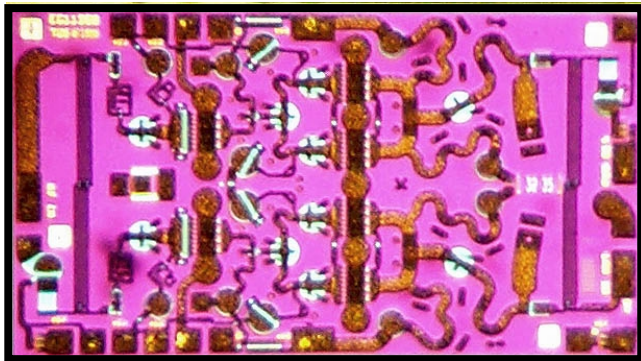


**18-27.5 GHz 1W Power Amplifier**

**TGA1135B**



Chip Dimensions 2.641 mm x 1.480 mm

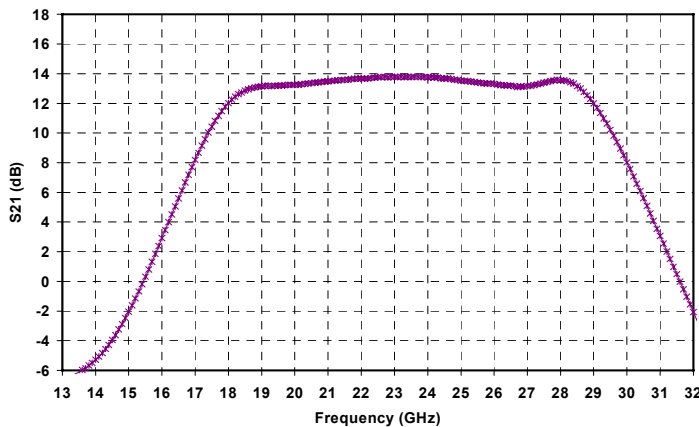
**Key Features**

- 0.25 um pHEMT Technology
- 14 dB Nominal Gain at 23GHz
- 30 dBm Nominal P1dB
- 38dBm OTOI typical
- Typical 15dB Input/Output RL
- Bias 6 - 7V @ 540 mA
- On-chip power detector diode

