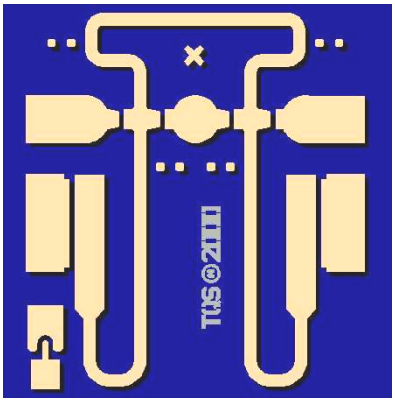
Wideband Dual Stage VPIN Limiter TGL2201-EPU



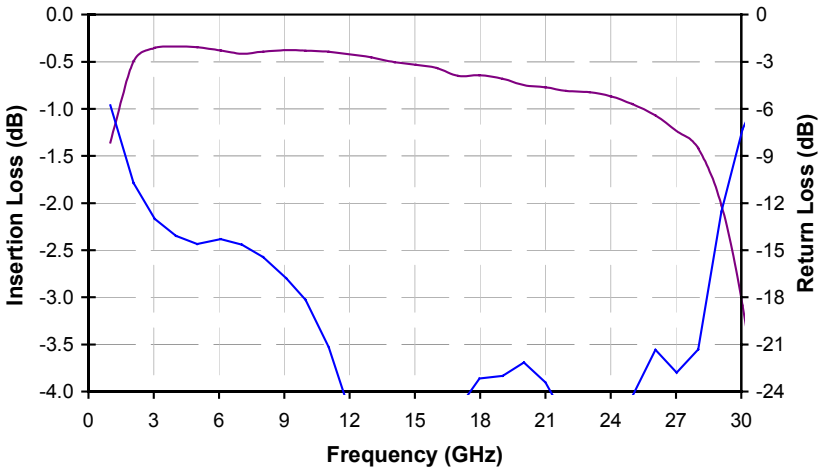
Key Features

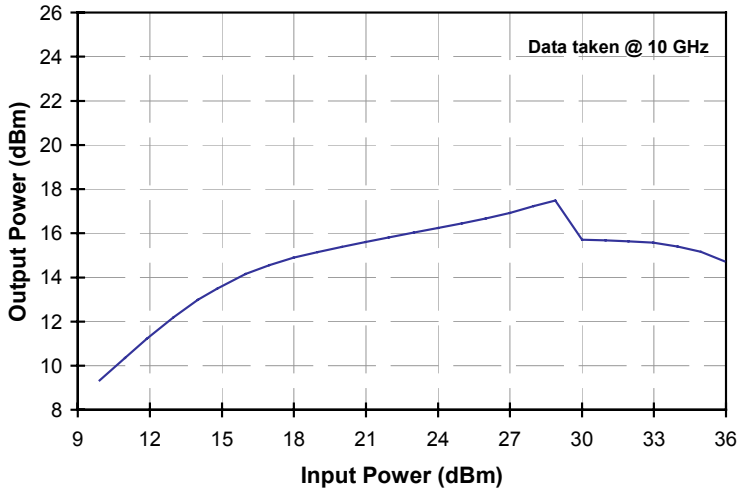
- 3-25 GHz Passive, High Isolation Limiter
- Low Loss < 0.5 dB , X-band
- Good Return Loss > 15 dB
- Flat Leakage < 18 dBm
- Input Power CW Survivability > 5W
- Integrated DC Block on both input and output
- Chip Dimensions: 1.1 x 1.1 x 0.1 mm

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 ^{0}C
T_{STG}	Storage Temperature	-65 to 150 ^{0}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 F = 16.0 GHz	-- --	-- --	20 20	dBm dBm

