

Power Divider: Two Way, Zero Degree 5 - 3250 MHz



MAPD-011058

Rev. V1

Features

- Wide Bandwidth
- Low Insertion Loss
- Excellent Amplitude balance
- Small Surface Mount assembly
- Available on Tape & Reel
- RoHS* Compliant and Lead Free
- 260°C Reflow Compatible

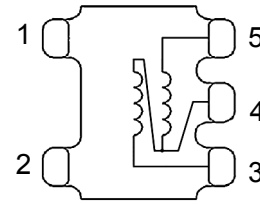
Applications

- CATV Broadband

Description

The MAPD-011058 is a two way, zero degree power divider covering a wide bandwidth

Functional Schematic



Pin Configuration³

Pin #	Function	Pin #	Function
1,2	Not used (Ground)	4	Input
3	Output 1	5	Output 2

3. The exposed pad centered on the package bottom must be connected to RF, DC and thermal ground.

Electrical Specifications: Freq. = 5 - 3250 MHz, T_A = 25°C, Z₀ = 75 Ω, P_{IN} = 0 dBm

Parameter	Test Conditions Frequency (MHz)	Units	Min.	Typ.	Max.
Insertion Loss	5 - 1000	dB	—	0.6	1.0
	1000 - 2400			0.8	1.3
	2400 - 3250			0.8	1.6
Amplitude Balance	5 - 1000	dB	-0.4	0.0	0.4
	1000 - 2400		-0.8	0.0	0.8
	2400 - 3250		-1.0	0.0	1.0
Phase Balance	5 - 2400	°	-5.0	0.1	5.0
	2400 - 3250		-7.0	0.2	7.0
Input Return Loss	5 - 2400	dB	7	9.2	—
	2400 - 3250		6	8.5	—
Output Return Loss	5 - 2400	dB	4	8.0	—
	2400 - 3250		3	5.5	—
Isolation	5 - 50	dB	7	13	—
	50 - 2400		13	20	—
	2400 - 3250		9	14	—

Ordering Information^{1,2}

Part Number	Package
MAPD-011058	2000 piece reel
MAPD-011058-TB	Sample Board

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

Absolute Maximum Ratings^{4,5}

Parameter	Absolute Maximum
Input RF Power ⁶	1 W
DC Current	0.5 A
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.

* Restrictions on Hazardous Substances, compliant to current RoHS EU directive.

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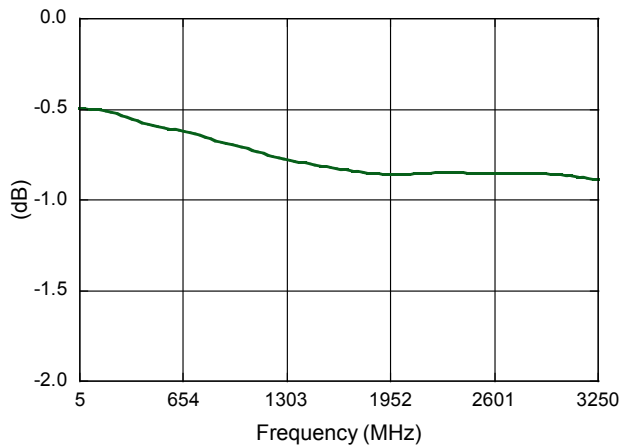


MAPD-011058

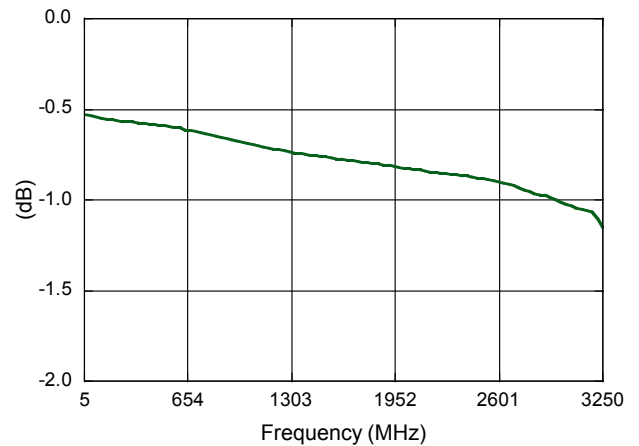
Rev. V1

Typical Performance Curves⁷: Freq. = 5 - 3250 MHz, $T_A = +25^\circ\text{C}$, $Z_0 = 75 \Omega$, $P_{IN} = 0 \text{ dBm}$