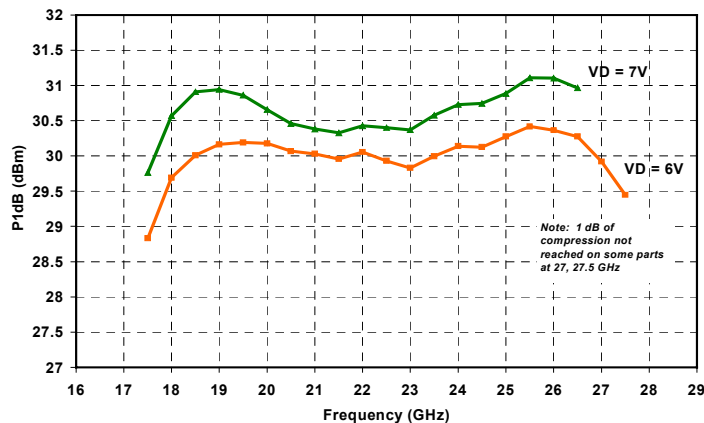
**Primary Applications**

- Point-to-Point Radio
- Point-to-Multipoint Communications
- Ka Band Sat-Com

TGA1135B Fixed Amplifier Typical Small Signal Data  
Wafer 993150303, 6V/540mA



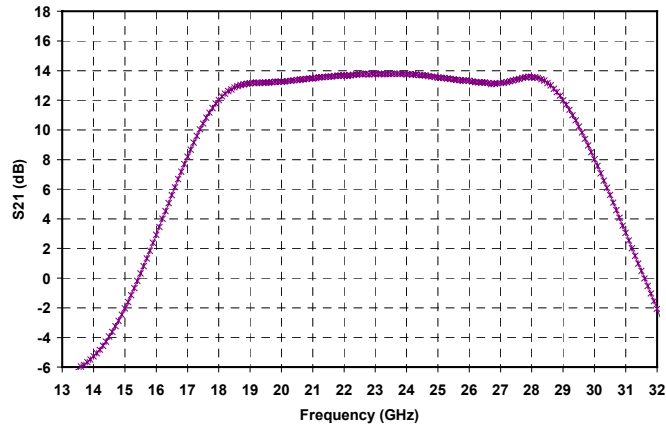
TGA1135B Nominal Output Power  
Wafer 993150303, Idq=540mA



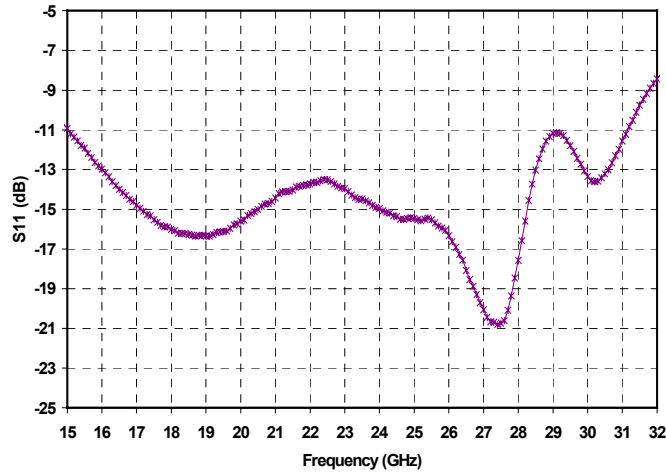
Note: Devices designated as EPU are typically early in their characterization process prior to finalizing all electrical and process specifications. Specifications are subject to change without notice

