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

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

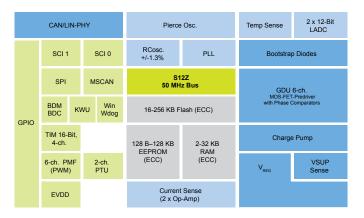
Core	S12Z; 50 MHz bus	Gate Driver	6-ch. motor control FET driver	
12 V V _{REG}	70 mA (boost option	PWM	–6-ch. motor control PWM	
	to 140 mA)		–Additional 4-ch., 16-bit PWM	
Flash	16-256 KB	PTU	Triggering ADC & PWM	
RAM	2-32 KB	ADC	2 ADCs, 1+3 to 8+8 ch., 12-bit	
EEPROM	128 B-1 KB	OpAmp	2 x for current 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

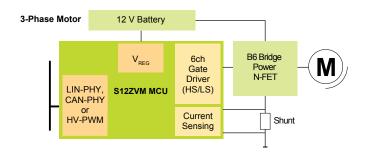
Part Number	Flash	Temp Range	Package
S912ZVMC12F1MKH	128 KB	-40 °C to 125 °C	64 LQFP-EP
S912ZVMC12F1WKH	128 KB	-40 °C to 150 °C	64 LQFP-EP
S912ZVML12F1WKH	128 KB	-40 °C to 150 °C	64 LQFP-EP
S912ZVML12F1MKH	128 KB	-40 °C to 125 °C	64 LQFP-EP
S912ZVML31F1WKH	32 KB	-40 °C to 150 °C	64 LQFP-EP
S912ZVML31F1WKF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

 $^{^{\}star}$ Limited Sample-availability for 256 KB version with CAN-PHY. Contact your local sales

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
- -S127VMI -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



www.NXP.com/S12ZVM

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