



S12 MagniV Mixed-Signal MCUs

S12ZVH Family

Single-chip solution for automotive instrument clusters

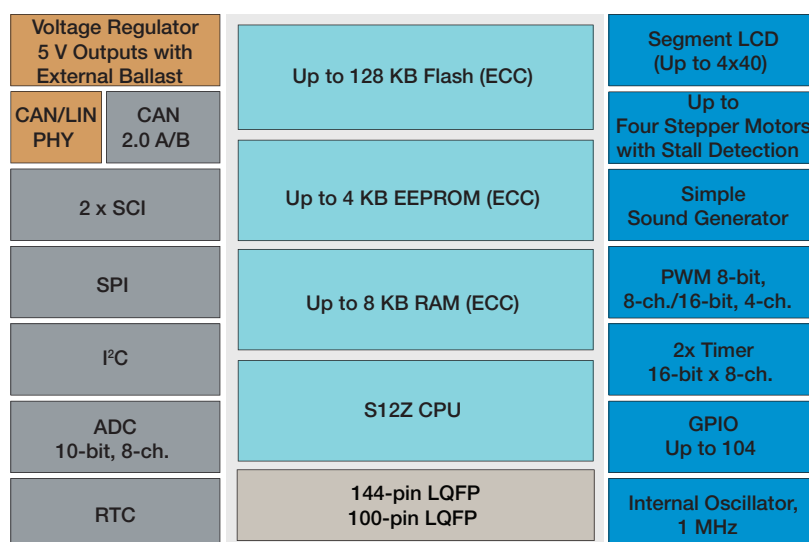
Target Applications

- Automotive instrument clusters
- Heating ventilation and air conditioning (HVAC)

Overview

The S12ZVH family is part of the S12 MagniV portfolio of mixed-signal MCUs, built upon LL18UHV technology, combining highly reliable 180 nm non-volatile memory technology with high-voltage analog components on a single piece of silicon. The industry's first single-chip automotive instrument cluster solution integrates an automotive voltage regulator operating between 5 and 18 volts, a CAN/LIN physical layer, an LCD display controller and instrument cluster gauge drivers. These high-voltage analog components are capable of withstanding the rigorous requirements of the automotive environment, including load dump conditions up to 40 volts at -40°C to $+105^{\circ}\text{C}$. This level of integration allows you to design an instrument cluster with a smaller and more energy-efficient footprint. Minimizing the number of components also helps to reduce the bill of materials cost and improve overall system reliability. The S12ZVH family will be available with two package options: 100 LQFP and 144 LQFP.

S12ZVH: S12 MagniV Mixed-Signal MCU Block Diagram



Development Tools

Instrument Cluster Reference Designs

Full-featured reference designs are available for the S12ZVH family to demonstrate the capabilities of this platform. They feature either four or two analog gauges, a 160-segment LCD, a sound generator module and real-time counter capabilities. These reference designs will be supplied with complete software enablement, including evaluation software, application notes and example codes.

S12ZVH Low-Cost Evaluation Board

S12ZVH evaluation boards are cost-effective and fully featured, including a display and all necessary connectivity to help you develop and validate the performance of the S12ZVH platform. Features include:

- Custom 4x40 LCD glass
- CAN connector interfaced with MCU internal CANPHY
- Serial communications LIN, SCI, SPI and I²C
- Four LEDs connected to PWM channels
- Four push buttons connected to KBI inputs

Instrument Cluster Reference Designs



- Four motor control headers 4x1 pins
- 32 KHz oscillator for real-time counter
- Piezoelectric speaker with amplification circuit

Part Number: TRK-S12ZVH128

Enablement Tools

- P&E MULTILINK: The latest version required to support S12Z core improvements
- CodeWarrior Development Tool Suite: S12Z support included in standard releases
- Cosmic Software: Compiler and debugger tools support the S12Z core

Package Descriptions

Part Number	Package Description	Internal Flash	RAM	EEPROM	Stepper Motor Controller	High-Current I/O	LCD Segments	CAN PHY	LIN PHY	ADC Channels
S12ZVH128CLQ	LQFP 144 20*20*1.4P0.5	128 KB	8 KB	4 KB	4	—	40 x 4	1	—	8
S12ZVH128CLL	LQFP 100 14*14*1.4P0.5	128 KB	8 KB	4 KB	2	—	32 x 4	—	—	4
S12ZVH64CLQ	LQFP 144 20*20*1.4P0.5	64 KB	4 KB	4 KB	4	—	40 x 4	1	—	8
S12ZVHY64CLQ	LQFP 144 20*20*1.4P0.5	64 KB	4 KB	2 KB	2	—	40 x 4	—	—	8
S12ZVHY32CLQ	LQFP 144 20*20*1.4P0.5	32 KB	2 KB	2 KB	2	—	40 x 4	—	—	8
S12ZVHY64CLL	LQFP 100 14*14*1.4P0.5	64 KB	4 KB	2 KB	2	—	32 x 4	—	—	4
S12ZVHY32CLL	LQFP 100 14*14*1.4P0.5	32 KB	2 KB	2 KB	2	—	32 x 4	—	—	4
S12ZVHL64CLQ	LQFP 144 20*20*1.4P0.5	64 KB	4 KB	2 KB	2	—	40 x 4	—	1	8
S12ZVHL32CLQ	LQFP 144 20*20*1.4P0.5	32 KB	2 KB	2 KB	2	—	40 x 4	—	1	8
S12ZVHL64CLL	LQFP 100 14*14*1.4P0.5	64 KB	4 KB	2 KB	2	—	32 x 4	—	1	4
S12ZVHL32CLL	LQFP 100 14*14*1.4P0.5	32 KB	2 KB	2 KB	2	—	32 x 4	—	1	4
S12ZVFP64CLQ	LQFP 144 20*20*1.4P0.5	64 KB	4 KB	2 KB	—	8	40 x 4	—	1	8
S12ZVFP64CLL	LQFP 100 14*14*1.4P0.5	64 KB	4 KB	2 KB	—	8	32 x 4	—	1	4



For more information, visit freescale.com/S12ZVH.

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