**Measured small signal data  
6V, 540mA**

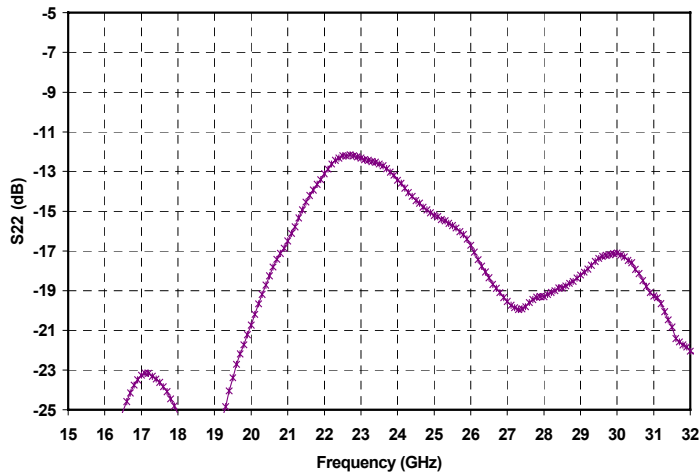
S21



S11



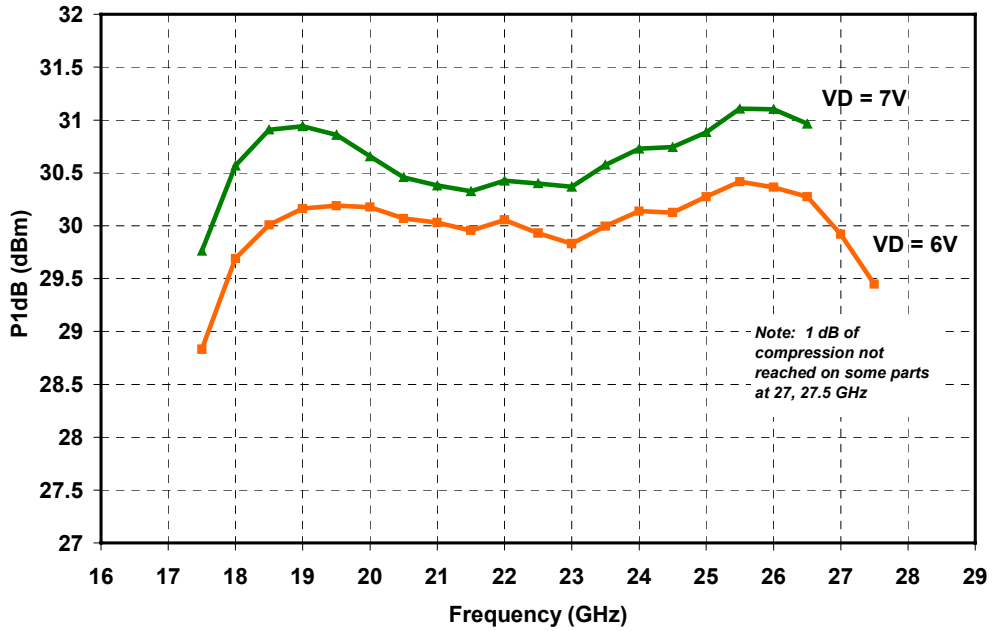
S22



*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.*

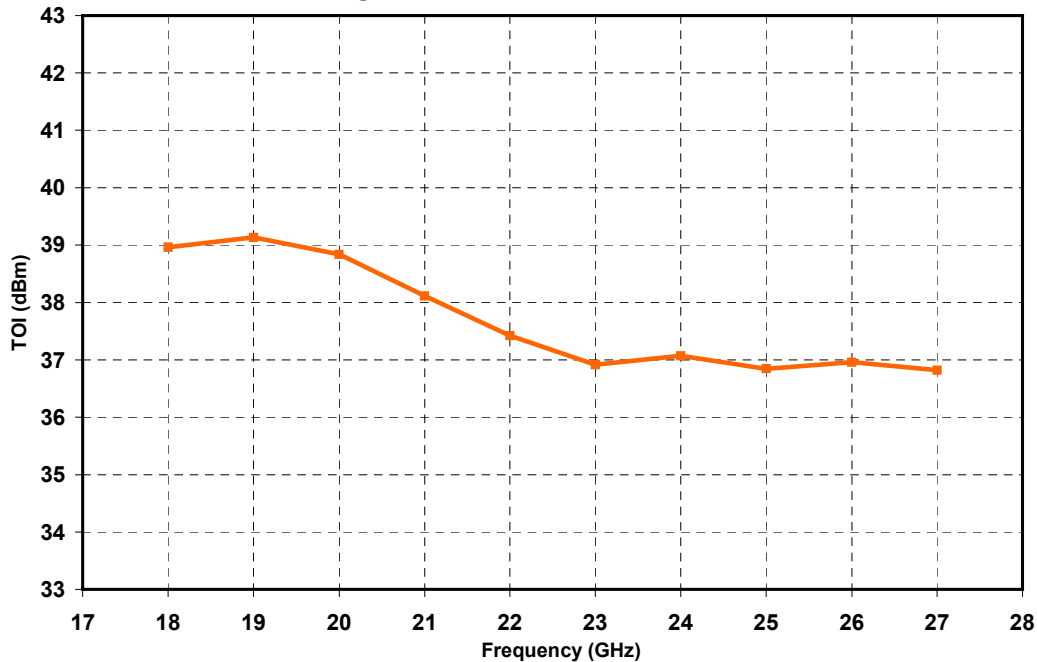
