

Ka band MMIC SPDT Schottky Diode

Ka-SPDT-1829 Previously named LE-Ka1401507

GaAs Diode, SPDT 18-29 GHz

Overview

Ka-SPDT-1829 is a SPDT Schottky diode based switch that covers frequencies from 18GHz to 29GHz with very low loss (2dB) when closed and isolation greater than 10dB when open.

All bond pads and the die backside are gold plated. This MMIC MMIC is compatible with conventional die attach methods, as well as thermo-compression and thermosonic wire bonding, making it ideal for MCM and hybrid microcircuit applications. All data shown herein is provisional and is measured with the chip in a 50 ohm environment and contacted with RF probes.

Features

- 18 - 29 GHz.
- 2 dB insertion loss.
- 10 dB isolation.
- 10 dB return loss (closed).

Applications

- Millimetre-wave imaging.
- Automotive radar.
- High resolution radar.
- Sensing.
- P2P communications;
- Short haul / high capacity / low interference links.
- Medical.

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Specification Overview

Parameter	Min.	Typ.	Max.	Units	Notes
Frequency	18		29	GHz	
Insertion Loss		2		dB	Biased at -2V, 0mA closed Biased at +2V, 10mA open
Isolation	10	15		dB	Biased at -2V, 0mA closed Biased at +2V, 10mA open
Return Loss (Open)		3		dB	
Return Loss (Closed)	8	10		dB	
Closed Voltage		-2		V	
Open Voltage		+2		V	
Closed Current		0		mA	
Open Current		10		mA	

Absolute Maximum Ratings

Parameter	Rating
Control Voltage	-3V to +3V
RF Power	20dBm
Storage Temperature	-65°C to +150°C
Channel Temperature	+175°C
Operating Temperature	-40°C to +85°C

Notes

The tests indicated have all been performed with 100pF de-coupling capacitors on all Vc pads. All tests are carried out at 25°C.



ESD (electrostatic discharge) sensitive device. Charged devices and circuit boards can discharge without detection. Although this product features proprietary protection circuitry, damage may occur on devices subjected to ESD. Proper ESD precautions should be taken to avoid performance degradation or loss of functionality.

