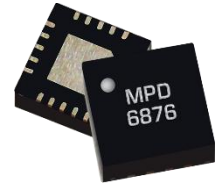


1 Device Overview

1.1 General Description

MPD-0226SM is a MMIC 2-way Wilkinson power divider. Passive GaAs MMIC technology allows production of smaller constructions that replace larger form factor circuit board constructions. Tight fabrication tolerances result in less unit to unit variation than traditional power divider technologies, allowing for accurate simulations using the provided S3P file taken from measured production units. Power dividers are passive reciprocal devices that can be used either as power combiners or as power dividers. Applications include Radar, Satcom, EW and test equipment. The MPD-0226SM is available as a 4 X 4 mm QFN package. Evaluation boards are also available.

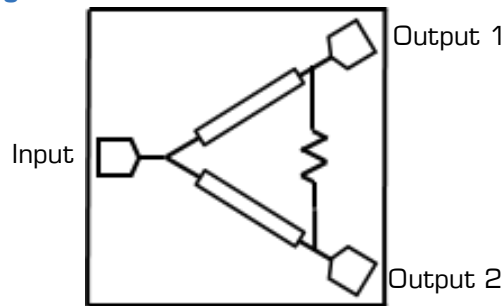


QFN

1.2 Features

- 2 GHz to 26.5 GHz In-phase Power splitting
- 20 dB Typical Output to Output Isolation
- Outstanding phase and amplitude balance
- RoHS Compliant
- S3P data [MPD-0226SM.zip](#)

1.3 Functional Block Diagram



1.4 Part Ordering Options¹

Part Number	Description	Package	Green Status	Product Lifecycle	Export Classification
MPD-0226SM	4 X 4 mm QFN	SM	RoHS	Active	EAR99
EVAL-MPD-0226	Connectorized Evaluation Fixture	Eval	RoHS	Active	EAR99

¹ Refer to our [website](#) for a list of definitions for terminology presented in this table.

Table of Contents

1	Device Overview	1	3	Specifications	4
1.1	General Description	1	3.1	Absolute Maximum Ratings	4
1.2	Features	1	3.2	Package Information.....	4
1.3	Functional Block Diagram	1	3.3	Electrical Specifications ¹	4
1.4	Part Ordering Options.....	1	3.4	Typical Performance Plots	5
2	Port Configurations and Functions	3	4	Mechanical Data.....	6
2.1	Port Diagram.....	3	4.1	SM Package Outline Drawing	6
2.2	Port Functions	3	4.2	SM Package Footprint	6
			4.3	Evaluation Board outline	7

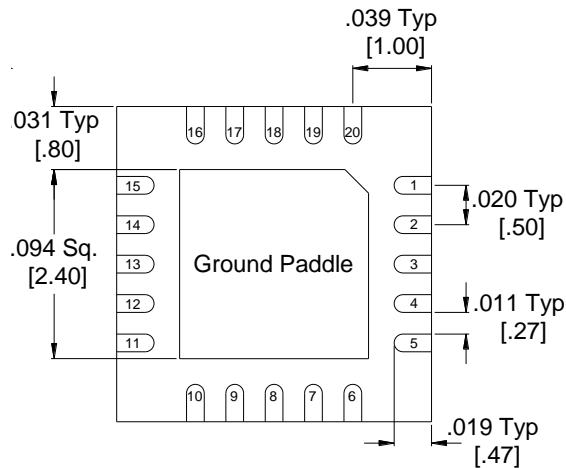
Revision History

Revision Code	Revision Date	Comment
-	June 2020	Initial Datasheet Release
A	January 2021	Specs table update
B	March 2022	Power Handling Specs Updated

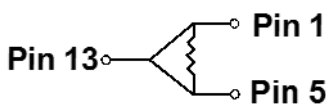
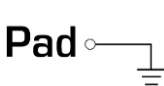
2 Port Configurations and Functions

2.1 Port Diagram

A bottom-up view of the MPD-0226SM's SM package outline drawing is shown below. The MMIC Power dividers are passive reciprocal devices allowing either power splitting or power combining.



2.2 Port Functions

Port	Function	Description	Equivalent Circuit
Pin 1	Output 1	The output 1 port is DC short to the other two ports and open to ground.	
Pin 5	Output 2	The output 2 port is DC short to the other two ports and open to ground.	
Pin 13	Input/common	The common port is DC short to the other two ports and open to ground.	
Pad	Ground	SM package ground path is provided through the ground paddle.	

3 Specifications

3.1 Absolute Maximum Ratings

The Absolute Maximum Ratings indicate limits beyond which damage may occur to the device. If these limits are exceeded, the device may be inoperable or have a reduced lifetime.

