

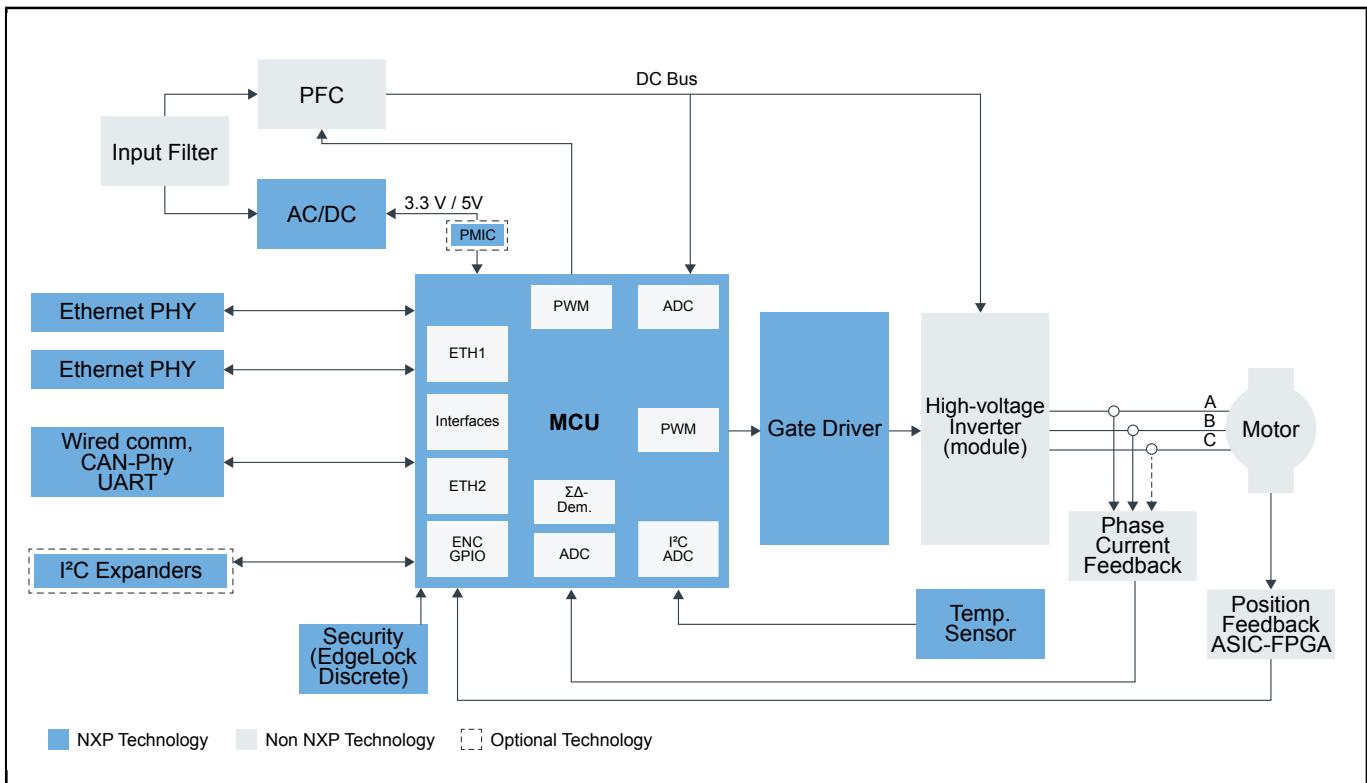


# Motor Drives

Last Updated: Jun 28, 2022

Motor drives precisely control speed and positioning to conserve energy and increase the lifespan of electric motors, which uses a foundation of secure edge processing, high-efficiency power management ICs, RTCs, thermal-efficient power drivers with current monitoring capability, USB and CAN transceivers, and voltage level translators.

