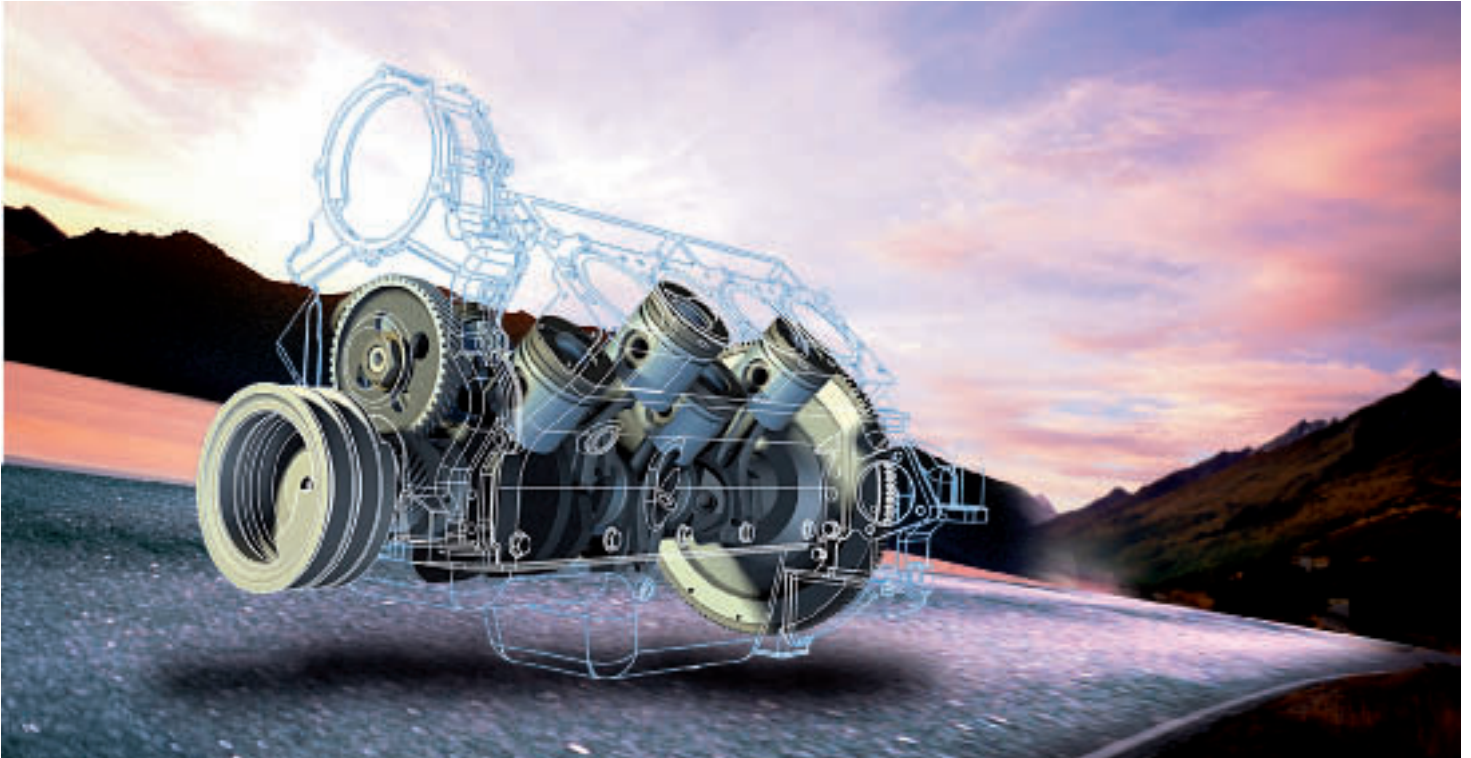


SPC563M/SPC564A

32-bit automotive microcontrollers
for powertrain applications



September 2009

STMicroelectronics' SPC563M and SPC564A families are members of a set of 32-bit Flash microcontrollers dedicated to the specific needs of mid-range engine control and automotive transmission control applications.

The modularity and compatibility of these product families set an unmatched level. A new state-of-the-art technology, combined with a high-performance core and tailor-made peripherals, make these product families the perfect platform solution, achieving the best trade-off between system cost and performance.

