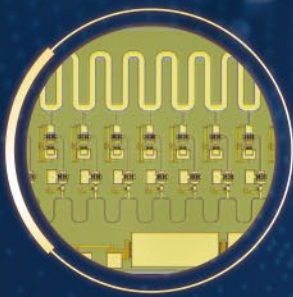


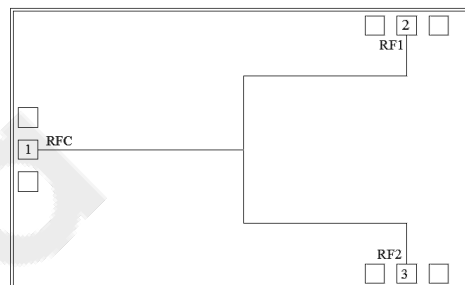
Wideband GaAs & GaN MMIC



Features

- ◆ Wide Frequency Bandwidth
- ◆ Low Insertion Loss and High Isolation
- ◆ Excellent Amplitude-Phase Balance
- ◆ Superior Temperature Stability and High Reliability

Functional Block Diagram



Description

The QTPD106D is a high-performance 2-way 0° GaAs MMIC power divider, covering a wide frequency range from 18 GHz to 26 GHz. It features low typical insertion loss of 0.65 dB and excellent port isolation up to 23 dB, with all ports perfectly matched to 50 Ω. Fully passive and bias-free, this MMIC offers outstanding broadband performance and high reliability, ideal for microwave communication systems, radar equipment, and RF front-end signal distribution scenarios.

Electrical Specifications :TA = +25°C, Pin=0dBm

Parameters	Min	Typ	Max	Units
Frequency	18		26	GHz
Nominal Splitter Loss		3		dB
Insertion Loss		0.65	0.8	dB
Insertion Loss Flatness		±0.1		dB
Input Return Loss		-20		dB
Output Return Loss		-25		dB
Amplitude Imbalance		±0.05		dB
Phase Imbalance		±0.1		deg
Isolation	18	23		dB

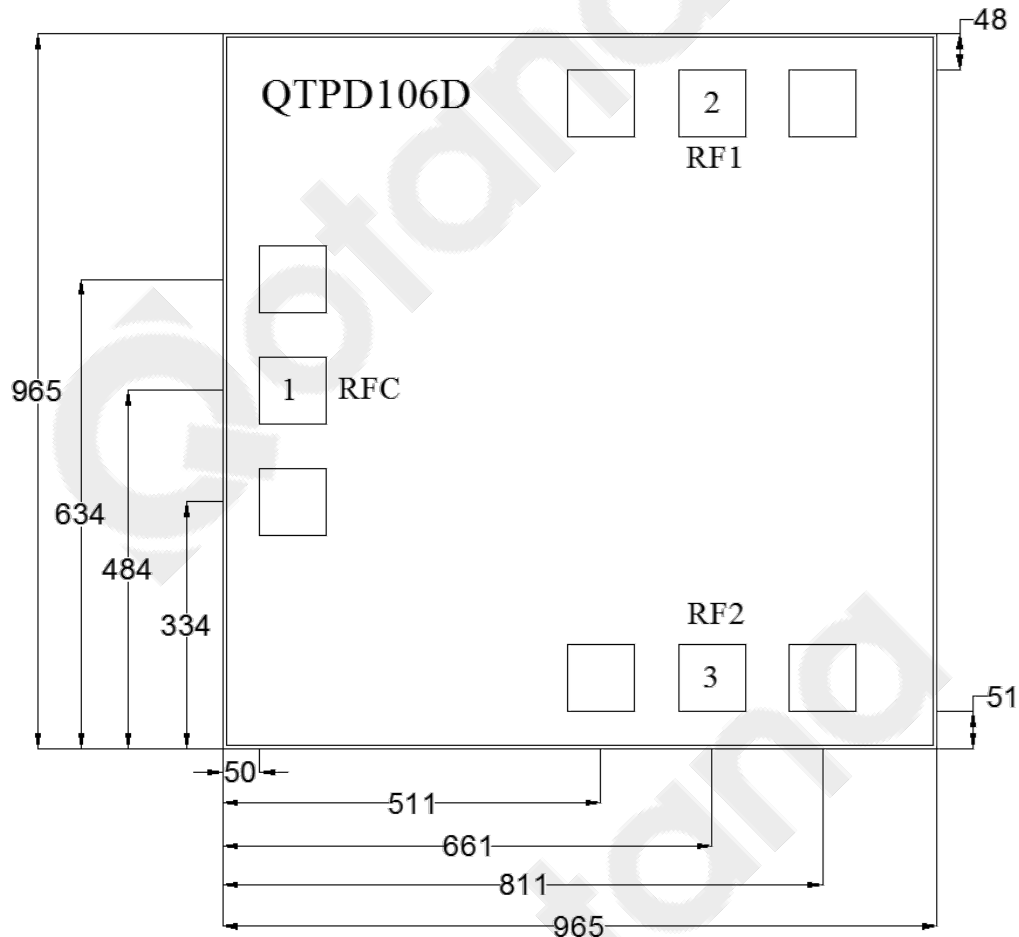
Absolute Maximum Ratings

Parameter	Rating
RF Input Power	+40dBm
Operating Temperature	-55°C to +85°C
Storage Temperature	-65°C to +150°C