## Servo Motor Drive Block Diagram

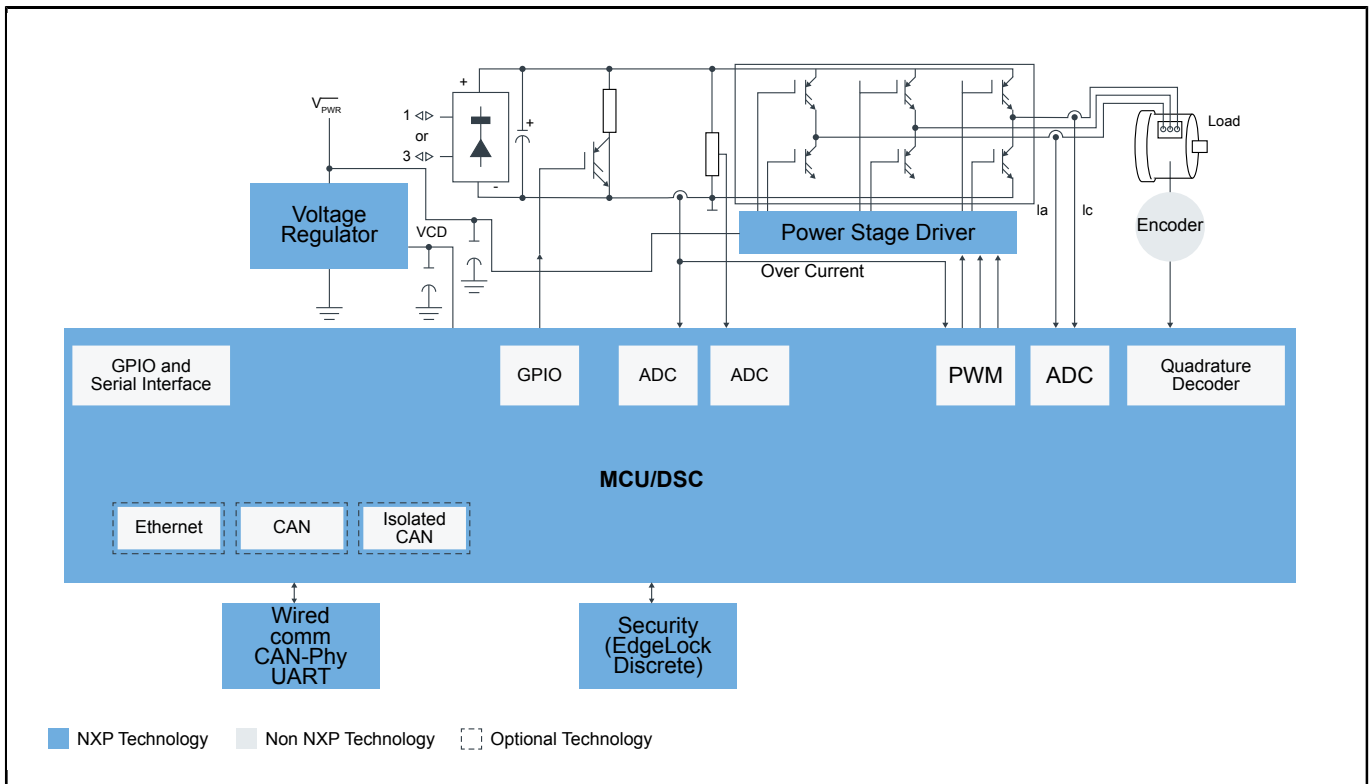


### Recommended Products for Servo Motor Drive

Microcontroller (MCU)	<ul style="list-style-type: none"> <li>• <a href="#">i.MX RT Crossover MCUs</a>: i.MX RT Crossover MCUs</li> <li>• <a href="#">MPC5775B and MPC5775E Microcontrollers for Battery Management Systems (BMS) and Inverter Applications</a></li> </ul>
AC/DC	<ul style="list-style-type: none"> <li>• <a href="#">AC-DC Solutions</a>: AC-DC Solutions</li> <li>• <a href="#">TEA19363LT</a>: GreenChip SMPS Primary Side Control IC with QR/DCM Operation and Active x-Capacitor Discharge</li> </ul>
Wired Interfaces	<ul style="list-style-type: none"> <li>• <a href="#">CAN Transceivers</a>: CAN Transceivers</li> <li>• <a href="#">UARTs</a>: UARTs</li> </ul>

