TGL2201

Wideband Dual Stage VPIN Limiter

Product Description

Qorvo's TGL2201 is a wideband dual stage limiter fabricated on Qorvo's proven GaAs VPIN process. Operating from 2 to 25 GHz, the TGL2201 has < 1dB of insertion loss under small signal operation and flat leakage of < 18 dBm under large signal.

The TGL2201 is suitable for a variety of wideband systems such as LNA/receiver protection in radars, phased arrays, and jammers.

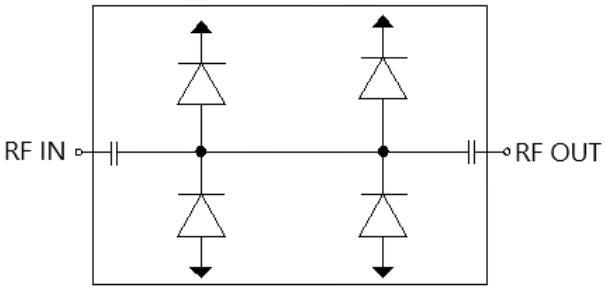
Lead-free and RoHS compliant.

Product Features

- Frequency Range: 2 – 25 GHz
- Insertion Loss: < 1 dB
- Return Loss: > 12 dB
- Input Power CW Survivability up to 5 W
- Flat Leakage: < 18 dBm
- Passive (no DC bias required)
- Integrated DC Block on the output
- Recovery Time: < 115 nS
- Die Size: 1.1 x 1.1 x 0.1 mm

Performance is typical across frequency. Please reference electrical specification table and data plots for more details.

Functional Block Diagram



Applications

- Receive Chain Protection
- Commercial and Military Radar

Ordering Information

Part No.	Description
TGL2201	2 – 25 GHz VPIN Limiter Gel Pack, 100 pieces

Absolute Maximum Ratings

Parameter	Rating
Incident Power, CW, 50 Ω, 25 °C	5 W
Mounting Temperature (30 seconds)	320 °C
Storage Temperature	-55 to 150 °C

Operation of this device outside the parameter ranges given above may cause permanent damage. These are stress ratings only, and functional operation of the device at these conditions is not implied.

Recommended Operating Conditions

Parameter	Min	Typ.	Max	Units
Operating Temperature Range	-55	+25	+85	°C
Passive – No Bias				

Electrical specifications are measured at specified test conditions. Specifications are not guaranteed over all recommended operating conditions.

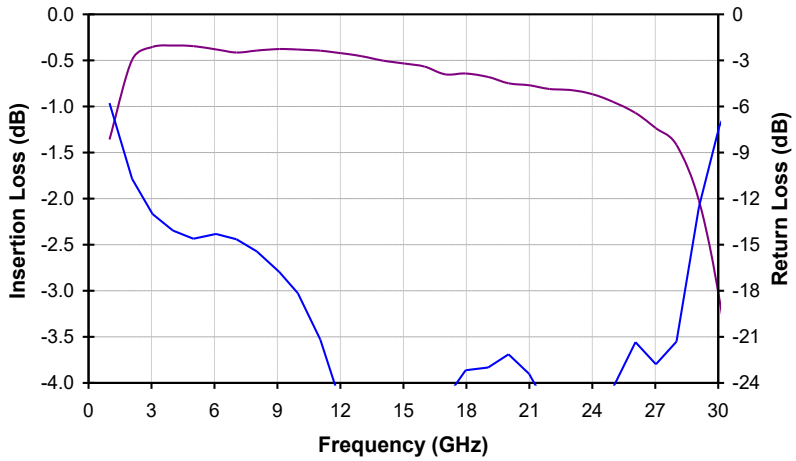
Electrical Specifications

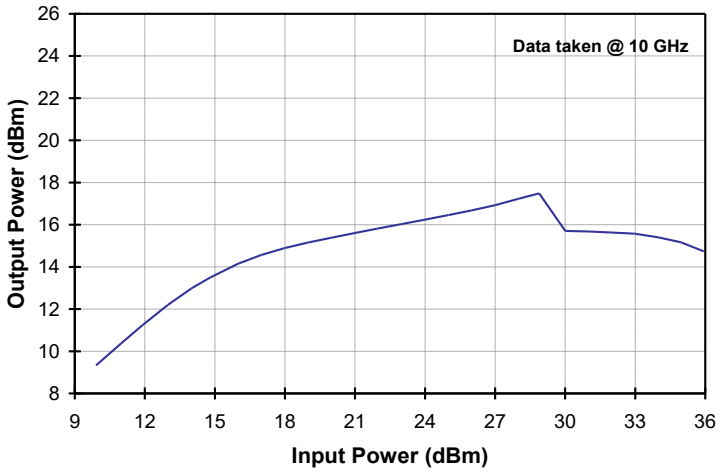
Test conditions, unless otherwise noted: 25 °C

