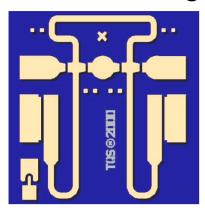


# **Wideband Dual Stage VPIN Limiter**

### **TGL2201-EPU**



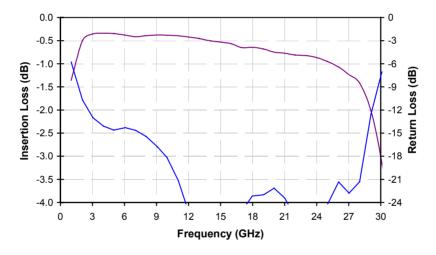
### **Key Features**

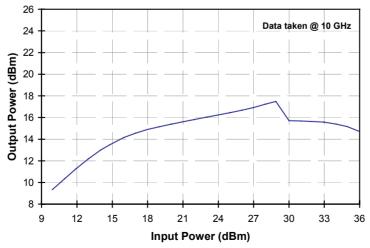
- 3-25 GHz Passive, High Isolation Limiter
- Low Loss < 0.5 dB , X-band
- Good Return Loss > 15 dB
- Flat Leakage < 18 dBm
- Input Power CW Survivability > 5W
- Integrated DC Block on both input and output
- Chip Dimensions: 1.1 x 1.1 x 0.1 mm

### **Primary Applications**

- Military Radar
- LNA Receiver Chain Protection

#### **Fixtured Measured Performance**







# **Advanced Product Information**

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# TABLE I MAXIMUM RATINGS

Symbol	Parameter 1/	Value
P <sub>IN</sub>	Input Continuous Wave Power	37 dBm
T <sub>M</sub>	Mounting Temperature (30 Seconds)	320 °C
T <sub>STG</sub>	Storage Temperature	-65 to 150 °C

 $\underline{1}$ / These ratings represent the maximum operable values for this device

### TABLE II DC CHARACTERISTICS

 $(T_A = 25 \, {}^{\circ}C)$ 

Symbol	Parameter	Limit		Units
		Min	Max	
FWD_RES (D1, D2, D3, D4)	Resistance Forward	1.9	3.9	Ohm
VREV <sub>(D1,D4)</sub>	Reverse Voltage	-60	-30	V

### TABLE III RF CHARACTERISTICS

 $(T_A = 25 \, {}^{\circ}C)$ 

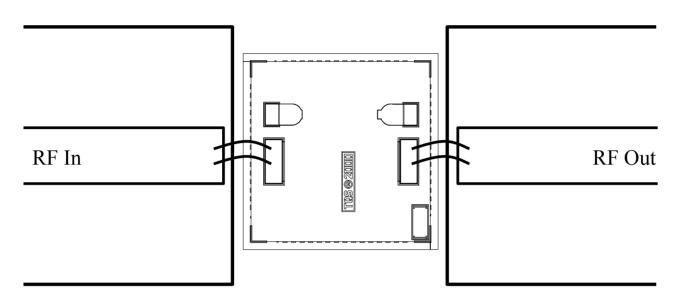
Symbol	Parameter	Test Condition	Limit		Units	
			Min	Тур	Max	
IL	Insertion Loss	F = 4-20 GHz		0.5	1.0	dB
IRL	Input Return Loss	F = 4-20 GHz	12			dB
ORL	Output Return	F = 4-20 GHz	12			dB
	Loss					
PWR	Output Power @	F = 6.0 GHz			20	dBm
	$P_{in} = 27 \text{ dBm}$	F = 16.0 GHz			20	dBm



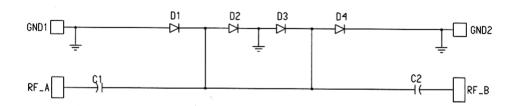
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# **High Isolation Limiter Assembly**



### **DC Schematic**



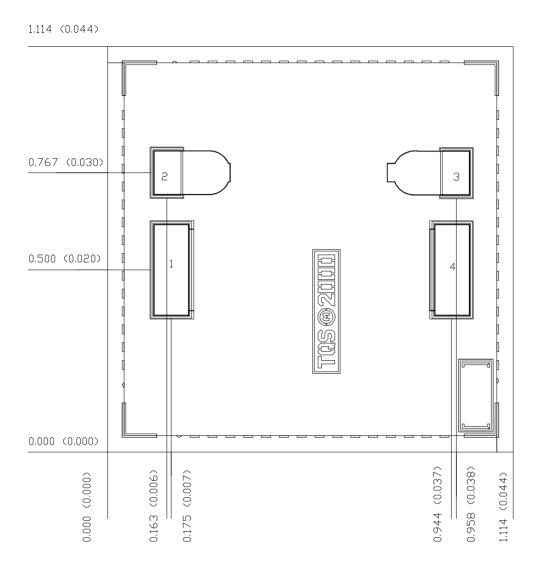


# **Advanced Product Information**

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## **Mechanical Drawing**



Units: millimeters (inches)

Thickness: 0.100 (0.004) (reference only)

Chip edge to bond pad dimensions are shown to center of bond pad

Chip size tolerance: +/- 0.051 (0.002)

GND IS BACKSIDE OF MMIC

Bond pad #1 (RF In) 0.096 x 0.250 (0.004 x 0.010) Bond pads #2,3 (Gnd) 0.078 x 0.126 (0.003 x 0.005) Bond pad #4 (RF Dut) 0.096 x 0.250 (0.004 x 0.010)

GaAs MMIC devices are susceptible to damage from Electrostatic Discharge. Proper precautions should be observed during handling, assembly and test.



# **Advanced Product Information**

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### **Assembly Process Notes**

#### Reflow process assembly notes:

- Use AuSn (80/20) solder with limited exposure to temperatures at or above 300 °C for 30 sec
- An alloy station or conveyor furnace with reducing atmosphere should be used.
- No fluxes should be utilized.
- Coefficient of thermal expansion matching is critical for long-term reliability.
- Devices must be stored in a dry nitrogen atmosphere.

#### 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 force impact is critical during auto placement.
- Organic attachment can be used in low-power applications.
- Curing should be done in a convection oven; proper exhaust is a safety concern.
- Microwave or radiant curing should not be used because of differential heating.
- Coefficient of thermal expansion matching is critical.

#### Interconnect process assembly notes:

- Thermosonic ball bonding is the preferred interconnect technique.
- Force, time, and ultrasonics are critical parameters.
- Aluminum wire should not be used.
- Maximum stage temperature is 200 °C.

GaAs MMIC devices are susceptible to damage from Electrostatic Discharge. Proper precautions should be observed during handling, assembly and test.