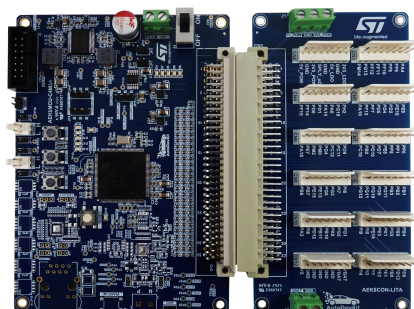


Cost-optimized and compact size MCU discovery kit for SPC58EC80E5 Chorus 4M automotive microcontroller with CAN-FD and unified automotive connector



Features

- AEK-MCU-C4M3 MCU board featuring the [SPC58EC80E5QMC1Y](#) dual-core, 180 MHz, 32-bit Power Architecture MCU for Automotive General-Purpose Applications
- AEK-CON-LIT connector board for simplified access to the 96 pins of the automotive unified connector
- 12 V DC power supply connector for external supply. The board can also be supplied via the automotive unified connector
- [L5963](#) automotive dual monolithic switching regulator with LDO. It provides up to 2 A for 5 V and 3.3 V rails both for internal and external supply
- Two voltage configurations for the microcontroller (5 V or 3.3 V)
- [STEF033/STEF05L](#)-electronic fuses for 3.3 V and 5 V lines, featuring an I_{LIMIT} current up to 2.5 A and I_{SHORT} current up to 0.5 A for external supply with integrated protection as short circuit, overload and thermal latch
- [L99VR02JTR](#) automotive linear voltage regulator with configurable output voltage featuring 500 mA current capability with integrated protection for both 5/3.3 V rails, additional to the one provided by the DC-DC
- JTAG connector
- Five generic LEDs
- Reset and wakeup buttons
- Four 3.3 V/5 V SPIs
- One SPI working at 3.3 V, thanks to a fixed voltage-level translator
- Standardized 96-pin plug-and-play automotive unified connector, featuring external supply voltage and general-purpose pins for ADCs, EMIOs, Interrupts, GPIOs, DSPI, CAN, I²C, and UART
- Two CAN-FD transceivers
- Reverse battery-protection dedicated circuit
- Extremely low quiescent current in standby conditions
- Compact size:
 - AEK-MCU-C4M3: 127 mm x 90 mm
 - AEK-CON-LIT: 127 mm x 65 mm
- Included in the AutoDevKit ecosystem

Product summary

Cost-optimized and compact size MCU discovery kit for SPC58EC80E5 Chorus 4M automotive microcontroller with CAN-FD and unified automotive connector	AEK-MCU-C4MLIT3
32-bit Power Architecture MCU for Automotive General-Purpose Applications - Chorus family	SPC58EC80E5QMC1Y
Electronic fuses for 3.3 V/5 V lines	STEF033APUR/STEF05LAPUR
AutoDevKit Studio for 32-bit power architecture MCUs	STSW-AUTODEVKIT
Automotive dual monolithic switching regulator with LDO and HSD	L5963DN-EHT

Description

The [AEK-MCU-C4MLIT3](#) evaluation kit consists of an MCU board (AEK-MCU-C4M3) and a connector board (AEK-CON-LIT).

The AEK-MCU-C4M3 is designed to address Automotive and Transportation applications as well as other applications requiring automotive safety and security levels. A cryptography-dedicated MCU core, employed as hardware secure module (HSM), is paired with a dual 180 MHz general-purpose 32-bit core, hosted by the on-board [SPC58EC80E5](#) MCU, featuring 4 MB of flash memory.

Two CAN-FD transceivers support high-speed CAN-FD applications, up to 8 Mbps communication speed, featuring low quiescent current, electromagnetic compatibility (EMC) and electrostatic discharge (ESD).

Product summary	
L99VR02J automotive linear voltage regulator with configurable output	L99VR02JTR
Applications	Domain and zone controllers Doorzone and actuations General purpose Automotive MCU boards

The board also hosts an OpenOCD debugger/programmer, MCU peripheral connectors, wake up, and reset buttons.

The MCU ADC reference voltage is provided by a stable linear voltage regulator (LDO) embedded in the L5963 IC or by the L99VR02JTR IC depending on the chosen voltage.

The board has a dedicated supply capacity for an external 5 V or 3.3 V load.

Two e-fuses (STEF05L for 5 V and STEF033 for 3.3 V) are used to increase the external output voltage in a smooth and controlled manner, at board power-up. This careful ramp-up helps prevent a surge of inrush current from the power source to the load, thereby protecting the external power supply from overload. This feature is particularly helpful in setups where one power supply feeds multiple loads.

