



## GLOBALFOUNDRIES 130, 55, 45, 28, 22, 12nm PROTOTYPING AND VOLUME PRODUCTION

Picture Source: GLOBALFOUNDRIES Dresden

Through EUROPRACTICE-IC, customers from both academic and private sectors can access Multi-Project-Wafer and Volume Production services of GLOBALFOUNDRIES.

### Why EUROPRACTICE?

- ▶ Affordable and easy access to Prototyping and Small Volume Production services for academia and industry.
- ▶ MPW (Multi-Project-Wafer) runs for various technologies, including ASICs, Photonics, MEMS and GaN.
- ▶ Advanced packaging, system integration solutions and test services.

### Why GLOBALFOUNDRIES?

- ▶ The world's leading specialty foundry with the flexibility to meet the dynamic needs of clients.
- ▶ Broad range of platforms and features, such as RF CMOS, FDSOI, RFSOI, SiGe, FinFET, SiPhotonics.
- ▶ Technology nodes ranging from 350nm down to 12nm.
- ▶ 22nm and 28nm nodes fabricated in Dresden, Germany.

### Technology Highlights

#### GF 130BCDLite-GEN2

The GF 130BCDLite process is tailored for cost-effective mobile/consumer applications: DC-DC, AC-DC, PMIC, Wireless and Quick Charging.

#### GF 55BCDLite

Industry's first 55BCDLite technology (300mm, Cu BEOL). 55BCDLite is built on top of 55LPx platform. It delivers optimal performance for mobile audio amplifiers and smart phone power solutions enabled by its industry leading lowest RdsOn versus BVdss breakdown voltage.

#### GF 45SPCLO-Silicon Photonics

45SPCLO is a 45nm generation SOI CMOS technology that supports (ASIC) designs and custom logic designs. It offers power, area, and performance advantages and efficiency providing more data per watt per fibre per Laser. Monolithic integration of RF, digital and Si-Photonic circuits with higher energy efficiency and higher modulation speed. Ideal for applications like Automotive Lidar, IoT, Cloud, Frictionless Networking, Virtualization and Hierarchical AI.

#### GF 28SLPe

The 28nm Super Low Power (SLPe) utilizes High-k Metal Gate (HKMG) "Gate First" technology and offers complete RF modelling for high performance RF-SoC applications. As a result, it provides superior Performance, Power, Area and Cost (PPAC) characteristics, optimized scalability (die size, design compatibility, performance) and manufacturability.

## GF SiGe 8XP

GF's SiGe 8XP technology drawn at 130nm features low noise figures, high linearity, gain, breakdown and operating voltages, together with simplified impedance matching and excellent thermal stability. Advanced SiGe heterojunction bipolar transistors (HBTs) provide superior low-current and high-frequency performance while enabling the technology to operate at high junction temperatures.

## GF 45RFSOI

45RFSOI takes advantage of a 45nm partially-depleted SOI server-class technology base that has been extensively evaluated for use in mmWave applications and in high volume production at multiple GF fabs since 2008. Today, this baseline process has RF-centric enablement, topped with device and technology additions, including thick copper and dielectric back-end-of-line (BEOL) features which enable 45RFSOI to handle the demanding performance requirements of 5G solutions.

## GF 22FDX

GF 22FDX employs 22nm Fully-Depleted Silicon-On-Insulator (FD-SOI) technology that delivers outstanding performance at extremely low power with the ability to operate at 0.4V ultra-low power and at 1pA per micron for ultra-low standby leakage. It has Integrated RF and mmWave devices for 5G architectural innovation and reduced system cost.

## GF 12LP+

The 12nm GLOBALFOUNDRIES 12LP+ FinFET process technology platform is ideal for high-performance, power-efficient SoCs in demanding, high-volume applications. 3D FinFET transistor technology provides best-in-class performance and power with significant cost advantages from 12nm area scaling. The 12LP+ technology can provide up to 20% higher device performance and 36% lower total power compared to the 12LP technology.

## Technology Details

130BCDlite-Gen2	8XP	55LBCDlite	45RFSOI
<p>Core Voltage: 1.5V/5V/30V                      I/O Voltage: 1.5V/5V/30V                      Metal layers: 4 - 8                      2 core device Vt's                      Iso- and low Rds(on) N/PLDMOS (10V-40V)                      HRES, Zener diode, MIM, MOM capacitors, eFlash</p>	<p>Core Voltage: 1.2V/2.5V                      Metal layers: 5 - 8                      HBT ft/fmax (GHz): 250/340                      High Breakdown: 3.2V BVceo @ 78GHz fT                      μ/mmWave passive elements                      Inductors and Tx lines</p>	<p>Core Voltage: 0.9V/1.2V                      I/O Voltage: 1.8V/2.5V/3.3V                      High Voltage: 5V/12V/20V/30V                      Metal layers: 6 - 7                      SRAM/ROM Compilers, 5V EDMOS, LDMOS, Hybrid EDMOS, MIM CAP and Inductor options</p>	<p>Core Voltage: 0.9V/1V                      Metal layers: 7 - 8                      3 core device Vt's (HVt, SVt, UVt)                      High ft/fmax (290/410 GHz)                      FET stacking for higher PA Pout and PAE                      High and low density MIM Caps</p>
45SPCLO	28SLPe	22FDX	12LP+
<p>Core Voltage: 0.9V/1V                      Metal layers: 8 Cu and 1 Al                      Single wire and coupled wire CPW, eFuse                      VNCAPI, inductors                      C-band (1550nm) coherent transceivers modules                      O-band (1310nm) direct detect transceivers</p>	<p>Core Voltage: 1V                      I/O Voltage: 1.5V/1.8V                      Metal layers: 6 - 11                      4 core device Vt's                      3μm thick top metal                      High ft: 310 GHz                      Value-added RF devices for RFSOC integration</p>	<p>Core Voltage: 0.4V - 0.8V                      I/O Voltage: 1.2V/1.5V/1.8V/3.3V                      Metal layers: 7 - 10                      4 core device Vt's                      34x Ultra Thick Top metal                      Reference flow for back-gate biasing                      Integrated RF/mmWave devices with high ft/fmax</p>	<p>Core Voltage: 0.8V                      I/O Voltage: 1.2V/1.35V/1.5V/1.8V                      Metal layers: 8-13                      Dual STI, DDB, SDB,                      Single Fin Logic                      VNCAPI, Standard MIM, Adv MIM, Inductors, Precision MOL Resistor, eFuse</p>

