S12 MagniV Mixed-Signal MCUs
S12ZVM Family

Integrated solution for 3-phase BLDC motor control applications

Features

- 3-Phase Motor Control
- Integrated LIN Phy
- Integrated CAN Phy
- V_{REG} for 12 V Supply
- **B6** 6-ch. MOSFET Gate Driver
- Ultra-reliable Industrial
- AEC-Q100 Grade0 (150 °C Ta / 175 °C Tj)

Product One-Sheet

[Get Sample] [Data Sheet] [Tools]

System in a package—Highly integrated solution ideal for 3-Phase motors

High performance—S12Z performance supports field-oriented control (FOC) for maximum energy efficiency/lowest audible noise

Scalable—CAN-, LIN-, and HV-PWM-PHY options with memory up to 256 KB

High Reliability—High immunity to EMI and ESD stresses, LIN 2.x compliant with +/- 8 kV ESD capability

Low System Cost—Operating straight from car battery, integrated Phy for LIN or CAN, 6 channel motor control MOSFET gate pre-drivers

Enablement—Supported by comprehensive hardware and software solution

S12ZVM Specifications

Core	S12Z; 50 MHz bus	Gate Driver	6-ch. motor control FET driver
12 V V_{REG}	70 mA (boost option to 140 mA)	PWM	–6-ch. motor control PWM –Additional 4-ch., 16-bit PWM
Flash	16–256 KB	PTU	Triggering ADC & PWM
RAM	2–32 KB	ADC	2 ADCs, 1+3 to 8+8 ch., 12-bit
EEPROM	128 B–1 KB	OpAmp	2 x for current sensing
PHY	CAN, LIN or PWM	EVDD	1-ch. 5 V/ 20 mA (source)
SCI/SPI	Up to 2/1	Op Range	3.5 V–20 V
HVI	Up to 1	Timer	4-ch., 16-bit

Orderable Sample Part Numbers

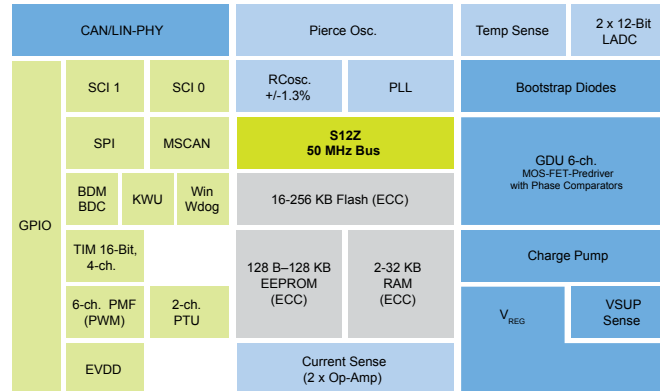| Part Number	Flash	Temp Range	Package
S912ZVMC12F1MKH	128 KB	-40 °C to 125 °C	64 LQFP-EP
S912ZVMC12F1WKH	128 KB	-40 °C to 150 °C	64 LQFP-EP
S912ZVML12F1WKH	128 KB	-40 °C to 150 °C	64 LQFP-EP
S912ZVML12F1MKH	128 KB	-40 °C to 125 °C	64 LQFP-EP
S912ZVML31F1WKH	32 KB	-40 °C to 150 °C	64 LQFP-EP
S912ZVML31F1WKF	32 KB	-40 °C to 150 °C	48 LQFP-EP
S912ZVMC25F1WKK	256 KB	-40 °C to 150 °C	80 LQFP-EP

*Limited Sample-availability for 256 KB version with CAN-PHY. Contact your local sales

www.NXP.com/S12ZVM

Product Block Diagram
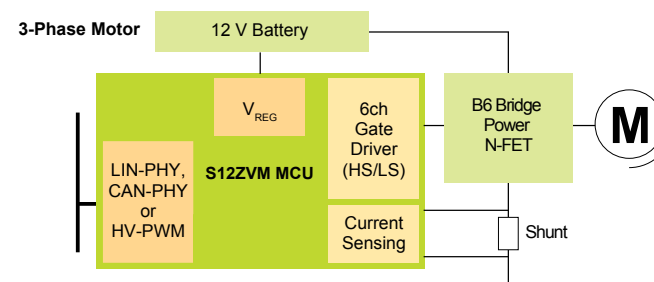

Application Example Block Diagram

Success Stories

- Engine cooling fans
- Fuel pumps
- Water pumps
- HVAC blower
- Superchargers

Target Applications

- Engine cooling fan/HVAC blower
- Oil/Fuel/Water pumps
- Compressors
- Turbo/Supercharger
- Wipers

Enablement Tools

- Evaluation boards/hardware
  - S12ZVML12EVBLIN
  - S12ZVMC12EVBCAN
  - S12ZVM32EVB
  - S12ZVML-MINIBRD
  - S12ZVMC256EVB
- Software Tools
  - Motor Control Development Toolbox
  - Automotive Math and Motorcontrol Libraries
  - FreeMASTER Run-Time Debugging Tool
  - MCAT Motorcontrol Algorithm Parameter Tunning
- Reference Solutions
  - BLDC: MTRCKTSBNZVM128
  - PMSM: MTRCKTSPNZVM128
- Compiler/Debugger
  - CodeWarrior® IDE
  - Cosmic IDE
- LIN Stack

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