

## 2-Way 0° Power Divider 5 - 1218 MHz

Rev. V2

### Features

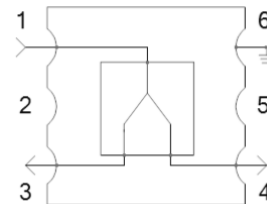
- 2-Way 0 Degree
- Surface Mount Package
- Available on Tape and Reel
- 260°C Reflow Compatible
- RoHS Compliant and Pb free
- Isolation optimized for +55°C operation

### Description

The MAPD-011053 is a 2 way 0 degree power divider in a low cost surface mount package.

Ideally suited for all CATV Broadband and FTTx applications. This part can be optimized for isolation performance at +25°C also. Please see the application section page.

### Functional Schematic



### Pin Configuration<sup>3</sup>

Pin #	Function	Pin #	Function
1	Input	4	Output 2
2, 5	External Capacitor	6	Ground
3	Output 1		

3. MACOM recommends connecting unused package pins to ground.

### Electrical Specifications: $T_A = 25^\circ\text{C}$ , $Z_0 = 75 \Omega$ , $P_{IN} = 0 \text{ dBm}$

Parameter	Frequency Test Conditions (MHz)	Units	Min.	Typ.	Max.
Power Split	—	dB	—	3	—
Insertion Loss 1 (pin 1 - pin 3)	5 - 700	dB	—	0.3	0.5
	700 - 1218			0.5	0.8
Insertion Loss 2 (pin 1 - pin 4)	5 - 700	dB	—	0.5	0.9
	700 - 1218			1.3	1.8
Amplitude Balance	5 - 700	dB	—	0.3	$\pm 0.6$
	700 - 1218			0.9	$\pm 1.25$
Phase Balance	5 - 700	degree	—	3	$\pm 5$
	700 - 1218			5	$\pm 6$
Input Return Loss (pin 1)	5 - 700	dB	23	30	—
	700 - 1218		17	22	
Output Return Loss (pin 3)	5 - 700	dB	19	24	—
	700 - 1218		12	15	
Output Return Loss (pin 4)	5 - 700	dB	18	24	—
	700 - 1218		12	25	
Isolation (pin 4 - pin 3)	5 - 70	dB	28	35	—
	70 - 130		35	44	
	130 - 700		32	41	
	700 - 1218		19	26	

### Ordering Information<sup>1,2</sup>

Part Number	Description
MAPD-011053	2000 piece reel
MAPD-011053-TB	sample board

1. Reference Application Note M513 for reel size information.
2. All sample boards include 5 loose parts.

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### Recommended Maximum Ratings<sup>4,5</sup>

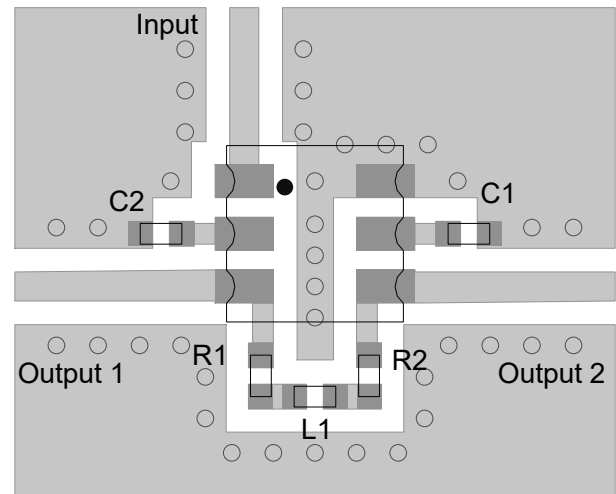
Parameter	Absolute Maximum
Input RF Power <sup>6</sup>	2 W
DC Current	500 mA
Operating Temperature	-40°C to +85°C

4. Exceeding any one or combination of these limits may cause permanent damage to this device.
5. MACOM does not recommend sustained operation near these survivability limits.
6. Specified at 25°C only.