Parameter	Min	Typ.	Max	Units
Operational Frequency Range	2	–	25	GHz
Insertion Loss		< 1		dB
Input Return Loss	12	–		dB
Output Return Loss	12	–		dB
Flat Leakage Power @ P_{IN} > 27 dBm		< 18		dBm
Pulse Recovery Time		< 115		nS

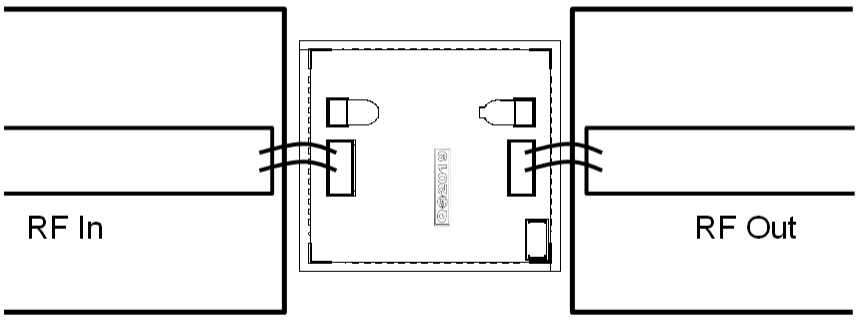
Performance Plots

Test conditions unless otherwise noted: Temp. = 25 °C



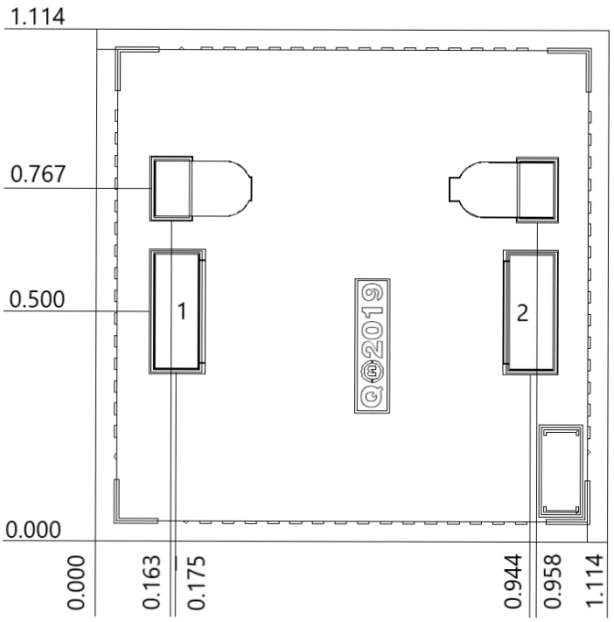


Assembly Drawing



Note: RF Input and RF Output ports are not interchangeable.

Mechanical Drawing and Bond Pad Description



Unit: millimeters
Thickness: 0.10
Die x, y size tolerance: ± 0.050
Chip edge to bond pad dimensions is shown to center of pad
Ground is backside of die

Pad No.	Symbol	Description	Pad Size (mm x mm)
1	RF Input	RF Input, 50 Ω, DC Blocked	0.096 x 0.250
2	RF Output	RF Output, 50 Ω, DC Blocked.	0.096 x 0.250

Assembly Notes

Component placement and adhesive attachment assembly notes:

- Vacuum pencils and/or vacuum collets are the preferred method of pick up.
- Air bridges must be avoided during placement.
- The impact on the force is critical during auto placement.

Reflow process assembly notes:

- Use AuSn (80/20) solder and limit exposure to temperatures above 300 °C to 3 – 4 minutes, maximum.
- An alloy station or conveyor furnace with reducing atmosphere should be used.
- Do not use any kind of flux.
- Coefficient of thermal expansion matching is critical for long-term reliability.
- Devices must be stored in a dry nitrogen atmosphere.

Interconnect process assembly notes:

- Thermosonic ball bonding is the preferred interconnecting technique.
- Force, time, and ultrasonic are critical parameters.
- Aluminum wire should not be used.
- Devices with small pad sizes should be bonded with 0.0007-inch wire.

Handling Precautions

Parameter	Rating	Standard
ESD – Human Body Model (HBM)	Class 1B	ESDA / JEDEC JS-001

Caution!
ESD-Sensitive Device

Solderability

Use only AuSn (80/20) solder and limit exposure to temperatures above 300 °C to 3 – 4 minutes, maximum.

RoHS Compliance

This product is compliant with the 2011/65/EU RoHS directive (Restrictions on the Use of Certain Hazardous Substances in Electrical and Electronic Equipment), as amended by Directive 2015/863/EU. This product also has the following attributes:

- Lead Free
- Halogen Free (Chlorine, Bromine)
- Antimony Free
- TBBP-A ($C_{15}H_{12}Br_4O_2$) Free
- PFOS Free
- SVHC Free

Contact Information

For the latest specifications, additional product information, worldwide sales and distribution locations:

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