**TGA1135B**

**TGA1135B Nominal Output Power**  
**Wafer 993150303, Idq=540mA**



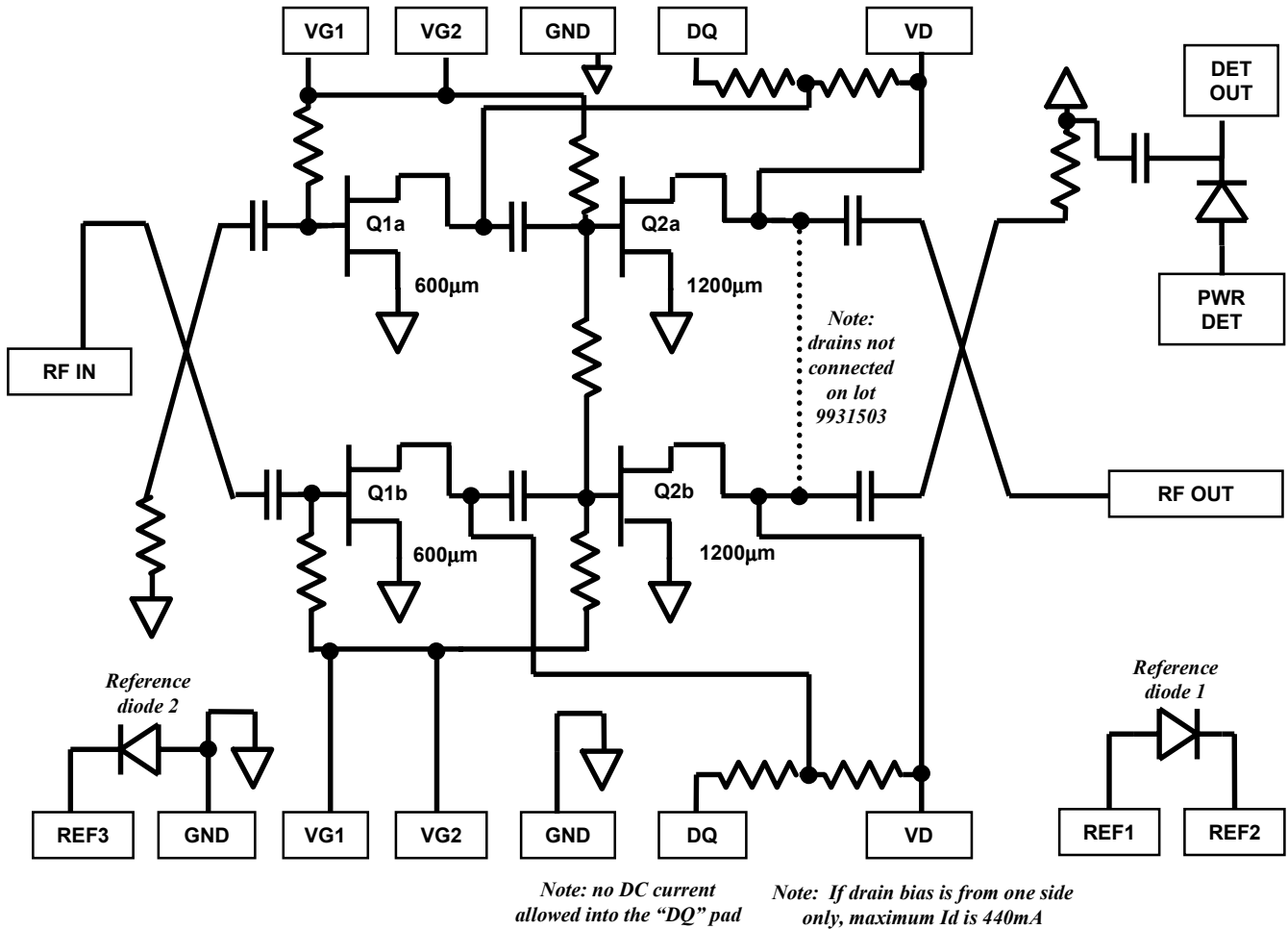
**P1dB Measured Data**

**TGA1135B wafer 993150303 nominal performance**  
**TOI performance @ Pin SCL=7dBm: Vd=6V, Id=540mA, separation = 10MHz**