### Component List

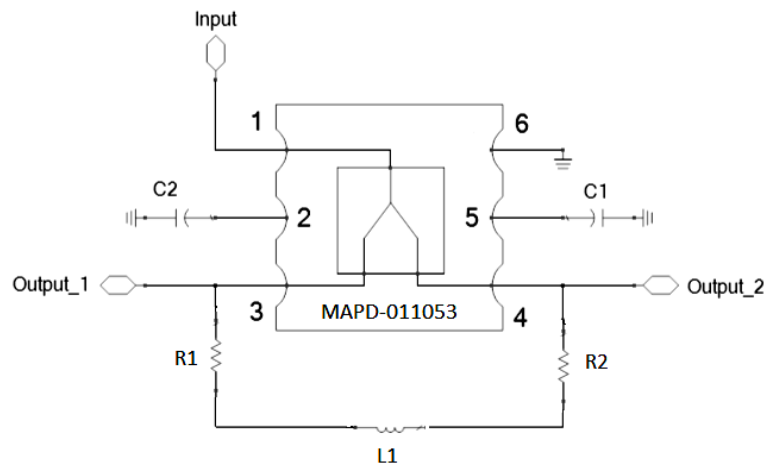
Part	Value	Case Style
C1, C2	0.5 pF	0402
R1	180 Ω	0402
R2	9.1 Ω	0402
L1	22 nH	0402

### Recommended Board Layout<sup>7,8,9</sup>

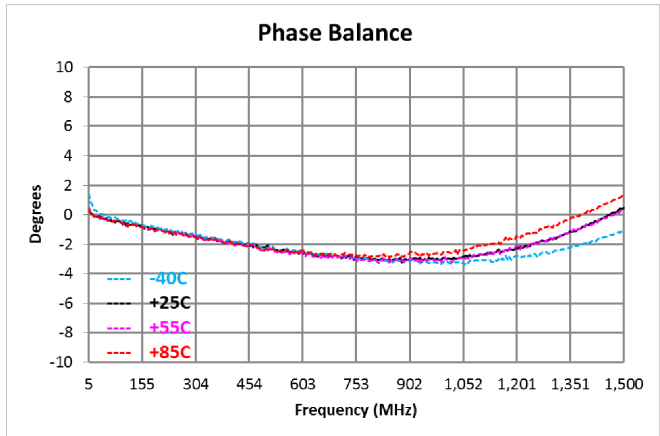
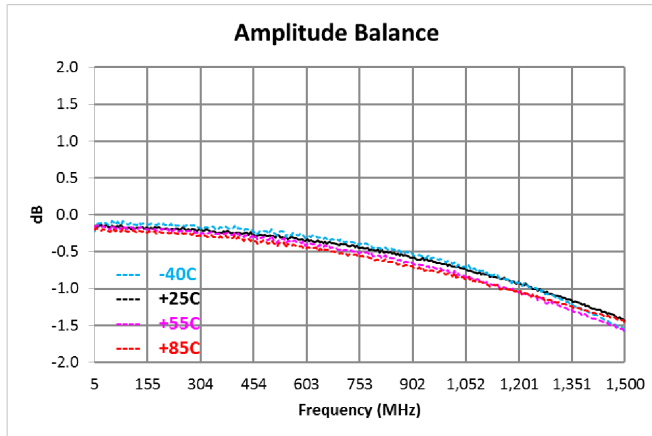
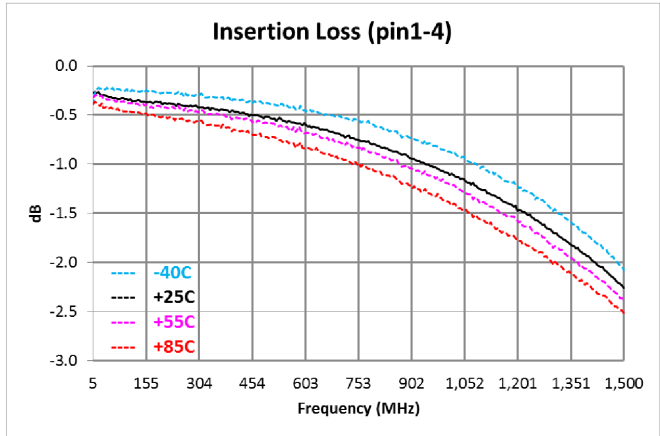
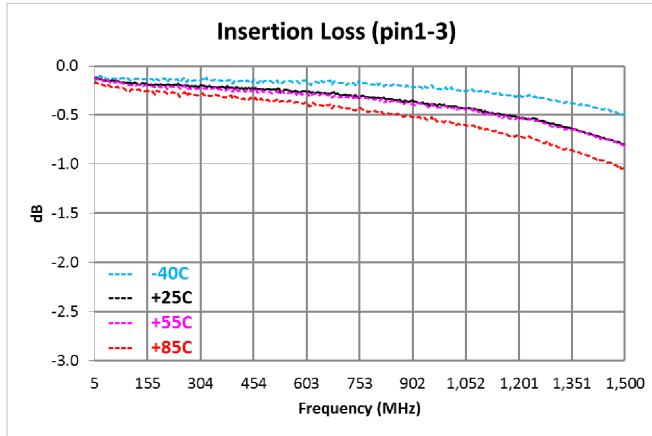


