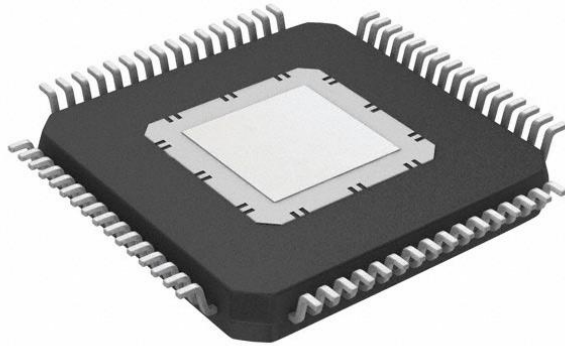


[www.digi-electronics.com](http://www.digi-electronics.com)



# S912ZVML31F1MKH Datasheet

DiGi Electronics Part Number	S912ZVML31F1MKH-DG
Manufacturer	<a href="#">NXP USA Inc.</a>
Manufacturer Product Number	S912ZVML31F1MKH
Description	IC MCU 16BIT 32KB FLASH 64LQFP

<https://www.DiGi-Electronics.com>

**Detailed Description** S12Z S12 MagniV Microcontroller IC 16-Bit 50MHz 32KB (32K x 8) FLASH 64-HLQFP (10x10)

This model S912ZVML31F1MKH is available at DiGi Electronics.

DiGi Electronics offers a global database of semiconductor and electronic component datasheets. We welcome your inquiries regarding pricing, lead time, or other product-related questions.

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RFQ Email: [Info@DiGi-Electronics.com](mailto:Info@DiGi-Electronics.com)

DiGi is a global authorized distributor of electronic components.

## Purchase and inquiry

Manufacturer Product Number:

S912ZVML31F1MKH

Series:

S12 MagniV

DiGi-Electronics Programmable:

Not Verified

Core Size:

16-Bit

Connectivity:

LINbus, SCI, SPI

Number of I/O:

31

Program Memory Type:

FLASH

RAM Size:

4K x 8

Data Converters:

A/D 9x12b

Operating Temperature:

-40°C ~ 125°C (TA)

Supplier Device Package:

64-HLQFP (10x10)

Base Product Number:

Manufacturer:

NXP USA Inc.

Product Status:

Active

Core Processor:

S12Z

Speed:

50MHz

Peripherals:

DMA, POR, PWM, WDT

Program Memory Size:

32KB (32K x 8)

EEPROM Size:

128 x 8

Voltage - Supply (Vcc/Vdd):

3.5V ~ 40V

Oscillator Type:

Internal

Mounting Type:

Surface Mount





Package / Case:




64-LQFP Exposed Pad

# 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<sub>REG</sub> 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 <sub>REG</sub>	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

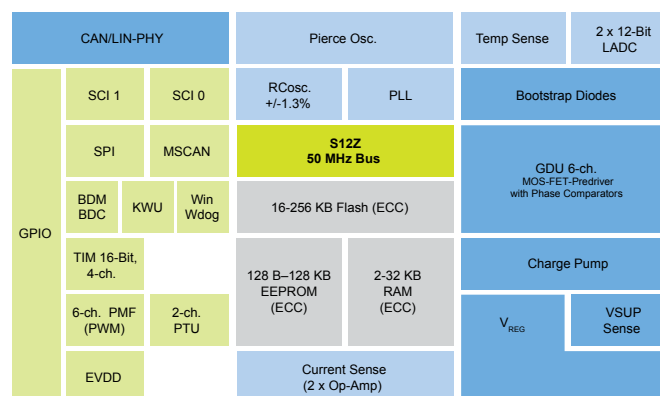
\*Limited Sample-availability for 256 KB version with CAN-PHY. Contact your local sales

[www.NXP.com/S12ZVM](http://www.NXP.com/S12ZVM)

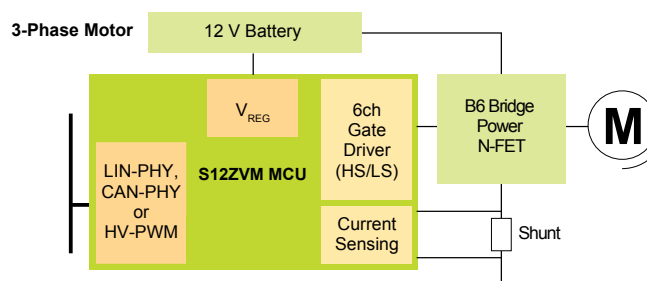
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Document Number: S12ZVMFS REV 5

## 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

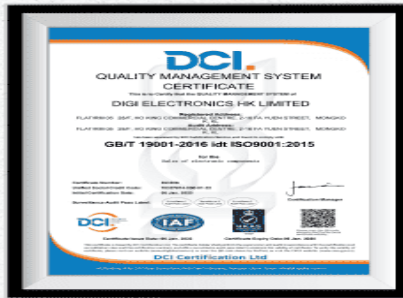
- ▶ Evaluation boards/hardware
  - S12ZVML12EVBLIN
  - S12ZVMC12EVBCAN
  - S12ZVM32EVB
  - S12ZVML-MINIBRD
  - S12ZVMC256EVB
- ▶ Software Tools
  - Motor Control Development Toolbox
  - Automotive Math and Motorcontrol Libraries
  - FreeMASTER Run-Time Debugging Tool
  - MCAT Motorcontrol Algorithm Parameter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



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