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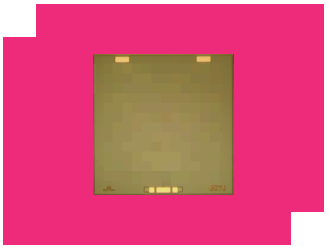
MPD-0226CH

2-26.5 GHz MMIC 2-way Power Divider/Combiner

DEVICE OVERVIEW

General Description

MPD-0226CH 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. Low unit to unit variation allows for accurate simulations using the provided measured S3P files which include the effects of the bond wires for the die and the housing for the module. 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-0226CH is available as a bare die.



Download s-parameters here

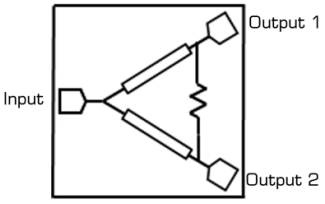
Features

- 2 GHz to 26.5 GHz In-phase Power splitting
- 20 dB Typical Output to Output Isolation
- Outstanding phase and amplitude balance
- 20W as a power divider, 2W as a combiner

Applications

- Radar
- SATCOM
- Electronic Warfare
- Test Equipment

Functional Block Diagram



Part Ordering Options

Part Number	Description	Package	Green Status	Product Lifecycle	Export Classification
MPD-0226CH	2-26.5 GHz MMIC 2-way Power Divider/Combiner	CH	REACH RoHS	Released	EAR99

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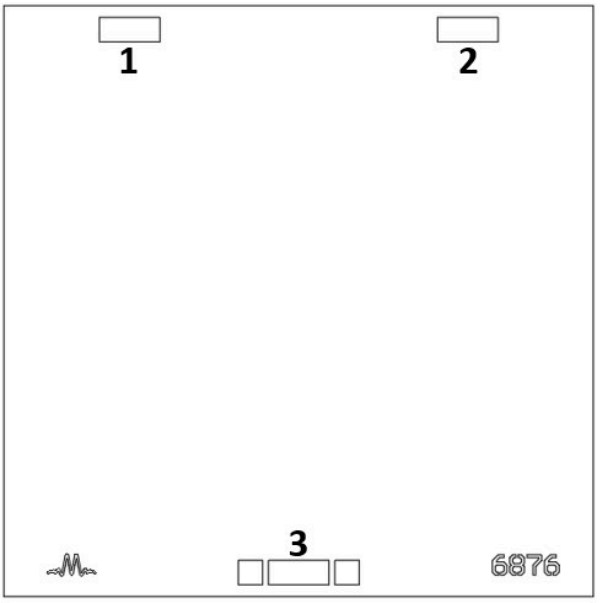
Revision History

Revision Code	Revision Date	Comment
-	2021-11-01	Initial Datasheet Release
G0	2025-12-17	Power Handling Updated

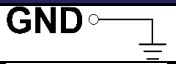
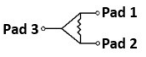
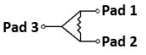
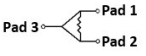
Port Configuration and Functions

Port Diagram

A top-down view of the MPD-0226CH's bare die outline drawing is shown below. The MMIC Power dividers are passive reciprocal devices allowing either power splitting or power combining.



Port Functions

Port	Function	Description	DC Equivalent Circuit
GND	Ground	CH package ground path is provided through the substrate and ground bond pads.	
Pad 1	Output 1	The output 1 port is DC short to the other two ports and open to ground.	
Pad 2	Output 2	The output 2 port is DC short to the other two ports and open to ground	
Pad 3	Input/common	The common port is DC short to the other two ports and open to ground.	

Specifications

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	Unit
DC Current	60	mA
Maximum Operating Temperature	100	°C
Maximum Storage Temperature	125	°C
Minimum Operating Temperature	-55	°C
Minimum Storage Temperature	-65	°C
RF Power Handling as a Power Combiner [1]	2	W
RF Power Handling as a Power Divider [2]	20	W

[1] Based on 3W failure with out of phase signals at room temperature at 2.5GHz with matched loads
[2] Based >40W Power handling test as a splitter without failure at room temperature at 2.5GHz with matched loads

