

SPC56xB/C/D

Automotive 32-bit Flash microcontrollers
for car body applications



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STMicroelectronics' SPC56xB/C/D family of 32-bit Flash microcontrollers is dedicated to the specific needs of body and convenience applications.

The modularity and compatibility of the product family portfolio is set to an unmatched level. A new state-of-the-art technology, combined with a high-performance core and tailor-made peripherals, make this family of products the perfect platform solution, achieving the best equilibrium between system cost and performance.

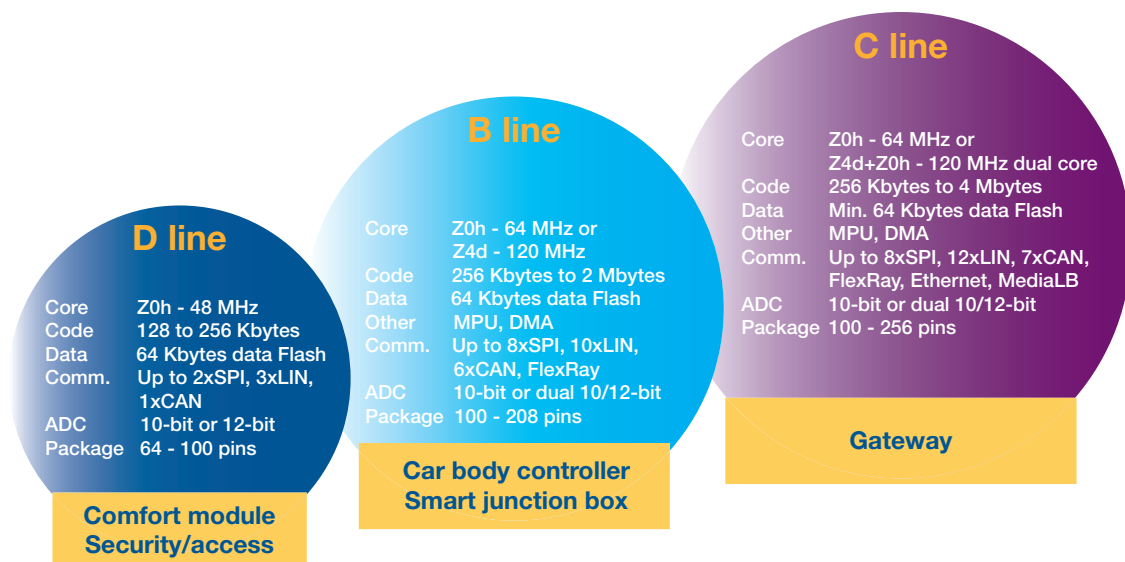
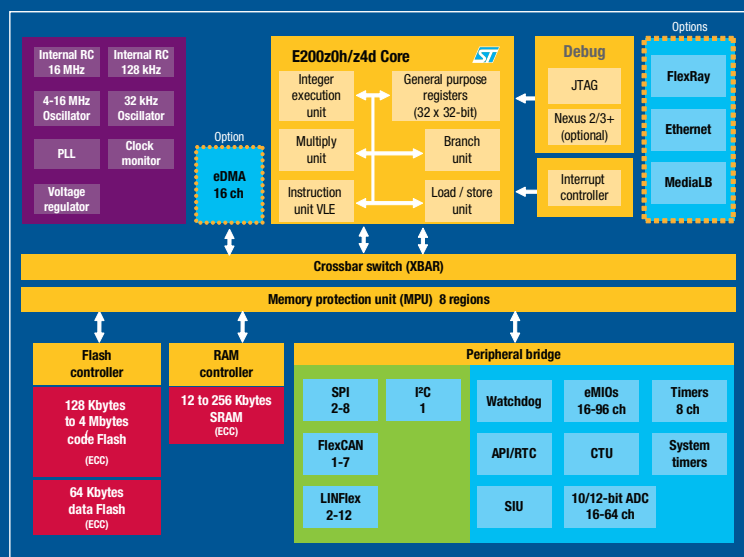
From product specification, on through design and manufacturing, focus is on reliability, application robustness and added value.

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

- Car body controllers
- Smart junction boxes
- Comfort modules
- Gateways
- Security/access
- Door and seat with sensorless positioning

SPC56xB/C/D block diagram



Innovative concepts

Lighting module support

The family features a module dedicated to the control of car lighting providing real-time diagnostic feedback for 100% of the loads. It extends the capability of existing systems as each channel can be configured on the fly for incandescent lamps and LEDs through software.



Power management

A sophisticated low-power management allows for a quantum leap in power saving, avoiding the use of a secondary microcontroller. The low-power and wake-up concepts support LIN and CAN communication from standby mode with identification of the CAN message ID triggering wake-up.

Benefits

Reduced system cost

- Lighting module with diagnostic
- EEPROM emulation support
- Improved EMI
- Innovative power management concept
- Dual on-chip RC oscillators

Improved time to market

- Standard core for maximum reuse
- Designed for AUTOSAR
- Memory/pinout/performance scalability
- Compatibility of product family
- Existing tools ecosystem and know-how

Power and robustness

- Z0h - Z4d PowerPC Core - Dual core options
- ECC on all memories
- Memory/register protection functions
- Clock security system/backup oscillator
- CPU clock independent watchdog
- Injection robust I/Os

Reduced cost of non-quality

- Zero defect strategy from design to production
- Latest 90 nm automotive focused technology
- Co-development of technology with Freescale
- Supply chain strengthened via dual source capability



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.

