16-bit Microcontrollers

S9S12XHY Family

For automotive instrument cluster applications

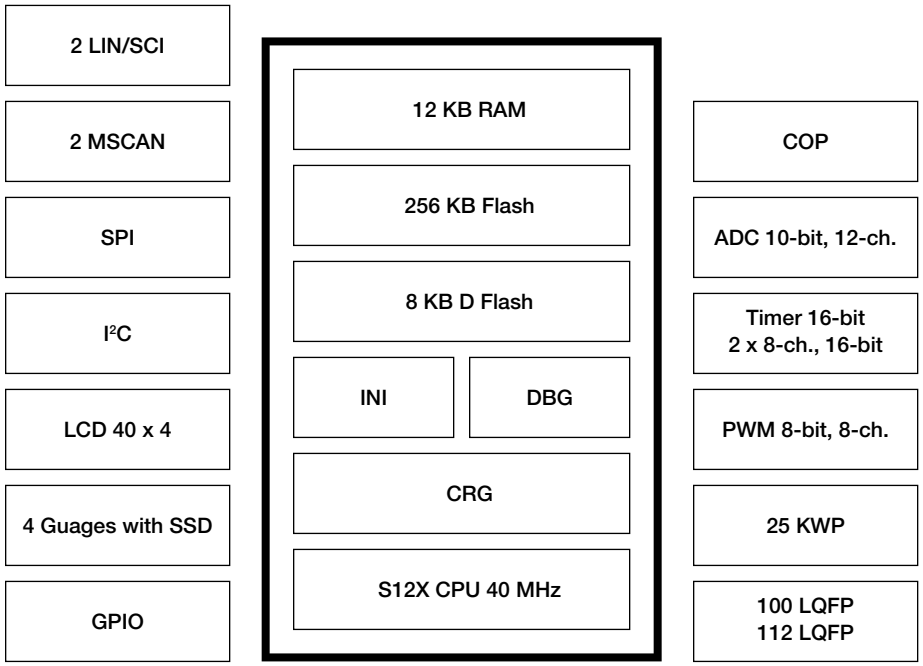
Overview

The cost-effective, high-performance, optimized automotive 16-bit S9S12XHY family is intended to bridge the gap between low-end 16-bit microcontrollers, such as the S9S12HY family, and high-performance 32-bit solutions. Targeting low-end automotive instrument cluster applications, the S9S12XHY family includes support for CAN and LIN/J2602 communication and delivers typical cluster requirements such as stepper motor control with stepper stall detection (SSD) and LCD driver. It's a cost-competitive solution to complement the 9S12HY64/32 devices and address emerging market needs for low-end clusters.

The S9S12XHY family uses many of the same features found in the S9S12HY family, including error correction code (ECC) on flash memory, a separate data flash module for diagnostic or data storage, a fast analog-to-digital converter (ADC) and a frequency modulated phase-locked loop (PLL) for improved EMC performance. These integrated features enable you to design a more cost-effective application.

The S9S12XHY family delivers the advantages and efficiencies of a 16-bit MCU while retaining the low-cost, power consumption, EMC and code-size efficiency advantages of existing 8-bit and 16-bit MCU families.

S12XHY Block Diagram



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Like the S9S12HY family, the S9S12XHY family will run 16-bit wide accesses without wait states for peripherals and memories. 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. The S9S12XHY family is available in 100-pin QFP and 112-pin LQFP package options and maximizes pin compatibility with the S9S12HY/HA family in the 100 LQFP.

Target Applications

- Entry-level instrument clusters
- Automotive HVAC
- Automotive audio

Development Tools

The S9S12XHY family leverages and expands the extensive suite of hardware and software development tools available for the S12 and S12X families.

DEMO board: DEMO9S12XHY256

Reference design: S12XHY-DEMO-V1

CodeWarrior Development Studio for Microcontrollers

Features	Benefits
LCD driver, configurable up to 40 x 4	Does not need external LCD driver, which delivers lower cost
Stepper motor controller with drivers for up to four motors, hardware SSD	Does not need external stepper motor driver, which lowers the cost. Hardware SSD is convenient in motor control application
HCS12X CPU core with 40 MHz bus frequency	Higher performance
Up to 256 KB on-chip flash with ECC	Adequate memory size for application code ECC provides extra data/program safety
8 KB data flash with ECC	Convenient data storage ECC provides extra data/program safety
Two multi-scalable controller area network (MSCAN) modules (supporting CAN protocol 2.0A/B)	CAN bus communication
Up to two serial communication interface (SCI) modules supporting LIN 1.3, 2.0, 2.1 and SAE J2602 communications	LIN bus communication

Refer to datasheet for more features

Package Options

Part Number	Package	Flash Size	Ram Size	Temp Ranges
S9S12XHY256F0MLM	112 LQFP (Pb-free)	256K	12K	Operating temperature (TA) of -40°C to +125°C
S9S12XHY256F0MLL	100 LQFP (Pb-free)	256K	12K	Operating temperature (TA) of -40°C to +125°C
S9S12XHY128F0MLM	112 LQFP Pb-free)	128K	8K	Operating temperature (TA) of -40°C to +125°C
S9S12XHY128F0MLL	100 LQFP (Pb-free)	128K	8K	Operating temperature (TA) of -40°C to +125°C

Learn More: For current information about Freescale products and documentation, please visit **freescale.com/automotive**.

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