7. Dimensions in mm.
8. Tolerance:  $\pm 0.2$  mm unless otherwise noted.
9. Recommended PCB layout shown above uses 1.6 mm FR4, CPWG transmission line. Width 0.70 mm, Gap 0.57 mm.

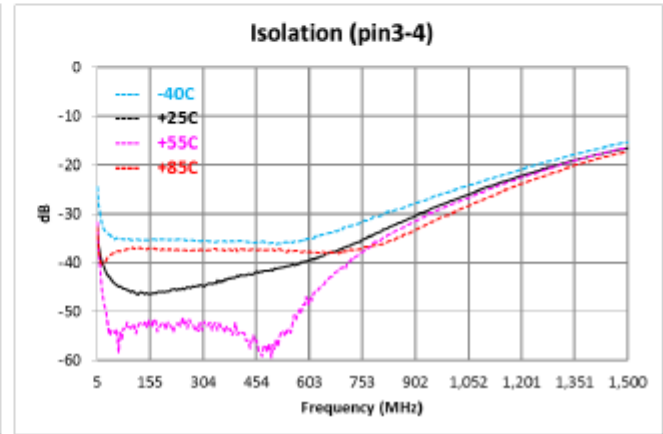
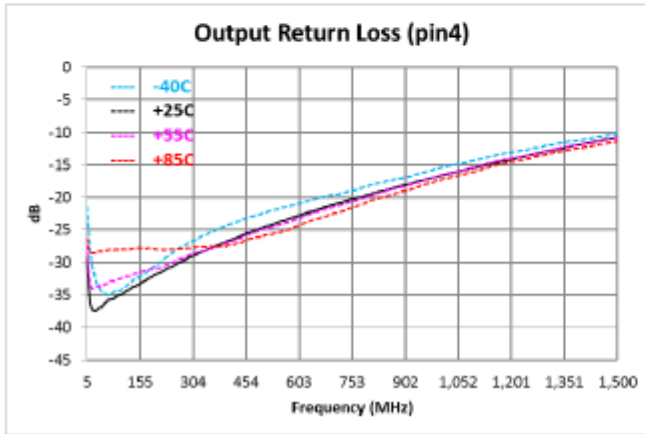
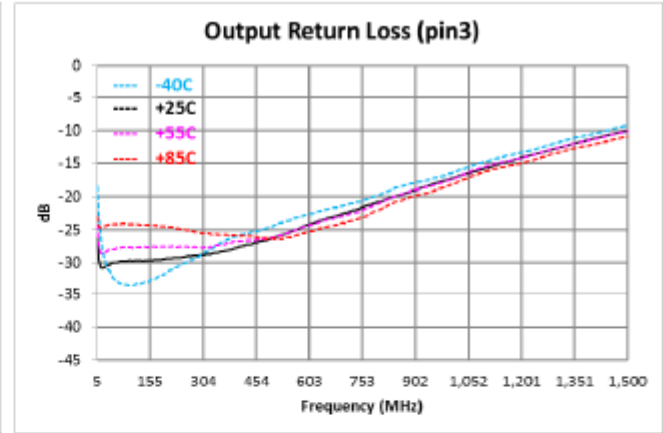
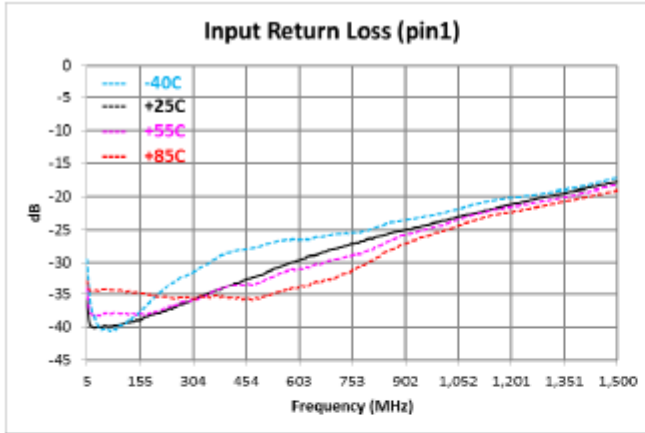
### Application Schematic