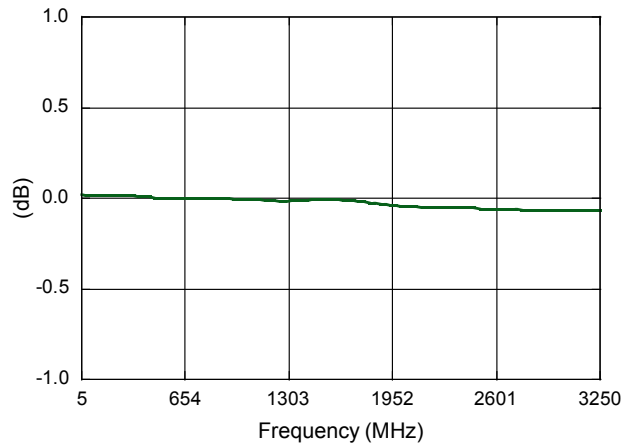
Insertion Loss 1 (pin 4-3)



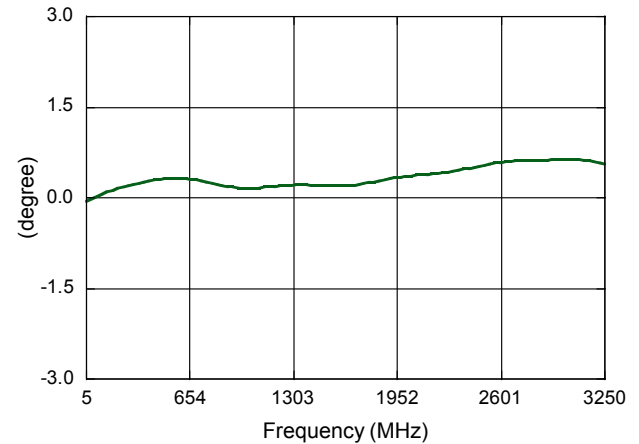
Insertion Loss 2 (pin 4-5)



Amplitude Balance



Phase Balance



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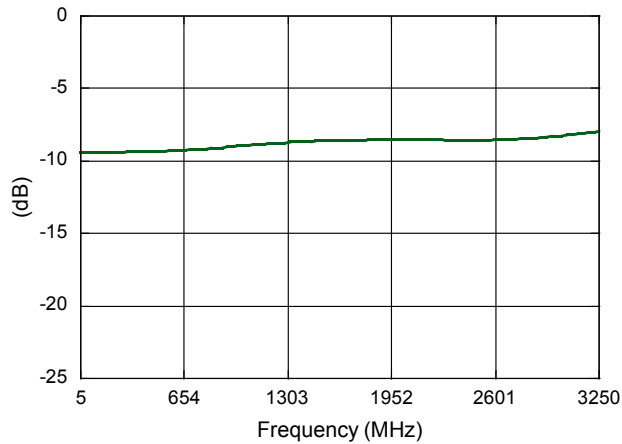