For system reset during the development phase, a reset button was added to the board layout, while a reverse battery protection circuit has been integrated for robust protection.

A preloaded demo firmware makes an on-board LED blink at power-up.

The MCU board can be used standalone or easily connected to another functional board, also called daughter board, thanks to the standardized 96-pin plug-and-play automotive unified connector.

If the functional board you are using does not feature the same 96-pin connector, you can connect it to the MCU board through the AEK-CON-LIT connector board (not available for separate sale) included in the kit carton box.

1 Block diagram

Figure 1. AEK-MCU-C4MLIT3 kit connection

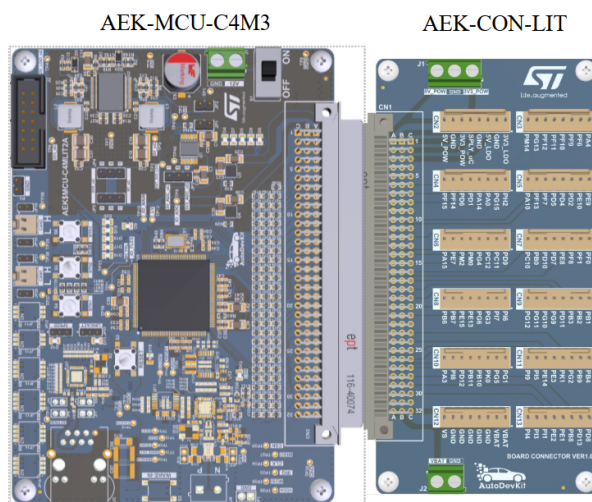
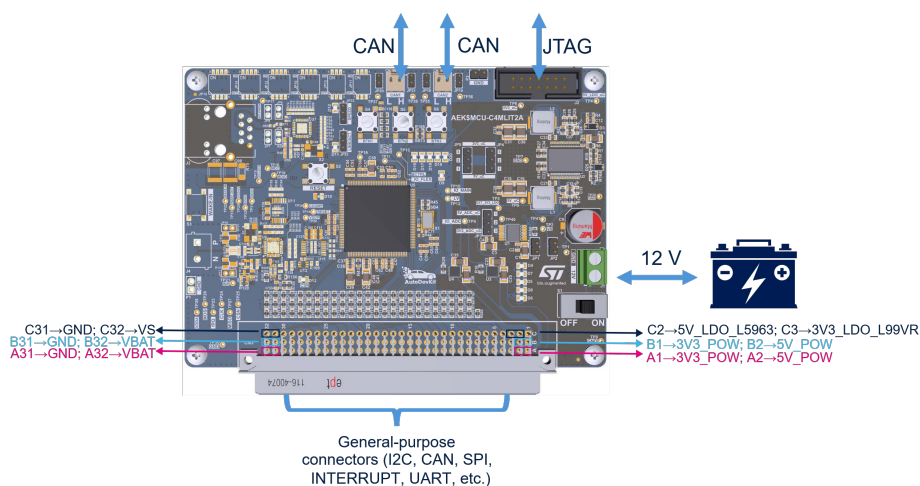
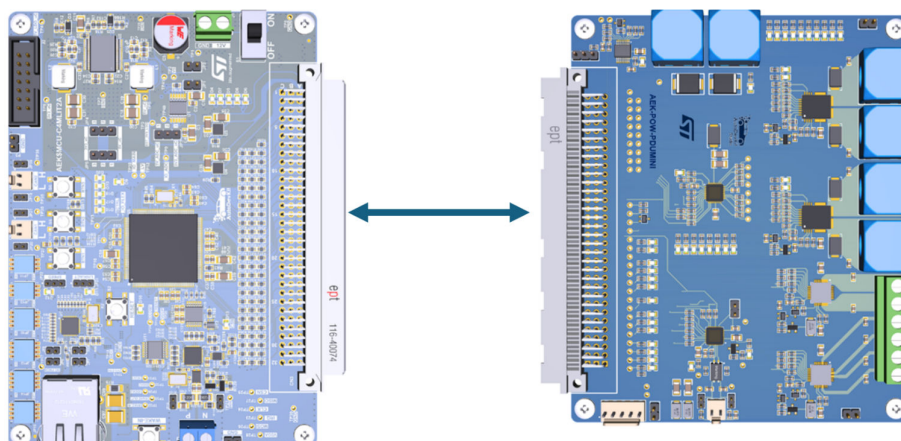


Figure 2. AEK-MCU-C4MLIT3 block diagram



For example, the board can be connected to a daughter board for Power Distribution.

