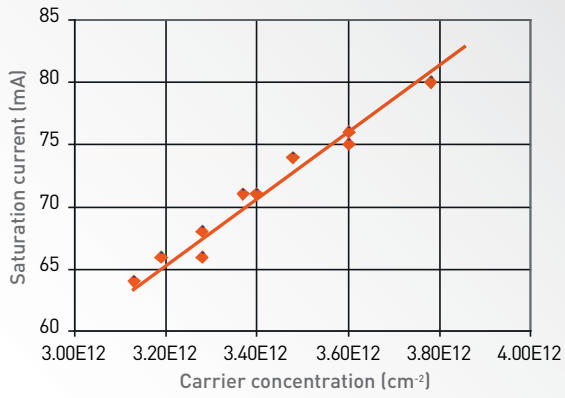
Picogiga
A Soitec Group Company International

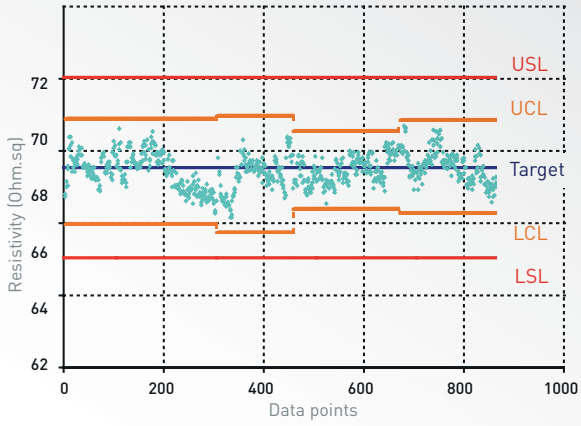
Epiwafers

GaAs Epiwafers

For RF & microwave components



1. Saturation current (customer data) as a function of the free sheet carrier density (Picogiga data)



2. SPC controls (average sheet resistivity control chart)

Features

- Generic pHEMT (AlGaAs, AlAs, InGaAs)
- Epistructure for E/D (Enhancement/Depletion) InGaP pHEMT
- P-type doping capability for PiN-pHEMT technology
- High-Low and High-Low-High MESFET
- MHEMT and pMHEMT (38% to 70%)

Benefits

Epistructure

- Epistructure customization for MESFET, HEMT, pHEMT, MHEMT, pMHEMT, diode
- Low/High temperature MBE process
- Phosphorus capability for InGaP layer
- P-type doping capability

Manufacturing

- Engineering service for better performance, better yields *(1)*
- SPC controls *(2)*
- Excellent uniformity (< 2% wafer-to-wafer)

Characterization

- Contactless resistivity, mobility & sheet carrier concentration
- XRD, PL, Hall characterization
- Large electrical device characterization (buffer isolation)

Device applications:
Switch
Power and low-noise amplifiers
Hall sensor
Optical modulator

System applications:
Wireless: cell phone *(3)*
Military-Defense: satellite, radar *(4)*
Automotive *(5)*


3.


4.


5.

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General Product Characteristics

	Parameter	Product Solutions				
Layer	Structure	MESFET	HFET	pHEMT	MHEMT	pMHEMT
Cap layer	Material	GaAs			InGaAs	
	Dopant	N-type silicon			N-type silicon	
	Thickness	from 100 to 2000Å			300Å	
Barrier	Material	GaAs	AlGaAs		AlInAs	
	Al content	–	from 15 to 30%		from 38 to 52%	
	Doping	Nid		N-type silicon	N-type silicon	
	Thickness	from 100 to 400Å			300Å	
	AlAs Etch stop option	✓			–	
	InGaP Etch stop option	✓			–	
Channel	Material	GaAs		InGaAs	InGaAs	
	Thickness	from 100 to 500Å		from 90 to 180Å	from 90 to 180Å	
	In content	–		from 15 to 24%	from 38 to 70%	
	Doping	N-type silicon		Nid	Nid	
Buffer	Material	GaAs			AlInAs	
	SL option	AlAs/GaAs			–	
		AlGaAs/GaAs			–	
Substrate	VGF, LEC	3"; 100mm; 150mm			3"; 100mm; 150mm	

► ***Please note that these are typical specifications. Customized options are also available. Please contact your sales representative for more information.***

Nid: *Non intentionally doped*
SL: *Super Lattice*
VGF: *Vertical Gradient Freeze*
LEC: *Liquid Encapsulated Czochralsky*

► *Definitions*
MESFET: *Metal Schottky Field Effect Transistor*
HFET: *Heterojunction Field Effect Transistor*
HEMT: *High Electron Mobility Transistor*
pHEMT: *pseudo-High Electron Mobility Transistor*
MHEMT: *Metamorphic High Electron Mobility Transistor*
pMHEMT: *pseudo Metamorphic High Electron Mobility Transistor*
E/D: *Enhancement/Depletion mode*

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