Measured Performance Data

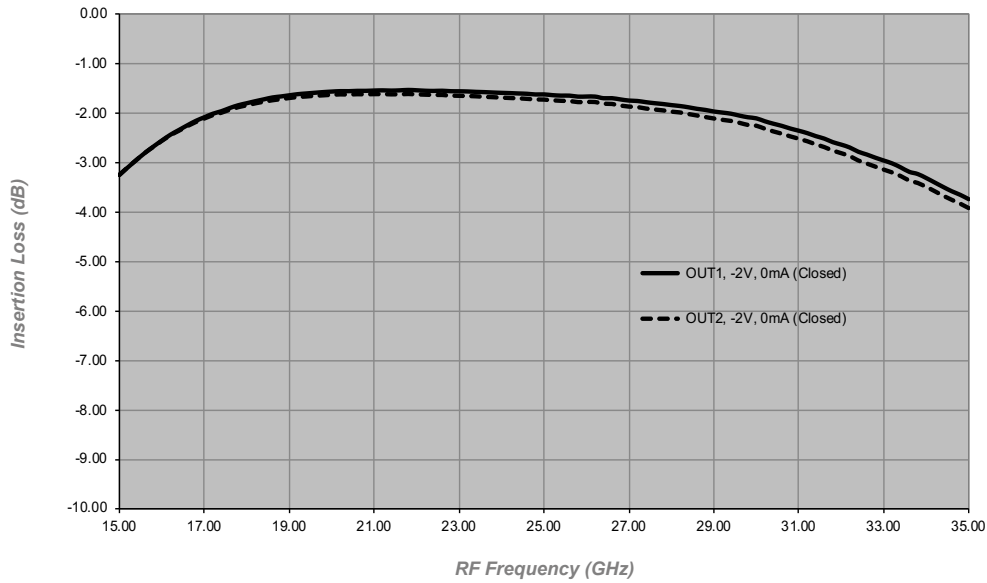


Figure 1
Insertion Loss

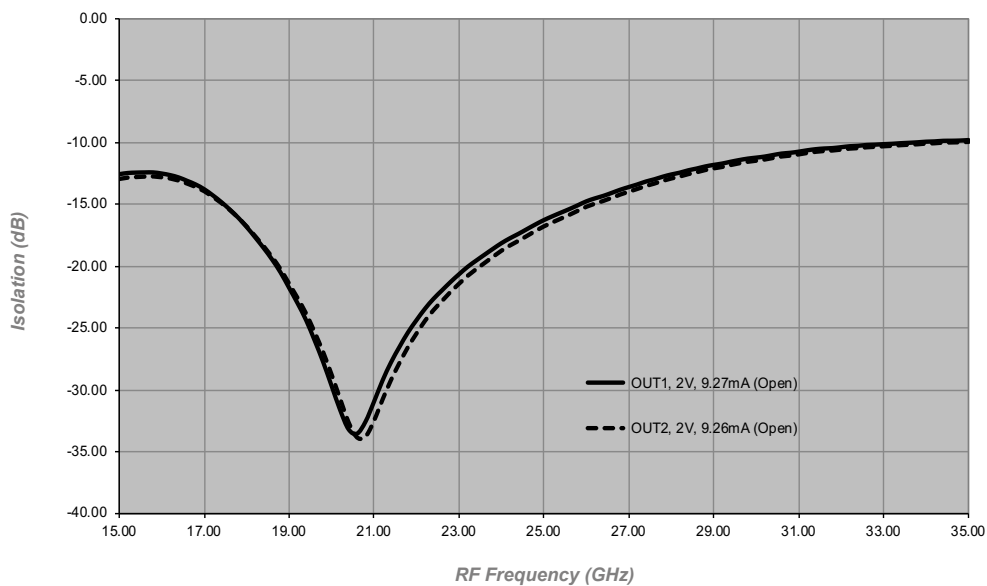


Figure 2
Isolation

Measured Performance Data

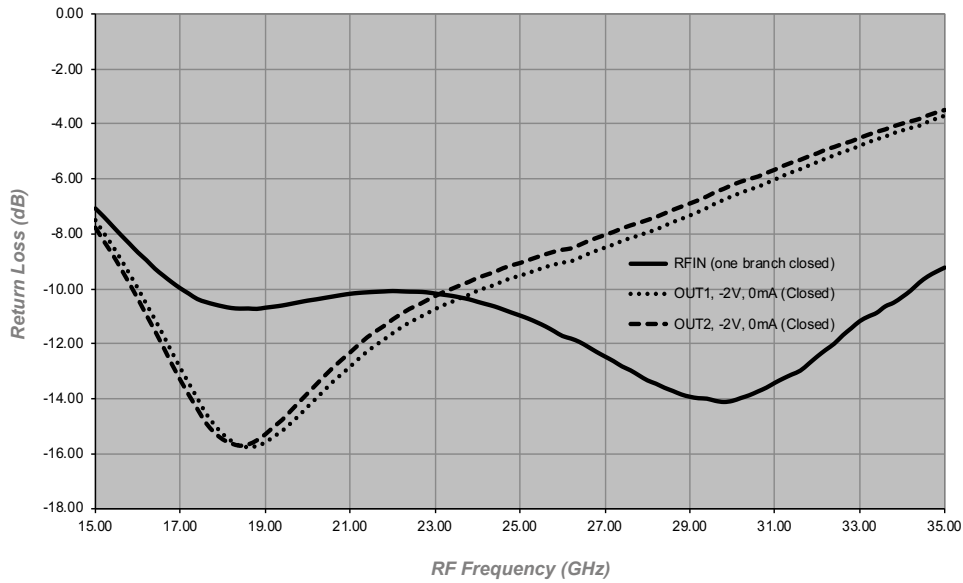


Figure 3
Closed Return Loss

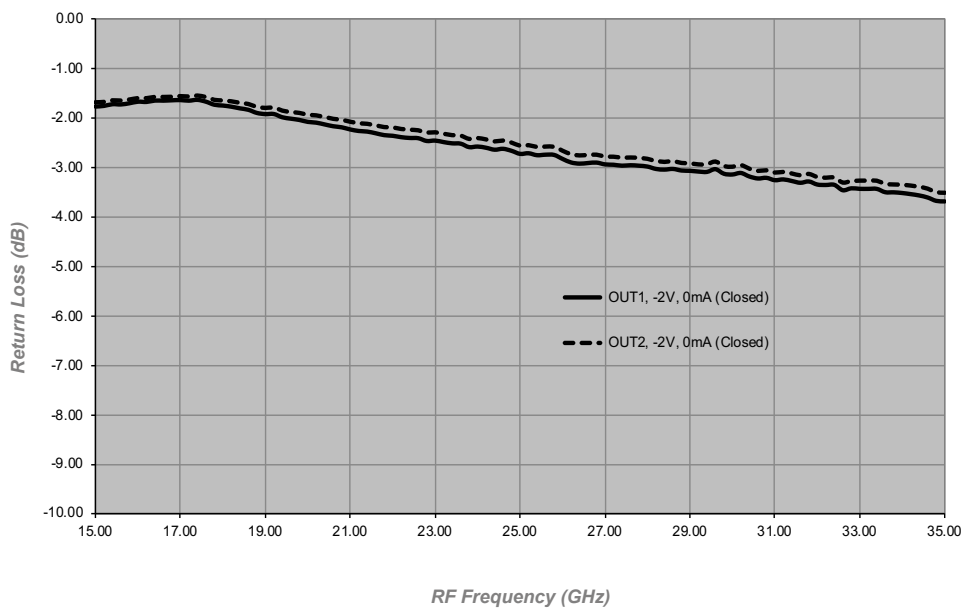