Figure 3. AEK-MCU-C4MLIT3 connection with a PDU daughter board



2

Schematic diagrams

Figure 4. AEK-MCU-C4MLIT3 circuit schematic (1 of 11)

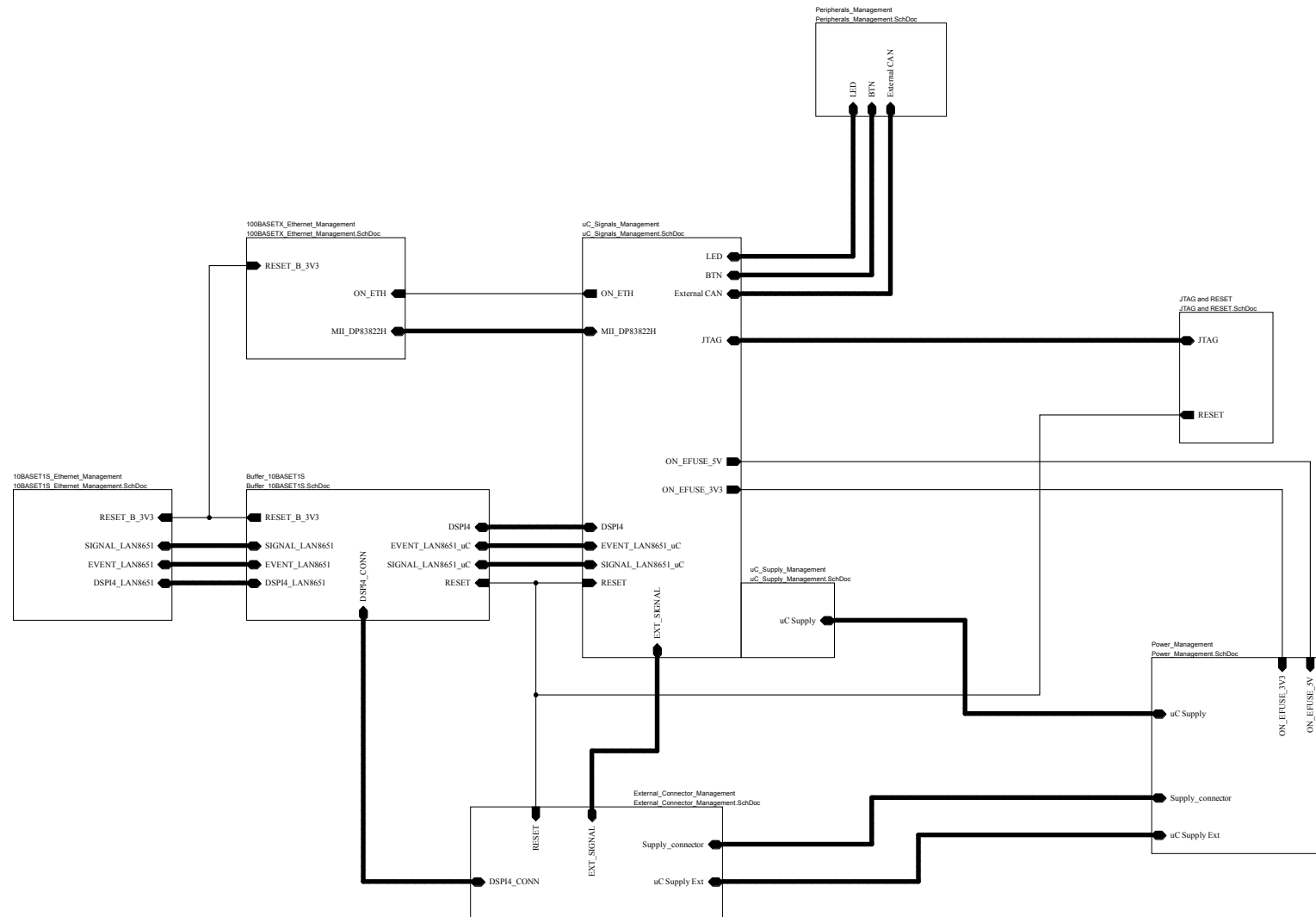


Figure 5. AEK-MCU-C4MLIT3 circuit schematic (2 of 11)