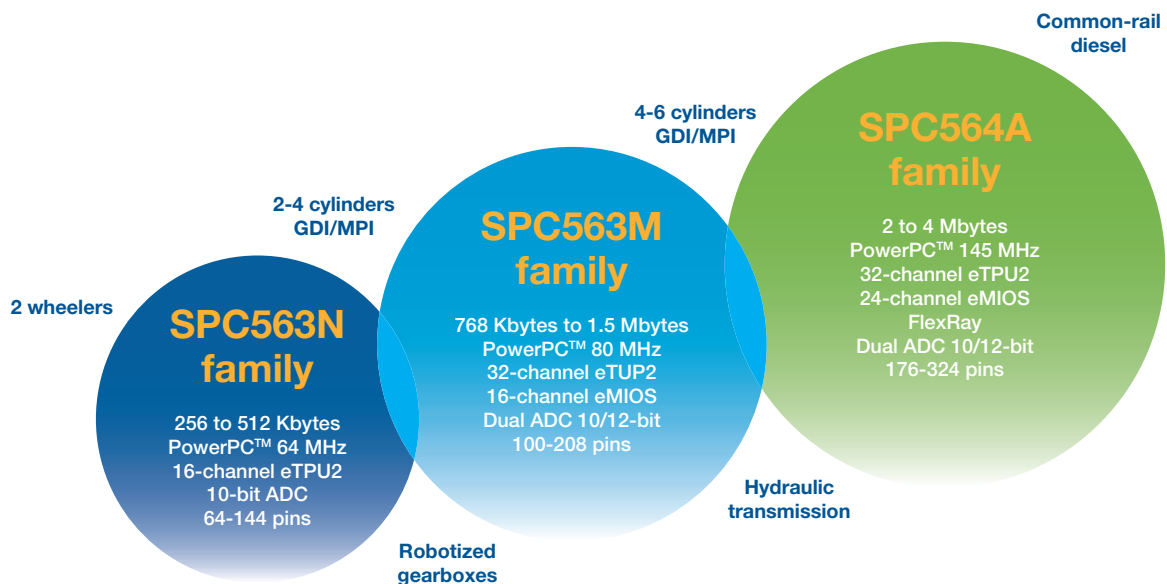
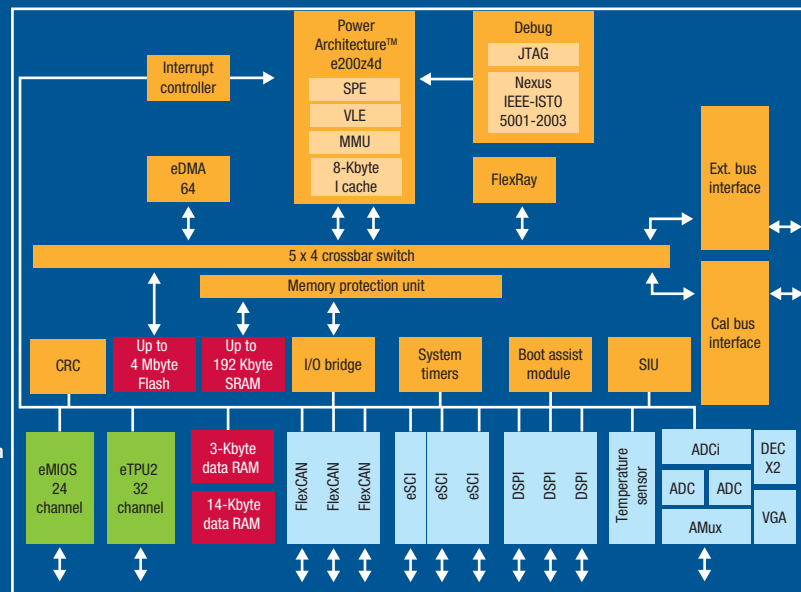
From product specification, through design and manufacturing, focus is on reliability, application robustness and added value.

The use of an industry-standard PowerPC™ core, sharing standard peripherals with similar products across all application fields, increases integration, maximizes design reuse and shortens time to market.

Applications

- 2/4-cylinder GDI/MPI
- Common-rail diesel engines
- Low-end 6 cylinder engines
- Robotized transmission
- Hydraulic transmission
- Suspension

SPC564A family block diagram



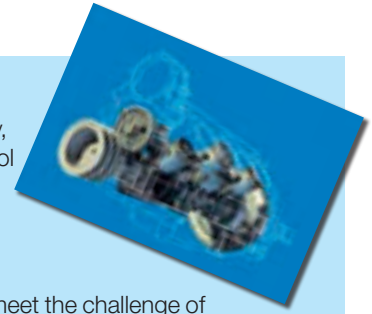
SPC56 for powertrain applications

Innovative concepts - Powering green innovations

With a dedicated eTPU2 coprocessor to offload the CPU, integrated DSP capability, and a wide range of enhancements, SPC563M devices enable tight emission control to meet new and upcoming automotive requirements.

Our SPC564A family takes this concept even further by associating the SPC563M peripherals with the latest generation of PowerPC™ cores, also including FlexRay capability.

These new families bring new solutions to automotive applications to successfully meet the challenge of more performance with enhanced energy efficiency, while decreasing overall system cost.



