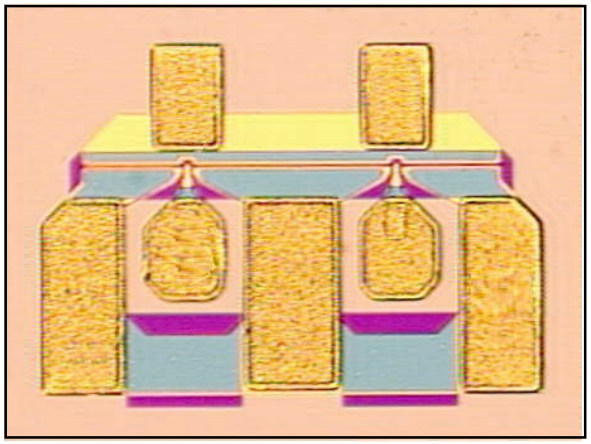
TriQuint SEMICONDUCTOR

Product Data Sheet

August 5, 2008

300um Discrete pHEMT TGF4350

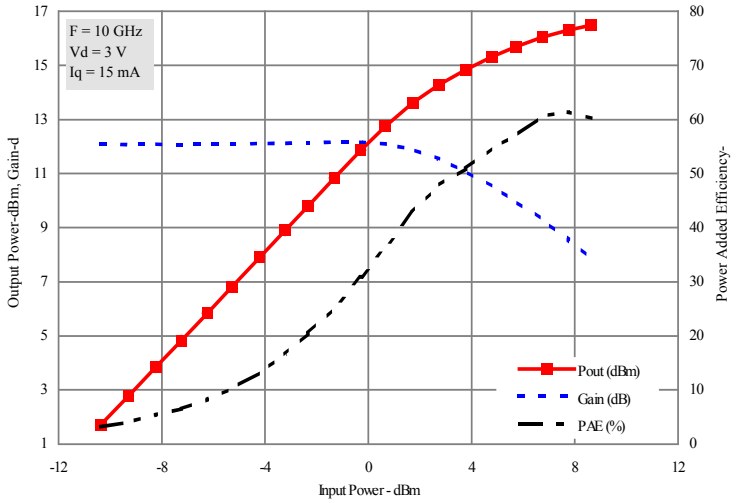


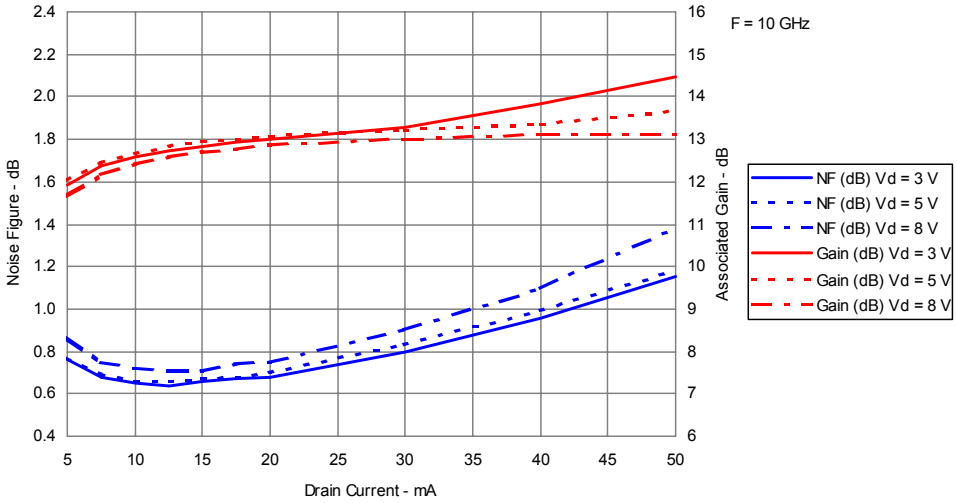
Key Features and Performance

- 0.25um pHEMT Technology
- DC 22 GHz Frequency Range
- 1.2 dB NF, 14.5 dB Associated Gain at 10 GHz, 3V Operation
- Floating Source Configuration
- Chip Dimensions 0.620 mm x 0.514 mm

Primary Applications

- Low Noise amplifiers





Note: Datasheet is subject to change without notice.