Ordering Information

Part No.	Package	Description
QTPD106D	Die	18-26 GHz Power Divider

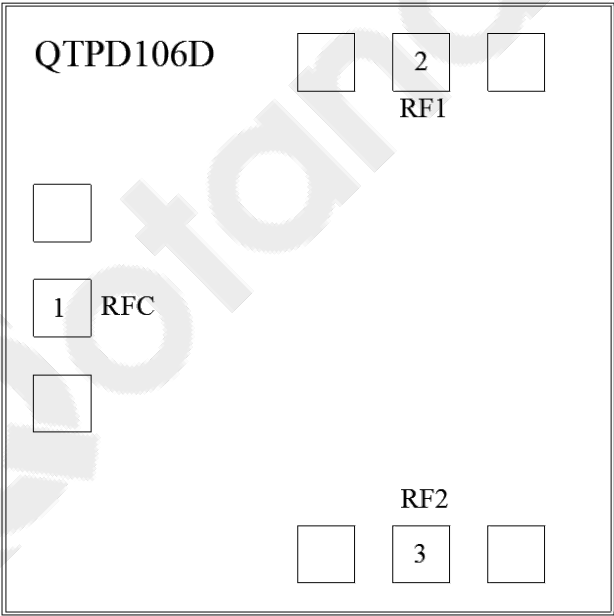
Outline Drawing: All Dimensions in μm



Notes:

- ◆ 1. Die is 100 microns thick
- ◆ 2. RF bond pads are 90 x 90 microns

Pad Description

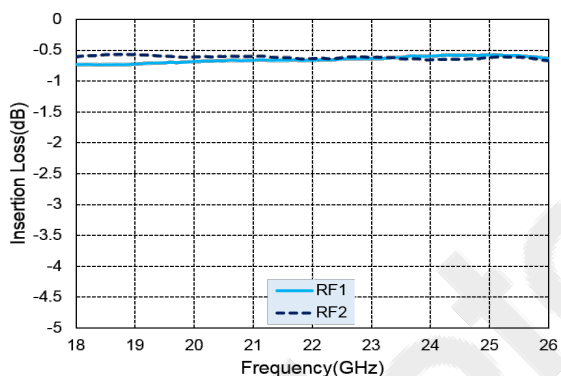


- Notes:**
- ◆ 1. No connection required for unlabeled pads
 - ◆ 2. Backside and bond pad metal: Gold

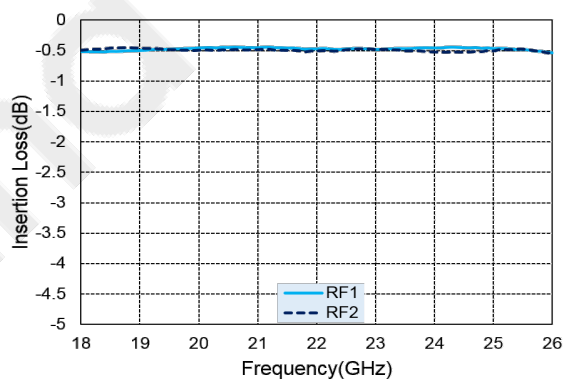
Pad	Function	Description
1	RFC	RF Common Port
2,3	RF1&RF2	RF Branch Ports