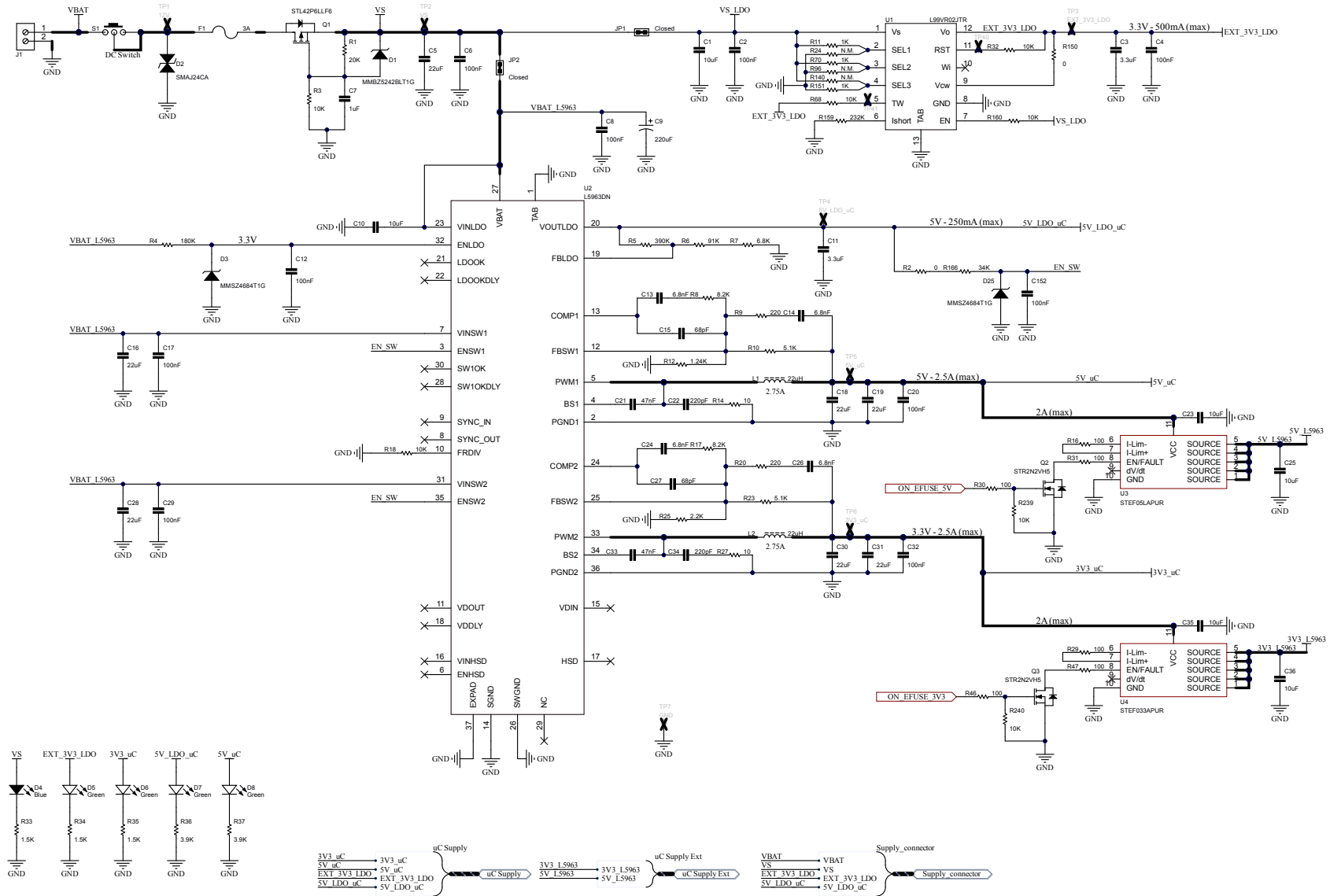






Figure 8. AEK-MCU-C4MLIT3 circuit schematic (5 of 11)

