



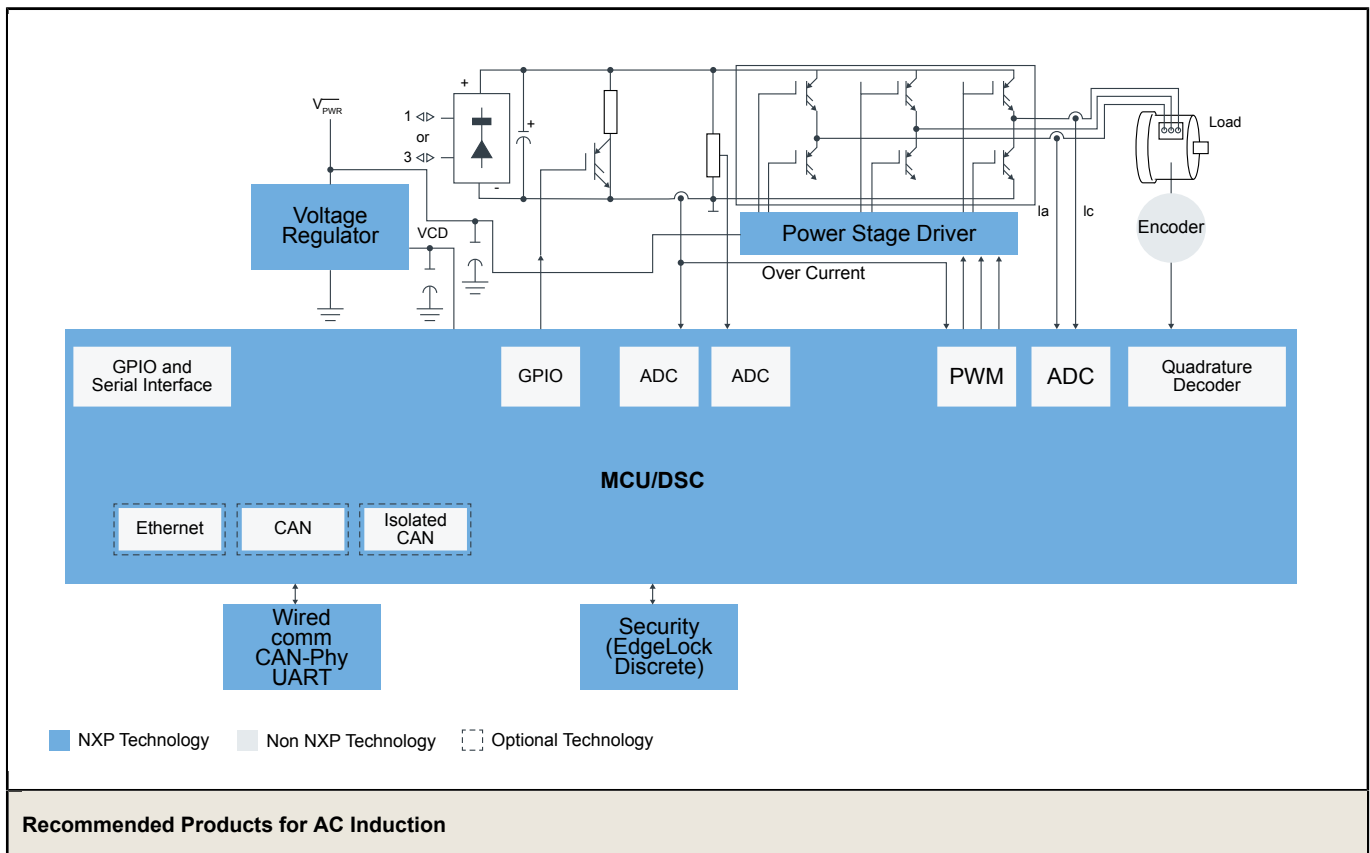
3-Phase AC Induction Motor

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AC induction machines are popular due to their simplicity, reliability, and direct operation from an AC line voltage. ACIMs are asynchronous machines and always have a lower mechanical rotor speed than the power line frequency.

The principle of operation for an ACIM is based on the voltage induction from the stator to the rotor. When the stator winding is fed by a three-phase supply voltage, the current flows in the winding and the stator rotating magnetic field is generated. Induced voltage in the rotor windings will create the rotor current and the rotor magnetic field. The interaction between two magnetic fields creates the mechanical torque needed to turn the rotor.

AC Induction Block Diagram



Controllers (MCU)	<ul style="list-style-type: none"> • MCX-A13X-A14X-A15X: MCX A13x, 14x, 15x MCUs with Arm® Cortex® M33, Scalable Device Options, Low Power and Intelligent Peripherals • MCX-N94X-N54X: MCX N94x/54x Highly Integrated Multicore MCUs with On-Chip Accelerators, Intelligent Peripherals and Advanced Security • i.MX RT Crossover MCUs: i.MX RT Crossover MCUs • 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 • LPC553x: LPC553x/S3x: Advanced Analog Arm®Cortex®-M33-Based MCU Family • MCX Arm Cortex-M: MCX Industrial and IoT Microcontrollers • S32K Auto General-Purpose MCUs: S32K Automotive General-Purpose Microcontrollers • Digital Signal Controllers: Digital Signal Controllers
Voltage Regulator	<ul style="list-style-type: none"> • Power Management: Power Management • PF5020: Multi-Channel (5) PMIC for Automotive Applications – 4 High Power and 1 Low Power, Fit for ASIL B Safety Level • PF1550: PMIC with 1A Li+ Linear Battery Charger for Low Power Processor Systems
Power Stage Driver	<ul style="list-style-type: none"> • GD3162: Advanced High Voltage Isolated Gate Driver with Dynamic Gate Strength Control • GD3160: Advanced High Voltage Isolated Gate Driver with Segmented Drive for SiC MOSFETs • GD3100: Advanced High Voltage Isolated Gate Driver for IGBT and SiC MOSFETs • GD3000: 3-Phase Brushless Motor Pre-Driver • MC34937: Three Phase Field Effect Transistor Pre-driver
Driver	<ul style="list-style-type: none"> • GD3162: Advanced High Voltage Isolated Gate Driver with Dynamic Gate Strength Control • GD3160: Advanced High Voltage Isolated Gate Driver with Segmented Drive for SiC MOSFETs • GD3100: Advanced High Voltage Isolated Gate Driver for IGBT and SiC MOSFETs • GD3000: 3-Phase Brushless Motor Pre-Driver
Wired Interfaces	<ul style="list-style-type: none"> • CAN Transceivers: CAN Transceivers • Ethernet: Ethernet • UARTs: UARTs • I²C, SPI, I3C Interface Devices: I²C, SPI, I3C Interface Devices
Security (EdgeLock Discrete)	<ul style="list-style-type: none"> • SE050: EdgeLock® SE050: Plug and Trust Secure Element Family – Enhanced IoT Security with High Flexibility
Wired comm CAN-Phy UART	<ul style="list-style-type: none"> • CAN with Flexible Data Rate: High Speed CAN with Flexible Data Rate (CAN FD) • CAN Signal Improvement: CAN Signal Improvement Capability (SIC) • Secure CAN Transceivers: Secure TJA115x CAN Transceiver Family

View our complete solution for [3-Phase AC Induction Motor](#).

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