SPC56xB/C/D family overview for car body and convenience

Part number	Package	System		Code Flash (Kbytes)	Data Flash (Kbytes)	RAM (Kbytes)	A/D	Timed I/Os	Serial interfaces	Other ⁽¹⁾
		Core	Max. freq.						SPI/LIN/CAN/PC	
SPC560D30L1 ⁽³⁾	LQFP64	Z0h	48	128	64	12	16	6	2/2/1/0	12-bit ADC, CTU, eDMA, MPU
SPC560D30L3 ⁽³⁾	LQFP100	Z0h	48	128	64	12	32	28	2/3/1/0	
SPC560D40L1 ⁽³⁾	LQFP64	Z0h	48	256	64	16	16	6	2/2/1/0	
SPC560D40L3 ⁽³⁾	LQFP100	Z0h	48	256	64	16	32	28	2/3/1/0	
SPC560B40L3	LQFP100	Z0h	64	256	64	24	28	28	3/3/2/1	10-bit ADC, CTU, MPU
SPC560B40L5	LQFP144	Z0h	64	256	64	24	36	56	3/3/2/1	
SPC560B44L3	LQFP100	Z0h	64	384	64	28	28	28	3/4/3/1	
SPC560B44L5	LQFP144	Z0h	64	384	64	28	36	56	3/4/3/1	
SPC560B50L3	LQFP100	Z0h	64	512	64	32	28	28	3/4/3/1	
SPC560B50L5	LQFP144	Z0h	64	512	64	32	36	56	3/4/3/1	
SPC560B54L3 ⁽³⁾	LQFP100	Z0h	64	768	64	64	26	34	3/4/6/1	Dual ADC 10/12-bit, CTU, MPU, eDMA
SPC560B54L5 ⁽³⁾	LQFP144	Z0h	64	768	64	64	34	64	4/6/6/1	
SPC560B54L7 ⁽³⁾	LQFP176	Z0h	64	768	64	64	48	64	6/8/6/1	
SPC560B60L5 ⁽³⁾	LQFP144	Z0h	64	1024	64	80	34	64	4/6/6/1	
SPC560B60L7 ⁽³⁾	LQFP176	Z0h	64	1024	64	80	48	64	6/8/6/1	
SPC560B64L7 ⁽³⁾	LQFP176	Z0h	64	1536	64	96	48	64	6/10/6/1	Dual ADC 10/12-bit, CTU, MPU, MMU, eDMA, FlexRay
SPC564B64L7 ⁽³⁾	LQFP176	Z4d	120	1536	-	128	50	64	8/10/6/1	
SPC564B64L8 ⁽³⁾	LQFP208	Z4d	120	1536	-	128	50	64	8/10/6/1	
SPC564B70L7 ⁽³⁾	LQFP176	Z4d	120	2048	-	144	50	64	8/10/6/1	
SPC564B70L8 ⁽³⁾	LQFP208	Z4d	120	2048	-	144	50	64	8/10/6/1	10-bit ADC, CTU, MPU
SPC560C40L3	LQFP100	Z0h	64	256	64	32	28	28	3/4/6/1	
SPC560C44L3	LQFP100	Z0h	64	384	64	40	28	28	3/4/6/1	
SPC560C50L3	LQFP100	Z0h	64	512	64	48	28	28	3/4/6/1	Dual ADC 10/12-bit, CTU, MPU, MMU, eDMA, FlexRay, Ethernet, MediaLB ⁽²⁾
SPC56EC64L7 ⁽³⁾	LQFP176	Z4d+ Z0h	120 ⁽⁴⁾	1536	-	144	50	64	8/10/6/1	
SPC56EC64L8 ⁽³⁾	LQFP208	Z4d+ Z0h	120 ⁽⁴⁾	1536	-	144	50	64	8/10/6/1	
SPC56EC70L7 ⁽³⁾	LQFP176	Z4d+ Z0h	120 ⁽⁴⁾	2048	-	192	50	64	8/10/6/1	
SPC56EC70L8 ⁽³⁾	LQFP208	Z4d+ Z0h	120 ⁽⁴⁾	2048	-	192	50	64	8/10/6/1	
SPC56EC80L7 ⁽³⁾	LQFP176	Z4d+ Z0h	120 ⁽⁴⁾	4096	-	256	50	64	8/10/6/1	Dual ADC 10/12-bit, CTU, MPU, MMU, eDMA, FlexRay, Ethernet, MediaLB
SPC56EC80L8 ⁽³⁾	LQFP208	Z4d+ Z0h	120 ⁽⁴⁾	4096	-	256	50	64	8/12/7/1	
SPC56EC80B3 ⁽³⁾	LPGA256	Z4d+ Z0h	120 ⁽⁴⁾	4096	-	256	64	96	8/12/7/1	

(1) All products include 32 kHz oscillator, watchdog, 16 MHz and 128 kHz internal RC oscillators, real-time clock, clock monitoring and register protection.

Operating temperature range from - 40° C to 85° C up to - 40° C to 125° C.

(2) Limited software emulated MediaLB.

(3) In development. Contact your sales office.

(4) Z4d master core frequency, Z0h core will run at half system frequency.



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