MAPD-011058

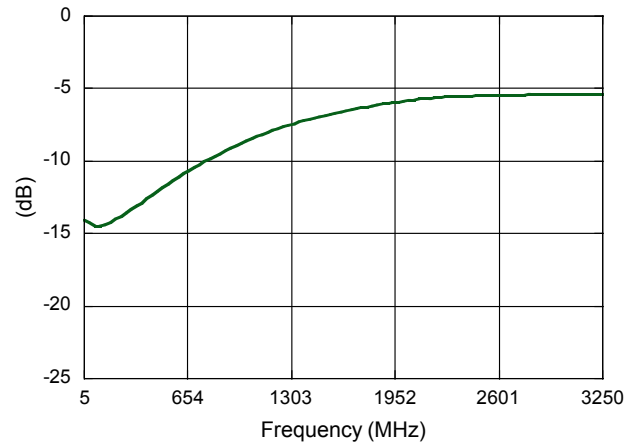
Rev. V1

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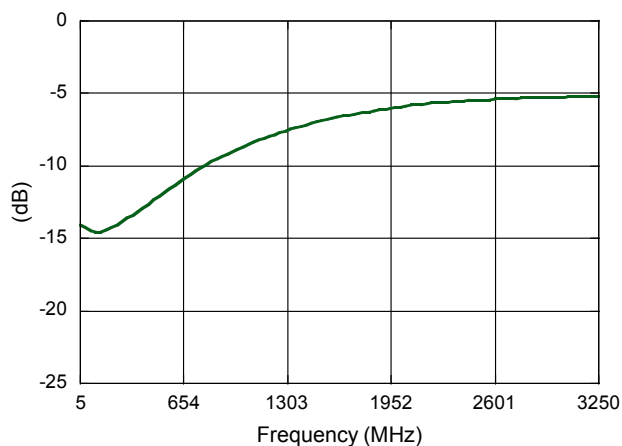
Input Return Loss (pin 4)



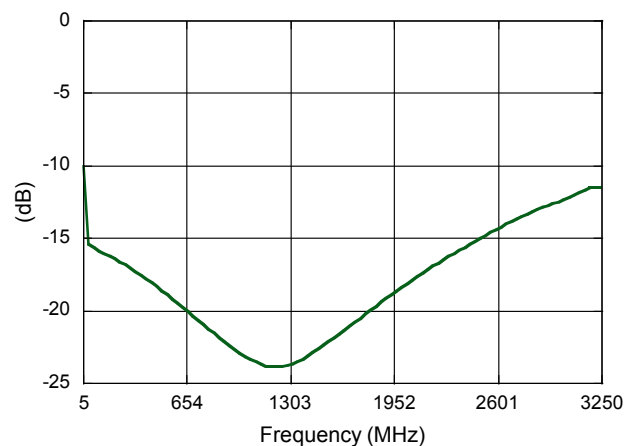
Output Return Loss 1 (pin 3)



Output Return Loss (pin 5)

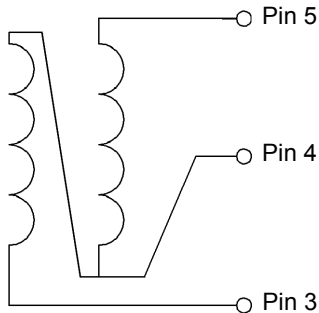


Isolation (pin 3-5)