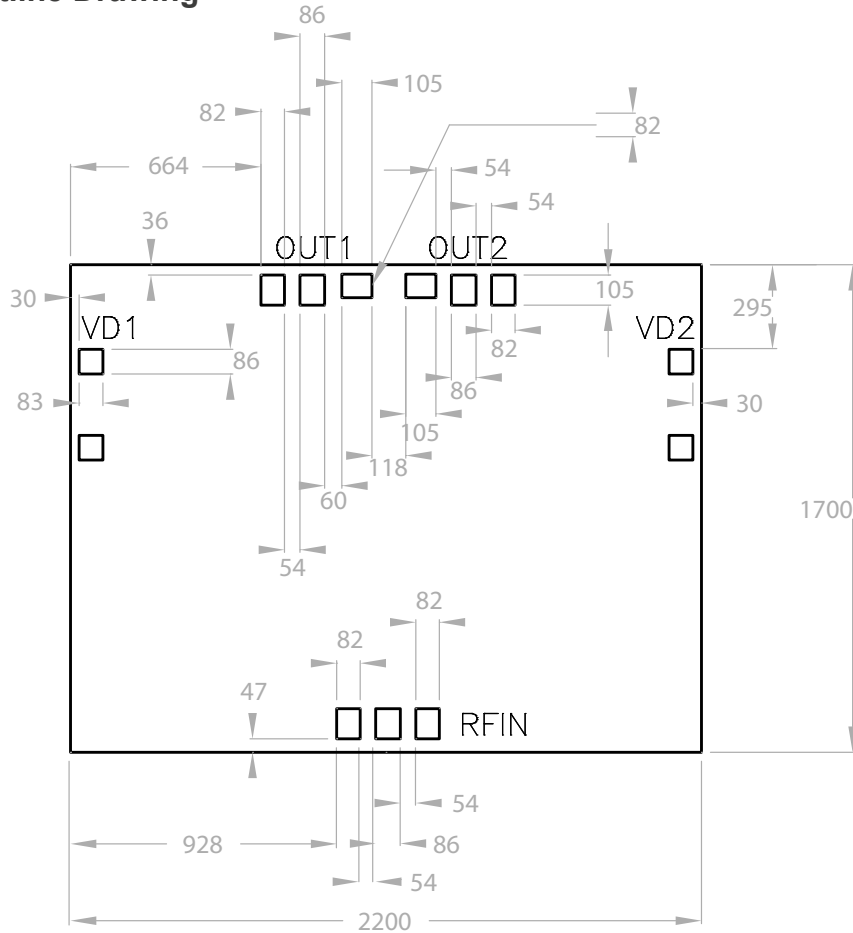


Figure 4
Isolated Port 'Open'
Return Loss

Outline Drawing



Notes

1. All dimensions are in um.
2. RF bond pads are 86 x 105um.
3. All DC bond pads are 86 x 83um.
4. Gold backside metalisation.
5. Backside metal is ground.
6. Die thickness is 100um.