Package Information

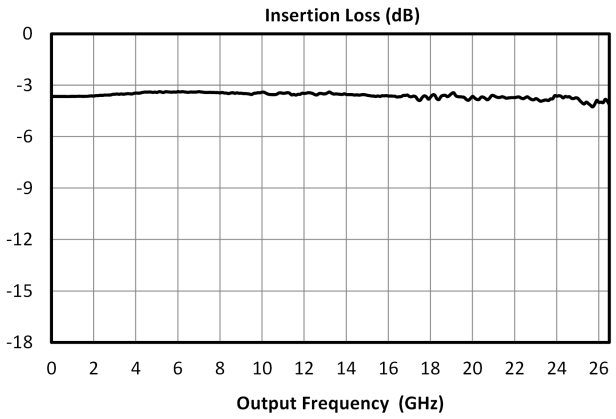
Parameter	Details	Rating
Dimensions	-	2.44 x 2.44 mm

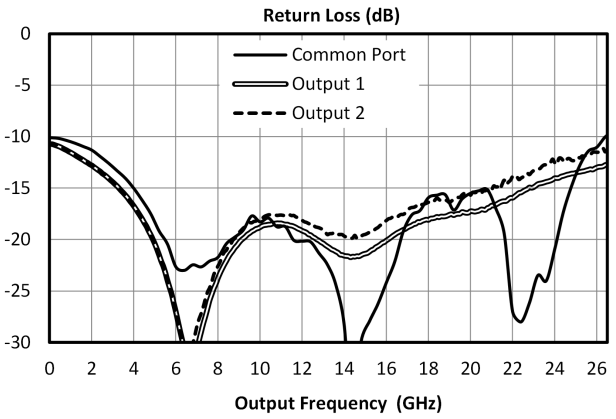
Electrical Specifications

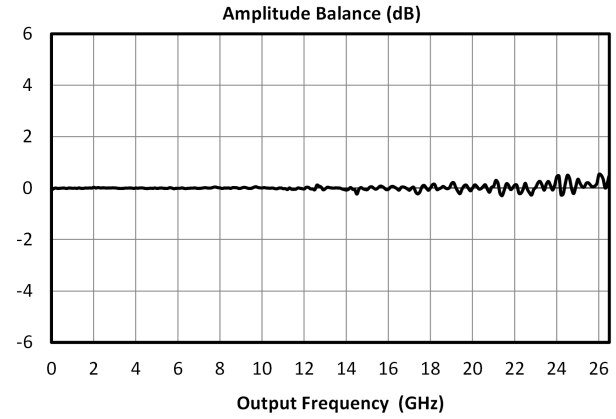
Parameter	Test Conditions	Minimum Frequency (GHz)	Maximum Frequency (GHz)	Min	Typ	Max	Unit
Amplitude Balance	-	2	26.5	-	0.2	1.2	dB
Excess Insertion Loss [1]	-	20	26.5	-	1.5	2	dB
Excess Insertion Loss [2]	-	2	20	-	1	1.5	dB
Impedance	-	-	-	-	50	-	Ω
Isolation	-	2	26.5	-	20	-	dB
Nominal Phase Shift	-	2	26.5	-	0	-	°
Nominal Power Splitting	-	2	26.5	-	3	-	dB
Phase Balance	-	2	26.5	-	2	10	°
VSWR	-	2	26.5	-	1.35	-	

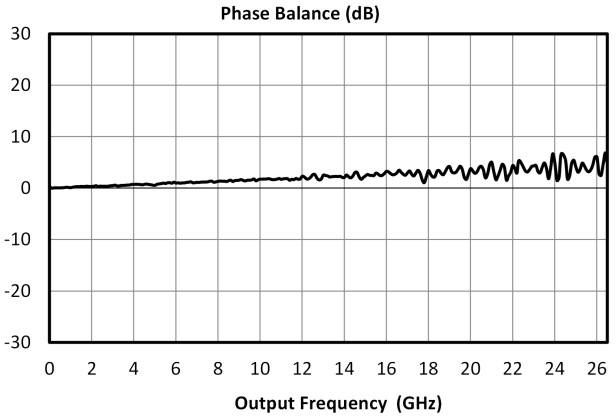
[1][2] Excess Insertion Loss = (Input Port to Common Port Insertion Loss) - 3dB

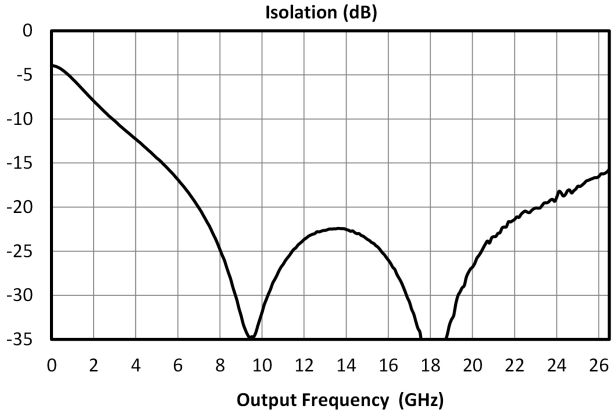
Typical Performance Plots











Die Mounting Recommendations

Mounting and Bonding Recommendations

Marki MMICs should be attached directly to a ground plane with conductive epoxy. The ground plane electrical impedance should be as low as practically possible. This will prevent resonances and permit the best possible electrical performance. Datasheet performance is only guaranteed in an environment with a low electrical impedance ground.