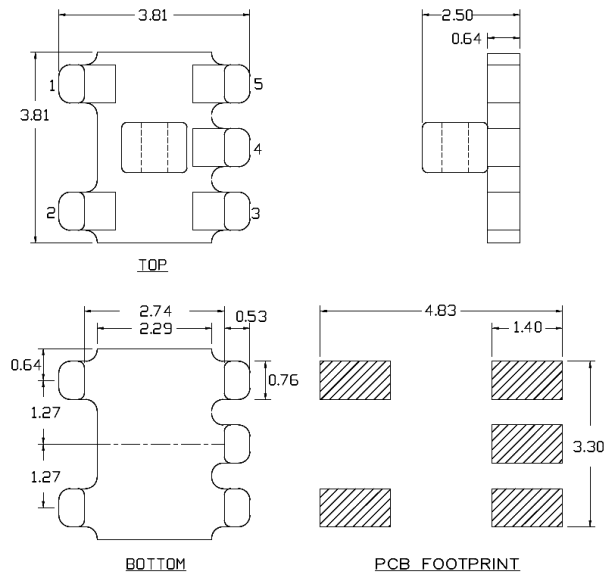


7. Temperature plots available on request.

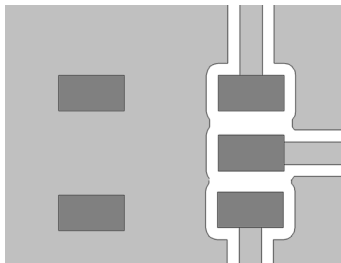
Application Schematic



Outline Drawing^{10,11,12,13}



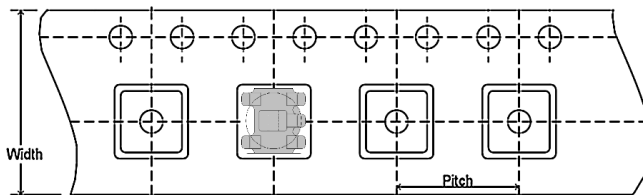
Recommended Board Layout^{8,9}



8. Recommended PCB layout shown above uses Rogers RO4350B substrate, thickness 0.254 mm.
9. Grounded coplanar wave guide trace, width 0.48 mm and Gap 0.25 mm.

10. Dimensions in mm.
11. Tolerance: ± 0.2 mm unless otherwise noted.
12. Model number and lot code are printed on the reel.
13. Plating finish: ENIG.

Carrier Tape Orientation



Tape & Reel Information¹⁴

Parameter	Units	Value
Qty per Reel	—	2000
Reel Size	mm	330
Tape Width	mm	12.00
Pitch	mm	8.00
Orientation	—	F33

14. Reference Application Note ANI-019 for orientation.

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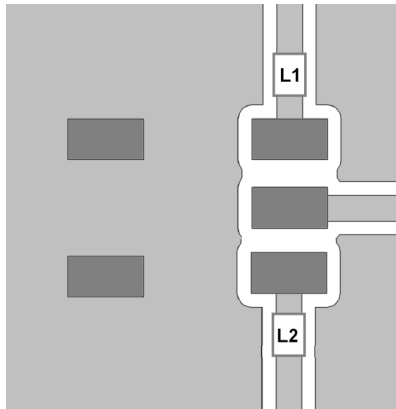


MAPD-011058

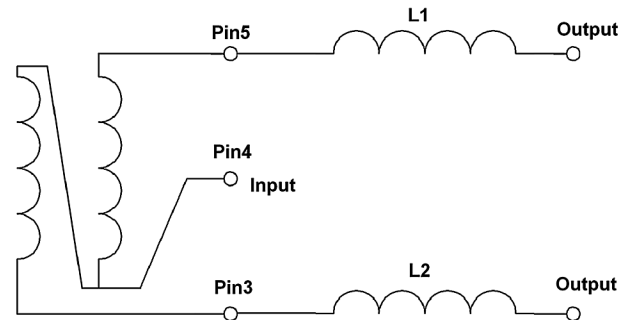
Rev. V1

Recommended External Matching for Improved Performance

PCB Layout



Schematic Including off Chip Components



Parts List

Component	Value	Package
L1 & L2	3.3 nH	0402

Electrical Specifications: Freq. = 5 - 3250 MHz, $T_A = 25^\circ\text{C}$, $Z_0 = 75 \Omega$, $P_{IN} = 0 \text{ dBm}$

Parameter	Test Conditions Frequency (MHz)	Units	Min.	Typ.	Max.
Insertion Loss	5 - 1000	dB	—	0.6	—
	1000 - 2400			0.5	
	2400 - 3250			0.4	
Amplitude Balance	5 - 1000	dB	—	0.0	—
	1000 - 2400			0.1	
	2400 - 3250			0.2	
Phase Balance	5 - 2400	°	—	0.8	—
	2400 - 3250			0.2	
Input Return Loss	5 - 2400	dB	—	10	—
	2400 - 3250			17	
Output Return Loss	5 - 2400	dB	—	10	—
	2400 - 3250			14	
Isolation	5 - 50	dB	—	13	—
	50 - 2400			20	
	2400 - 3250			14	