Parameter	Maximum Rating	Units
DC Current	60	mA
RF Power Handling as a Power Divider ¹	20	W
RF Power Handling as a Power Combiner ²	2	W
Operating Temperature	-55 to +100	°C
Storage Temperature	-65 to +125	°C

¹Based >40W Power handling test as a splitter without failure at room temperature at 2.5GHz with matched loads

²Based on 3W failure with out of phase signals at room temperature at 2.5GHz with matched loads

3.2 Package Information

Parameter	Details	Rating
ESD	Human Body Model (HBM), per MIL-STD-750, Method 1020	N/A

3.3 Electrical Specifications¹

The electrical specifications apply at $T_A=+25^{\circ}\text{C}$ in a 50Ω system.

Min and Max limits are guaranteed at $T_A=+25^{\circ}\text{C}$.

Parameter	Frequency (GHz)	Min	Typ.	Max	Units	
Nominal Power Splitting	2-26.5		3		dB	
Excess Insertion Loss ²	2-20		1.5	4	dB	
	20-26.5		3	6		
Nominal Phase Shift	2-26.5		0		Degrees	
Amplitude Balance			0.2	0.8	dB	
Phase Balance			2	8.5	Degrees	
VSWR				1.25		
Isolation				20		dB
Impedance				50		Ω

¹ All measured data is taken from the eval board without de-embedding of the connectors and traces.

² Excess Insertion Loss = (Common Port to Output Port Insertion Loss) – 3 dB.

3.4 Typical Performance Plots

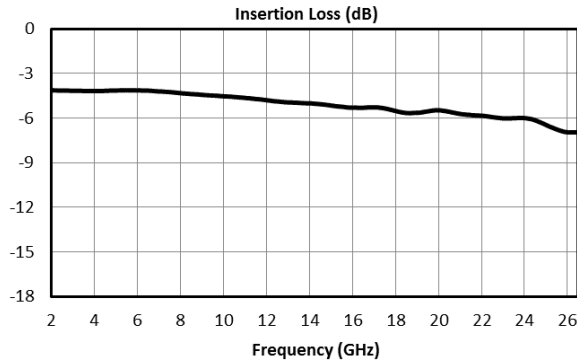


Fig. 1. Total Insertion loss (Common to output port)

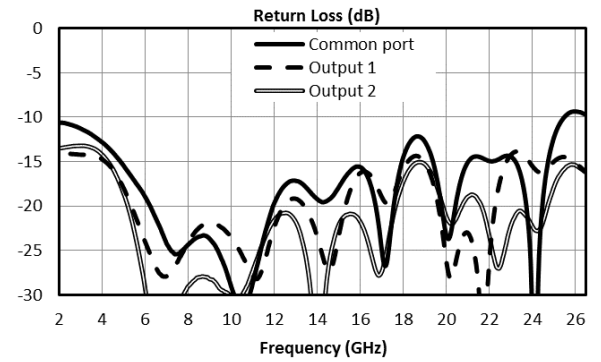


Fig. 2. Return loss for common port and output ports.

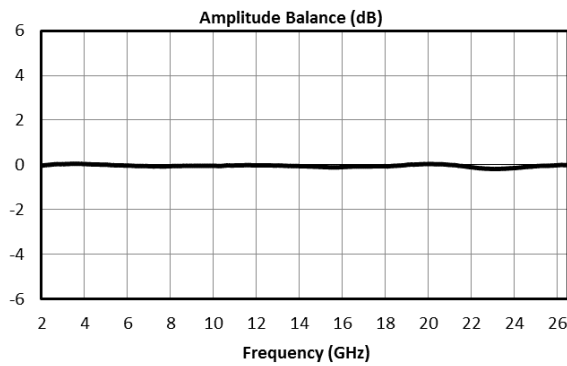


Fig. 3. Amplitude balance between output ports.

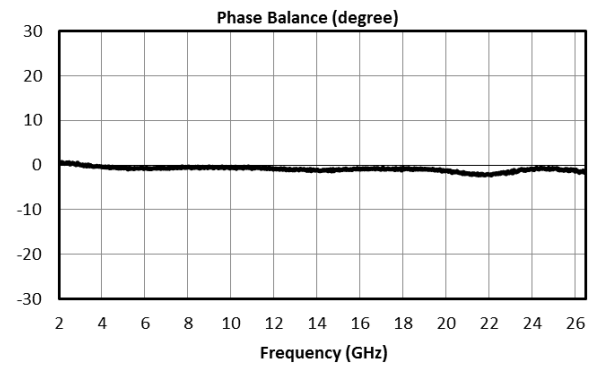


Fig. 4. Phase balance between output ports.