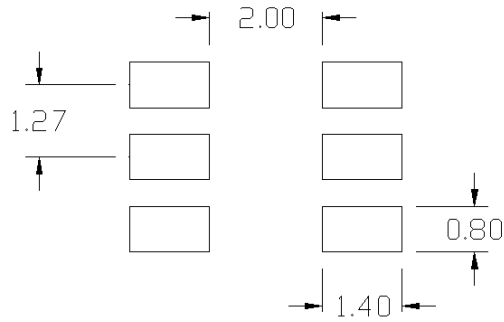
## Typical Performance Curves



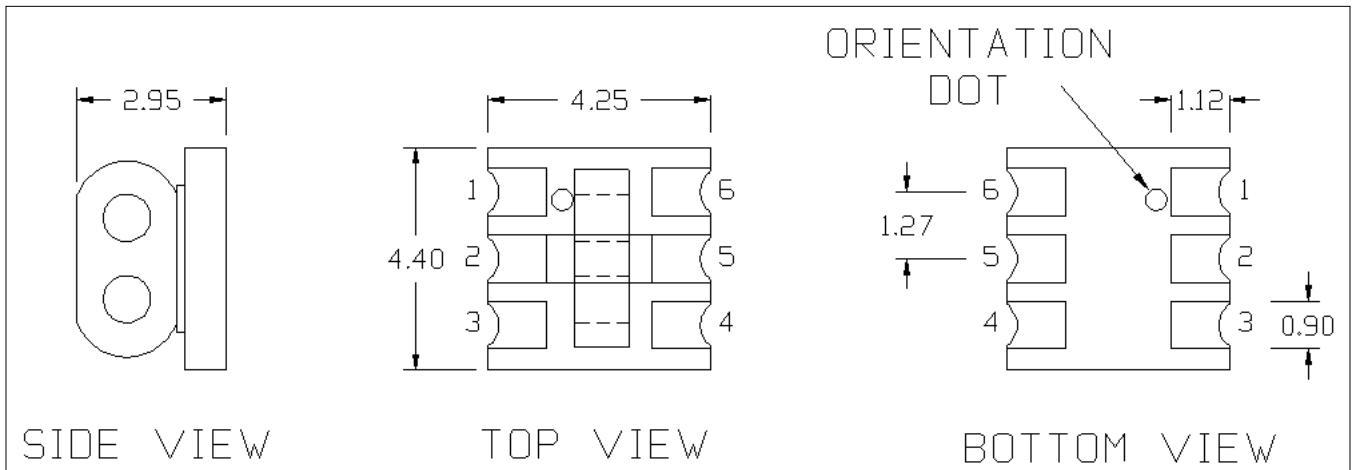
## Typical Performance Curves



### Recommended Land Pattern

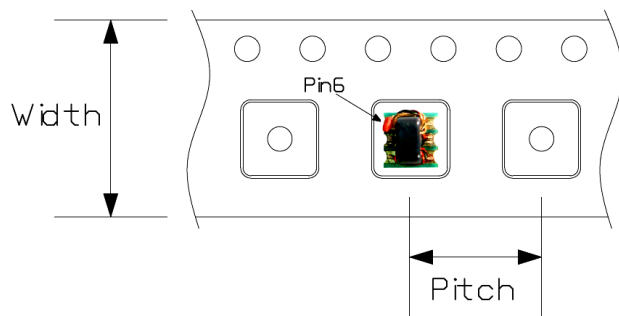


### Part Outline Drawing<sup>10,11,12,13</sup>



- 10. Dimensions in mm.
- 11. Tolerance:  $\pm 0.2$  mm unless otherwise noted.
- 12. Model number and lot code printed on reel.
- 13. Finish: Electroless Nickel Immersion Gold.