Electrical Characteristics

MAXIMUM RATINGS

Symbol	Parameter	Value	Notes
V^+	Positive Supply Voltage	13 V	
I^+	Positive Supply Current	.085 A	3/
I^-	Negative Gate Current	.88 mA	
P_D	Power Dissipation	1.1. W	
P_{IN}	Input Continuous Wave Power	20 dBm	
T_{CH}	Operating Channel Temperature	150 °C	1/, 2/
T_M	Mounting Temperature (30 seconds)	320 °C	
T_{STG}	Storage Temperature	-65 °C to 150 °C	

1/ These ratings apply to individual FET

2/ Junction operating temperature will directly affect the device mean time to failure (MTTF). For maximum life it is recommended that junction temperatures be maintained at the lowest possible levels.

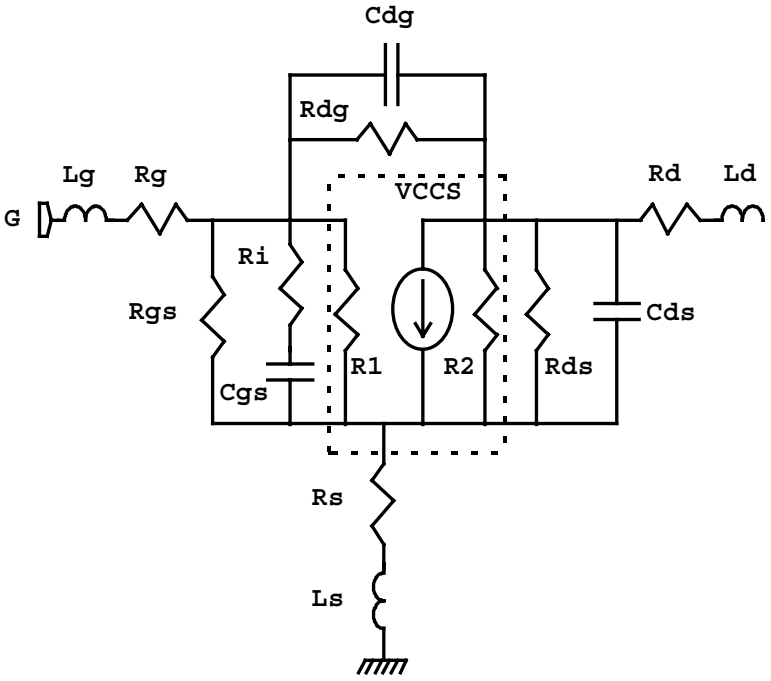
3/ Nominal value of Idss

DC PROBE TESTS
(T_A = 25 °C ± 5°C)

Symbol	Parameter	Minimum	Maximum	Value
Idss	Saturated Drain Current (info only)	30	141	mA
V_{P1-5}	Pinch-off Voltage	-1.5	-0.5	V
BV_{GS1}	Breakdown Voltage gate-source	-30	-8	V
BV_{GD1-5}	Breakdown Voltage gate-drain	-30	-8	V