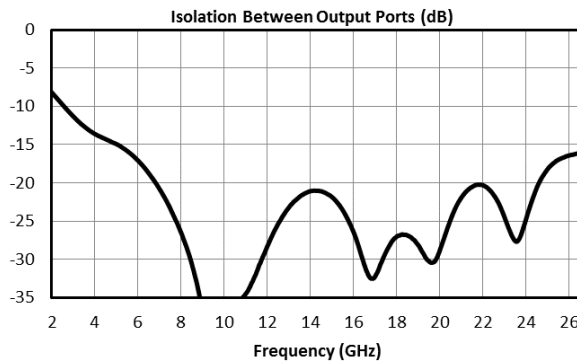
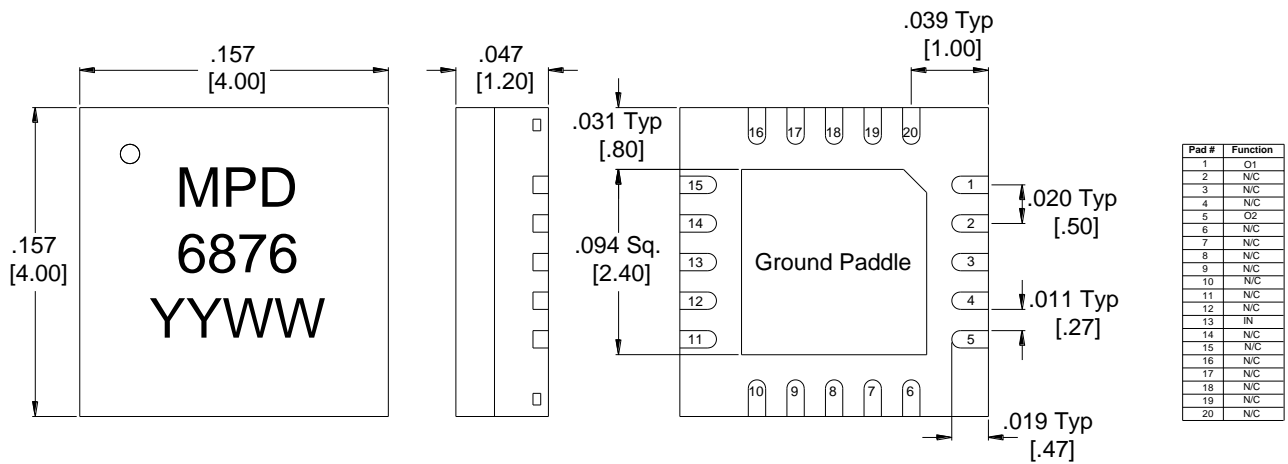