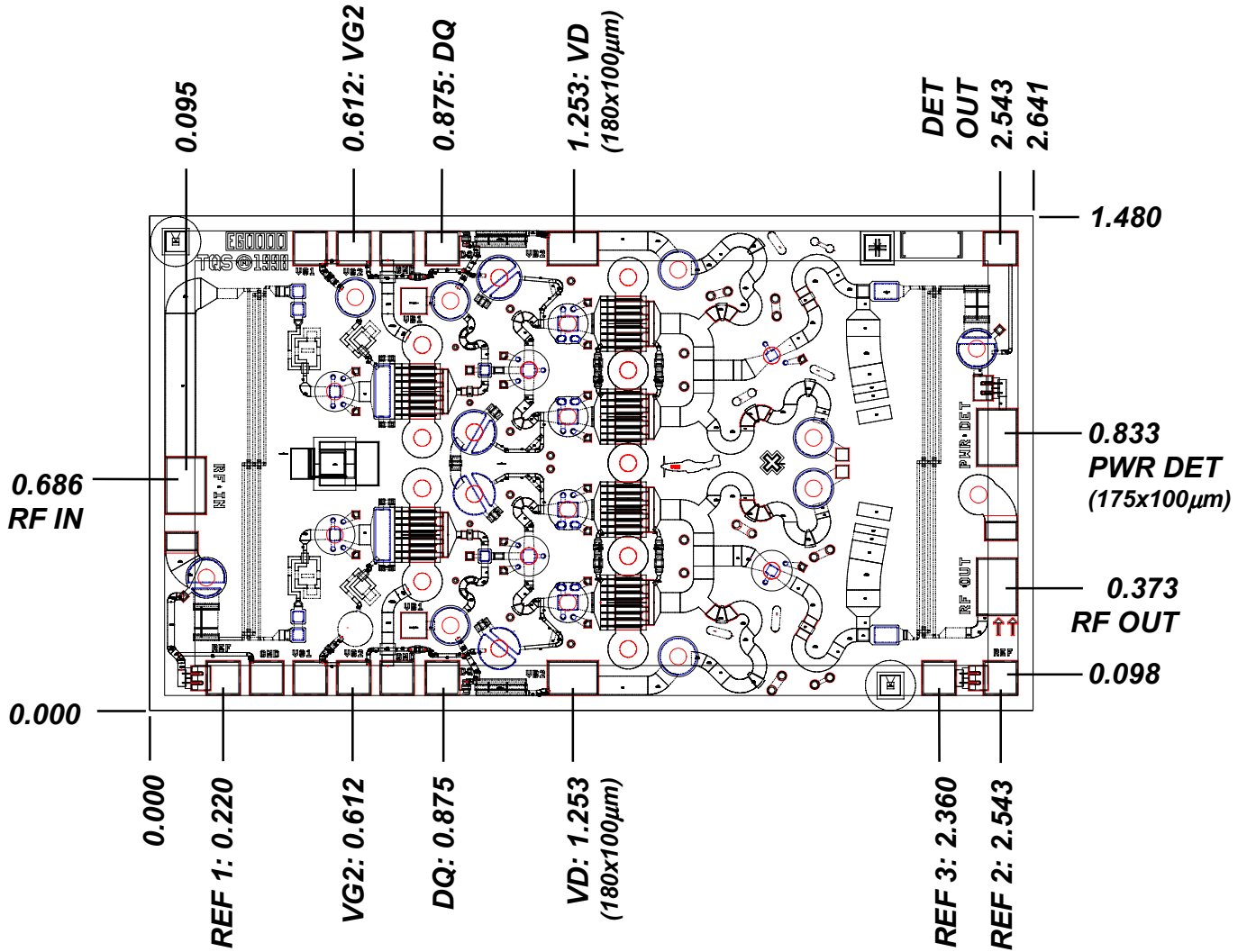
**Output TOI Measured Data**

*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.*



DC Schematic

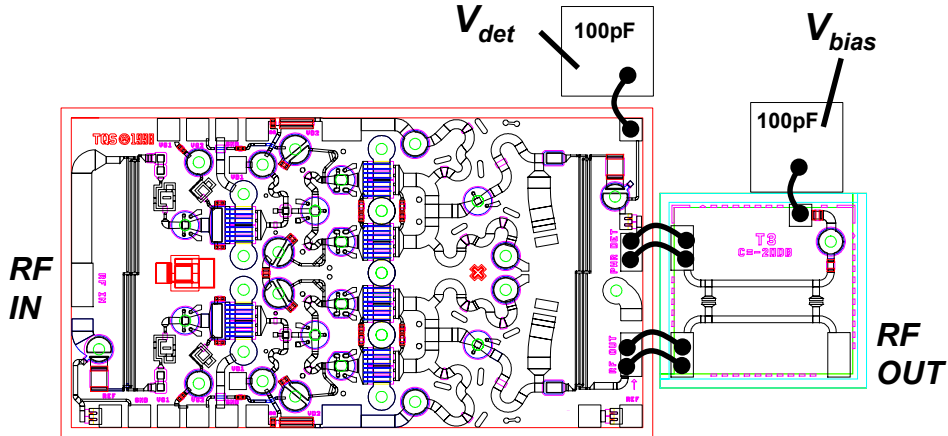
*Note: Devices designated as EPU are typically early in their characterization process prior to finalizing all electrical and process specifications. Specifications are subject to change without notice.*



