

Ceramic

# Diplexer

DPGE-252-492R+

50Ω 2400 to 2500 MHz (4900-5950 MHz)

## The Big Deal

- Optimized for diplexing Wi-Fi high band and low band
- Tiny size, 0805
- Low passband insertion loss, 0.5 dB
- High rejection, 25 dB high pass, 36 dB low pass
- Low cost



CASE STYLE: GE0805C-10

## Product Overview

Mini-Circuits' DPGE-252-492R+ is an LTCC diplexer with a low passband from 2400 to 2500 MHz and a high passband from 4900 to 5950 MHz, optimized for diplexing Wi-Fi low band and high band signals. This model provides 0.5 dB typical passband insertion loss, 25 dB rejection in the high channel, and 36 dB rejection in the low channel. The filter is capable of handling up to 2W RF input power and provides a wide operating temperature range from -55 to +100°C. Utilizing LTCC construction, the unit is fabricated in a tiny ceramic monolith (0.08 x 0.05 x 0.03") with excellent repeatability and low cost, suitable for volume production.

## Key Features

Feature	Advantages
Optimized for diplexing 2400 to 2500 MHz and 4900 to 5950 MHz bands	The DPGE-252-492R+ diplexer is specifically designed for splitting low channel and high channel signals in Wi-Fi applications.
Tiny size (0.08 x 0.05 x 0.02")	Minimizes performance variations due to parasitics and saves space in dense circuit board layouts.
High stopband rejection	Effective suppression of unwanted out-of-band spurs over a wide stopband range results in better receiver sensitivity and dynamic range.
Good return loss, 23 dB typ.	Ensures good matching in 50Ω systems and minimizes in-band reflection.
Wraparound terminations	Excellent solderability and easy visual inspection.
Wide operating temperature range, -55 to +100°C	Reliable performance in extreme environments.

### 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](http://www.minicircuits.com/MCLStore/terms.jsp)



# Ceramic Diplexer

## DPGE-252-492R+

50Ω 2400 to 2500 MHz (4900-5950 MHz)



CASE STYLE: GE0805C-10

**+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

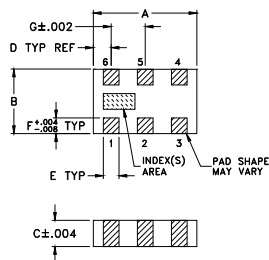
Operating Temperature	-55°C to 100°C
Storage Temperature*	-55°C to 100°C
RF Power Input**	2W at 25°C

\*Refer to product storage temperature after installation.  
 \*\* Passband rating, derate linearly to 1W at 100°C.  
 Suggestion for T&R unused product storage condition: +5~+35°C, Humidity 45-75%RH, 12 month max.

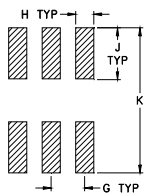
### Pad Connections

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

### Outline Drawing



### PCB Land Pattern

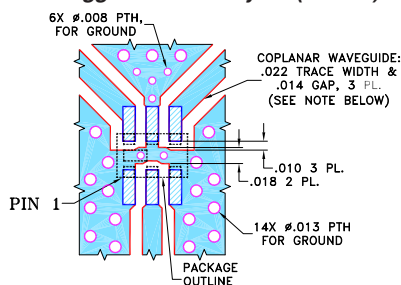


Suggested Layout,  
Tolerance to be within ±.002

### Outline Dimensions (inch mm)

Parameter	Value (inch)	Value (mm)
A	.079	2.01
B	.049	1.24
C	.020	0.51
D	.014	0.36
E	.012	0.30
F	.012	0.30
G	.026	0.66
H	.014	0.36
J	.039	1.00
K	.110	2.80
wt		grams
		.005

### Evaluation Board MCL P/N: TB-DPGE252492R+ Suggested PCB Layout (PL-441)



- NOTES:**
1. COPLANAR WAVEGUIDE IS SHOWN FOR ROGERS R04350B 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 LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER).
- DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK.

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### Features

- small size 0805 (2.0 x 1.25 mm)
- low insertion loss, 0.5 dB typ.
- high rejection
- temperature stable
- LTCC construction

### Applications

- ISM Band
- WLAN
- Bluetooth
- Zigbee

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

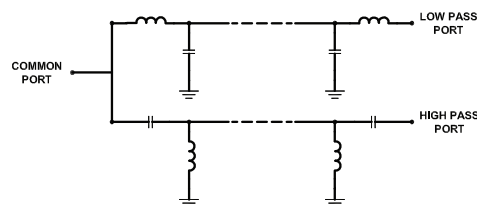
Parameter	Port	Frequency (MHz)	Min.	Typ.	Max.	Unit	
Pass Band	Insertion Loss	Low Pass	2400 - 2500	-	0.4	0.5	dB
		High Pass	4900 - 5950	-	0.5	0.65	
	Return Loss	Low Pass	2400 - 2500	10	33	-	dB
		High Pass	4900 - 5950	10	25	-	
Stop Band Rejection	High Pass	800 - 2500	20	25	-	dB	
		9800 - 11900	12	19	-		
	Low Pass	4800 - 6000	20	36	-	dB	
		7200 - 7500	20	33	-		