	<ul style="list-style-type: none"> <li>• <a href="#">I<sup>2</sup>C, SPI, I3C Interface Devices</a>: I<sup>2</sup>C, SPI, I3C Interface Devices</li> </ul>
I2C Expanders	<ul style="list-style-type: none"> <li>• <a href="#">I<sup>2</sup>C-Bus Repeaters/Hubs/Extenders</a>: I<sup>2</sup>C-Bus Repeaters/Hubs/Extenders</li> <li>• <a href="#">PCAL6416A</a>: Low-Voltage Translating 16-Bit I<sup>2</sup>C-Bus/SMBus I/O Expander</li> </ul>
Gate Driver	<ul style="list-style-type: none"> <li>• <a href="#">GD3000</a>: 3-Phase Brushless Motor Pre-Driver</li> <li>• <a href="#">GD3100</a>: Advanced Single-Channel Gate Driver for Insulated Gate Bipolar Transistors and Silicon Carbide MOSFETs</li> <li>• <a href="#">GD3160</a>: Advanced Single-Channel High-Voltage Isolated Automotive Gate Driver for SiC MOSFETs/IGBTs</li> </ul>
Temperature sensor	<ul style="list-style-type: none"> <li>• <a href="#">I<sup>2</sup>C Digital Temperature Sensors</a>: I<sup>2</sup>C Digital Temperature Sensors</li> <li>• <a href="#">PCT2075</a>: I<sup>2</sup>C-Bus Fm+, 1 Degree C Accuracy, Digital Temperature Sensor And Thermal Watchdog</li> </ul>
PMIC	<ul style="list-style-type: none"> <li>• <a href="#">PMICs and SBCs</a>: Power Management Integrated Circuits (PMICs) and System Basis Chips (SBCs)</li> <li>• <a href="#">UJA1169ATK</a>: Mini High-Speed CAN System Basis Chip</li> </ul>
Ethernet PHY	<ul style="list-style-type: none"> <li>• <a href="#">Ethernet</a> : Ethernet</li> </ul>
Security (EdgeLock Discrete)	<ul style="list-style-type: none"> <li>• <a href="#">EdgeLock<sup>®</sup> SE050: Plug &amp; Trust Secure Element Family – Enhanced IoT security with high flexibility</a></li> <li>• <a href="#">Authentication</a>: IoT Security and Authentication Solutions</li> </ul>

