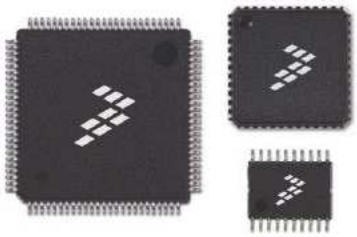


16-bit Microcontrollers

S12G Family



Applications

- Space-constrained applications
- Body controllers
- Door modules
- HVAC
- Seat controllers
- Smart actuators
- RKE receivers
- Occupant detection
- Lighting modules
- Smart junction boxes
- Fuel pumps
- Oil pumps

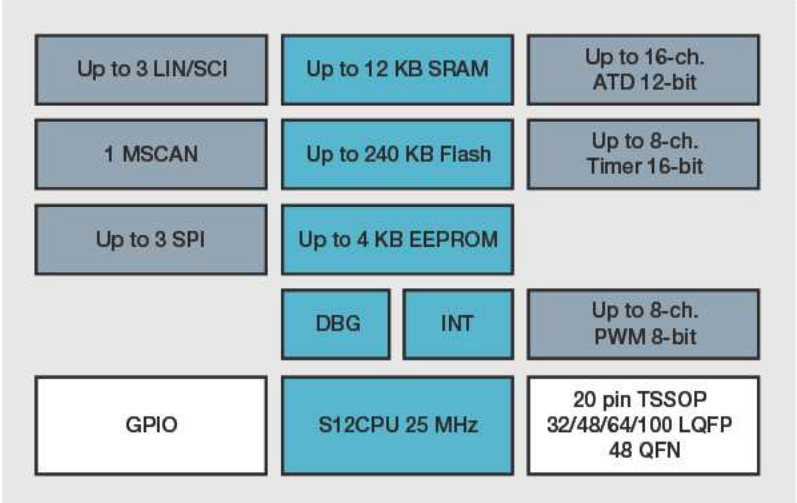
Feature-rich 16-bit microcontrollers for body applications

Overview

The Freescale Semiconductor MC9S12G family is a feature-rich 16-bit microcontroller product line focused on low cost, high performance and low pin count for automotive applications. This family bridges the gap between high-end 8-bit microcontrollers and high-performance 16-bit microcontrollers, such as the MC9S12XS family. The MC9S12G family is targeted at generic automotive applications requiring CAN or LIN/SAE J2602 communication and is used in applications such as body controllers, door modules, occupant detection and lighting modules.

The MC9S12G family uses many of the same features found on the MC9S12XS and MC9S12P family, including error correction code (ECC) on flash memory, a fast analog-to-digital converter (ADC) and a frequency modulated phase locked loop (IPLL) that improves the EMC performance. In order to make using the MC9S12G family easier in your embedded designs, it features an EEPROM with a small erase sector size.

S12G Family Block Diagram



The MC9S12G family delivers the advantages and efficiencies of a 16-bit MCU while retaining the cost-effective, power consumption, EMC and code-size efficiency advantages of our existing 8-bit and 16-bit MCU families. Like the MC9S12XS family, the MC9S12G family runs 16-bit wide accesses without wait states for peripherals and memory. The MC9S12G family is available in 20 TSSOP, 48 QFN, 32,48, 64 and 100 LQFP packages for embedded design flexibility. It aims to maximize the amount of functionality, especially in the lower pin-count packages. In addition to the I/O ports available in each module, further I/O ports are available with interrupt capability allowing wake-up from stop or wait modes.