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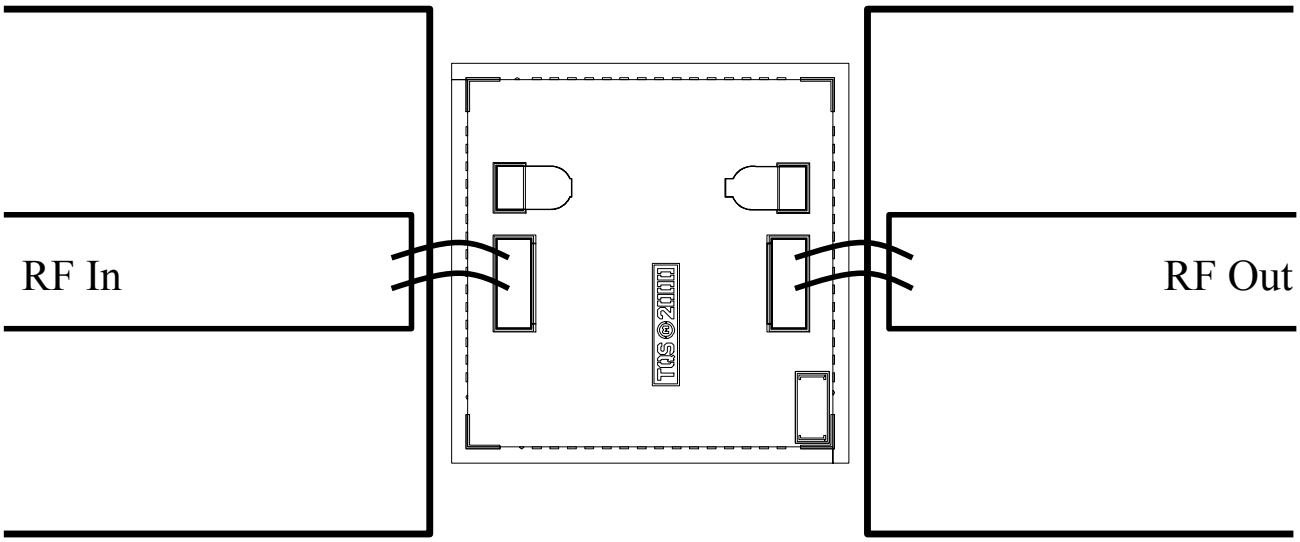
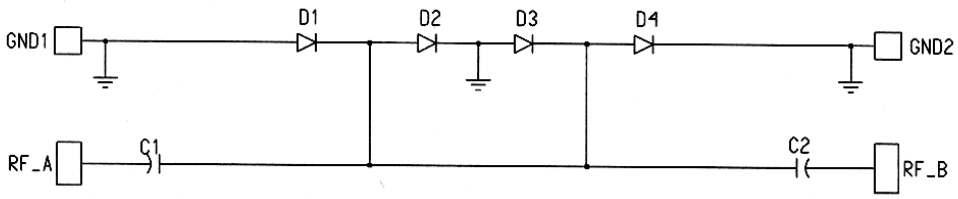
High Isolation Limiter Assembly



DC Schematic



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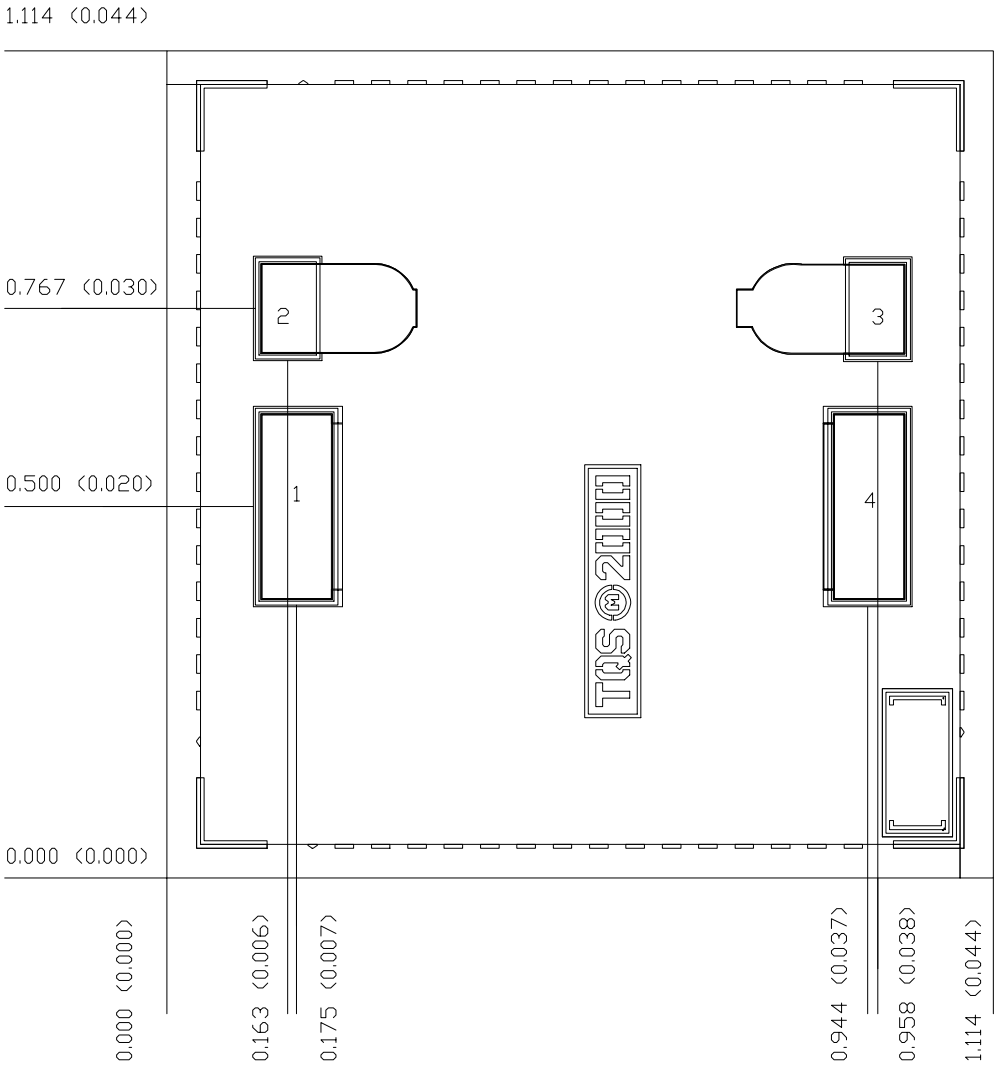
Mechanical Drawing



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 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.

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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.

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