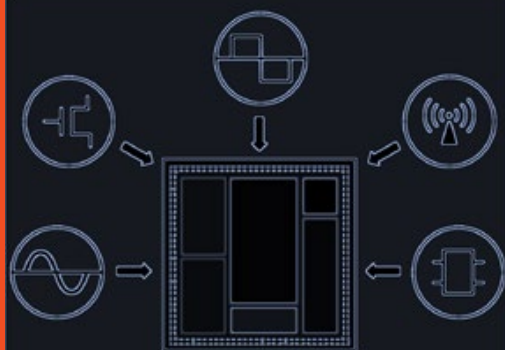




GLOBALFOUNDRIES®



# 40LP

## 40nm Process Technology

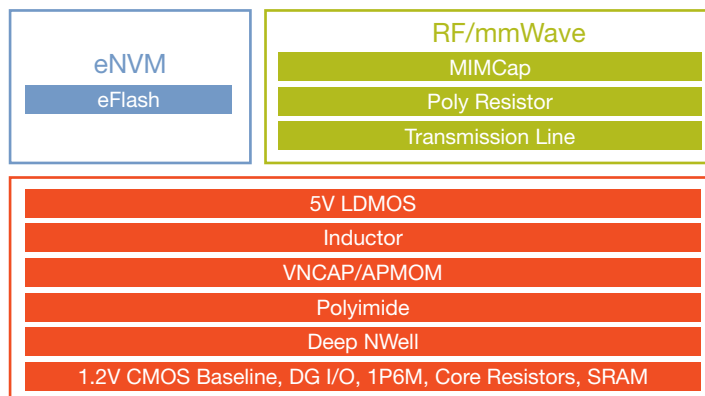
### Highlights

- Single 40nm platform to support logic, analog, RF and eNVM
  - + Reusable designs for maximum ROI
  - + Manufactured in Singapore
  - + High volume production with fully mature D0 (<0.04 def/in<sup>2</sup>) defect density
- Optimized for mobile and wireless applications
  - + Baseband SoC
  - + Mobile Multimedia
  - + Wireless Consumer
  - + Digital TV, STB
  - + Automotive MCUs
  - + IoT
- Comprehensive design ecosystem
  - + Full range of Foundation and Complex IP libraries
  - + PDK and reference flows supported by major EDA and IP partners
  - + High performance and high reliability eFlash macro (Auto Grade 1)
- 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

### Enabling *Connected Intelligence*

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.



40LP Baseline & RF/mmWave

### 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

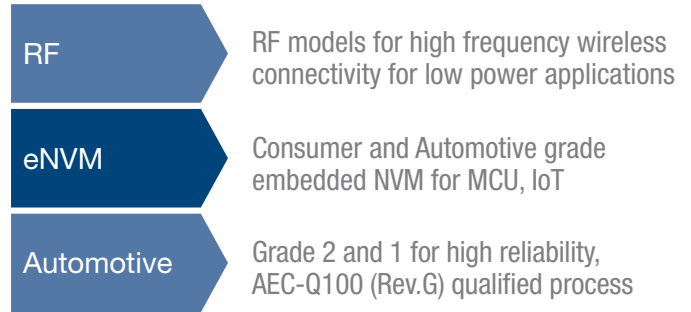
The 40LP Platform IP portfolio includes a wide range of silicon-proven high performance, power-optimized solutions for a broad set of applications.

Foundation IP		
Standard Cell 9T		Standard Cell 12T
SRAM & ROM Compiler		GPIO
PLL	Temp Sensor	ESD
Interface IP		
DDR3/2	LPDDR3/2	HDMI
SATA I/II	PCIe G1/2	USB3.0/2.0
MIPI D-PHY		SerDes
Memory		
NVM: eFlash	eFuse	NVM: OTP
ROM		SRAM

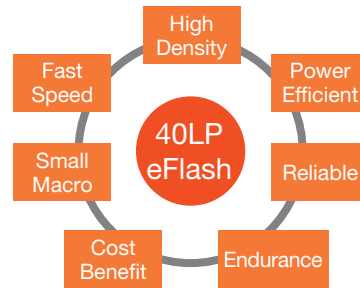
Contact GF for IP availability.

## 40nm Platform Extensions

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



## 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<sub>Read</sub> < 200µA/MHz (low-power mode)

### Reliable

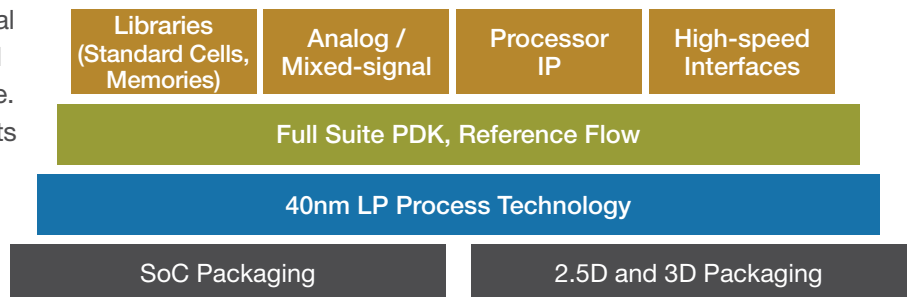
- Automotive grade
- 10 year data retention

### 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.



GLOBALFOUNDRIES®

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