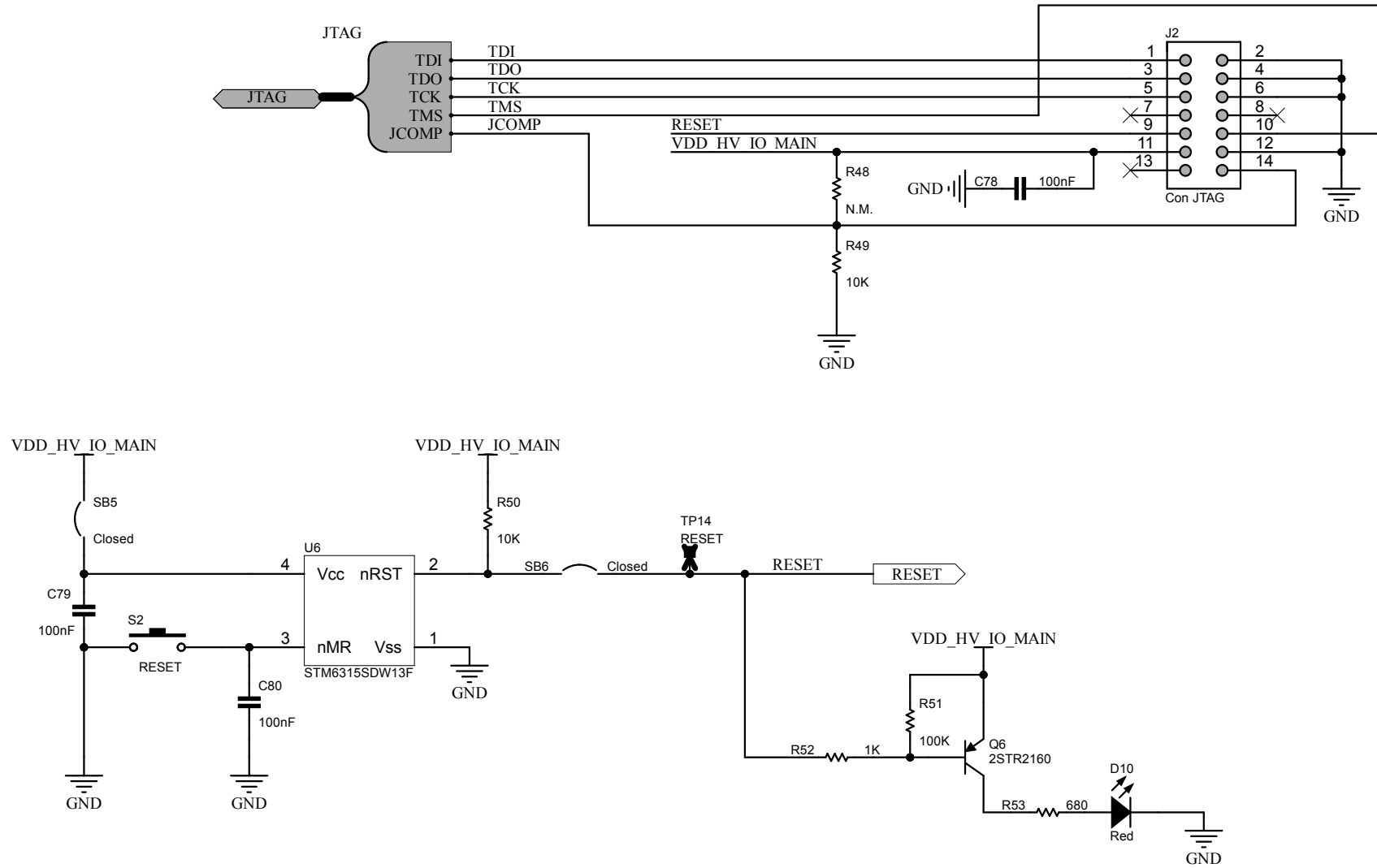
