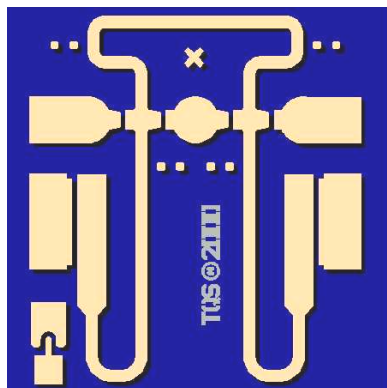


Wideband Dual Stage VPIN Limiter

TGL2201-EPU



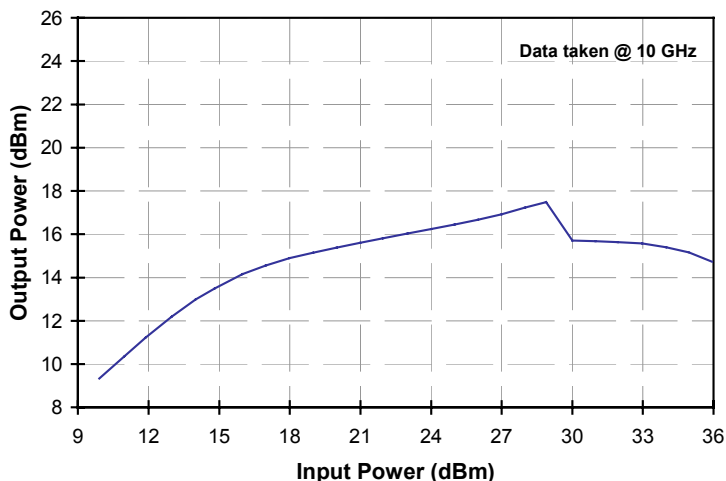
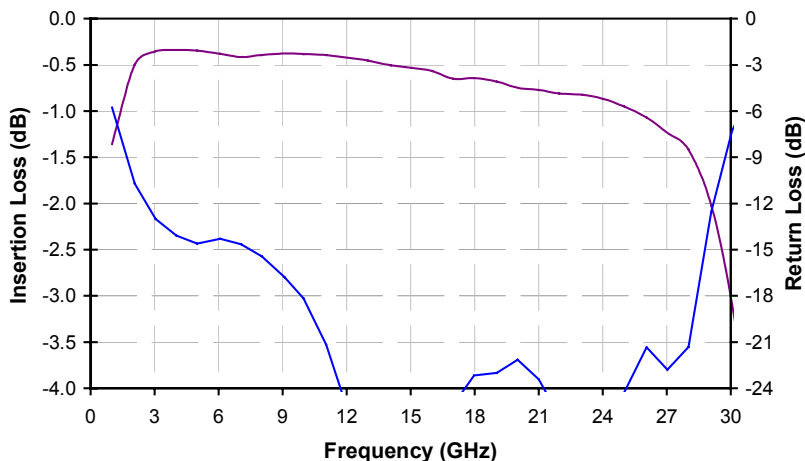
Key Features

- 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



Note: Devices designated as EPU are typically early in their characterization process prior to finalizing all electrical and process specifications. Specifications are subject to change without notice.

**TABLE I
MAXIMUM RATINGS**

Symbol	Parameter 1/	Value
P _{IN}	Input Continuous Wave Power	37 dBm
T _M	Mounting Temperature (30 Seconds)	320 °C
T _{STG}	Storage Temperature	-65 to 150 °C

1/ These ratings represent the maximum operable values for this device

**TABLE II
DC CHARACTERISTICS
(T_A = 25 °C)**

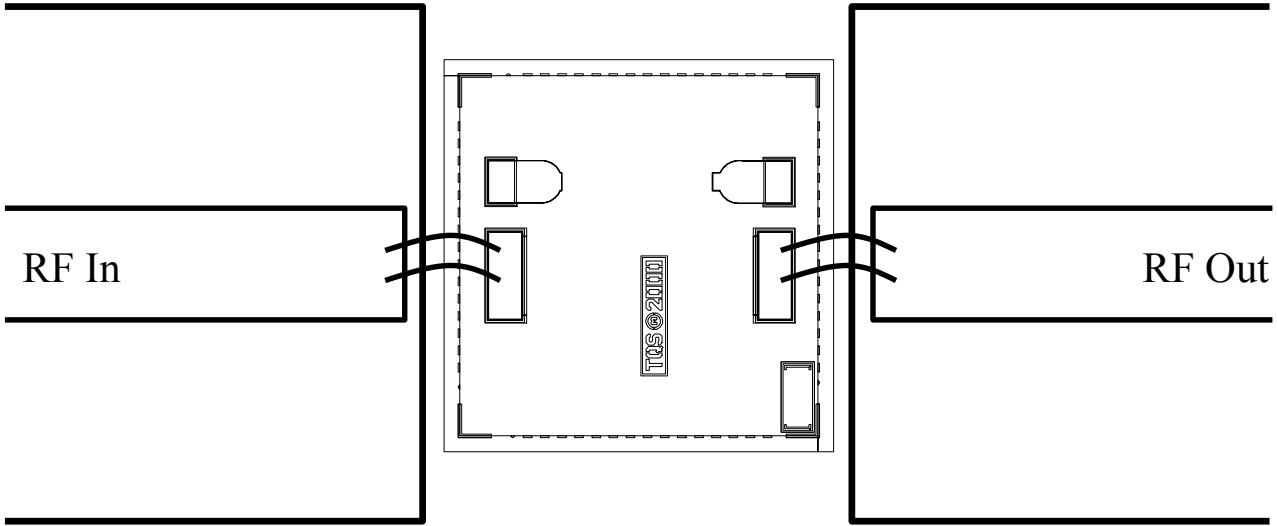
Symbol	Parameter	Limit		Units
		Min	Max	
FWD_RES _(D1, D2, D3, D4)	Resistance Forward	1.9	3.9	Ohm
VREV _(D1, D4)	Reverse Voltage	-60	-30	V

