130 BCDLite® & BCD
130nm 1.5V to 85V Process Technologies

Highlights

- New 130nm BCDLite Gen2 release affords up to 50% $R_{0.5}$ improvement and up to 30% greater logic density
- 130nm feature size with industry-leading analog and power devices
  + Manufactured in Singapore
  + High volume production with D0 (<0.04 def/in²) defect density
- 130nm BCDLite Platforms for mobility and consumer applications
  + Isolated 5V to 40V Low $R_{0.5}$ power devices for optimal trade-off between performance and cost
- 130nm BCD Platforms for industrial and automotive power ICs
  + World-class $R_{0.5}$ for 5V to 85V FETs
  + Automotive AEC Q100 Grade 1 and Grade 0 (contact GF for Availability) qualification
- 130nm BCDLite® and BCD eFlash for embedded power ICs
  + Integrated with SST ESF1 1st generation SuperFlash technology
- Extensive services and supply chain support
  + Regularly scheduled MPWs
  + Layout database consolidation and mask assembly services
  + Advanced packaging and test solutions including 2.5D and 3D

GLOBALFOUNDRIES’ BCDLite and BCD process technologies offer a modular platform architecture based on the company’s low power logic process with integrated low and high voltage bipolar transistors, high voltage EDMOS/LDMOS transistors, precision analog passives, and non-volatile memory to offer superior cost and performance.

- New Gen2 release with significant performance improvements
- BCDLite is tailored for cost-effective mobile/consumer applications: DC-DC, AC-DC, PMIC, Wireless and Quick Charging
- BCD high-temp rated transistors and rugged power devices are ideal for industrial and automotive applications
- High performance power and high-voltage transistors
- Integration of separate digital controllers and analog/power ICs into mixed-signal solutions

Target Applications and Solutions

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<th>130nm BCDLite®</th>
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Technology Overview

- 5V CMOS baseline with 1.5V LP CMOS
  + 130nm BCD with N-buried layer and deep trench isolation
  + 130nm BCDLite with N-epi and junction isolation
- 300mm with Cu BEOL
- High-performance power and high-voltage transistors
  + Iso- and low R_ds(on) N/PLDMOS (10/12/16/20/24/30V /40V) for 130nm BCDLite and 130nm BCD
  + Low R_ds(on) N/PLDMOS (40-85V) for 130nm BCD
- HRES, Zener diode, MIM and MOM capacitors
- Automotive Grade 1 (130nm BCDLite) and Grade 0 (130nm BCD) options
- eFlash: >10k endurance
- Tj rating –40°C up to 175°C

Application-optimized Platform Modules

- Modular: LDMOS passive devices are selectable for better cost or performance
- LR LDMOS: Low R_ds(on) 10–40V for PMIC, audio amp and wireless charger applications
- Cu BEOL: Low resistivity for power-hungry fast charger and power management applications
- Automotive: Grade 0 with eFlash—ideal for automotive powertrain and in-vehicle networking

BCDLite Cost-optimal Roadmap

Applications vary widely, ranging from full analog to integrated solutions. As the percentage of digital content increases, it puts a premium on smaller feature sizes to control die area and cost. GF offers a full range of feature sizes to help you find the right choice for each application. The chart below shows the impact of process choice on die cost as a function of feature size and digital content for a typical 12V PMIC.

IP Overview

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<th>Memory</th>
<th>Design Enablement</th>
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<td>SRAM Compiler</td>
<td>SPICE: BSIM4.5 with Sub Ckt</td>
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<td>6T, 7T, 9T) GPIO</td>
<td>NVM: eFuse</td>
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<td>1.5V, 5V)</td>
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<td>GPIO (1.5V, 5V)</td>
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<td>SRAM and ROM Compiler</td>
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Contact GF for IP availability.

GLOBALSOLUTIONS® Design and Manufacturing Ecosystem

GLOBALSOLUTIONS is the sum of our internal resources and ecosystem partners, combined to efficiently enable the fastest time-to-volume. This ecosystem includes partners in all aspects of design enablement and turnkey services, OPC and mask operations, and advanced capabilities in assembly solutions.

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