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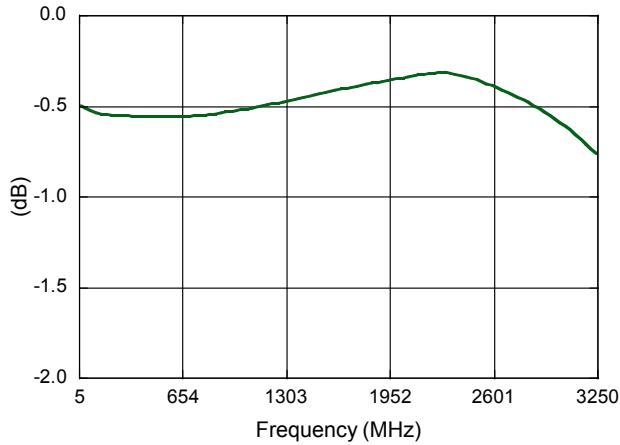
MAPD-011058

Rev. V1

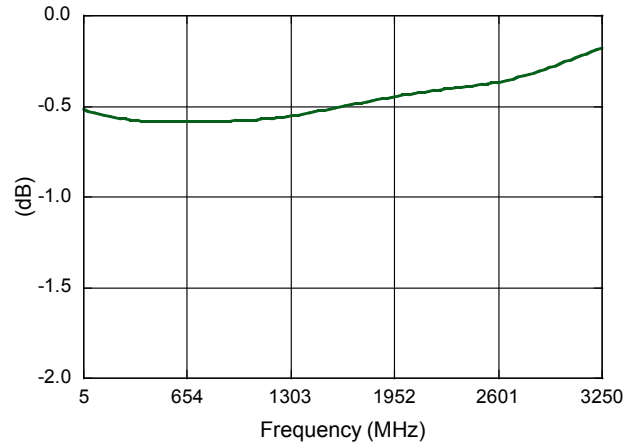
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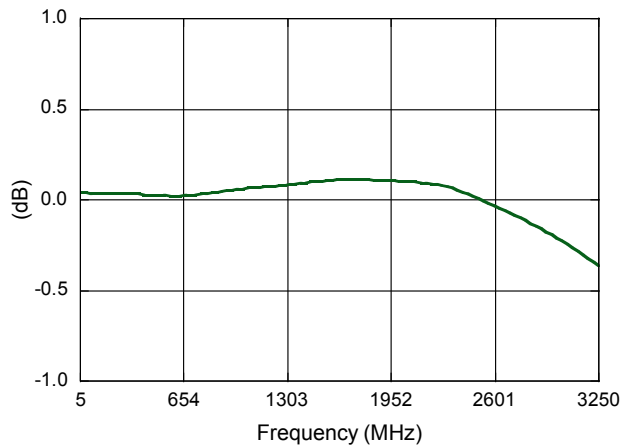
Insertion Loss 1 (pin 4-3)



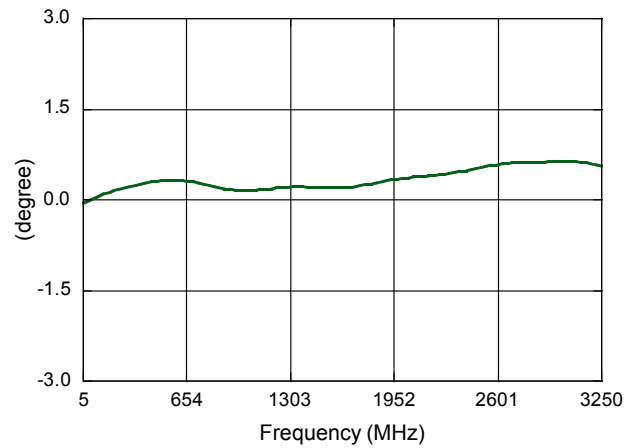
Insertion Loss 2 (pin 4-5)



