GLOBALFOUNDRIES 40LP process technology platform is ideal for power- and price-sensitive mobile and wireless applications with flexible mixed-technology options for RF, low voltage and automotive. 40LP also enables mmWave solutions for applications that require greater than 30GHz operation. 40LP provides up to 40% less power, 60% less area and significantly lower cost compared to 65nm technologies. The 40nm platform supports a wide choice of device component options to meet your exacting low-power product specifications.

Target Applications and Solutions

- mmWave Automotive Radar (40LP+RF+eNVM)
- Single-chip PMIC / motor control (40LP+eNVM)
- Automotive (Body Electronics / Power Train) (40LP+eNVM)
- Wearables (40LP+RF)
- NFC devices (40LP+eNVM)
- Industrial / Smart Meters (40LP)
Technology Overview

- 40nm LP with 1.1V CMOS logic
  + 4 core device Vt's
  + 2.5V I/O with Overdrive (3.3V) and Underdrive (1.8V) options, and 1.8V I/O with Underdrive (1.5V) option
- APMOM, MIM and MOS capacitors
- eFuse macro
- Large suite of passive devices
- Wide choice of productized metal stack options
- Standard temperature range: -40°C to +105°C

IP Overview

The 40LP Platform IP portfolio includes a wide range of silicon-proven high performance, power-optimized solutions for a broad set of applications.

<table>
<thead>
<tr>
<th>Foundation IP</th>
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<tr>
<td>Standard Cell 9T</td>
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<td>Standard Cell 12T</td>
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<tr>
<td>SRAM &amp; ROM Compiler</td>
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<td>PLL</td>
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<th>Interface IP</th>
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<tr>
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<td>SATA I/II</td>
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<td>MIPI D-PHY</td>
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<th>Memory</th>
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<tr>
<td>NVM: eFlash</td>
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<td>ROM</td>
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Contact GF for IP availability.

40nm Platform Extensions

The 40nm LP platform offers numerous technology options that enable you to further innovate and differentiate your design.

- RF: RF models for high frequency wireless connectivity for low power applications
- eNVM: Consumer and Automotive grade embedded NVM for MCU, IoT
- Automotive: Grade 2 and 1 for high reliability, AEC-Q100 (Rev.G) qualified process

40nm High Performance and High Reliability eFlash solution

- Fast Speed
  • Read Access ~10ns
  • Sector Erase time ~10ms
  • Word Program speed ~10μs
- Small Macro
  • 0.066μm² bit cell
  • Optimized macro
  • Flexible macro form factor
- Cost Benefit
  • 30% smaller bit cell than 55nm
- High Density
  • NVM Memory density up to 16Mb
- Power Efficient
  • Active \( I_{\text{read}} < 200μA/MHz \) (low-power mode)
- Reliable
  • Automotive grade
  • 10 year data retention
- Endurance
  • >200k Cycles

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.

40nm LP Process Technology

- Libraries (Standard Cells, Memories)
- Analog / Mixed-signal
- Processor IP
- High-speed Interfaces

- Full Suite PDK, Reference Flow
- 40nm LP Process Technology
- SoC Packaging
- 2.5D and 3D Packaging

GLOBALFOUNDRIES® Design and Manufacturing Ecosystem

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