

# Ceramic Diplexer

## LDPO-33-53+

50Ω DC to 3000 MHz (5000 to 5750 MHz)

### The Big Deal

- Low insertion loss
- High stopband isolation
- Very small size, 0402



CASE STYLE: NK0402C

### Product Overview

Mini-Circuits' LDPO-33-53+ is a tiny, surface-mount diplexer with a low pass channel from DC to 3000 MHz and a high pass channel from 5000 to 5750 MHz. This model provides low passband insertion loss, high stopband rejection, and RF input power handling up to 3W. Fabricated using LTCC technology, the unit comes housed in a tiny, 0402 ceramic package with excellent thermal stability from -55 to +125°C.

### Key Features

Feature	Advantages
Low passband insertion loss	Ensures low signal loss through both channels
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.

#### Notes

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Generic photo used for illustration purposes only  
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**+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 7" Devices/Reel 20, 50, 100, 200, 500, 1000, 4000

### Maximum Ratings

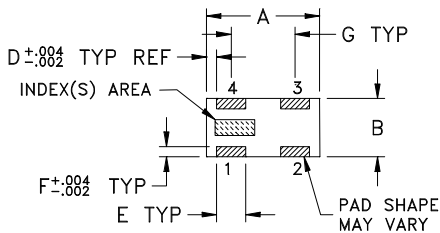
Operating Temperature	-55°C to 125°C
Storage Temperature*	-55°C to 125°C
RF Power Input**	3W

\*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 1W at 125°C

### Pad Connections

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

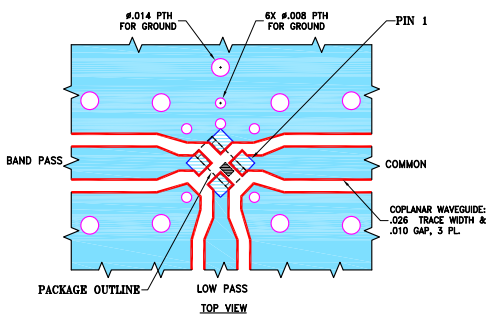
### Outline Drawing



### Outline Dimensions (inch mm)

A	B	C	D	E	F	G	wt grams
.039	.020	.015	.004	.010	.004	.022	.0007
1.0	0.51	0.38	0.10	0.25	0.10	0.56	

### Evaluation Board MCL P/N: TB-LDPO-33-53+ Suggested PCB Layout (PL-571)



- NOTES:  
1. PCB IS MULTILAYER PCB, SEE STACK-UP DIAGRAM.  
2. TRACE WIDTH AND GAP ARE SHOWN FOR FR4, GRADE IT-180TC (TECO CORP.) WITH DIELECTRIC THICKNESS: 0034-.0005; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH & GAP MAY NEED TO BE MODIFIED.  
3. LAYERS 3 & 4 OF THE PCB ARE CONTINUOUS GROUND PLANES.  
■ DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER).  
■ DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK.

### Features

- low insertion loss
- miniature size 0402
- low cost
- aqueous washable

### Applications

- ISM Band
- WIFI
- Bluetooth
- Cellular

### Electrical Specifications<sup>1</sup> at 25°C

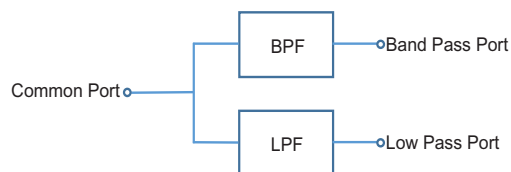
Parameter	Port	Frequency (MHz)	Min.	Typ.	Max.	Unit	
Pass Band	Insertion Loss	Low Pass	DC - 3000	—	0.8	1.2	dB
		Band Pass	5000 - 5750	—	2.5	3.0	
	Return Loss	Low Pass	DC - 3000	—	15	—	dB
Band Pass		5000 - 5750	—	11	—		
Common		DC - 3000	—	18	—		
Stop Band Rejection	Low Pass	5000 - 12000	—	17	—	dB	
	Band Pass	DC - 3000	19	25	—	dB	
		7800 - 12000	15	23	—	dB	

1. Tested on Evaluation Board TB-LDPO-33-53+

### 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	0.04	70.45	56.56	58.15	0.16
50	0.08	55.54	45.75	46.53	0.14
100	0.06	49.20	41.19	42.00	0.08
500	0.11	35.41	26.09	26.14	0.03
1000	0.18	30.43	21.17	21.42	0.01
1500	0.26	28.83	19.97	20.73	0.08
2000	0.31	29.52	21.54	22.84	0.07
2500	0.37	35.58	27.11	30.07	0.16
3000	0.49	31.63	29.21	28.99	0.37
3500	0.89	17.49	19.25	17.35	0.79
4000	2.99	7.53	13.12	7.74	2.83
4500	11.93	2.39	12.19	2.11	9.27
5000	27.40	1.33	17.31	1.11	14.02
6000	19.61	1.29	41.28	1.17	22.94
7000	15.63	7.70	3.57	1.27	2.90
8000	23.80	26.88	0.55	1.26	0.60
9000	30.25	20.83	0.12	1.32	0.18
10000	25.09	22.08	0.13	0.84	0.26
11000	28.56	25.29	0.22	0.25	0.46
12000	40.40	31.81	0.03	0.07	0.47

