



Providing a safe
high voltage battery
management
system platform

MPC5775B BMS+VCU Reference Design High Voltage, Targets ISO 26262 ASIL D

The MPC5775B BMS+VCU reference design is targeted to integrate Battery Management System and Vehicle Control Unit functionalities in one ECU. It provides customers with a proven-concept, well-designed and cost-effective solution including hardware and software enablement.

KEY FEATURES

- ▶ NXP MPC5775B Microcontroller (416 MAPBGA)
- ▶ NXP Power SBC FS65xx with 1 CAN physical layer
- ▶ Dual TPL communication with daisy chain of Battery Cell Controller device
- ▶ Support multiple input/output interfaces, including MSDI, ADC, GPIO, LSD and HSD
- ▶ Hardware features:
 - 1 x 100Base-T1 Ethernet
 - 3 x CAN, two of which support CANFD
 - 1 x LIN/1 x UART
 - 2 x PWM input/ 16 x Switch input/ 10 x ADC/4 x High-side output channels/11 x Low-side output channel
 - 5 x 5V/1 x 12V power supply for external sensor
- ▶ Support functional safety features onboard:
 - ASIL-D Safety power SBC MC33FS6523CAE
 - ASIL-D MCU MPC5775B
 - ASIL-C Battery Cell Controller MC33771

ENABLEMENT/ RUNTIME SOFTWARE

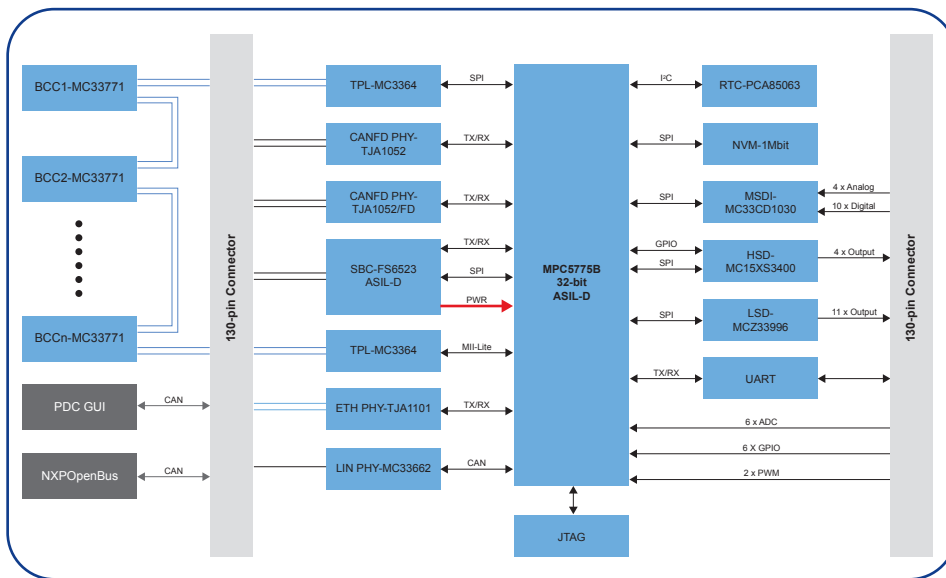
- ▶ IDE: S32 Design Studio, EB Tresos 20.1.0
- ▶ Compiler: Green Hills, Wind River, GCC E200 VLE GNU
- ▶ Debugger: JTAG Debug, Lauterbach, P&E Multilink
- ▶ CAN Adaptor: PCAN-USB Pro
- ▶ Two demo app projects: S32 SDK and AUTOSAR MCAL
- ▶ GUI tool to easy monitor system over CAN
- ▶ Provide bootloader based on UDSONCAN protocol

TARGET APPLICATIONS

- ▶ High Voltage Battery Management System
- ▶ Vehicle Control Unit



SYSTEM BLOCK DIAGRAM



RDVCUMPC5775E BOARD



MPC5775B MCU SPECIFICATIONS

Core	2x e200z7 (1x in LS)	Speed	220MHz
Flash	4 MB	RAM	512 KB
Timer/ PWM	2x eMIOS 32ch total	Other Timer	Up to (4 +1) x PIT, 4x STM 2x SWT
Analog	2x EQADC 40ch total	Communications	1x FEC, 2x MSCAN-FD, 4x FlexCAN, 5xDSPI, 6x eSCI (LIN)
Security	Hardware CSE Module	Operating Range	3.0V – 5.5V
Temp (Ta)	-40 to 125 C	Package	416 BGA

Part Number	Application	Kit Contains
RDVCUMPC5775E	HV BMS	Board

www.nxp.com/RDVCU5775EVM

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