SPC563M/SPC564A family benefits

Tight emission control

- High-performance cores integrating digital-signal processing and vector floating-point computation for the SPC563M family, plus cache memory and dual-issue pipeline for the SPC564A family
- Enhanced timer sets (eTPU2, eMIOS)
- Dual ADCs with variable-gain input amplifier and decimation filter allowing knock detection integration

Reduced system cost

- Very high I/O availability in QFP packages
- Innovative calibration concept and tools support
- Requires only one linear 5 V voltage regulator (SPC563M family)
- On-chip integration of CRC unit and FlexRay controller (SPC564A family)

Improved time to market

- Compatibility across families through modular peripheral set
- AUTOSAR compliant, maximizing software and tools reuse
- Memory/pin-out/performance scalability

Focus on quality

- Unique dual source set-up
- Latest 90 nm automotive-focused technology
- Co-development of technology and state-of-the-art design methodology for zero defects



A comprehensive development tools offer

The SPC56 product family is supported by a wide range of development tools using a vast network of 3rd parties. This includes classical C compilers, debuggers and emulators, as well as advanced tools such as configuration tools or auto-code generators. Evaluation boards are available from ST.

Designed for AUTOSAR

All products are designed to fulfill AUTomotive Open System ARchitecture requirements.

Available AUTOSAR packages include MCAL, basic software, OS, configuration tools and on-site support.

SPC563M/SPC564A family overview

Part number ⁽¹⁾	Package	System				Memory		A/D		Timer functions		Serial interface CAN/SCI/ SPI	Others
		Core	Freq. Max.	DMA Ch.	Core Ext.	Flash (Kbyte)	RAM (Kbyte)	Units	Ch	eTPU2 (code+data RAM)	eMIOS ch		
SPC563M54	LQFP100	e200z3	64	32	FPU SIMD VLE MMU	768	48	2 x 12-bit	23	32 ⁽²⁾ (14+3 KB RAM)	16 ⁽²⁾	2/1/2/0	VGA Decimation filter Temperature sensor
	32								32 (14+3 KB RAM)	16 ⁽²⁾	2/2/2/0		
SPC563M60	LQFP100	e200z3	80	32	FPU SIMD VLE MMU	1024	64	2 x 12-bit	23	32 ⁽²⁾ (14+3 KB RAM)	16 ⁽²⁾	2/1/2/0	Cal. bus VGA Decimation filter Temperature sensor
	LQFP144								32	32 ⁽²⁾ (14+3 KB RAM)	16 ⁽²⁾	2/2/2/0	
	LQFP176								34	32 (14+3 KB RAM)	16 ⁽²⁾	2/2/2/0	
	LBGA208								34	32 (14+3 KB RAM)	16 ⁽²⁾	2/2/2/0	
SPC563M64	LQFP144	e200z3	80	32	FPU SIMD VLE MMU	1536	94	2 x 12-bit	32	32 (14+3 KB RAM)	16 ⁽²⁾	2/2/2/0	Cal. bus VGA Decimation filter Temperature sensor
	LQFP176								34	32 (14+3 KB RAM)	16 ⁽²⁾	2/2/2/0	
	LBGA208								34	32 (14+3 KB RAM)	16 ⁽²⁾	2/2/2/0	
SPC564A70	LQFP176	e200z4d	145	64	FPU SIMD VLE MMU	2048	128	2 x 12-bit	40	32 (14+3 KB RAM)	24 ⁽²⁾	3/3/3/2	CRC unit Cal. bus VGA Decimation filter Temperature sensor
	LBGA208								40	32 (14+3 KB RAM)	24 ⁽²⁾	3/3/3/2	
	PBGA324								40	32 (14+3 KB RAM)	24 ⁽²⁾	3/3/3/2	
SPC564A74	LQFP176	e200z4d	145	64	FPU SIMD VLE MMU	3072	160	2 x 12-bit	40	32 (14+3 KB RAM)	24 ⁽²⁾	3/3/3/2	CRC unit Cal. bus VGA Decimation filter Temperature sensor
	LBGA208								40	32 (14+3 KB RAM)	24 ⁽²⁾	3/3/3/2	
	PBGA324								40	32 (14+3 KB RAM)	24 ⁽²⁾	3/3/3/2	
SPC564A80	LQFP176	e200z4d	145	64	FPU SIMD VLE MMU	4096	192	2 x 12-bit	40	32 (14+3 KB RAM)	24 ⁽²⁾	3/3/3/2	CRC unit Cal. bus VGA Decimation filter Temperature sensor
	LBGA208								40	32 (14+3 KB RAM)	24 ⁽²⁾	3/3/3/2	
	PBGA324								40	32 (14+3 KB RAM)	24 ⁽²⁾	3/3/3/2	

1. Operating temperature range from -40 °C to 125 °C

2. All eMIOS and eTPU channels available through the 32-bit timed serial bus supporting Microsecond Bus frame format



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