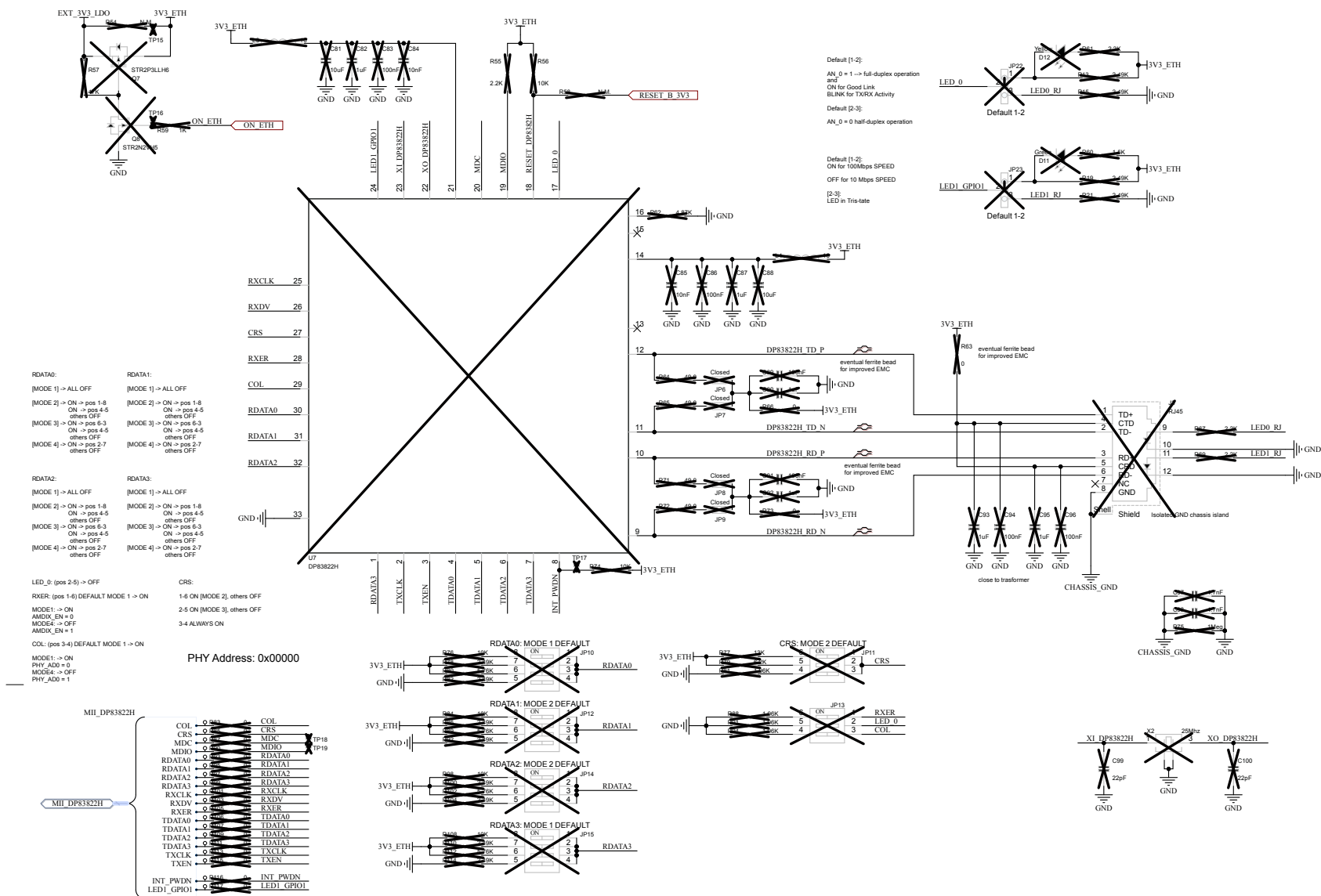