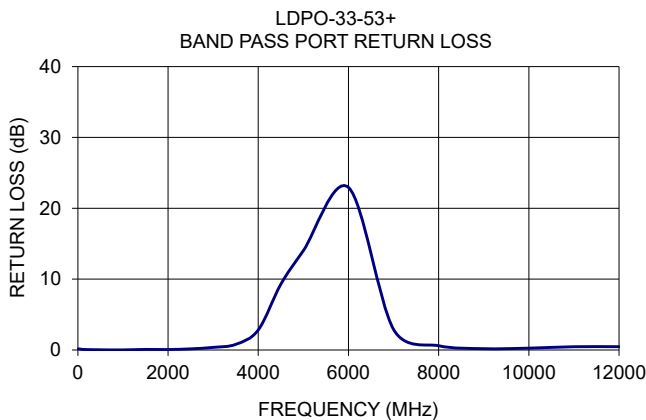
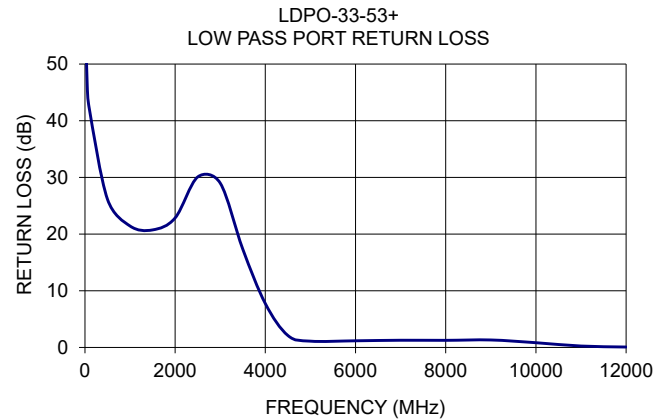
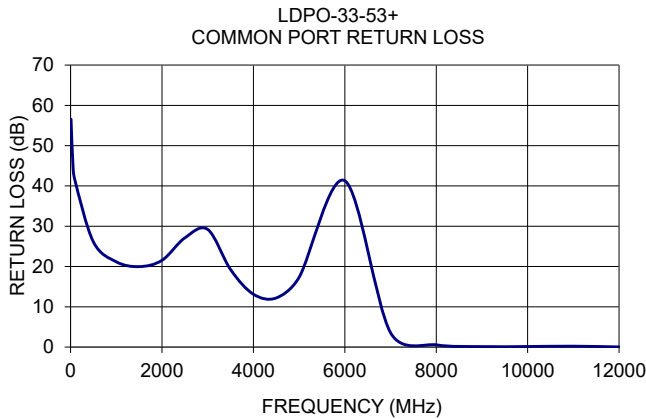
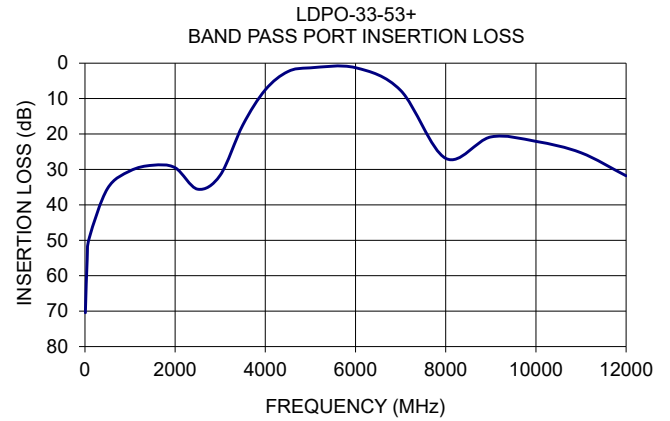
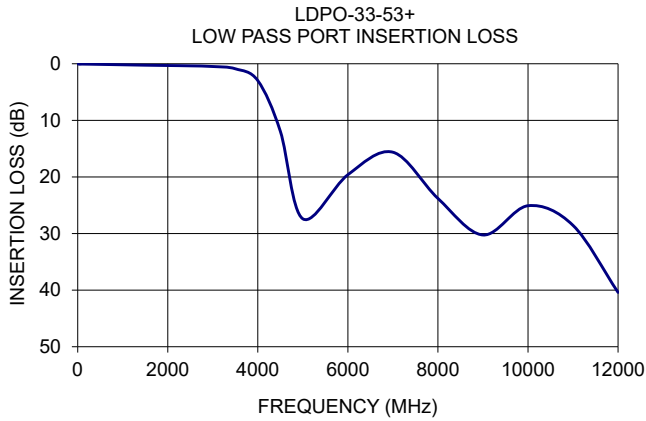
### Block Diagram



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