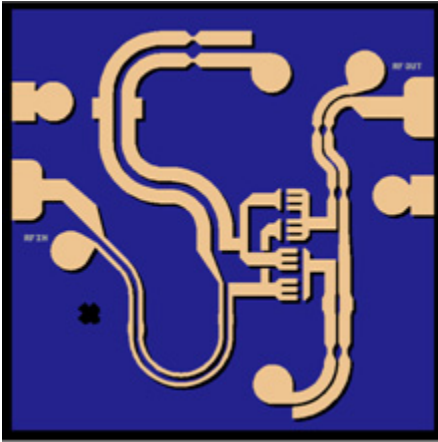


20 - 40 GHz X2 Frequency Multiplier

TGC1430F



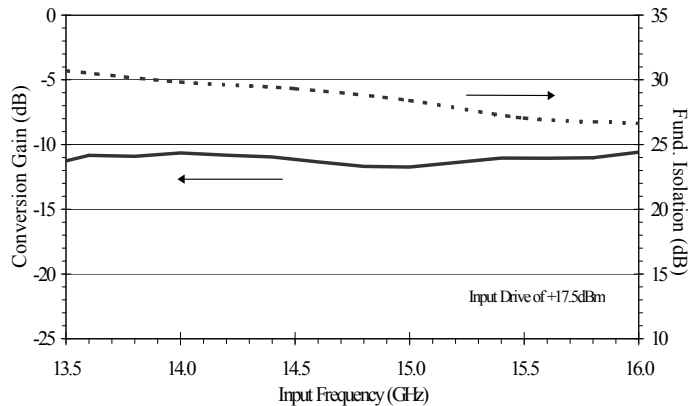
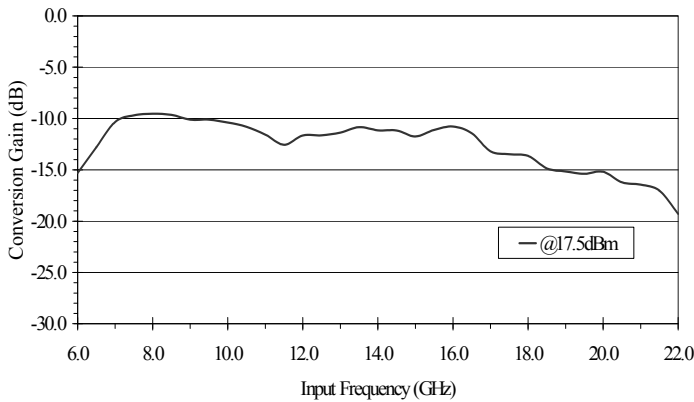
Chip Dimensions 1.50 mm x 1.50 mm

Key Features and Performance

- 0.25um pHEMT Technology
- 20 - 40 GHz Output Frequencies
- 10 - 20 GHz Fundamental Frequencies
- -12 +/- 2dB Conversion Gain
- 18 dBm Input Drive Optimum
- 25dB Fundamental Isolation

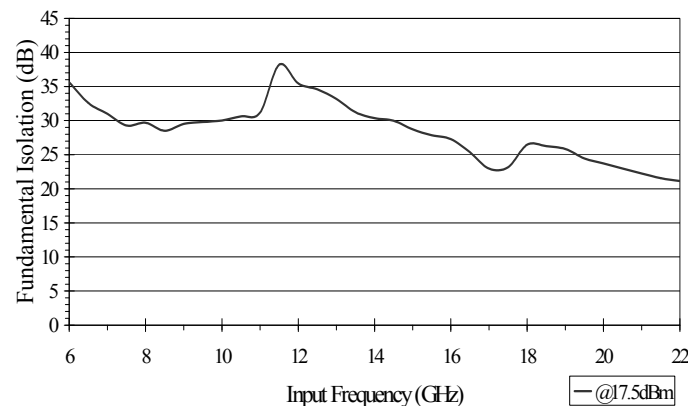
Primary Applications

- Point-to-Point Radio
- Point-to-Multipoint Communications



Conversion Gain vs Input Frequency (Input @ 17.5dBm)