Amplitude Balance



Phase Balance



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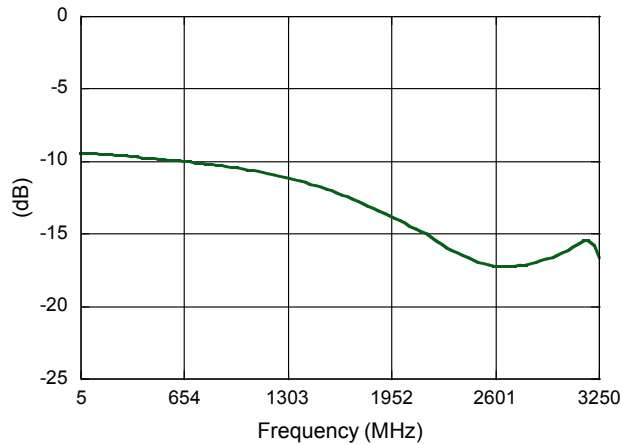
MAPD-011058

Rev. V1

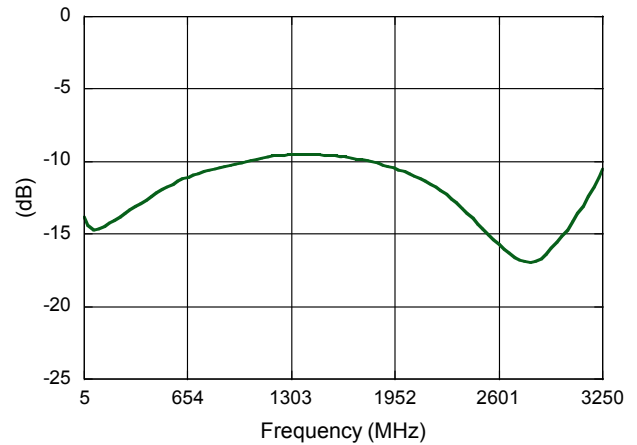
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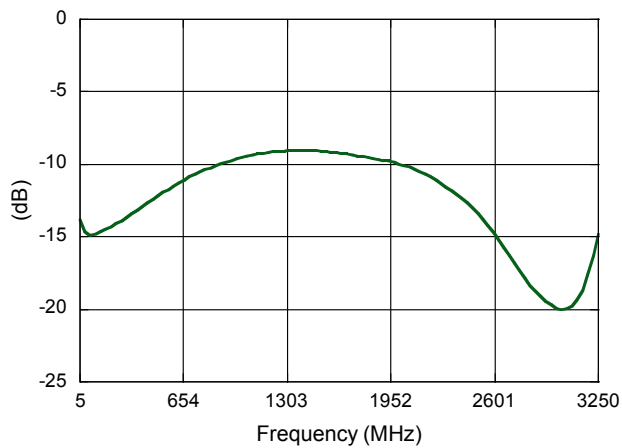
Input Return Loss (pin 4)



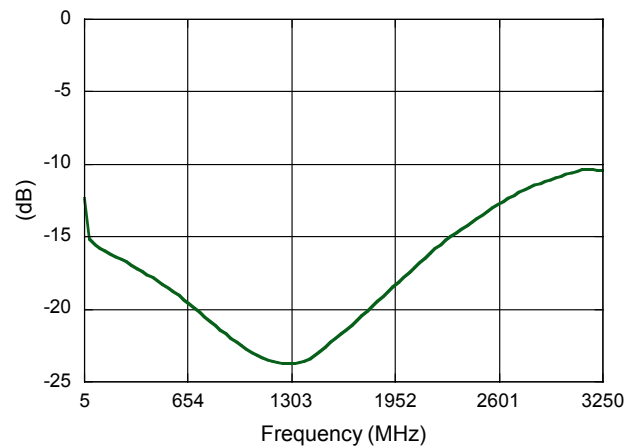
Output Return Loss 1 (pin 3)



Output Return Loss (pin 5)



Isolation (pin 3-5)



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5 - 3250 MHz



MAPD-011058

Rev. V1

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