### Carrier Tape Orientation

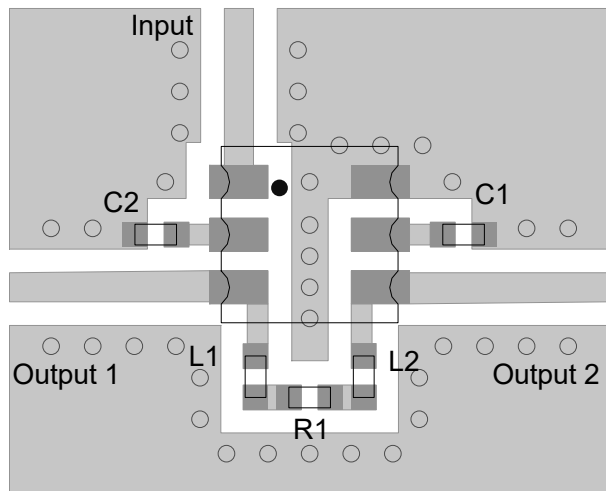


### Tape & Reel Information

Parameter	Units	Value
Qty Per Reel	-	2000
Reel Size	mm	330
Tape Width	mm	12.00
Pitch	mm	8.00
Orientation	-	F31
Reference Application Note ANI-019 for orientation		