Die Packing Information

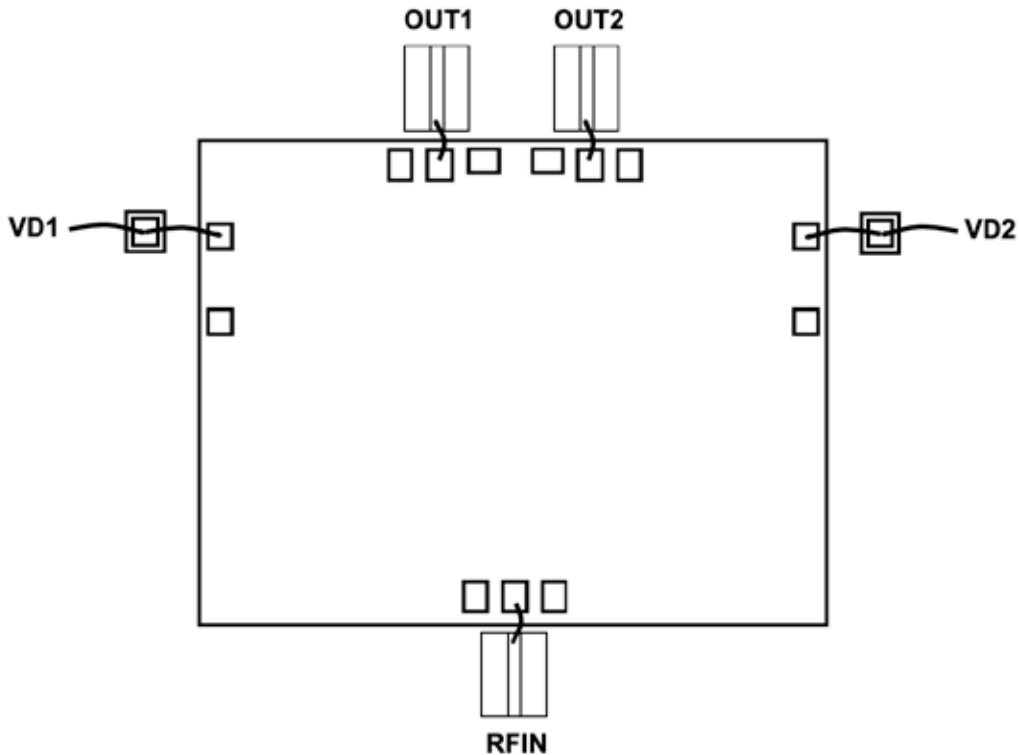
All die are delivered using gel-paks unless otherwise requested.

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Pad Descriptions

Name	Description
RFIN	Common RF input pad. This pad is AC coupled.
OUTX	RF output pad for branch X. This pad is AC coupled.
VDX	This is DC control voltage pad for branch X.
BOTTOM	The die backside must be connected to RF/DC ground.

General Notes on Assembly



General Notes on Assembly

Die should be mounted on conductive material such as gold-plated metal to provide a good ground and suitable heat sink, if necessary.

1. Attaching the die using Au/Sn preforms is preferable. The Eutectic melt for Au/Sn occurs at approximately 280°C so the die (plus mount and preform) is initially heated up to 180°C and then it is heated for approximately 10 seconds to 280°C using a nitrogen heat gun. The device will survive 10 seconds at this temperature. The static breakdown for GaAs devices is approximately 330°C.
2. Pure, dry nitrogen should be used as the heat source.
3. If the devices cannot be lifted/ placed by a vacuum device, then ESD die-lifting tweezers are preferable.
4. Aluminium wire must not be used.

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