Mounting - To epoxy the chip, apply a minimum amount of conductive epoxy to the mounting surface so that a thin epoxy fillet is observed around the perimeter of the chip. Cure epoxy according to manufacturer instructions.

Wire Bonding - Ball or wedge bond with 0.025 mm (1 mil) diameter pure gold wire. Thermosonic wirebonding with a nominal stage temperature of 150 °C and a ball bonding force of 40 to 50 grams or wedge bonding force of 18 to 22 grams is recommended. Use the minimum level of ultrasonic energy to achieve reliable wirebonds. Wirebonds should be started on the chip and terminated on the package or substrate. All bonds should be as short as possible <0.31 mm (12 mils).

Circuit Considerations – 50 Ω transmission lines should be used for all high frequency connections in and out of the chip. Wirebonds should be kept as short as possible, with multiple wirebonds recommended for higher frequency connections to reduce parasitic inductance. In circumstances where the chip more than .001” thinner than the substrate, a heat spreading spacer tab is optional to further reduce bondwire length and parasitic inductance.

Handling Precautions

General Handling

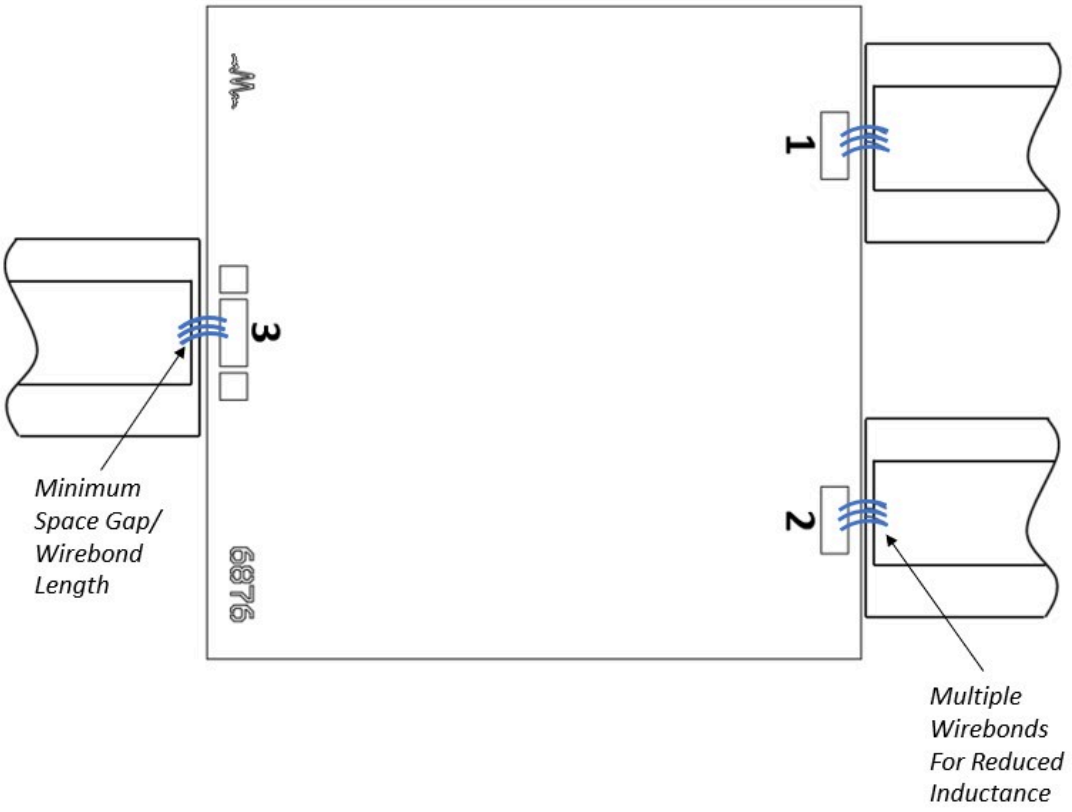
Chips should be handled with care using tweezers or a vacuum collet. Users should take precautions to protect chips from direct human contact that can deposit contaminants, like perspiration and skin oils on any of the chip's surfaces.