## Application Section: 25°C Isolation Optimization

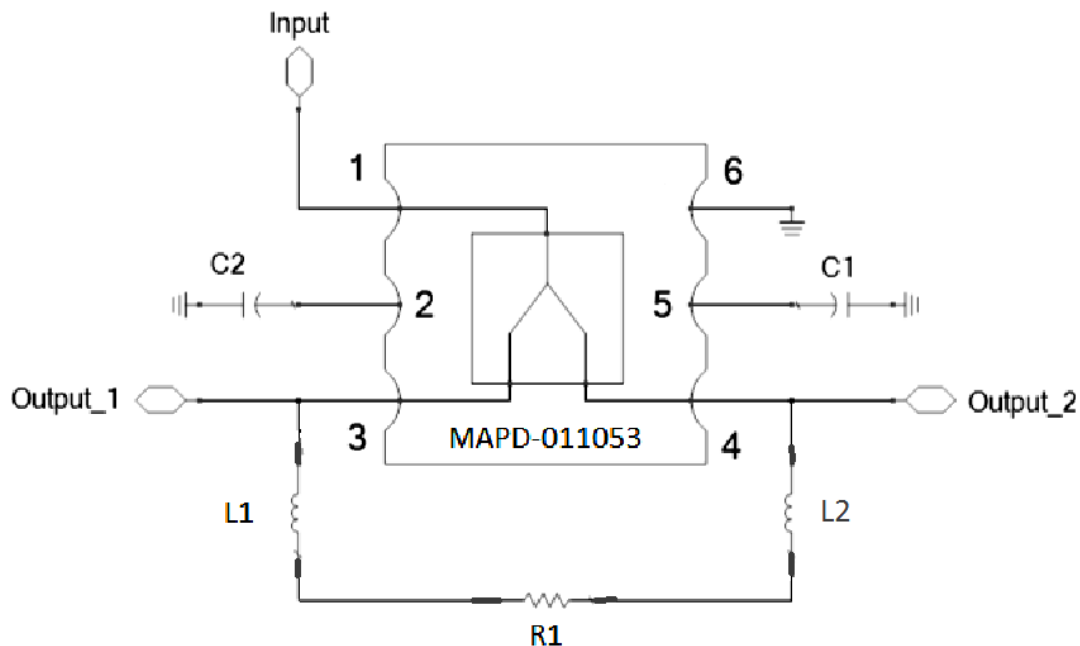
### Recommended Board Layout



### Component List

Part	Value	Case Style
C1, C2	0.5 pF	0402
L1, L2	10 nH	0402
R1	180 Ω	0402

### Application Schematic



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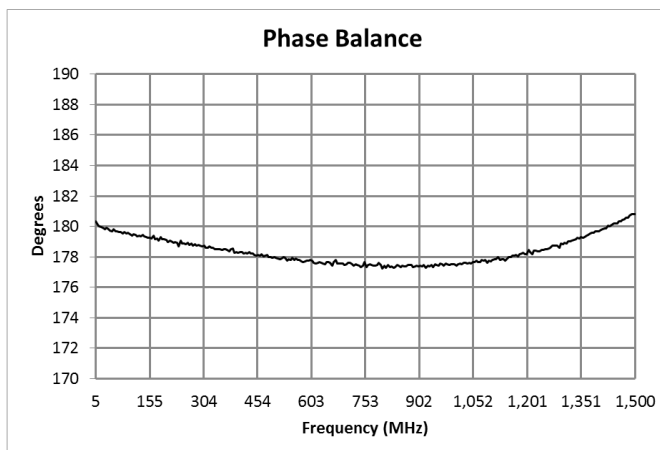
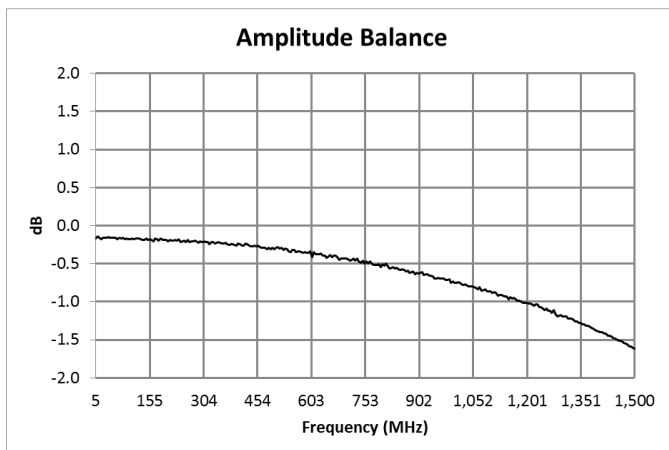
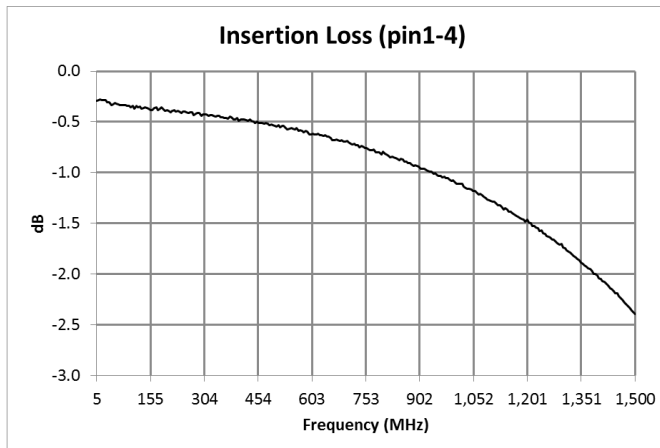
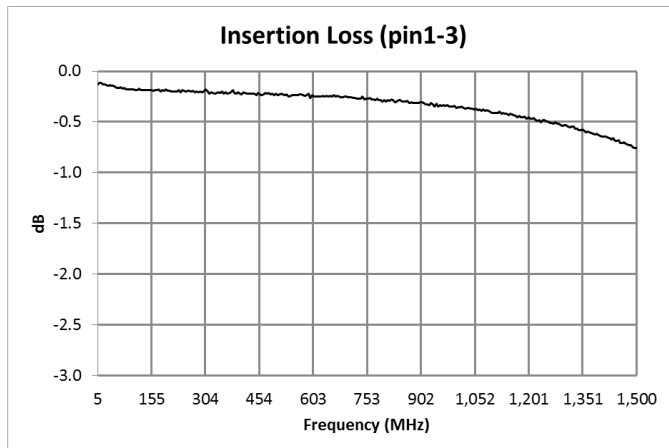
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Electrical Specifications:  $T_A = 25^\circ\text{C}$ ,  $Z_0 = 75 \Omega$ ,  $P_{IN} = 0 \text{ dBm}$

Parameter	Frequency Test Conditions (MHz)	Units	Min.	Typ.	Max.
Power Split	—	dB	—	3	—
Insertion Loss 1 (pin 1 - pin 3)	5 - 700 700 - 1218	dB	—	0.25 0.40	—
Insertion Loss 2 (pin 1 - pin 4)	5 - 700 700 - 1218	dB	—	0.6 1.2	—
Amplitude Balance	5 - 700 700 - 1218	dB	—	0.3 0.8	—
Phase Balance	5 - 700 700 - 1218	degree	—	2 3	—
Input Return Loss (pin 1)	5 - 700 700 - 1218	dB	—	34 24	—
Output Return Loss (pin 3)	5 - 700 700 - 1218	dB	—	25 20	—
Output Return Loss (pin 4)	5 - 700 700 - 1218	dB	—	26 18	—
Isolation (pin 4 - pin 3)	5 - 100 100 - 700 700 - 1218	dB	—	35 44 34	—