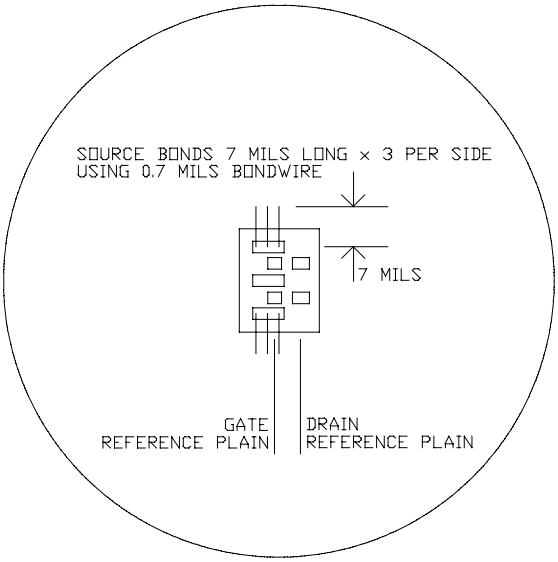
FET Elements

Lg = 0.040 nH
Rg = 0.525 Ohms
Rgs = 14500 Ohms
Ri = 4.924 Ohms
Cgs = 0.364 pF
Cdg = 0.042 pF
Rdg = 146000 Ohms
Rs = 0.300 Ohms
Ls = 0.041 nH
Rds = 253.858 Ohms
Cds = 0.080 pF
Rd = 0.833 Ohms
Ld = 0.028 nH
VCCS Parameters
M = 0.091 S
A = 0
R1 = 1E19 Ohms
R2 = 1E19 Ohms
F = 0
T = 4.000 pS

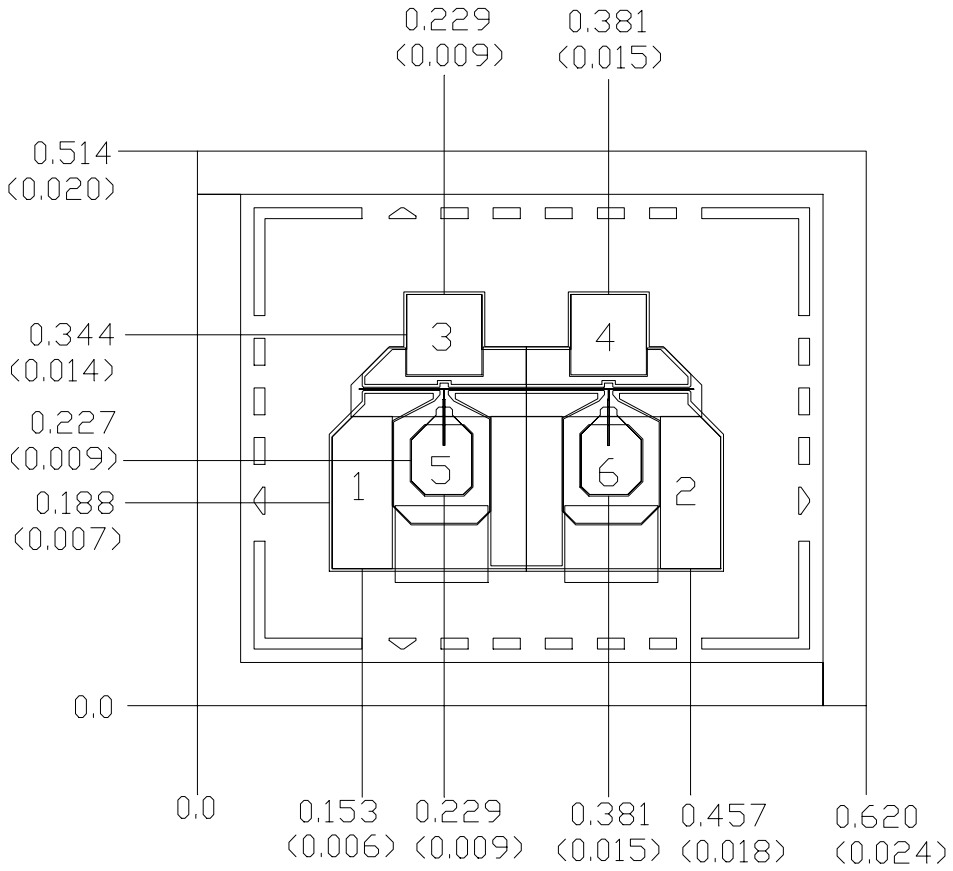


TGF4350 pHEMT Model (Vds = 3.0 V and 15mA at T = 25°C)

Device is mounted on a 20 mil high ledge. Source inductance includes that of source bondwires and ledge



Mechanical Drawing



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,#2 (Source)	0.056 x 0.123	(0.002 x 0.005)
Bond Pad #3,#4 (Drain)	0.070 x 0.074	(0.003 x 0.003)
Bond Pad #5,#6 (Gate)	0.056 x 0.065	(0.002 x 0.003)

Process and Assembly Notes

This device can be attached using conductive epoxy or AuSn solder.

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.