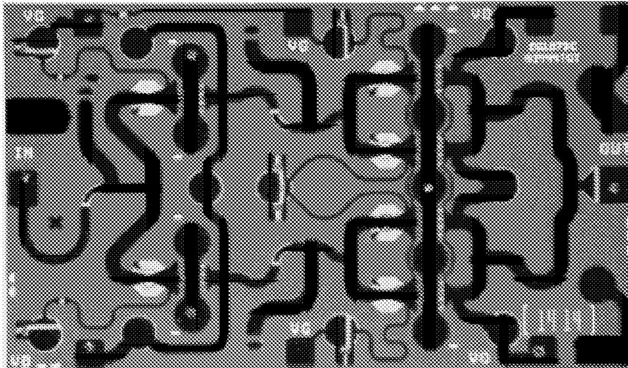
TriQuint SEMICONDUCTOR®

Advance Product Information

37-41 GHz 0.4W MMIC PA

TGA1073C

Prototype Part #, Production Part # TBD



Key Features and Performance

- 0.25um pHEMT Technology
- 16 dB Nominal Gain
- 26 dBm Nominal Pout @ P1dB
- -34 dBc IMR3 @ 16 dBm SCL
- Bias 5 -7V @ 240 mA
- Chip Dimensions 2.40 mm x 1.45 mm

Primary Applications

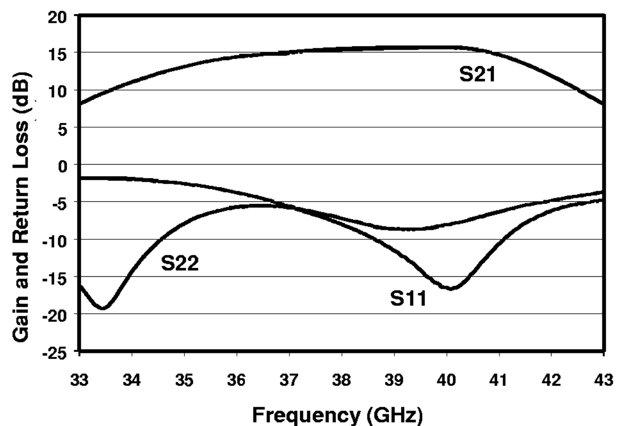
- Point-to-Point Radio
- Point-to-Multipoint Communications

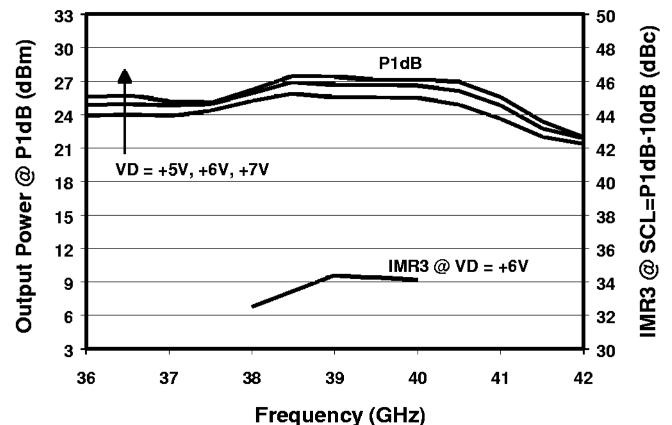
The TriQuint TGA1073C-EPU is a two-stage HPA MMIC design using TriQuint's proven 0.25 um Power pHEMT process. The TGA1073C is designed to support a variety of millimeter wave applications including point-to-point digital radio and LMDS and other point-to-multipoint communications.

The three stage design consists of a 2 x 400um input stage driving a 4 x 400um output stage.