<sup>1</sup> Tested on Evaluation Board TB-DPGE252492R+

### Typical Performance Data at 25°C

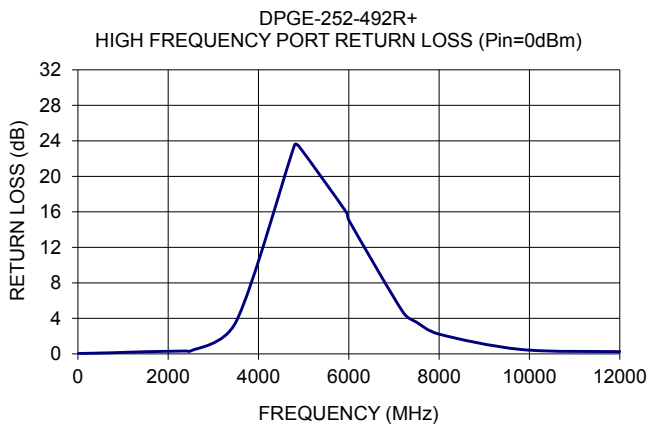
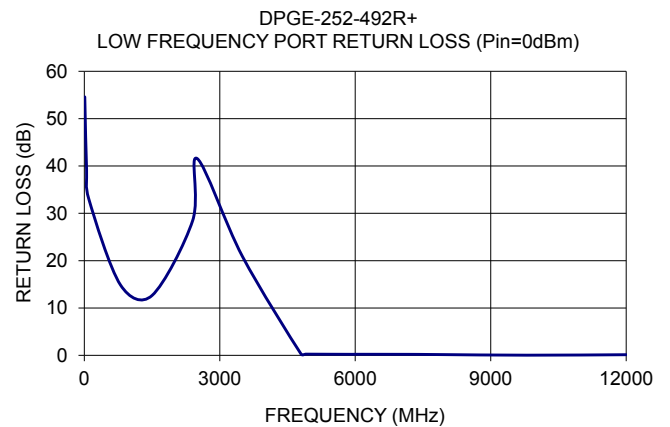
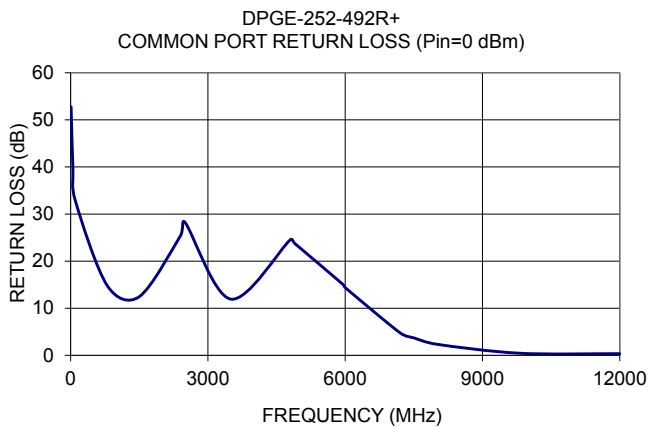
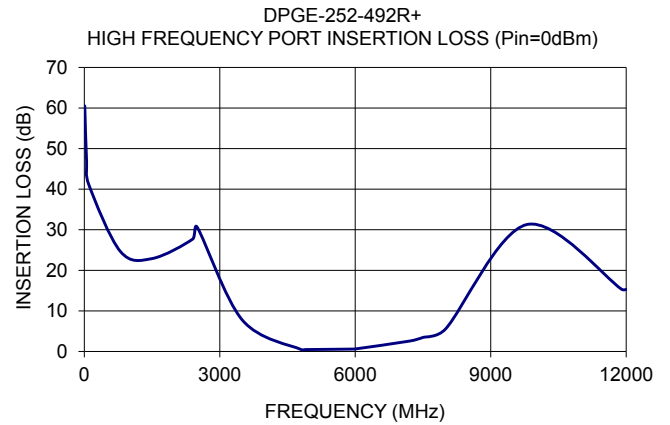
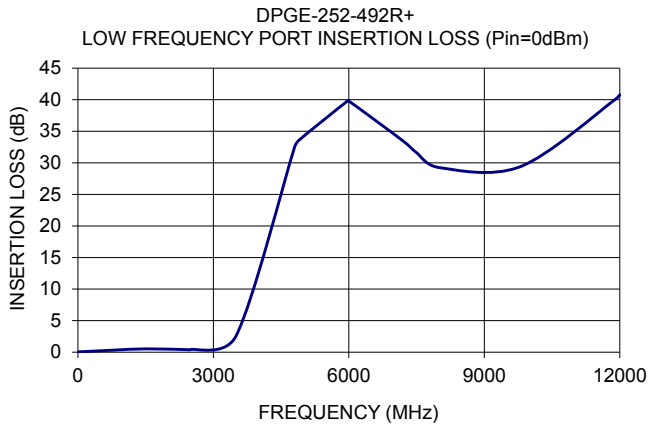
Frequency (MHz)	Insertion Loss (dB)			Return Loss (dB)	
	Low Pass Port	High Pass Port	Common Port	Low Pass Port	High Pass Port
10	0.06	60.52	52.76	54.59	0.05
50	0.07	46.96	39.69	39.28	0.05
100	0.08	41.09	32.91	32.99	0.05
800	0.33	24.63	14.80	14.88	0.13
1500	0.53	22.89	12.45	12.65	0.24
2400	0.41	27.70	25.40	28.49	0.32
2500	0.43	30.61	28.21	41.56	0.33
3500	2.55	7.73	11.93	20.92	3.60
4800	32.53	0.48	24.55	0.27	23.55
4900	33.61	0.47	23.73	0.25	23.35
5950	39.69	0.59	15.07	0.21	15.91
6000	39.79	0.62	14.38	0.22	15.06
7200	33.47	2.56	4.77	0.21	4.69
7500	31.60	3.46	3.71	0.19	3.57
8000	29.25	5.55	2.35	0.15	2.22
9800	29.40	31.28	0.45	0.03	0.50
11900	40.05	15.32	0.36	0.13	0.26
12000	40.77	15.29	0.35	0.14	0.25

### Functional Schematic



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REV. OR  
M172548  
DPGE-252-492R+  
ED-16419/22  
AVB/CP/AM  
190208  
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