

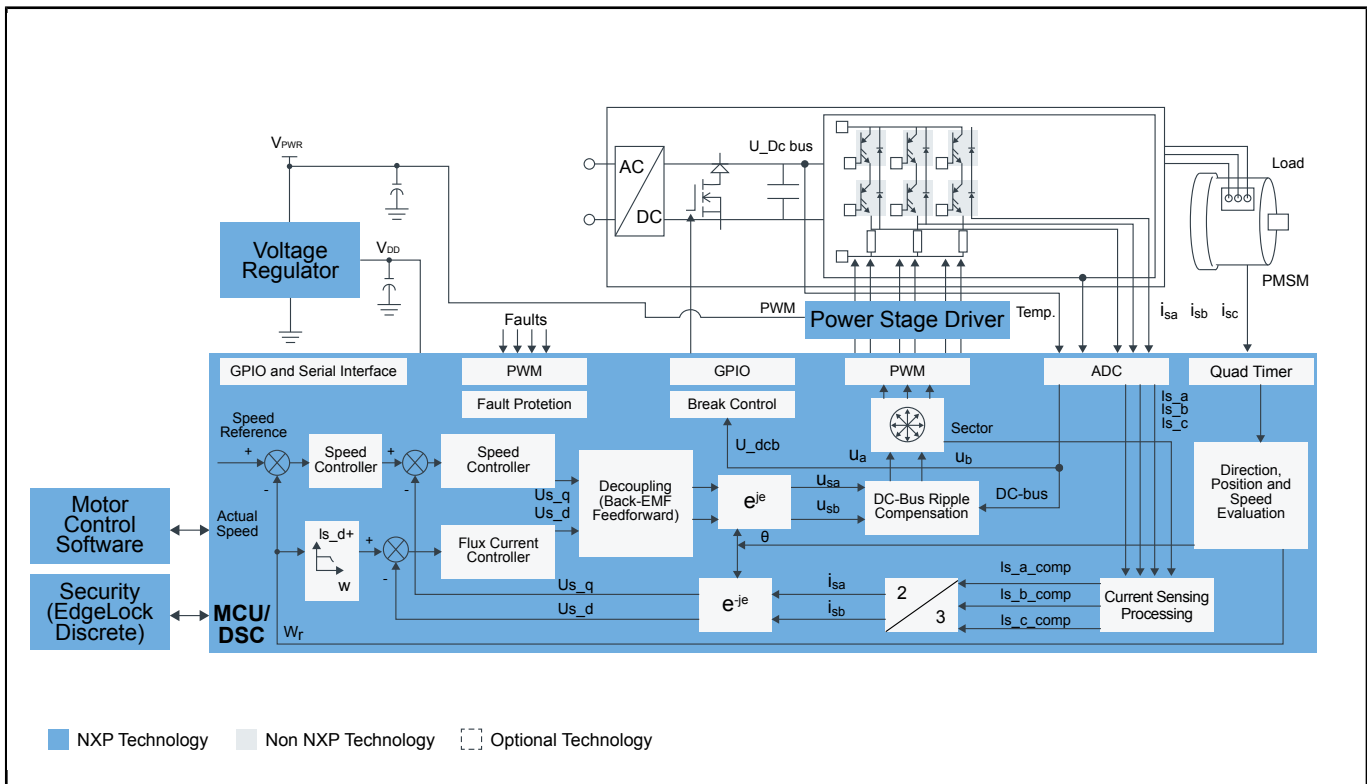


# Permanent Magnet Synchronous Motor (PMSM)

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