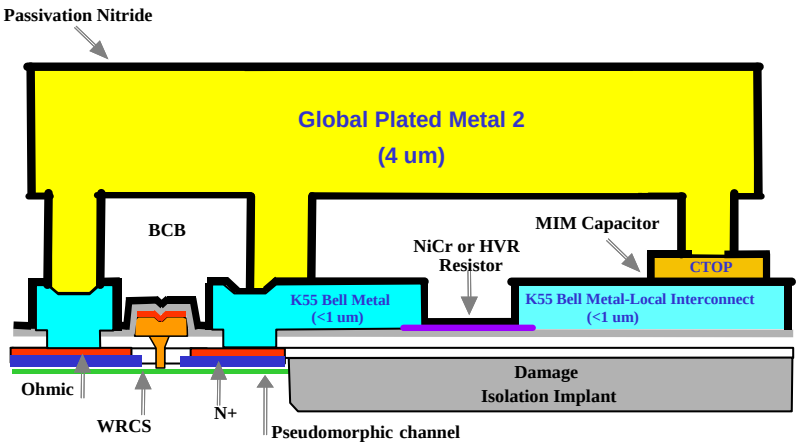
TQP15

0.15um D-mode pHEMT Foundry Service

Updated Process Diagram



TQP15 Process Cross-Section

General Description

TriQuint's TQP15 process is based on our production-released TQP13 and our limited release TQP25 processes. TQP15 is a breakthrough technology offering both high breakdown voltage and high frequency/ gain capability all within an optical process technology that enables commercialization of mmw markets. TQP15 is targeted at the emergent Ka-band segment and is ideal for the VSAT, satellite communications, and point-to-point radio markets. The two metal interconnecting layers are encapsulated in a high performance dielectric that allows wiring flexibility, optimized die size and plastic packaging simplicity. Precision NiCr resistors and high value MIM capacitors are included allowing higher levels of integration, while maintaining smaller, cost-effective die sizes.

Features

- D-Mode, -1.0 V Vp
- InGaAs Active Layer pHEMT Process
- 0.15 µm Low Cost Optical Lithography Gates
- High Density Interconnects:
  - 1 Global
  - 1 Local
- High-Q Passives
- Thin Film Resistors
- High Value Capacitors (620 pF/mm^2
- Backside Vias Optional
- Based on Production TQP13 and Limited Release TQP25 pHEMT Processes

Applications

- Medium Power, D-Mode Applications
- Point-to-Point Radio
- Converters
- VSAT
- Ka-band Power Amplifiers

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TQP15 Process Details

Transistor Details @ Vds = 3.0V			
Element	Parameter	Typical*	Units
D-Mode pHEMT	Vp (1uA/um)	-1.0	V
	Idss	310	mA/mm
	Imax	550	mA/mm
	Breakdown, Vdg	12 min, 14 typ	V
	Ft @ Idss	75	GHz
	Gm @ Idss	400	mS/mm
Common Process Element Details			
Gate Length	D-Mode	0.15	µm
Interconnect		2	Metal Layers
MIM Caps	Value	620	pF/mm2
Resistors	NiCr	50	Ohms/sq
	Bulk	300	Ohms/sq

Maximum Ratings

Storage Temperature Range	-65 to +150	Deg C
Operating Temperature Range	-55 to +150	Deg C
Capacitor	40	V

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Prototyping and Development

- Prototype Wafer Option (PWO); Q2 2010:
  - Customer-specific masks; Customer schedule
  - 2 wafers delivered
  - Hot Lot cycle time
  - With thinning and sawing; optional backside vias

Process Qualification Status

- New Process based on mature TQP13 and Limited Release TQP25 150-mm processes
- Full 150mm wafer Process Qualification by Q2 2010
- For more information on Quality and Reliability, contact TriQuint or visit: www.triquint.com/manufacturing/QR/

Design Tool Status

- Preliminary Design Manual available
- Preliminary Layout Library in GSD II format available
- Preliminary Design Kit for Agilent's ADS and Microwave Office's AWR design environments available.

Applications Support Services

- Tiling of GDSII stream files including PCM
- Design Rule Check services
- Packaging Development Engineering
- Test Development Engineering:
  - On-wafer
  - Packaged parts
- Yield Enhancement Engineering
- Failure Analysis

Training

- GaAs Design Classes:
  - Half-Day Introduction; Upon request
  - Four-Day Technical Training; Summer at TriQuint Oregon facility

Manufacturing Services

- Mask making
- Production 150-mm wafer fab
- Wafer Thinning
- Wafer Sawing
- Substrate Vias
- DC Diesort Testing
- Plastic Packaging
- RF Packaged Part Testing

Please contact your local TriQuint Semiconductor Representative/ Distributor or Foundry Services Division for Additional information:
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