

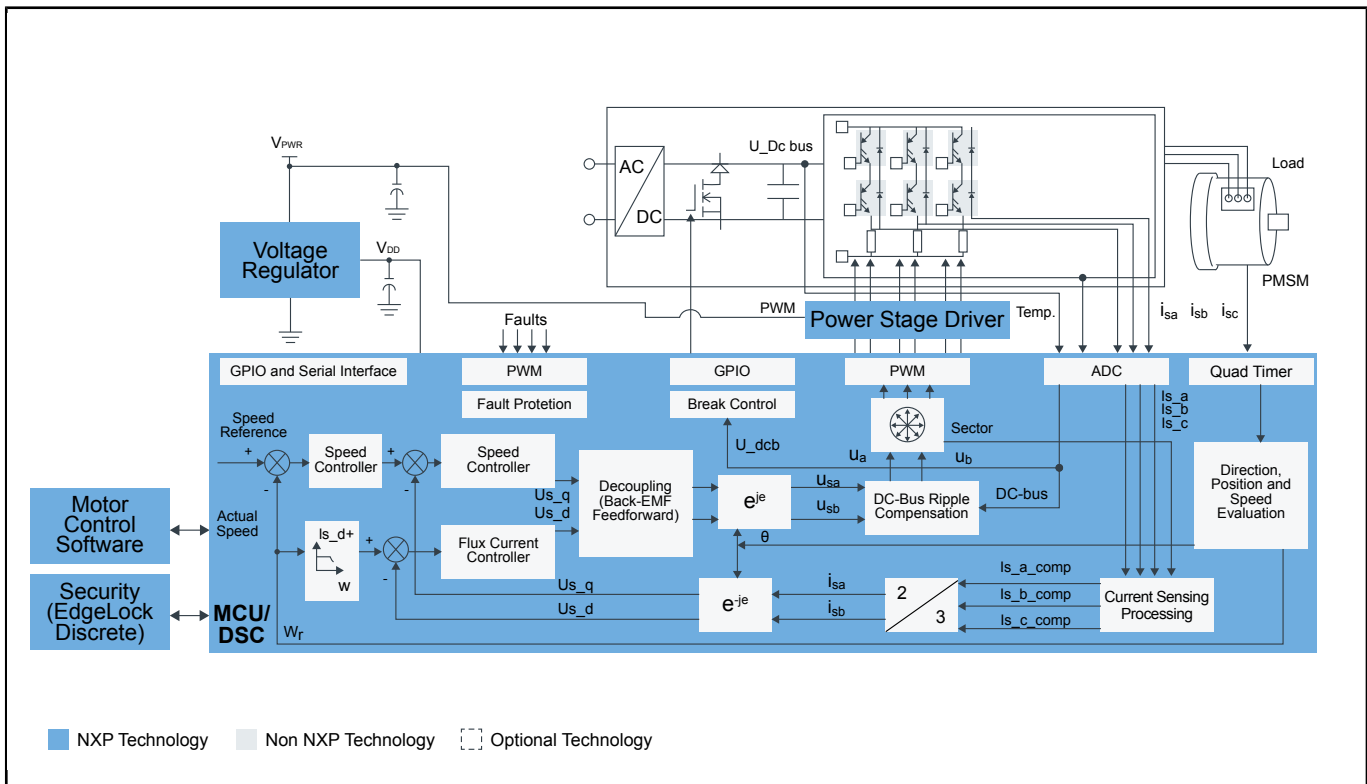


Permanent Magnet Synchronous Motor (PMSM)

Last Updated: Jul 13, 2023

Permanent magnet synchronous motors (PMSM) are typically used for high-performance and high-efficiency motor drives. High-performance motor control is characterized by smooth and accurate rotation over the entire speed range of the motor. NXP provides a comprehensive development ecosystem to support a rapid design of motor control devices that integrates PMSM.

3 Phase PMSM Block Diagram



Recommended Products for 3 Phase PMSM

MCU	<ul style="list-style-type: none"> • MCX-A14X-A15X: MCX A14x/15x MCUs with Arm® Cortex® M33, Scalable Device Options, Low Power and Intelligent Peripherals
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	<ul style="list-style-type: none"> • MCX-N94X-N54X: MCX N94x/54x Highly Integrated Multicore MCUs with On-Chip Accelerators, Intelligent Peripherals and Advanced Security • S32M2: S32M2 Integrated Solution for 12V Motor Control • S32K3: S32K3 Microcontrollers for Automotive General Purpose • KV Series Arm Cortex-M4/M0+/M7: KV Series: Real-Time Motor Control and Power Conversion MCUs Based on Arm® Cortex®-M0+/M4/M7 • KE Series Arm Cortex-M4/M0+: Kinetis® E Series: 5V, Robust Microcontrollers (MCUs) Based on Arm® Cortex®-M0+/M4 Core • S32K1: S32K1 Microcontrollers for Automotive General Purpose
Power stage driver	<ul style="list-style-type: none"> • MC33937: 3-Phase Field Effect Transistor Pre-Driver • GD3100: Advanced High Voltage Isolated Gate Driver for IGBT and SiC MOSFETs
Motor Control Software	<ul style="list-style-type: none"> • FreeMASTER Run-Time Debugging Tool • RTCESL: Real Time Control Embedded Software Motor Control and Power Conversion Libraries • Model-Based Design Toolbox (MBDT) • Motor Control Application Tuning (MCAT) Tool
Voltage regulator	<ul style="list-style-type: none"> • PCA9410_9410A: 3.0 MHz, 500 MA, DC-to-DC Boost Converter • MC33903: SBC Gen2 with High-Speed CAN and LIN • MC33904: System Basis Chip Gen2 with High Speed CAN • MC33905: SBC Gen2 with High-Speed CAN and LIN
Security (EdgeLock Discrete)	<ul style="list-style-type: none"> • SE050: EdgeLock® SE050: Plug and Trust Secure Element Family – Enhanced IoT security with high flexibility
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View our complete solution for [Permanent Magnet Synchronous Motor \(PMSM\)](#).

Note: The information on this document is subject to change without notice.

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