

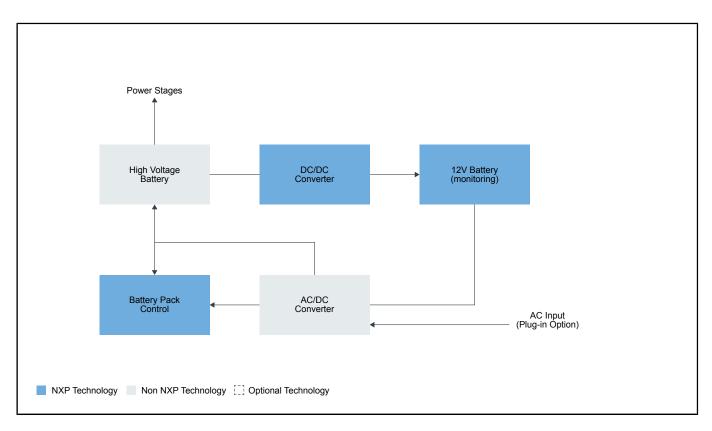
Hybrid Electric Vehicle (HEV) Applications

Last Updated: May 10, 2023

With the need for cleaner cars and fewer emissions, NXP has developed a portfolio that provides the building blocks for all the different electric vehicle types:

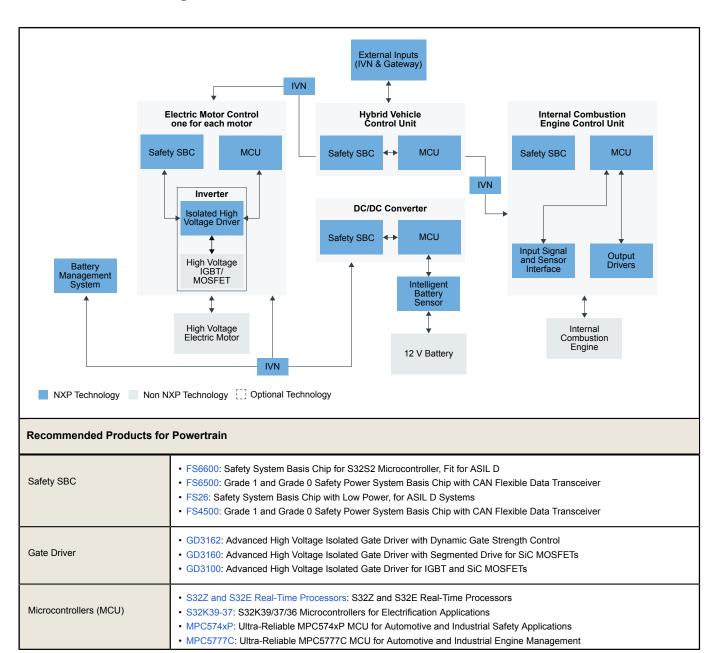
- Converter and charger: the AC-DC charger interfaces with the BMS to ensure a proper charge of electricity of the cells until it fulfills high-voltage requirements.
- Start/stop system: 8-, 16-bit MCUs with analog switches, system basis chips and transceivers to handle the high current and reliability.
- Hybrid control unit: controls power distribution, energy storage, engine and motor to enhance the efficiency of the HEV powertrain.

Converter and Charger Block Diagram



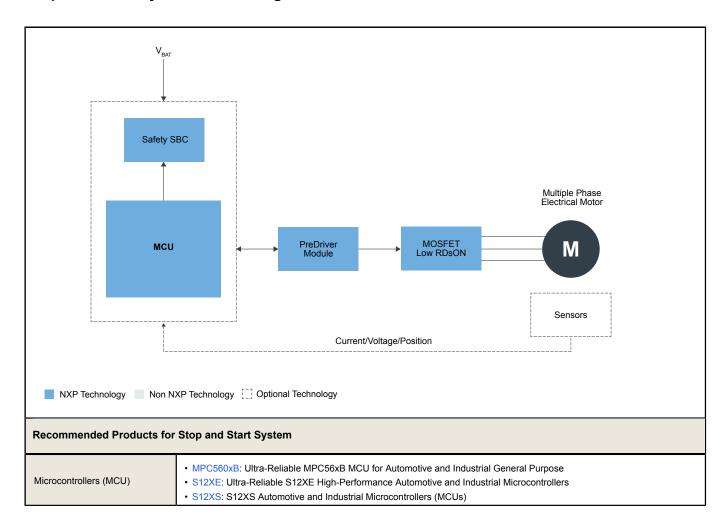
Recommended Products for Converter and Charger		
Battery Pack Control	MPC560xB: Ultra-Reliable MPC56xB MCU for Automotive and Industrial General Purpose S12XE: Ultra-Reliable S12XE High-Performance Automotive and Industrial Microcontrollers S12XS: S12XS Automotive and Industrial Microcontrollers (MCUs) S12P: S12P Automotive and Industrial Microcontrollers (MCUs) S12G: Ultra-Reliable S12G General Purpose Automotive and Industrial Microcontrollers	
12 V Battery Monitoring	MM912_637: Battery Sensor with LIN for 12 V Lead-Acid Batteries	
DC/DC converter	56F824X_825X: Digital Signal Controller	

Powertrain Block Diagram



	 MPC564xL: Ultra-Reliable Dual-Core 32-bit MCU for Automotive and Industrial Applications MPC5775B-E: MPC5775B and MPC5775E Microcontrollers for Battery Management Systems (BMS) and Inverter Applications
Input Signal and Sensor Interface	CD1020: Low-Cost 22-CH Multiple Switch Detect Interface
Output Drivers	CD1020: Low-Cost 22-CH Multiple Switch Detect Interface
External Inputs (IVN & Gateway)	MPC574xB-C-G: Ultra-Reliable MPC574xB/C/G MCUs for Automotive and Industrial Control and Gateway S32G2: S32G2 Processors for Vehicle Networking
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Battery Management System	Battery Management System (BMS): Battery Management System (BMS)
Battery Management System	Battery Management System (BMS): Battery Management System (BMS)

Stop and Start System Block Diagram



	S12P: S12P Automotive and Industrial Microcontrollers (MCUs) S12G: Ultra-Reliable S12G General Purpose Automotive and Industrial Microcontrollers S32 Automotive Platform: S32 Automotive Processing Platform
Safety SBC	 FS4500: Grade 1 and Grade 0 Safety Power System Basis Chip with CAN Flexible Data Transceiver FS26: Safety System Basis Chip with Low Power, for ASIL D Systems FS6600: Safety System Basis Chip for S32S2 Microcontroller, Fit for ASIL D
CAN/LIN Transceiver	CAN Transceivers: CAN Transceivers
Pre-Driver Module	MC33937: 3-Phase Field Effect Transistor Pre-Driver
MOSFET Low RDs	MC12XS2: 12 V Multipurpose Low RDSON eXtreme Switch

View our complete solution for Hybrid Electric Vehicle (HEV) Applications.

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

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