## AC & VFD Block Diagram

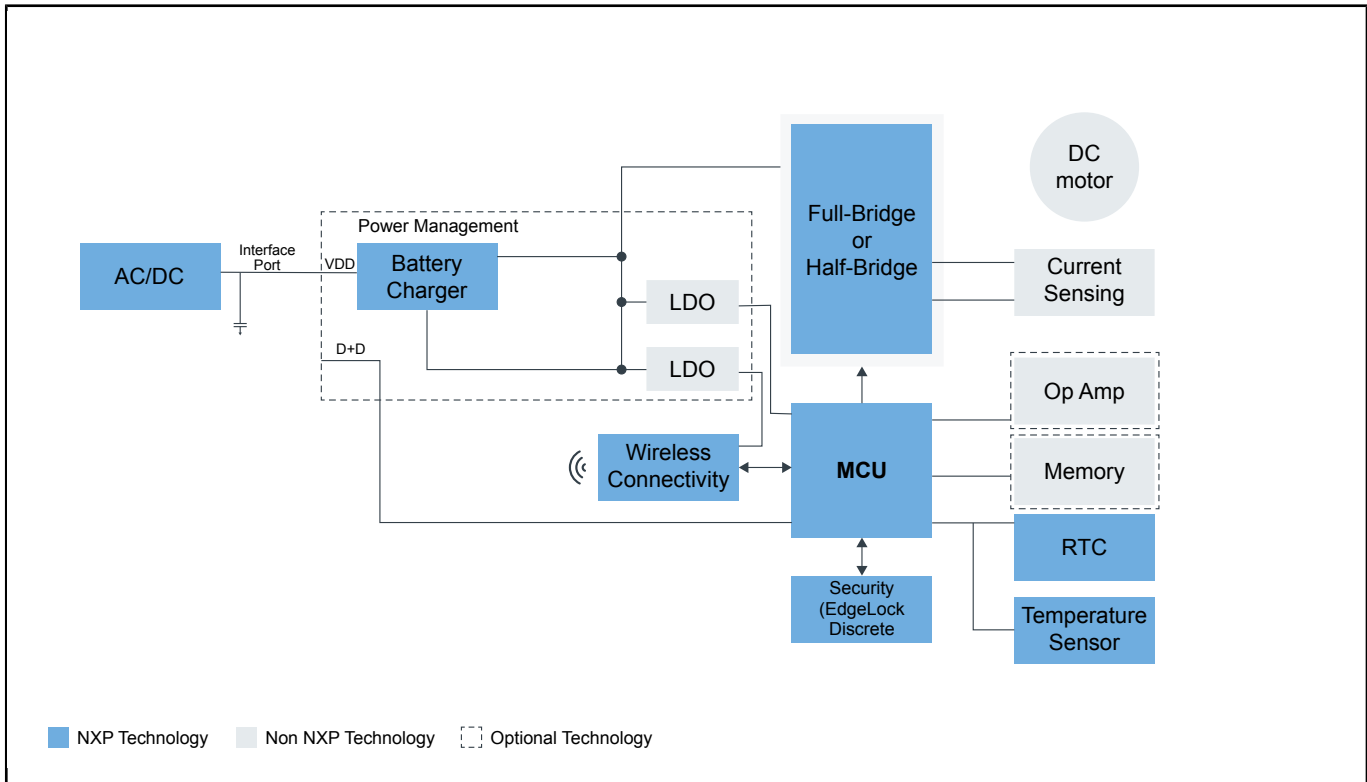


### Recommended Products for AC & VFD

Controllers (MCU)	<ul style="list-style-type: none"> <li>• <a href="#">i.MX RT Crossover MCUs</a>: i.MX RT Crossover MCUs</li> <li>• <a href="#">KV Series Cortex-M4/M0+/M7</a>: KV Series: Real-time Motor Control and Power Conversion MCUs based on Arm<sup>®</sup> Cortex<sup>®</sup>-M0+/M4/M7</li> <li>• <a href="#">KE Series Cortex-M4/M0+</a>: Kinetis<sup>®</sup> E Series: 5V, Robust Microcontrollers (MCUs) based on Arm<sup>®</sup> Cortex<sup>®</sup>-M0+/M4 Core</li> </ul>
-------------------	---

	<ul style="list-style-type: none"> <li>• <a href="#">LPC553x/S3x: Advanced Analog Arm®Cortex®-M33-Based MCU Family</a></li> <li>• <a href="#">MCX Cortex-M</a>: MCX General-Purpose MCUs</li> <li>• <a href="#">S32K General-Purpose MCUs</a>: S32K General-Purpose Microcontrollers</li> <li>• <a href="#">Digital Signal Controllers</a>: Digital Signal Controllers</li> </ul>
Voltage Regulator	<ul style="list-style-type: none"> <li>• <a href="#">Power Management</a>: Power Management</li> <li>• <a href="#">PF5020</a>: Multi-Channel (5) PMIC for Automotive Applications – 4 High Power and 1 Low Power, Fit for ASIL B Safety Level</li> <li>• <a href="#">PF1550</a>: PMIC with 1A Li+ Linear Battery Charger for Low Power Processor Systems</li> </ul>
Power Stage Driver	<ul style="list-style-type: none"> <li>• <a href="#">GD3000</a>: 3-Phase Brushless Motor Pre-Driver</li> <li>• <a href="#">MC34937</a>: Three Phase Field Effect Transistor Pre-driver</li> <li>• <a href="#">GD3100</a>: Advanced Single-Channel Gate Driver for Insulated Gate Bipolar Transistors and Silicon Carbide MOSFETs</li> <li>• <a href="#">GD3160</a>: Advanced Single-Channel High-Voltage Isolated Automotive Gate Driver for SiC MOSFETs/IGBTs</li> </ul>
Drivers	<ul style="list-style-type: none"> <li>• <a href="#">GD3000</a>: 3-Phase Brushless Motor Pre-Driver</li> </ul>
Wired Interfaces	<ul style="list-style-type: none"> <li>• <a href="#">CAN Transceivers</a>: CAN Transceivers</li> <li>• <a href="#">Ethernet</a> : Ethernet</li> <li>• <a href="#">UARTs</a>: UARTs</li> <li>• <a href="#">I<sup>2</sup>C, SPI, I3C Interface Devices</a>: I<sup>2</sup>C, SPI, I3C Interface Devices</li> </ul>
Security (EdgeLock Discrete)	<ul style="list-style-type: none"> <li>• <a href="#">EdgeLock® SE050: Plug &amp; Trust Secure Element Family – Enhanced IoT security with high flexibility</a></li> </ul>