**TABLE III
RF CHARACTERISTICS
(T_A = 25 °C)**

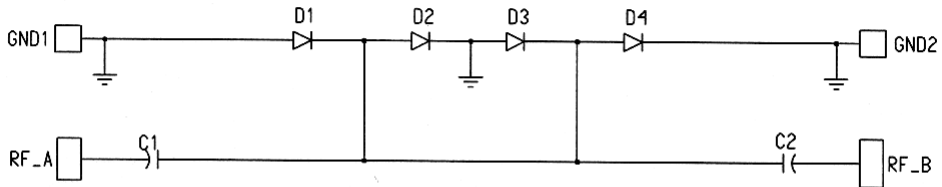
Symbol	Parameter	Test Condition	Limit			Units
			Min	Typ	Max	
IL	Insertion Loss	F = 4-20 GHz	--	0.5	1.0	dB
IRL	Input Return Loss	F = 4-20 GHz	12	--	--	dB
ORL	Output Return Loss	F = 4-20 GHz	12	--	--	dB
PWR	Output Power @ P _{in} = 27 dBm	F = 6.0 GHz	--	--	20	dBm
		F = 16.0 GHz	--	--	20	dBm

Note: Devices designated as EPU are typically early in their characterization process prior to finalizing all electrical and process specifications. Specifications are subject to change without notice.

High Isolation Limiter Assembly

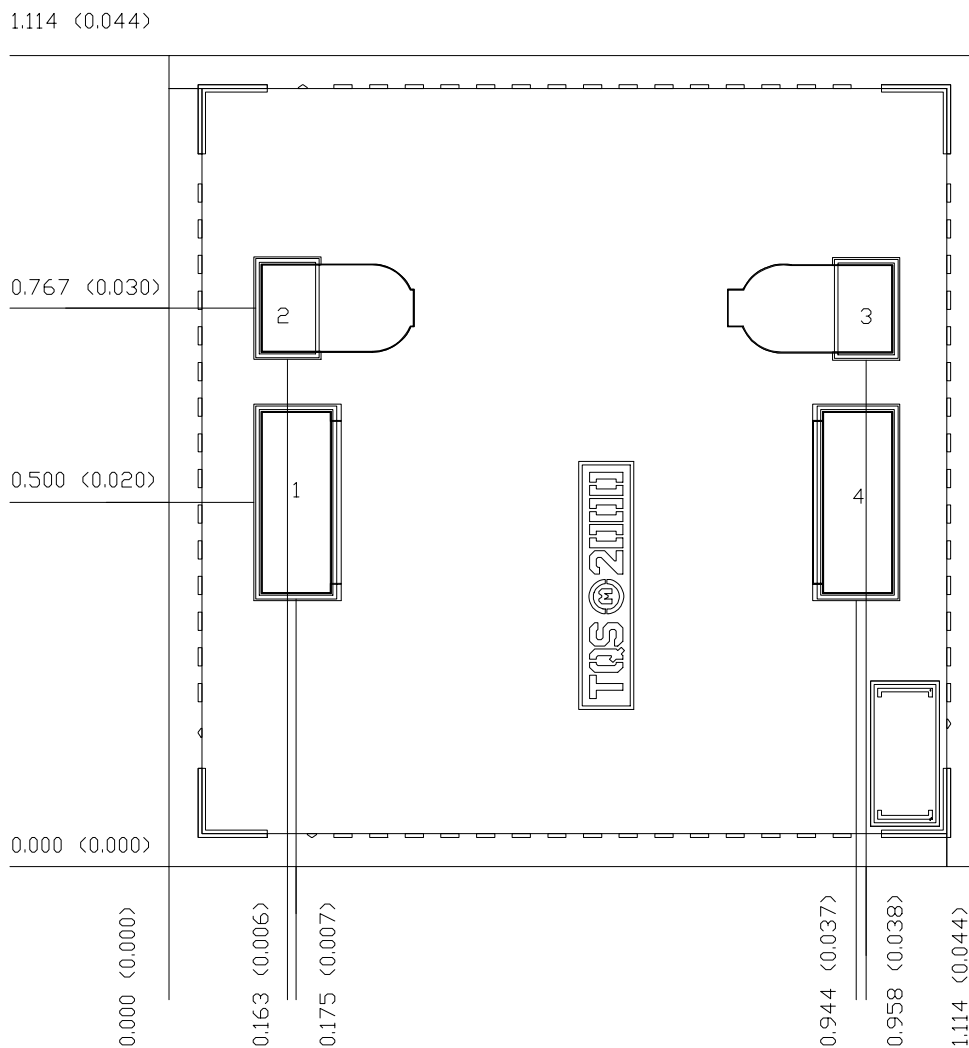


DC Schematic



Note: Devices designated as EPU are typically early in their characterization process prior to finalizing all electrical and process specifications. Specifications are subject to change without notice.

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 Out)	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.

Note: Devices designated as EPU are typically early in their characterization process prior to finalizing all electrical and process specifications. Specifications are subject to change without notice.

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.

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