Dimensions in mm  
 RF I/O Pad: 200x100 mm  
 DC Pads: 105x105 mm  
 Die Area: 3.909 mm<sup>2</sup>

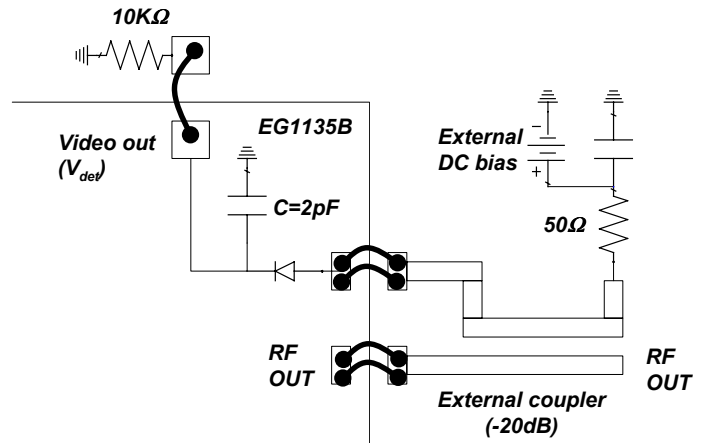
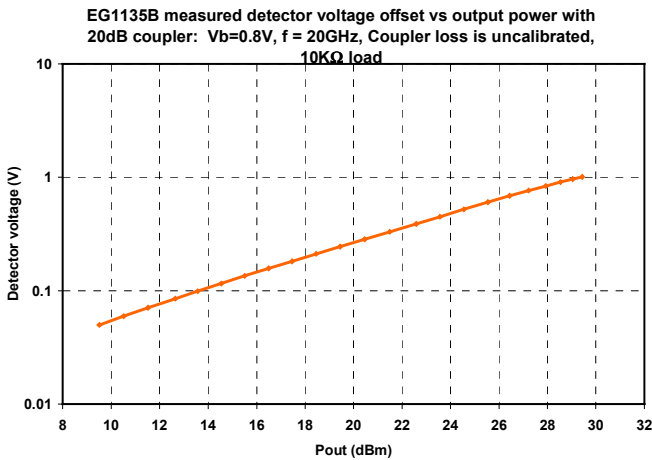
*Note: Devices designated as EPU are typically early in their characterization process prior to finalizing all electrical and process specifications. Specifications are subject to change without notice.*