## Portable Brushed DC Motor Block Diagram

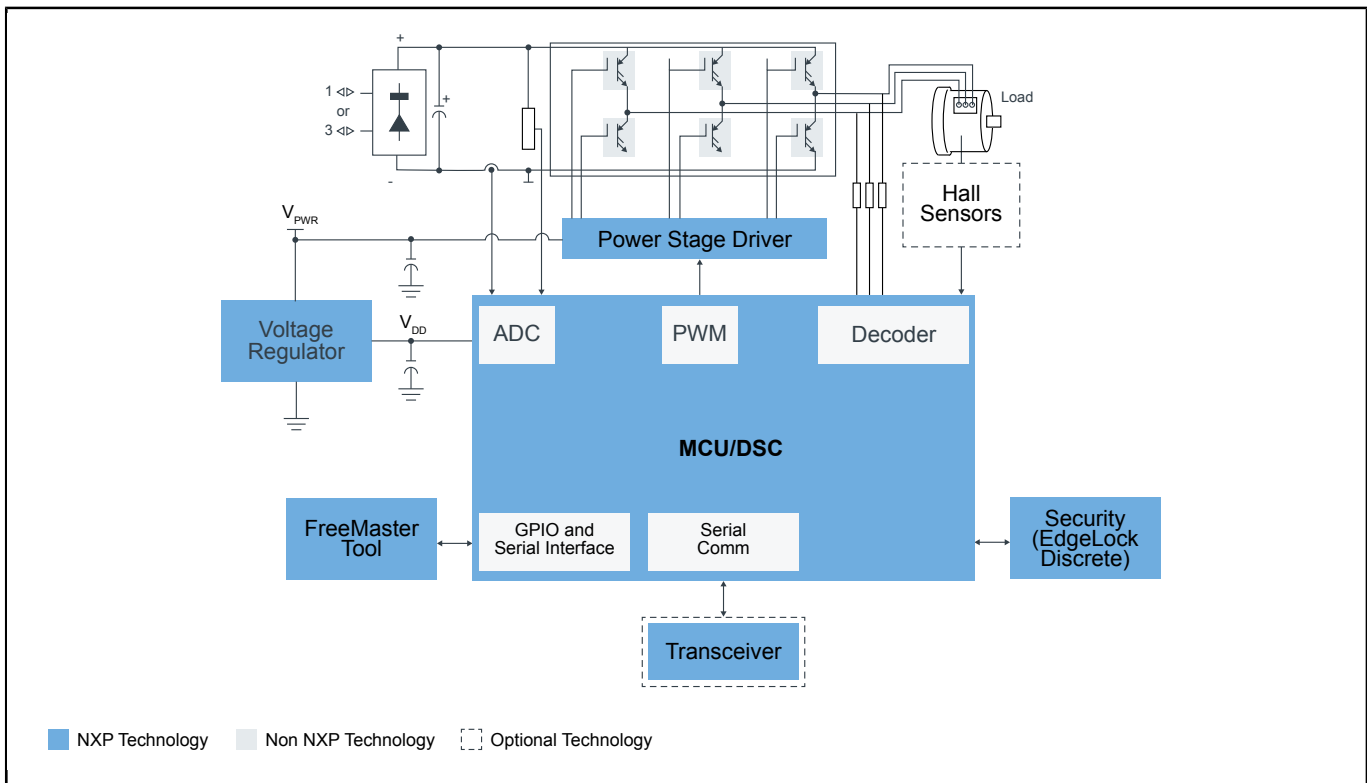


### Recommended Products for Portable Brushed DC Motor

MCU	<ul style="list-style-type: none"> <li>• <a href="#">KE Series Cortex-M4/M0+</a>: Kinetis® E Series: 5V, Robust Microcontrollers (MCUs) based on Arm® Cortex®-M0+/M4 Core</li> </ul>
-----	--