Static Sensitivity

GaAs MMIC devices are sensitive to ESD and should be handled, assembled, tested, and transported only in static protected environments.

Cleaning and Storage: Do not attempt to clean the chip with a liquid cleaning system or expose the bare chips to liquid. Once the ESD sensitive bags the chips are stored in are opened, chips should be stored in a dry nitrogen atmosphere.

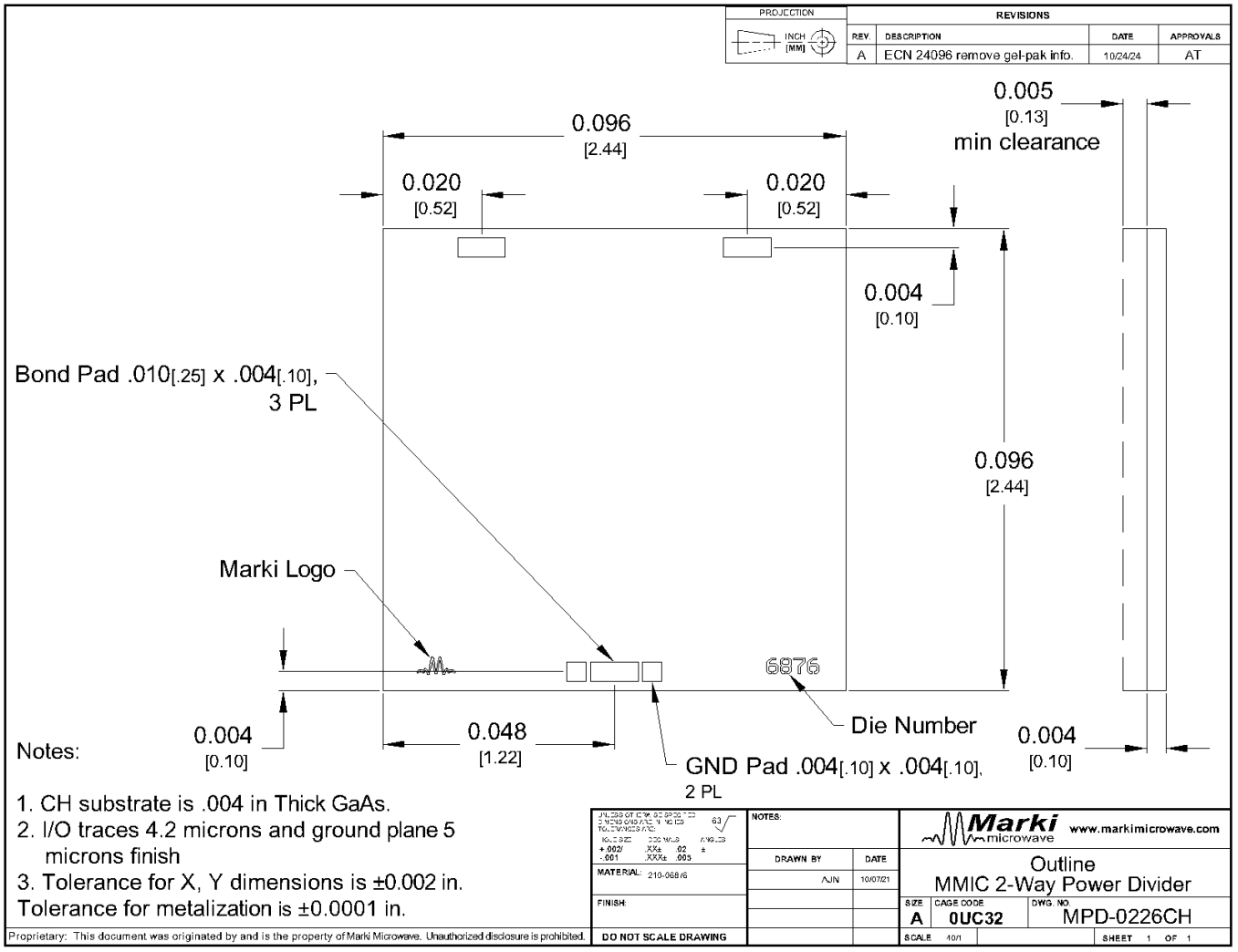
Bonding Diagram



Mechanical Data

Outline Drawing

Download : Outline 2D Drawing



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