GCS InGaP HBT Process Summary

GCS offers a total of four (4) power processes (P1, P2, P5 and P6) for Handset wireless, WLAN, Mobile WiMAX and Infrastructure markets.

Our P1 and P2 processes are designed to achieve **High Ruggedness** and **Superior Linearity** at the same time.

The P5 process featuring **Unbreakable Ruggedness** and **High Power Efficiency** at the same time was designed for GSM/EDGE power amplifier application. Several customers (including IDMs) have reported excellent VSWR >15:1 with 5V Vcc bias.

The P6 process was designed with high breakdown voltage which enables high voltage (up to 10V bias) and high power application

Our high frequency VCO InGaP HBT process with integrated varactor, 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, this process is also proven to be excellent for prescaler and other phase detector MMICs.

GCS InGaP HBT Process Summary

- A family of HBT processes specifically designed for different applications
- All Process have passed extensively reliability and environmental tests
- All processes have been qualified by tier-one customers (including IDMs) and in production since 2001

Parameters	Unit	P1	P2	P5	P6	D1 (High fT)
Applications		CDMA, WLAN, Linear Gain Block	CDMA, WLAN, WiMAX Linear Gain Block	GSM, Driver Amp	Hi BV Driver Amp for Base Station, CATV	VCO, High-speed Digital and Mixed-signal ICs
Current Gain @1KA/cm^2 (14x14 cm^2)		120	70	70	70	150
BVceo @ 2KA/cm^2	V	12.5	13.5	18.5	23	7.5
BVcbo @ 2KA/cm^2	V	23	23	33	45	17
fT/fmax	GHz	45/55	40/58	32/60	30/65	60/65
Schottky Diode		Yes	Yes	Yes	Yes	Yes
Performance Example		Pout = 28 dBm, PAE = 65%, G = 20dB, Vcc = 3.5V, Freq = 2.0 GHz, DUT = 1700 um^2	Pout = 28 dBm, PAE = 65%, G = 20dB, Vcc = 3.5V, Freq = 2.0 GHz, DUT = 1,700 um^2	Pout = 36 dBm, PAE = 70%, Lin. G = 18 dB, Vcc = 3.6V, Freq = 0.9 GHz, DUT = 6,900 um^2	Pout = 33 dBm, PAE = 70%, G = 21dB, Vcc = 10V, Freq = 2.0 GHz, DUT = 1,700um^2	VCO fo=4.990 to 5.154 GHz Po=9.5dBm PN=105dBc/Hz @ 100KHz offset