The TGA1073C provides 26 dBm nominal output power at 1dB compression across 36-41GHz. Typical small signal gain is 16 dB

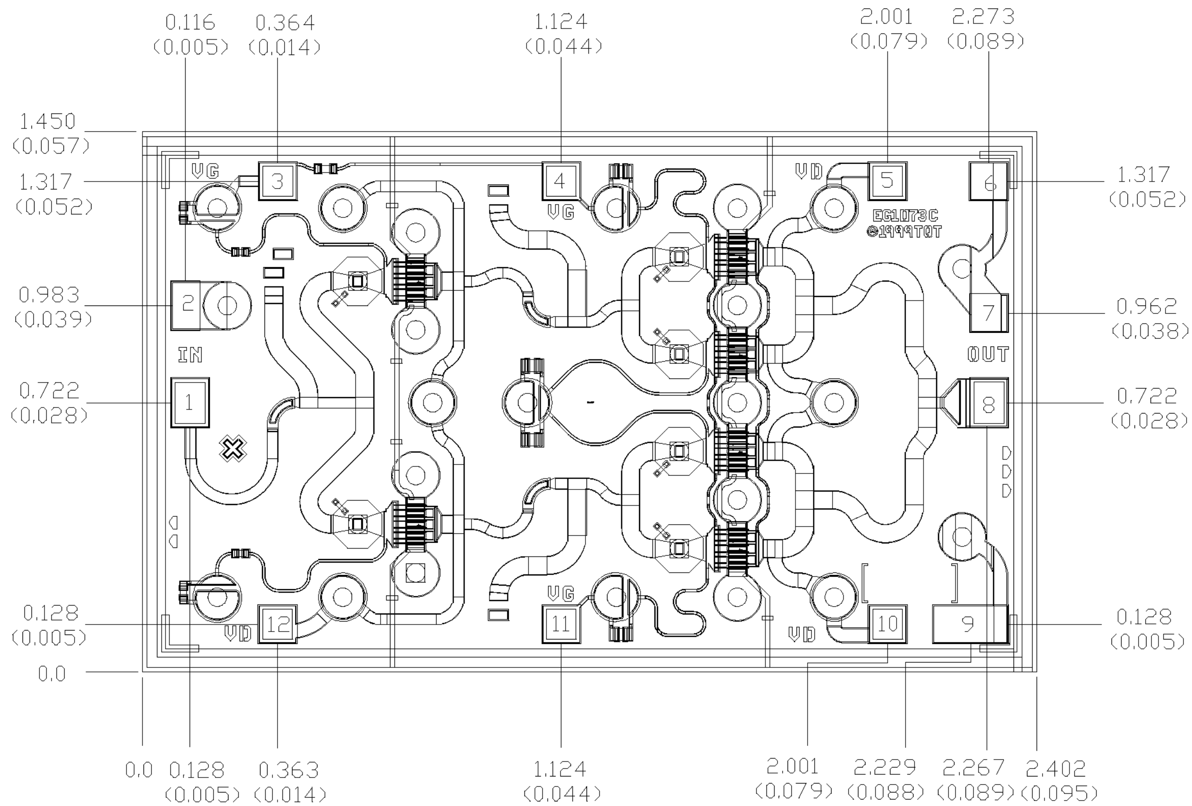
The TGA1073C requires minimum off-chip components. Each device is 100% DC and RF tested on-wafer to ensure performance compliance. The device is available in chip form.





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 Characteristics



Units: millimeters (inches)
Thickness: 0.1016 (0.004)
Chip edge to bond pad dimensions are shown to center of bond pad
Chip size tolerance: +/- 0.051 (0.002)

Bond Pad #1 (RF Input) 0.105 x 0.135 (0.004 x 0.005)
Bond Pad #2 (GND) 0.080 x 0.135 (0.003 x 0.005)
Bond Pad #3 (VG) 0.105 x 0.105 (0.004 x 0.004)
Bond Pad #4 (VG) 0.105 x 0.105 (0.004 x 0.004)
Bond Pad #5 (VD) 0.105 x 0.105 (0.004 x 0.004)
Bond Pad #6 (GND) 0.105 x 0.105 (0.004 x 0.004)
Bond Pad #7 (GND) 0.105 x 0.105 (0.004 x 0.004)
Bond Pad #8 (RF Output) 0.105 x 0.135 (0.004 x 0.005)
Bond Pad #9 (GND) 0.105 x 0.205 (0.004 x 0.008)
Bond Pad #10 (VD) 0.105 x 0.105 (0.004 x 0.004)
Bond Pad #11 (VG) 0.105 x 0.105 (0.004 x 0.004)
Bond Pad #12 (VD) 0.105 x 0.105 (0.004 x 0.004)

