Body Control Module based on MPC574xB/C/G Series Microcontrollers

Power Architecture®-based MCU for Automotive and Industrial Applications

Application One-Sheet

Overview

NXP MPC5748G family introduces highly flexible MCUs suitable for advanced central body control application (BCM) in vehicles. The MPC5748G solves five main topics for the BCM:

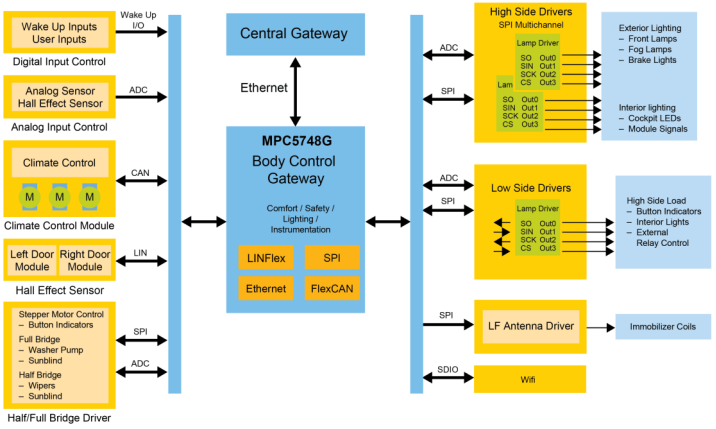
- A low power architecture that enables pretended networking and cyclic power profiles, with high levels of functionality, at very low power consumption
- High integration of CPUs and memory, plus timer, communications and ADC interfaces critical for BCM connectivity
- Programmable hardware security module (HSM), supporting EVITA-mid and SHE Automotive Security levels
- ISO 26262 ASIL-B architecture, enabling the integration of safety critical applications into the BCM
- The Flash architecture has virtual remapping functionality enabling seamless Firmware over-the-air updates (FOTA) of the MCU with zero ECU downtime

The MPC5748G MCU is a device with a diverse set of communication protocols such as Ethernet, FlexRay™, CAN FD, USB, MLB, etc., making this device

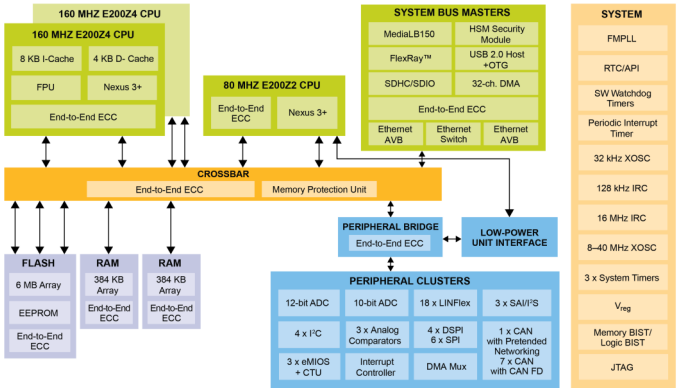
MPC574xB/C/G Specifications

Flash	Up to 6 MB	Timer/PWM	Up to 96 ch., eMIOS
RAM	Up to 768 KB	Other Timer	Up to 16 PIT, 3 STM, 4 SWT
Core	Up to 2 x Z4, 1 x Z2	Analog	Up to 2 ADC (10 & 12 bit), 3 Comparators, CTU
Speed	2 x 160 MHz 1 x 80 MHz	Communications	Up to 4 DSPI, 6 SPI, 18 LIN, 8 CAN FD, 4 I²C, 1xUSB, 2 x ENET, 1xSDHC
Op Range	3.3 to 5.5 V	Safety & Security	HSM, PASS and TDM, FCCU
Temp	-40 to 125 °C		
Package	176LQFP 256/324BGA	Low Power	LPU_SLEEP, LPU_STOP, LPU_STANDBY mode sup-

Application Block Diagram



MCU Block Diagram



Features

- Automotive peripherals:
  - CAN FD, many LINs
  - Ethernet, with IEEE® 1588 & AVB
- ADC and timer channels:
  - 2 ADCs, ADC0 (10 bit) and ADC1 (12 bit)
  - Cross trigger unit to synchronize timers and ADCs
  - eMIOS
- Advanced low power architecture:
  - Power island with Z2 CPU, RAM and peripheral subset, providing low power consumption for key-off functionality
  - Analog comparators to enable wake-up from deepest low power modes on analog threshold detection
- Security:
  - Hardware security module, physically isolated from the application resources
- Supporting asymmetric, hardware accelerated and symmetric crypto operations
  - Product life-cycle scheme, locking down features
- Functional Safety:
  - ASIL-B, use system level to achieve higher level (e.g., for lighting)
- Firmware Over-The-Air update:
  - Zero performance impact for FOTA updates (flexible read-while-write partitions, multi-ported Flash)
  - Simplified software complexity for FOTA updates, using flash remapping mechanism
  - Flash programming protection and logging

Enablement Tools

- Development hardware:
  - MPC574XG-MB family motherboard
  - MPC574XG-256DS, MPC574XG-176DS or MPC574XG-324DS daughterboard
  - DEVKIT-MPC5748G
- Runtime software: Flash and EEPROM driver
- Compiler: Green Hills®, Wind River®, HighTec®
- Debugger: Lauterbach®, iSystem®,PLS®, Green Hills®, P&E®
- Software Enablement:
  - S32 Design Studio with SDK
  - AUTOSAR 4.0 MCAL + OS

www.nxp.com/MPC5748G

Document Number: BCMAPPFS REV 1