	<ul style="list-style-type: none"> <li>• <b>MCX Cortex-M:</b> MCX General-Purpose MCUs</li> <li>• <b>LPC800 Cortex-M0+ :</b> LPC800 Series: Low-Cost Microcontrollers (MCUs) based on Arm® Cortex®-M0+ Cores</li> </ul>
AC/DC	<ul style="list-style-type: none"> <li>• <b>AC-DC Solutions:</b> AC-DC Solutions</li> <li>• <b>TEA19363LT:</b> GreenChip SMPS Primary Side Control IC with QR/DCM Operation and Active x-Capacitor Discharge</li> </ul>
Battery Charger	<ul style="list-style-type: none"> <li>• <b>Battery Chargers:</b> Battery Chargers</li> <li>• <b>MC34671:</b> 600 mA Single-Cell Li-Ion / Li-Polymer Battery Charger</li> </ul>
Security (EdgeLock Discrete)	<ul style="list-style-type: none"> <li>• <b>EdgeLock® SE050:</b> Plug &amp; Trust Secure Element Family – Enhanced IoT security with high flexibility</li> <li>• <b>Authentication:</b> IoT Security and Authentication Solutions</li> </ul>
Temperature Sensor	<ul style="list-style-type: none"> <li>• <b>I<sup>2</sup>C Digital Temperature Sensors:</b> I<sup>2</sup>C Digital Temperature Sensors</li> <li>• <b>PCT2075:</b> I<sup>2</sup>C-Bus Fm+, 1 Degree C Accuracy, Digital Temperature Sensor And Thermal Watchdog</li> </ul>
Full-Bridge	<ul style="list-style-type: none"> <li>• <b>BLDC, H-Bridge, Stepper:</b> BLDC, H-Bridge and Stepper Motor Drivers</li> </ul>
Full-Bridge or Half-Bridge	<ul style="list-style-type: none"> <li>• <b>MC33926:</b> H-Bridge, Brushed DC Motor Driver, 5-28 V, 5 A, 20 kHz</li> <li>• <b>HB2000:</b> SPI Programmable 10 A H-Bridge Brushed DC Motor Driver</li> <li>• <b>BLDC, H-Bridge, Stepper:</b> BLDC, H-Bridge and Stepper Motor Drivers</li> </ul>
RTC	<ul style="list-style-type: none"> <li>• <b>Real-Time Clocks:</b> Real-Time Clocks</li> </ul>
Wi-Fi	<ul style="list-style-type: none"> <li>• <b>Wireless:</b> Wireless</li> </ul>

## Brushless DC Motor (BLDC) Control Block Diagram



## Recommended Products for Brushless DC Motor (BLDC) Control

MCU/DSC	<ul style="list-style-type: none"> <li>• <a href="#">KV Series 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 Cortex-M4/M0+</a>: Kinetis® E Series: 5V, Robust Microcontrollers (MCUs) based on Arm® Cortex®-M0+/M4 Core</li> <li>• <a href="#">Digital Signal Controllers</a>: Digital Signal Controllers</li> <li>• <a href="#">LPC5500 Cortex-M33</a>: LPC5500 Series: Arm® Cortex®-M33 based Microcontroller Series for Mass Market, Leveraging 40nm Embedded Flash Technology</li> <li>• <a href="#">MCX Cortex-M</a>: MCX General-Purpose MCUs</li> <li>• <a href="#">S32K General-Purpose MCU</a>: S32K General-Purpose Microcontrollers</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 Single-Channel Gate Driver for Insulated Gate Bipolar Transistors and Silicon Carbide MOSFETs</li> <li>• <a href="#">GD3160</a>: Advanced Single-Channel High-Voltage Isolated Automotive Gate Driver for SiC MOSFETs/IGBTs</li> </ul>
Voltage regulator	<ul style="list-style-type: none"> <li>• <a href="#">Power Management</a>: Power Management</li> </ul>
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> </ul>
Transceiver	<ul style="list-style-type: none"> <li>• <a href="#">CAN Transceivers</a>: CAN Transceivers</li> </ul>
Security (EdgeLock Discrete)	<ul style="list-style-type: none"> <li>• <a href="#">EdgeLock® SE050</a>: Plug &amp; Trust Secure Element Family – Enhanced IoT security with high flexibility</li> </ul>

View our complete solution for [Motor Drives](#).

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

[www.nxp.com](http://www.nxp.com)

NXP and the NXP logo are trademarks of NXP B.V. All other product or service names are the property of their respective owners. The related technology may be protected by any or all of patents, copyrights, designs and trade secrets. All rights reserved. © 2022 NXP B.V.