Figure 9. AEK-MCU-C4MLIT3 circuit schematic (6 of 11)



AEK-MCU-C4MLT3

Schematic diagrams

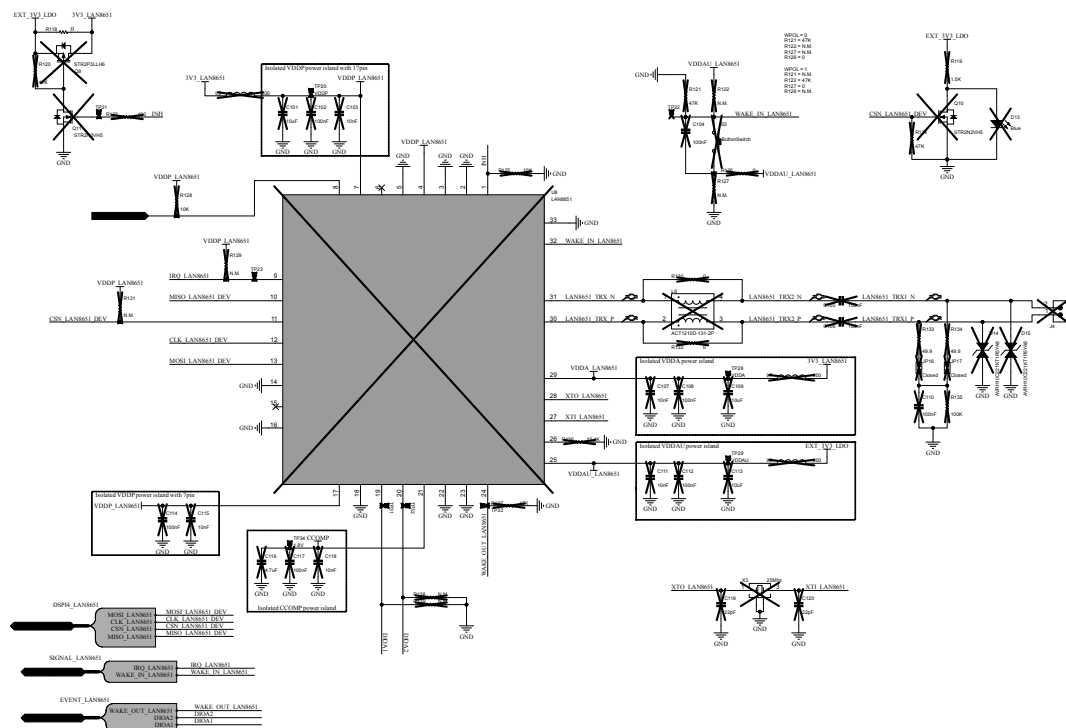


Figure 11. AEK-MCU-C4MLIT3 circuit schematic (8 of 11)

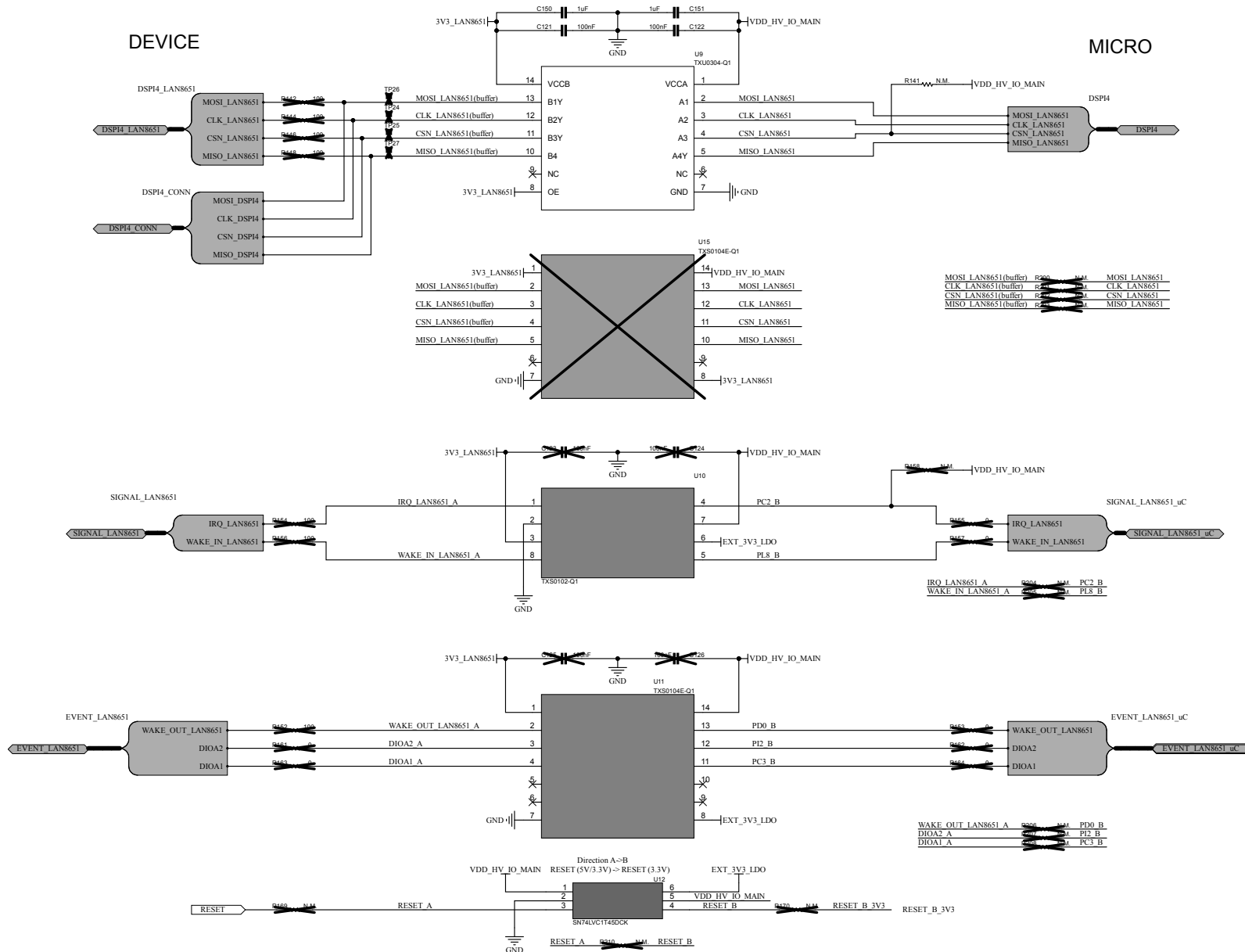


Figure 12. AEK-MCU-C4MLIT3 circuit schematic (9 of 11)

