

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		AllnAs	
	Al content	–	from 15 to 30%		from 38 to 52%	
	Doping	Nid		N-type silicon	N-type silicon	
	Thickness	from 100 to 400Å			300Å	
	AIAs 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			AllnAs	
	SL option	AIAs/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

Features

- ▶ Generic pHEMT (AlGaAs, AlAs, InGaAs)
- ▶ Epistucture 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

Epistucture

- ▶ Epistucture 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

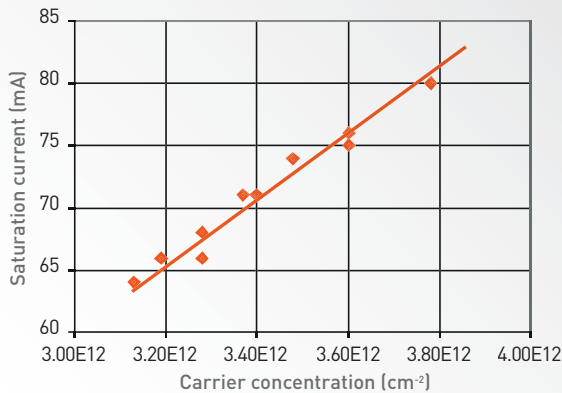
- ▶ Contactless resistivity, mobility & sheet carrier concentration
- ▶ XRD, PL, Hall characterization
- ▶ Large electrical device characterization (buffer isolation)

Device applications:

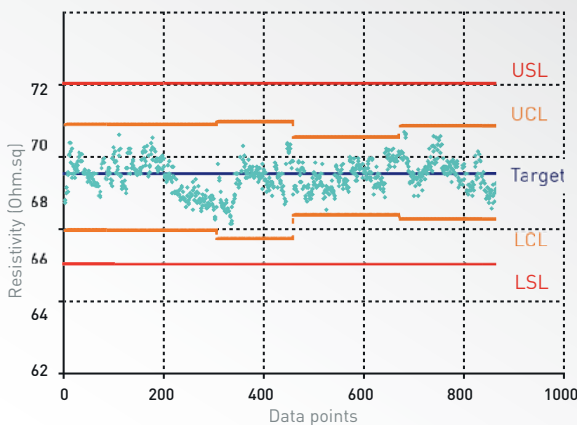
- Switch
- Power and low-noise amplifiers
- Hall sensor
- Optical modulator

System applications:

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



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



2. SPC controls (average sheet resistivity control chart)

