16.8 - 18	—	2.1	3.5	
			18 - 19	—	2.5	3.5	
	Return Loss	Low Pass (RF1)	DC - 11	—	11	—	dB
		High Pass (RF2)	16.8 - 18	—	10	—	
			18 - 19	—	7	—	
		Common (RF COM)	DC - 11	—	11	—	
			16.8 - 18	—	11	—	
			18 - 19	—	8	—	
Stopband	Rejection	Low Pass (RF COM-RF1)	16.5 - 19	25	36	—	dB
		High Pass (RF COM-RF2)	DC - 4.8	45	55	—	
			4.8 - 9	30	43	—	
			9 - 12.5	20	31	—	

1. Tested in Evaluation Board P/N TB-LDPV-11163+.
2. This component should not be used as a DC-block. 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]	2.8 W @ +25°C
Input Power (RF1)[5]	2.8 W @ +25°C
Input Power (RF2)[6]	2.8 W @ +25°C

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 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 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 W at +125°C.

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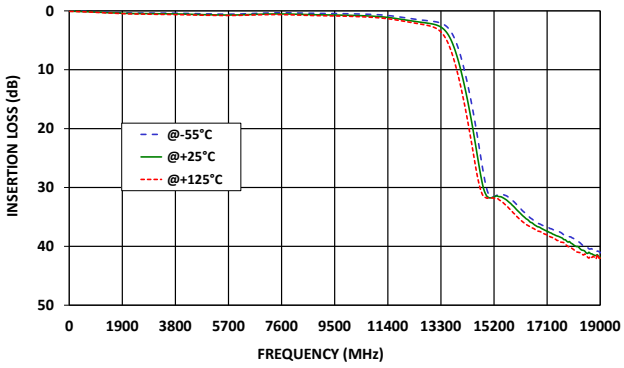
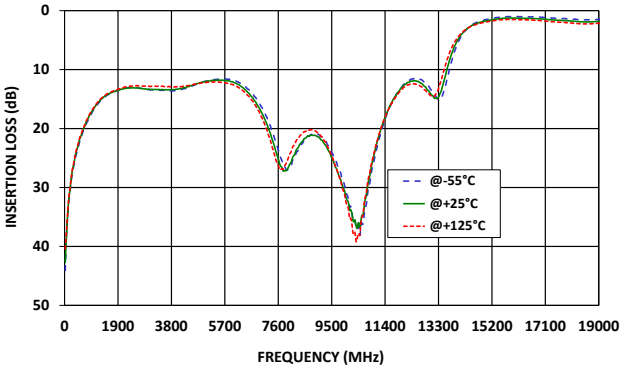
TYPICAL PERFORMANCE GRAPHS