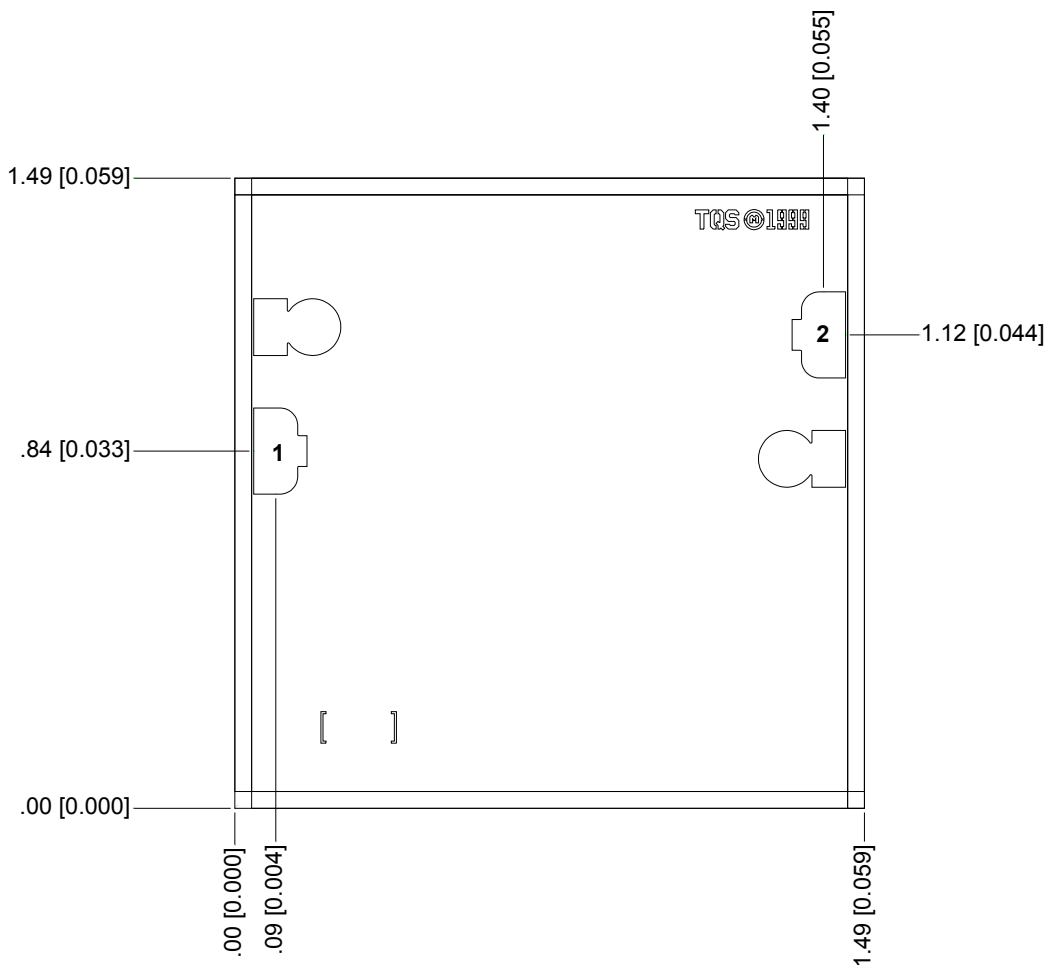
Conversion Gain and Fundamental Isolation for 27 - 32 GHz Output



Fundamental Isolation

Note: Datasheet is subject to change without notice.

Mechanical Drawing



Units: millimeters [inches]

Thickness: 0.10 [0.004] (reference only)

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

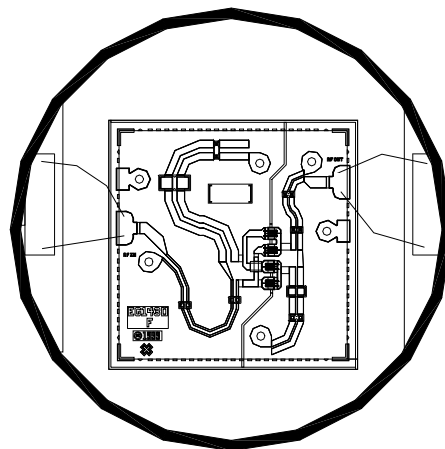
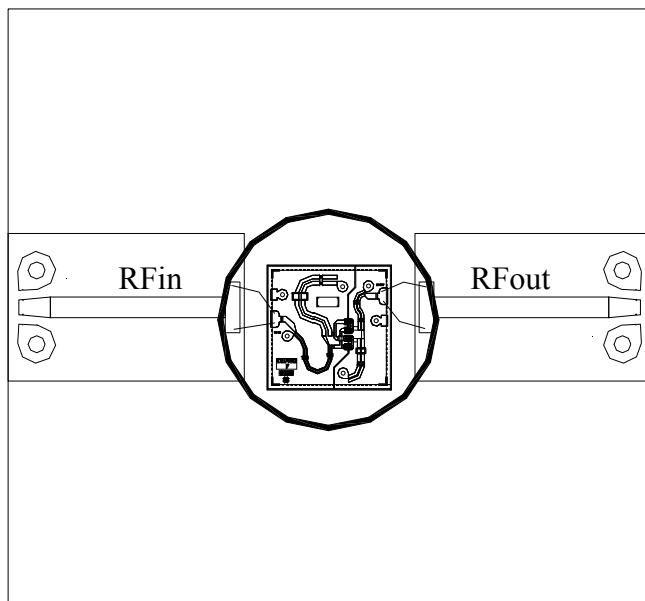
Chip size tolerance: ±0.05 [0.002]

RF ground through backside

| | | | |
|--------------------|------------------|--------------------|------------------------|
| Bond Pad #1 | RF Input | 0.10 x 0.20 | [0.004 x 0.008] |
| Bond Pad #2 | RF Output | 0.10 x 0.20 | [0.004 x 0.008] |

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

Recommended Assembly Drawing



Attach 2 TFNs and MMIC to carrier plate as shown using conductive epoxy.
Bond 4 wires as shown using minimum length.

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

Assembly Process Notes

Reflow process assembly notes:

- Use AuSn (80/20) solder with limited exposure to temperatures at or above 300⁰C (30 seconds max).
- 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 200⁰C.

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