Fig. 5. Isolation between differential ports

4 Mechanical Data

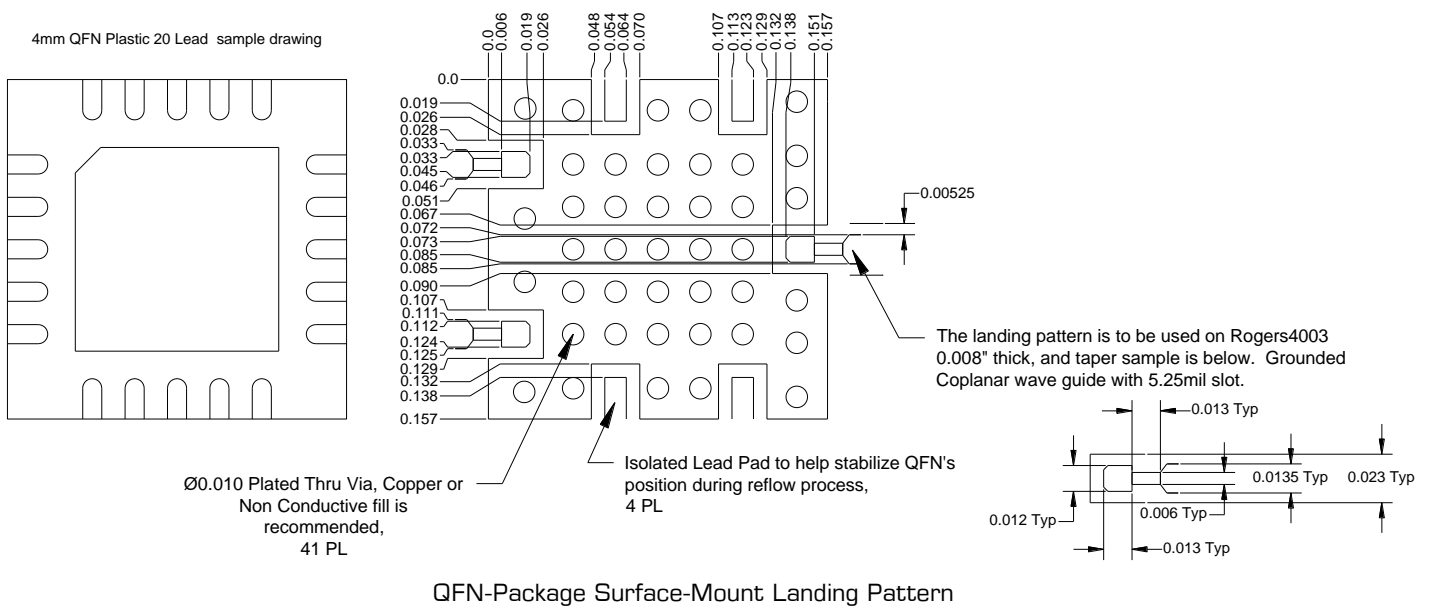
4.1 SM Package Outline Drawing



Notes:

- Substrate material is LCP.
- I/O Leads and Ground Paddle plating is (from base to finish):
 Ni: 0.5um MIN
 Pd: 0.02um MIN
 Au: 0.05um MAX
- All unconnected pins should be connected to PCB RF ground.

4.2 SM Package Footprint

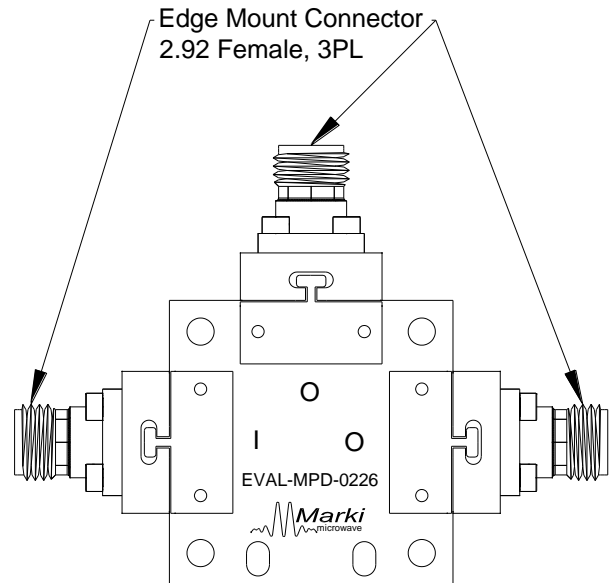
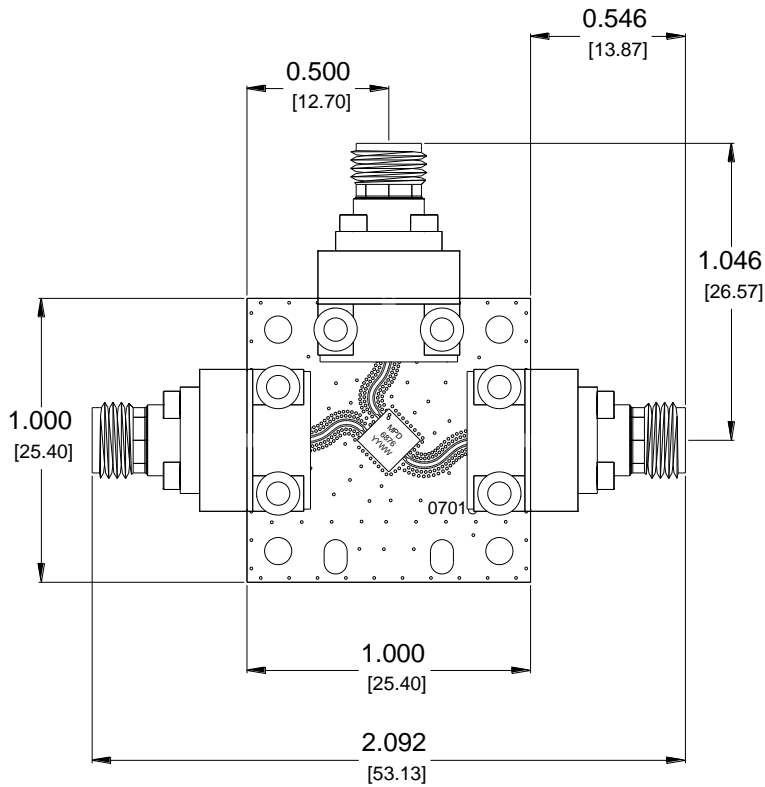
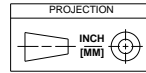


[Click here for a DXF of the above layout.](#)

[Click here for leaded solder reflow.](#) [Click here for lead-free solder reflow.](#)

4.3 Evaluation Board outline

All measurements are typical



Backside Label

Marki Microwave reserves the right to make changes to the product(s) or information contained herein without notice.
 Marki Microwave makes no warranty, representation, or guarantee regarding the suitability of its products for any particular purpose, nor does Marki Microwave assume any liability whatsoever arising out of the use or application of any product.