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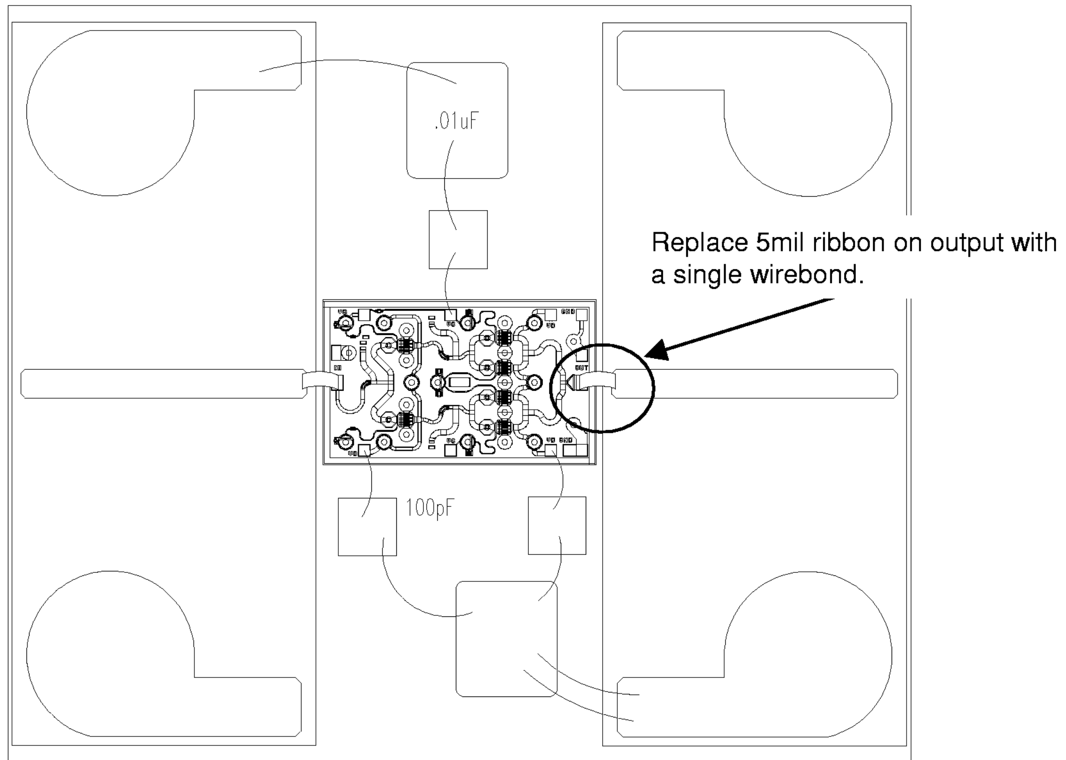

Chip Assembly and Bonding Diagram

Reflow process assembly notes:

- AuSn (80/20) solder with limited exposure to temperatures at or above 300♣C
- alloy station or conveyor furnace with reducing atmosphere
- no fluxes should be utilized
- coefficient of thermal expansion matching is critical for long-term reliability
- storage in dry nitrogen atmosphere

Component placement and adhesive attachment assembly notes:

- vacuum pencils and/or vacuum collets preferred method of pick up
- avoidance of air bridges during placement
- force impact 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
- discrete FET devices with small pad sizes should be bonded with 0.0007-inch wire
- maximum stage temperature: 200♣C

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