World Class III-V Compound Semiconductor RF Wafer Foundry

Serving the RFIC/MMIC industry, GCS offers **InGaP HBT, InP HBT, PHEMT, HFET, GaN HEMT, THz Mixer Diode, Integrated Passive Devices (IPD)** and **SAW filter** technologies.

A family of **five (5) InGaP HBT power processes** are in production, each tailored to provide an optimum performance (high power and superior linearity) for a unique application in the cellular handset, wireless communication and base station markets.

Four (4) power processes (P1, P2, P5 and P6) were designed specifically for the Handset wireless, WLAN, Mobile WiMAX and Infrastructure markets with the emphasis on **high power efficiency** and **superior linearity**; while P1 and P2 processes were developed for handset PA (WCDMA) with linearity and efficiency in mind; P2 process, in particular, has proven to be a winning formula for 802.11a,b,g,n and 802.16 PAs that achieve **high power efficiency, high ruggedness and superior linearity at the same time**. The P5 unbreakable ruggedness GSM HBT process, was designed to withstand the high VSWR ruggedness requirement of GSM, while maintaining superior RF performance. **In fact, several customers have reported excellent VSWR >15:1 with 5V Vcc bias.**

Our **high frequency D1 HBT process**, with Ft in the 60 GHz range, exhibits a **super low phase noise of -110 dBc/Hz at 100KHz offset for center frequency of up to 15 GHz** as demonstrated in many **VCO** products in the market. In addition, the D1 process is proven to be excellent for prescaler and other phase detector MMICs.

Our unique IPD process offers up to **10um** of top metal for high-Q passive components and **large through wafer Via openings for off-chip component integration.**

Besides HBT processes, we also offer 0.5um and 0.25um D-mode PHEMT, low cost Switch PHEMT, **superior linearity** 0.5/0.25um **HFET**, and **GaN HEMT** processes which allow you to compete effectively in today's markets for RF switch, PA, LNA and transceiver components of up to 40 GHz operation.

All of our processes went through rigorous reliability testing and qualification. **Today, we have been qualified by several first tier Integrated Device Manufacturers (IDM) in the US, Europe and Japan.** A qualification summary report for each process, including HTOL test data, active and passive elements stress tests results, etc. is available upon request.

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World Class III Compound Semiconductor RF Wafer Foundry

GCS provides high performance-driven foundry solutions to RFIC/MMIC design and sub-system companies in RF industry using its own proprietary process technologies.

To provide optimum performance for each unique application, GCS offers a broad portfolio of proprietary technologies. For RFIC/MMIC products, high power and high linearity InGaP HBT, PHEMT, HFET, GaN HEMT and RF Integrated Passive Devices (IPD) processes are available.

Technology	Process	Application
InGaP HBT	P1	High Linearity for Handset and WLAN PAs
	P2	High Linearity for Handset and WLAN PAs
	P5	High Ruggedness for GSM/DCS PA
	P6	HBV for Infrastructure Amps
	D1	Low Phase Noise for VCO components
InP HBT	SHBT1 (180GHz Ft)	High-speed Dig. & Analog ICs
	DHBT1 (150GHz Ft)	High V. Analog and RF ICs
	DHBT2 (250GHz Ft)	Super-high-speed ICs
	DHBT3 (300GHz Ft)	
GaAs HEMT	0.5 um D-Mode	PA and LNA to 20GHz
	0.5 um Switch	Low-cost RF Switches
	E/D-Mode PHEMT	Integrated Multifunction ICs
	0. 5um HFET	High Linearity for WiMAX and Infrastructure PAs
	0.25 um HFET	
	0.25 um PHEMT	Amplifiers up to 40 GHz
GaN HEMT	0.25 and 0.5um GaN HEMT	High V, High Power PA up to 20GHz
THz Mixer Diode	High fco Schottky Diode	Low-loss Mixer of up to 100GHz operation
RF Passives	High-Q LCR on GaAs	Filter and Matching/Bias Network
SAW	0.4um Linewidth/Spacing	Filters up to 2.4GHz
Optoelectronics	Custom GaAs and InGaAs PIN PD	850/1310/1550 nm
	Photonics ICs	Monolithic integratrion of PD, MPD and Laser
	QWIP	LWIR (9 um) Focal Plane Array
	Ridge Waveguide, SOA	Customer-specific
	Modulators, Laser Diode	
	VCSEL	850 nm, customer-specific
	LED / RCLED	LPH Array, POF
	GaN LED	Blue GaN LED

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