S12VR: Ultra-Reliable Mixed-Signal MCU for Automotive and Industrial Relay Driven Motor Applications ☆

The S12VR family is based on a process combing NVM, digital logic and high-voltage analog components into a monolithic solution. These analog components include an automotive voltage regulator, LIN physical layer, low-side drivers, high-side drivers and inputs. The new high-voltage devices are capable of withstanding the rigorous requirements of the automotive environment (up to 40V), which can happen during load dump conditions and are integrated with the industry-proven 16-bit S12 CPU and memory subsystem consisting of ECC-protected flash memory and real EEPROM. This S12 CPU is fully compatible with the S12G family of cost-effective, highly-integrated MCUs. That compatibility extends to the digital peripherals included in the S12VR, such as SPI, SCI serial modules, PWM and timer modules.

The S12VR combines all the elements of a system that saves valuable PCB space, simplifies design and increases overall system quality and reduces cost. A smaller PCB means smaller enclosures for automotive and industrial applications where every bit of weight removed increases fuel efficiency. The integration of different components on the S12VR reduces time -to-market by requiring less development time to get to a complete solution.

S12VR-family with the integrated LIN-PHY received approval from major major car OEMs for LIN conformance and EMC requirements and is now as well offered up to 125°C ambient temperatures.

Features

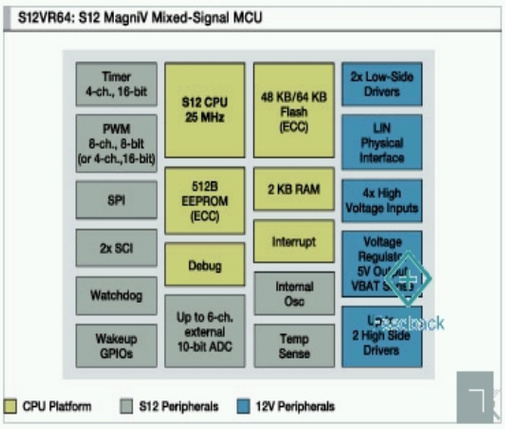
- S12 CPU core, 25 MHz bus
- Up to 64 KB flash with ECC
- 512 B EEPROM with ECC
- 2 KB on-chip SRAM
- LIN physical layer
- Voltage regulator
- Two low side drivers to drive inductive loads
- Up to two high-side drivers
- 4 High-voltage inputs
- This product is included in Freescale's product longevity program, with assured supply for a minimum of 15 years after launch
- Ultra-Reliable MCUs

Featured Reference Designs

S12 MagniV Window Lift and Relay-based DC Motor Control Reference Design

Related Products

MC33689:System Basis Chip with LIN
S12G:Ultra-Reliable Optimized 16-bit MCUs for General Purpose Automotive and Industrial Applications



Featured Documentation

S12VRFS: S12VR Family Fact Sheet
MC9S12VRRMV3: MC9S12VR-Family for Mask set 0N59H-Reference Manual and Data Sheet

Featured Software and Tools

S12VR64EVB3: S12VR Evaluation Board
USBMULTILINKBDM: USB S08/HCS12 BDM Multilink - In-Circuit Debugger/Programmer
CW_V5.1HCS12_VR64SP: CodeWarrior for HCS12(X) v5.1 VR64 Service Pack

Target Applications

- Automotive
- Industrial

What's New

Window Lift Reference Design

Find out the main advantages of the S12VR MCU for window lift and Relay-based DC Motor Control.

Featured Training & Events

On-Demand Training

S12 MagniV Mixed-Signal Microcontroller Introduction

Featured Video

Anti-Pinch Window Lift Reference Design for S12 MagniV Mixed-Signal MCU - Introduction

(01:14 min)

S12VR Family Comparison

	EEPROM	Internal RAM	Internal Flash	GPIO	Timers	Serial Interfaces	Package Description and Diagram
S12VR64xLF	0.5 KB	2 KB	64 KB	28	Timer Channels: 4 Timer Size: 16 bit	SPI: 1 SCI: 2 LIN: 1	LQFP 48 7*7*1.4P0.5
S12VR48xLF	0.5 KB	2 KB	48 KB	28	Timer Channels: 4 Timer Size: 16 bit	SPI: 1 SCI: 2 LIN: 1	LQFP 48 7*7*1.4P0.5
S12VR64xLC	0.5 KB	2 KB	64 KB	16	Timer Channels: 4 Timer Size: 16 bit	SPI: 1 SCI: 2 LIN: 1	LQFP 32 7*7*1.4P0.8
S12VR48xLC	0.5 KB	2 KB	48 KB	16	Timer Channels: 4 Timer Size: 16 bit	SPI: 1 SCI: 2 LIN: 1	LQFP 32 7*7*1.4P0.8

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