Typical Performance Plots

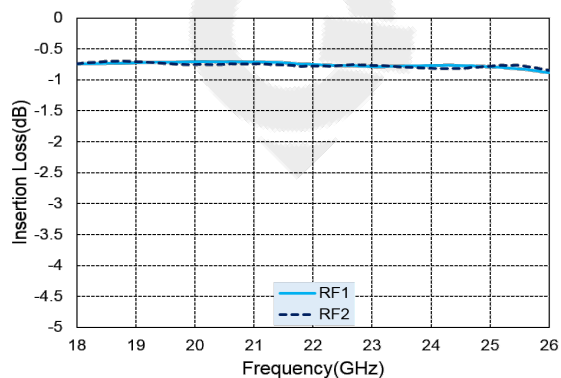
Insertion Loss @+25°C



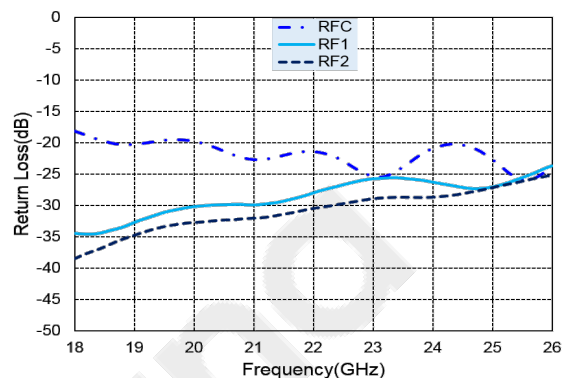
Insertion Loss @-40°C



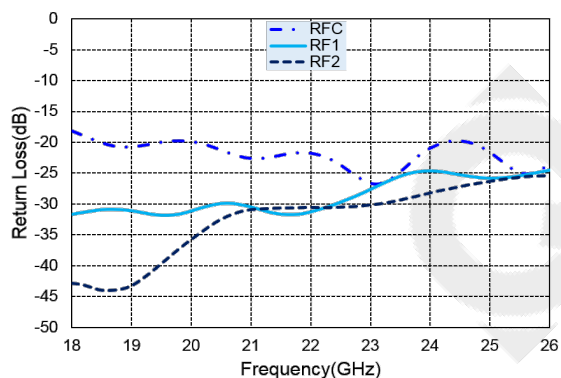
Insertion Loss @+85°C



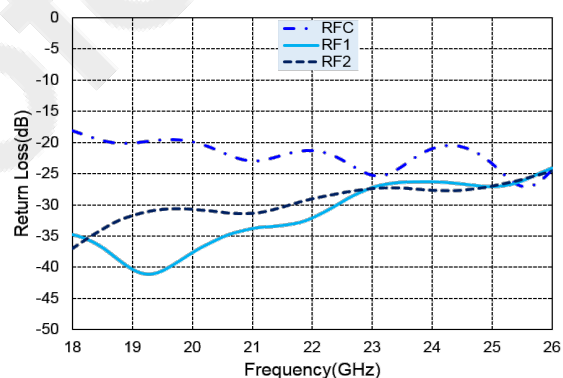
Return Loss @+25°C



Return Loss @-40°C

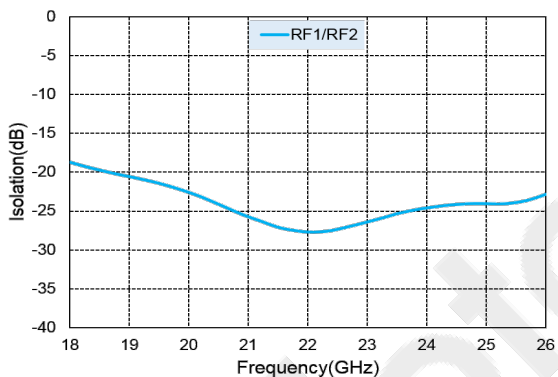


Return Loss @+85°C

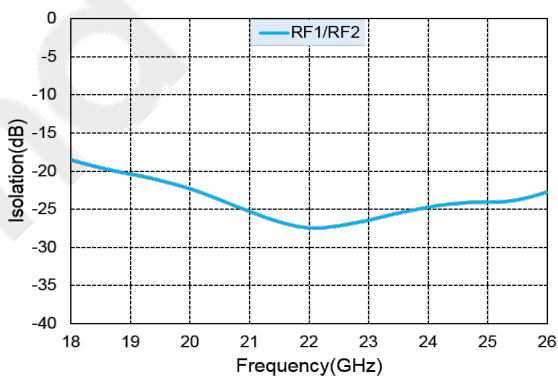


Typical Performance Plots

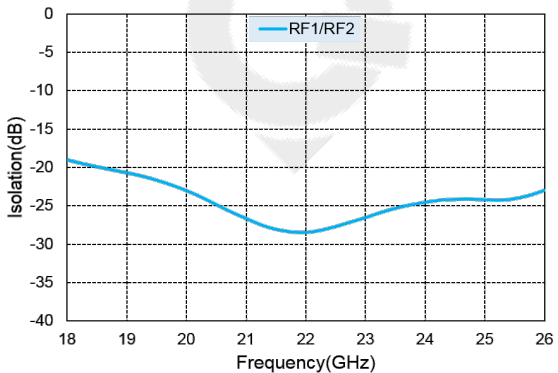
Isolation @+25°C



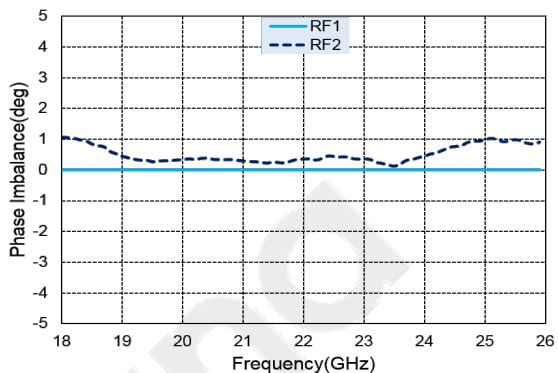
Isolation @-40°C



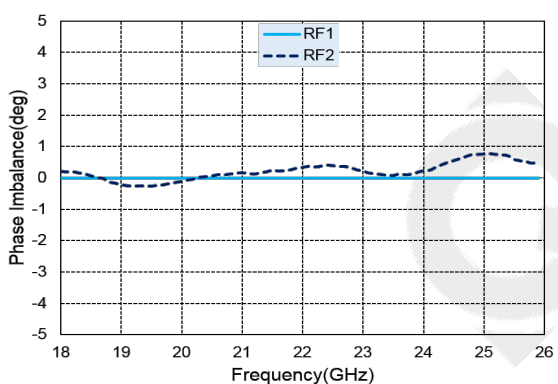
Isolation @+85°C



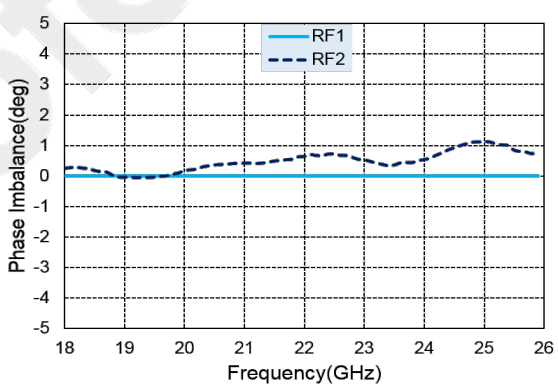
Phase Imbalance @+25°C



Phase Imbalance @-40°C



Phase Imbalance @+85°C



Assembly Instructions

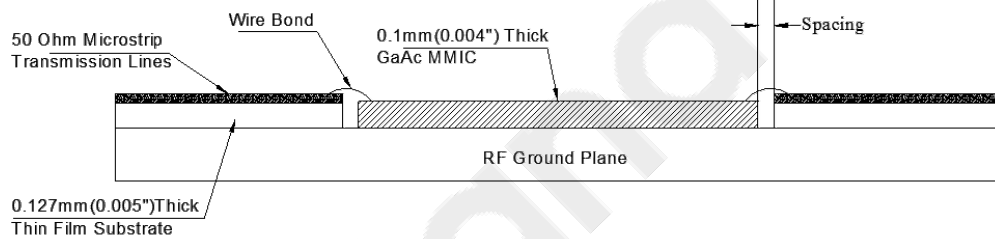


Figure1

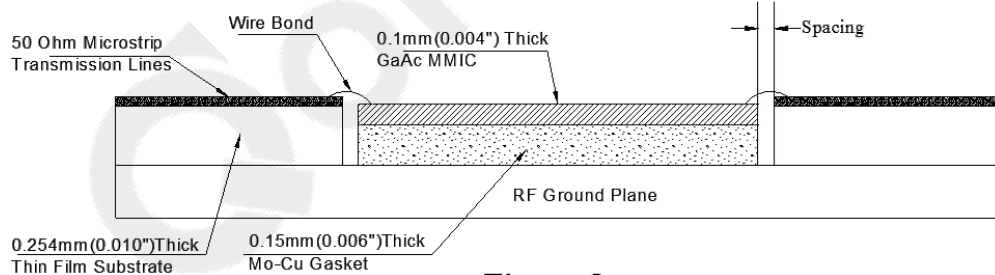


Figure2

- ◆ The small signal die can be bonded with conductive adhesive.
- ◆ It is recommended to use AuSn alloy for the power amplifier die, and weld it on a molybdenum copper substrate in the nitrogen or nitrogen-hydrogen atmosphere using the eutectic welding process. The time at temperatures above 320°C should not exceed 20 seconds.
- ◆ Thermosonic wedge bonding is an excellent interconnection technology.
- ◆ In general, the 25μm gold wire will be used to connect the die and microstrip lines. But if the pad size is less than 80μm, the 18μm gold wire is the best choice.
- ◆ During the process of assembling, the spacing should be between 0.06mm and 0.15mm when the frequency of the die is below 40GHz, but if the frequency is over 40GHz, the commend spacing is between 0.03mm and 0.06mm.
- ◆ You have to make sure that the surface of the die and microstrip line are almost keep in the same horizontal.