**TGA1135B built-in power detector**

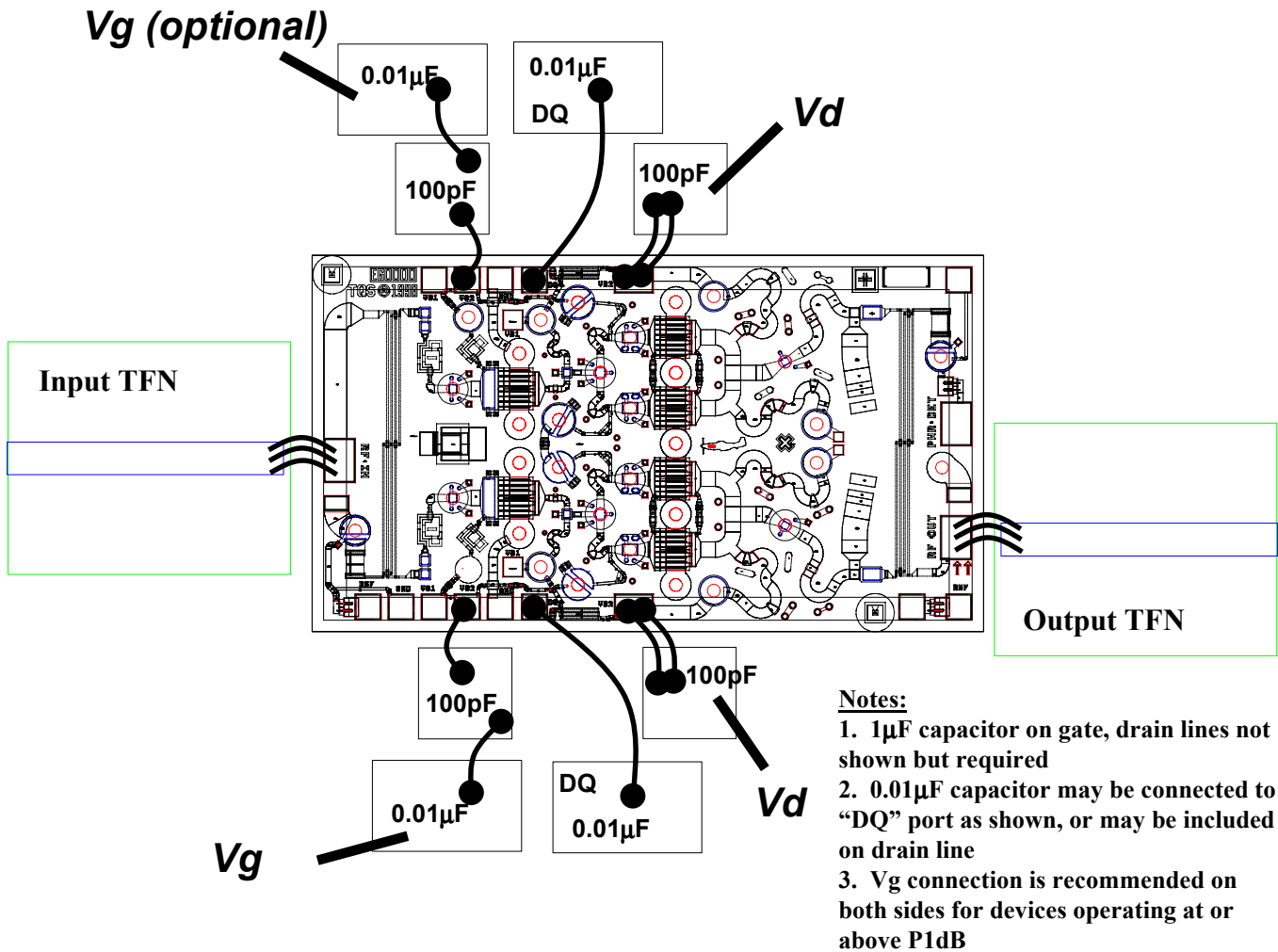


**TGA1135B with external test coupler  
(amplifier bias connections not shown)**

**On-chip diode functions as envelope detector  
External coupler and DC bias required**



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.



Chip Assembly and Bonding Diagram

**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:

- 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.***

*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.*