## Application Section: 25°C Isolation Optimization

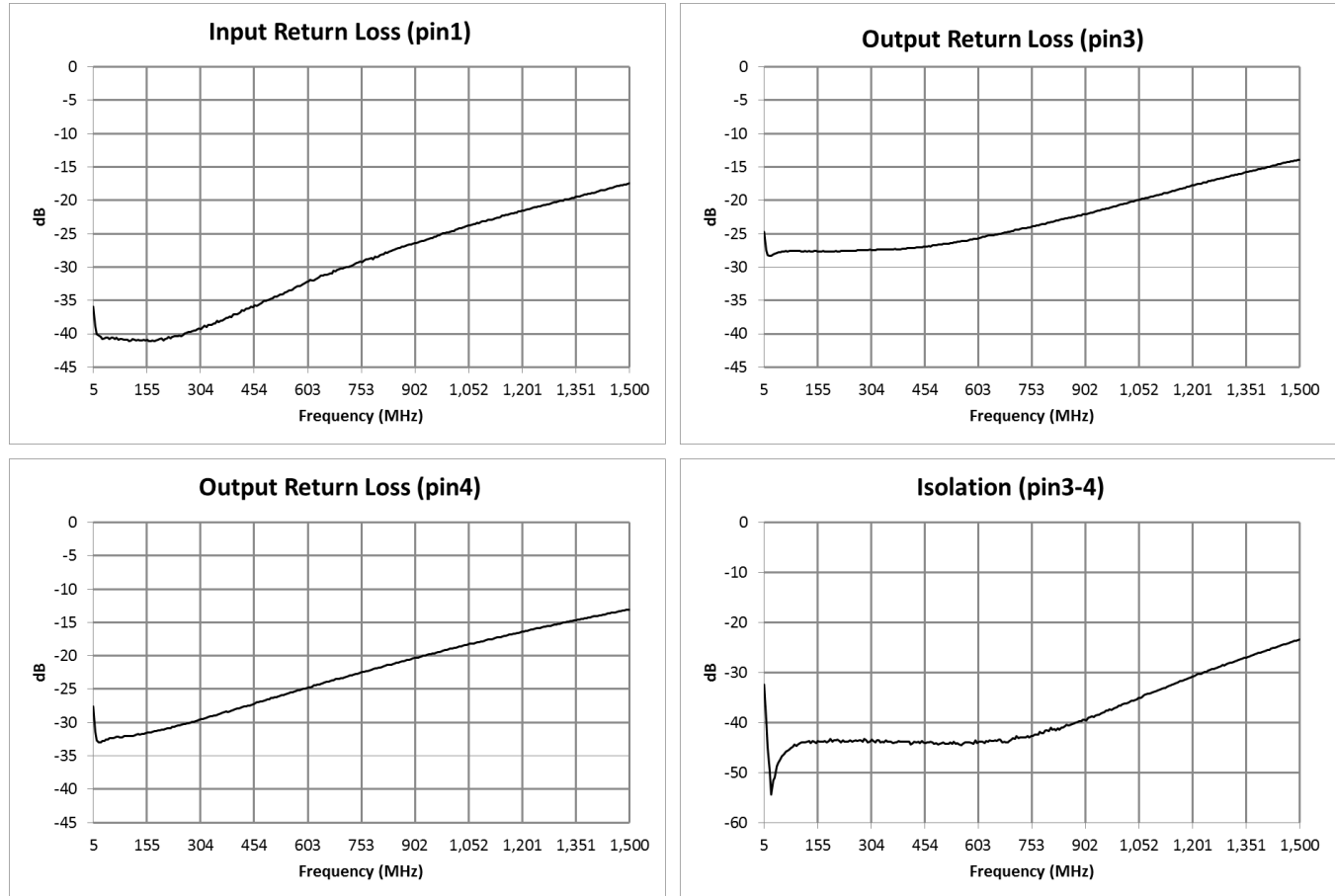
### Typical Performance Curves





## Application Section: 25°C Isolation Optimization

### Typical Performance Curves



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