Enablement Tools

The S12G family application development is enhanced with CodeWarrior Development Tool Suite and a variety of third-party development software. In addition, we now offer four S12G Tower development board kits

- TWR-S12G240/TWR-S12G240-KIT
- TWR-S12G128/TWR-S12G128-KIT
- TWR-S12G64/TWR-S12G64-KIT
- TWR-S12GN32/TWR-S12GN32-KIT

MC9S12G Family Features and Benefits

Features	Benefits
S12 CPU core, 25 MHz bus and up to 240 KB on-chip flash with ECC	Industry-proven S12 architecture and more horsepower for more complex 8-bit design applications
Up to 240 KB on-chip flash with ECC	Offers on-chip flash to store code and help save on-board flash/ROM
Up to 4 KB EEPROM with ECC	Easier user interface than data flash
Up to one multi-scalable controller area network (MSCAN) module (supporting CAN protocol 2.0A/B)	Designed to support complex system needs CAN communication port
Up to three serial communication interface (SCI) modules supporting LIN communications and up to three serial peripheral interface (SPI) modules	Helps provide more flexibility, options and advantages when your system needs more SCI/LIN or SPI communication ports
Up to 12 KB on-chip SRAM	N/A
Phase locked loop (IPLL) frequency multiplier with internal filter	N/A
Timer module (TIM) supporting up to eight channels that provide a range of 16-bit input capture, output compare, counter and pulse accumulator functions	N/A
Pulse width modulation (PWM) module with up to eight 8-bit channels	N/A
Up to 16-channel, 12-bit resolution successive approximation analog-to-digital converter (ADC)	N/A
Precision fixed voltage reference for ADC conversions	N/A
On-chip voltage regulator (VREG) for regulation of input supply and all internal voltages	N/A
Analog comparator module 8-bit digital-to-analog converter (DAC)	N/A

Package Options

Device	Flash	RAM	EEPROM	MSCAN	SCI	SPI	ADC	Analog Comparator	DAC	PWM	Timer	Package Options
S12GN16	16 KB	1 KB	512B	–	1	1	8-ch., 10-bit	1	–	6-ch.,8-bit	6-ch.,16-bit	20-pin TSSOP, 32-pin LQFP, 48-pin LQFP, 48-pin QFN
S12GN32	32 KB	2 KB	1 KB	–	1	1	8-ch., 10-bit	1	–	6-ch.,8-bit	6-ch.,16-bit	20-pin TSSOP, 32-pin LQFP, 48-pin LQFP, 48-pin QFN
S12GN48	48 KB	4 KB	1.5 KB	–	2	2	12-ch., 10-bit	1	–	6-ch.,8-bit	6-ch.,16-bit	32-pin LQFP, 48-pin LQFP, 64-pin LQFP
S12G48	48 KB	4 KB	1.5 KB	1	2	2	12-ch., 10-bit	1	–	6-ch.,8-bit	6-ch.,16-bit	32-pin LQFP, 48-pin LQFP, 64-pin LQFP
S12G64	64 KB	4 KB	2 KB	1	2	2	12-ch., 10-bit	1	–	6-ch.,8-bit	6-ch.,16-bit	32-pin LQFP, 48-pin LQFP, 64-pin LQFP
S12G96	96 KB	8 KB	3 KB	1	3	3	12-ch., 10-bit	–	–	8-ch.,8-bit	8-ch.,16-bit	48-pin LQFP, 64-pin LQFP, 100-pin LQFP
S12G128	128 KB	8 KB	4 KB	1	3	3	12-ch., 10-bit	–	–	8-ch.,8-bit	8-ch.,16-bit	48-pin LQFP, 64-pin LQFP, 100-pin LQFP
S12G192	192 KB	12 KB	4 KB	1	3	3	12-ch., 10-bit	–	–	8-ch.,8-bit	8-ch.,16-bit	48-pin LQFP, 64-pin LQFP, 100-pin LQFP
S12GA192	192 KB	12 KB	4 KB	1	3	3	16-ch., 12-bit	–	2	8-ch.,8-bit	8-ch.,16-bit	48-pin LQFP, 64-pin LQFP, 100-pin LQFP
S12G240	240 KB	12 KB	4 KB	1	3	3	16-ch., 10-bit	–	–	8-ch.,8-bit	8-ch.,16-bit	48-pin LQFP, 64-pin LQFP, 100-pin LQFP
S12GA240	240 KB	12 KB	4 KB	1	3	3	16-ch., 12-bit	–	2	8-ch.,8-bit	8-ch.,16-bit	48-pin LQFP, 64-pin LQFP, 100-pin LQFP

For more information, visit freescale.com/S12G

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