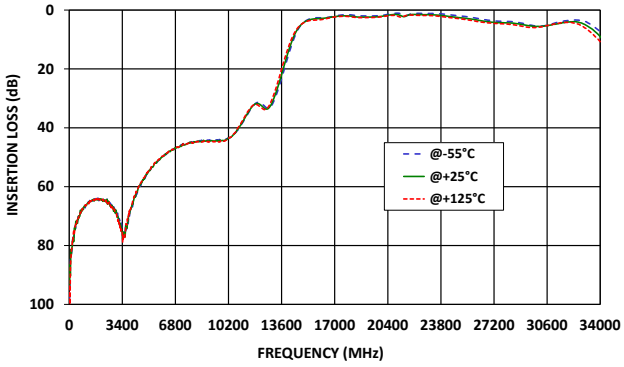
LDPV-11163+ LOW PASS
INSERTION LOSS



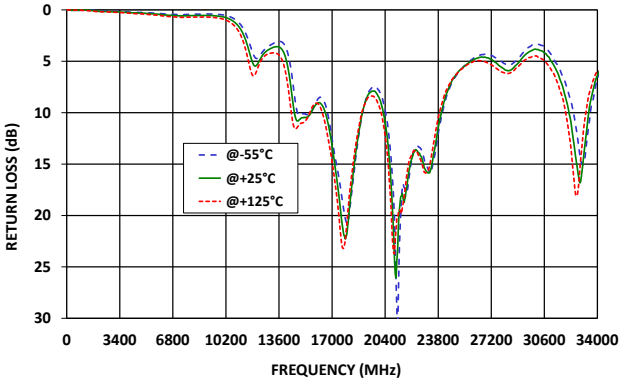
LDPV-11163+ LOW PASS
RETURN LOSS



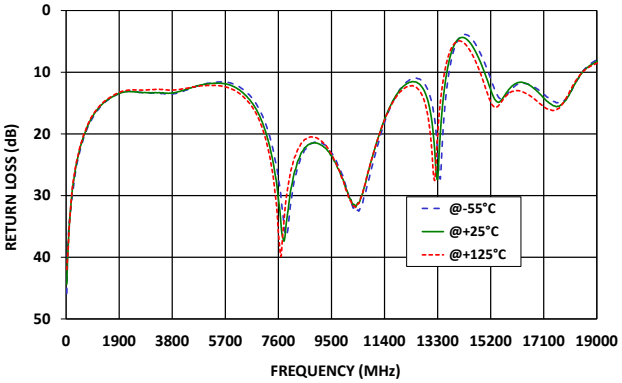
LDPV-11163+ HIGH PASS
INSERTION LOSS



LDPV-11163+ HIGH PASS
RETURN LOSS



LDPV-11163+ COMMON PORT
RETURN LOSS



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FUNCTIONAL DIAGRAM

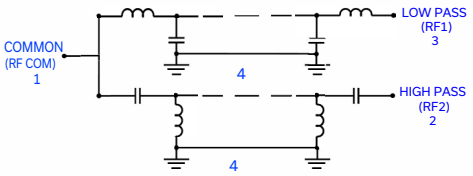
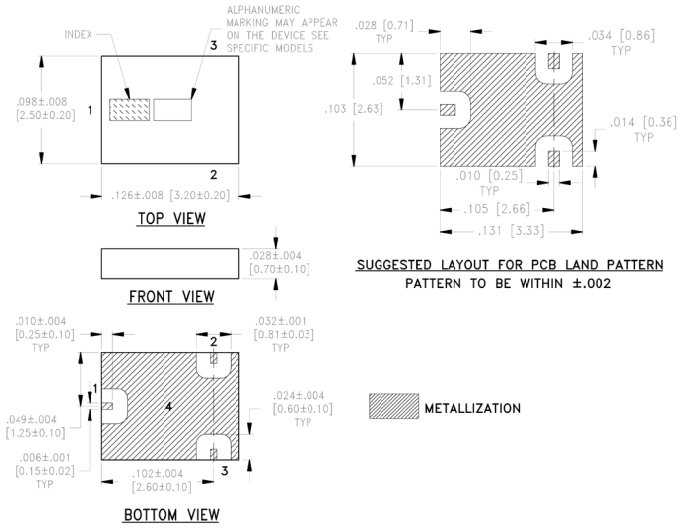


Figure 1.LDPV-11163+ Functional Diagram

PAD DESCRIPTION

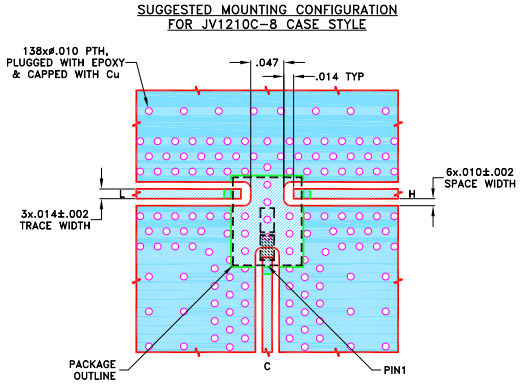
Function	Pad Number	Description
RF COM	1	Connects to RF COM Port
RF1	3	Connects to Low Pass Port
RF2	2	Connects to High Pass Port
GND	4	Connects to Ground on PCB, (See drawing PL-841)

CASE STYLE DRAWING



Weight: .024 grams
Dimensions are in inches (mm). Tolerances: 3Pl. ± .005

SUGGESTED PCB LAYOUT



NOTES:
1. TRACE WIDTH & GAP PARAMETERS ARE SHOWN FOR ROGERS (RO4835 Lo Pro), DIELECTRIC THICKNESS: .0073±.0007. 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 SOLDERMASK

Figure 2. Suggested PCB Layout

PRODUCT MARKING*: YB

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

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ADDITIONAL DETAILED INFORMATION IS AVAILABLE ON OUR DASHBOARD. CLICK HERE

Performance Data & Graphs	Data Graphs S-Parameter (S3P Files) Data Set (.zip file) De-embedded to device pads (if applicable)
Case Style	JV1210C-8 Lead Finish: Gold over Nickel Plate.
RoHS Status	Compliant
Tape and Reel	F74
Suggested Layout for PCB Design	PL-841
Evaluation Board	TB-LDPV-11163+ Gerber File
Environmental Rating	ENV06T10

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