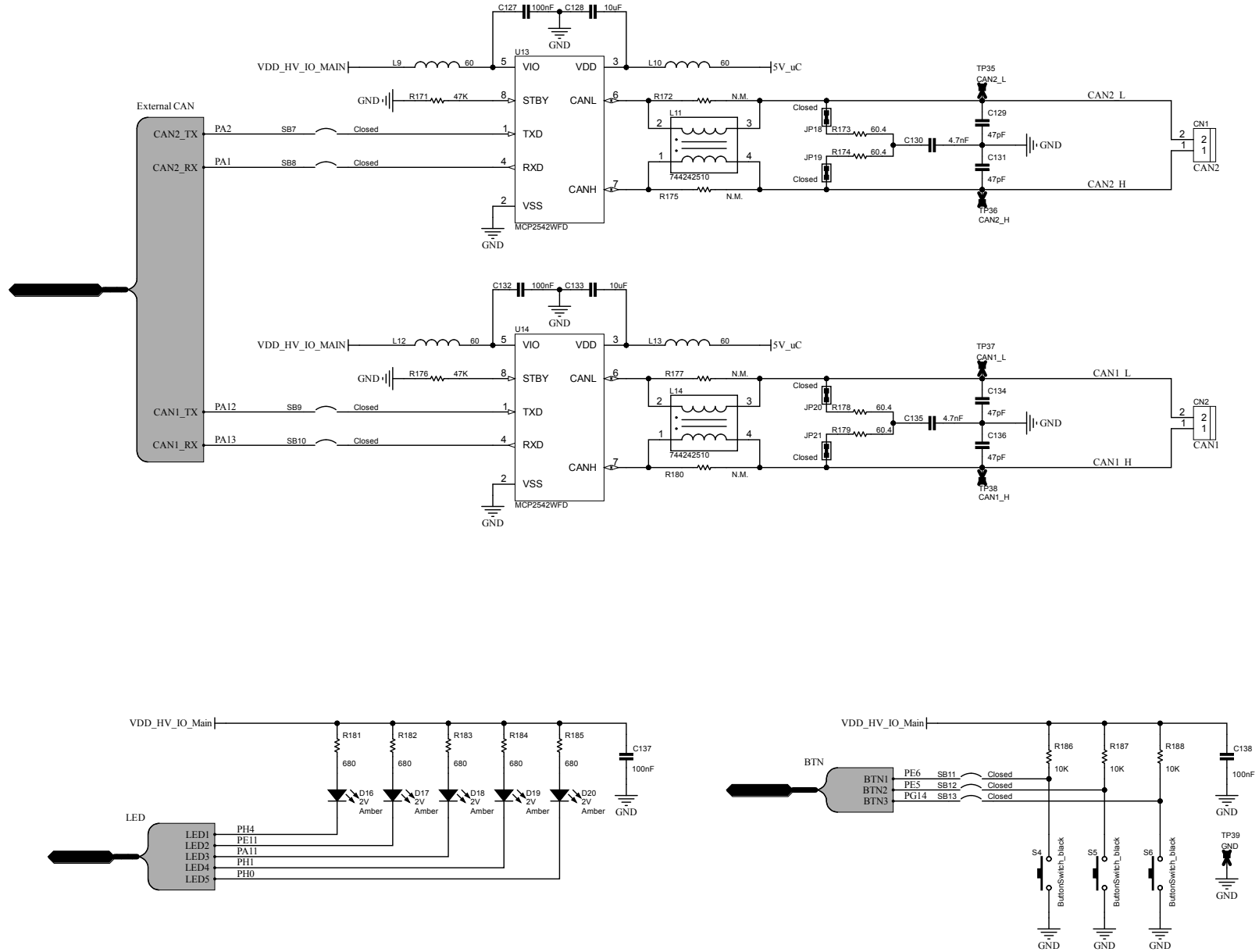


Figure 13. AEK-MCU-C4MLIT3 circuit schematic (10 of 11)

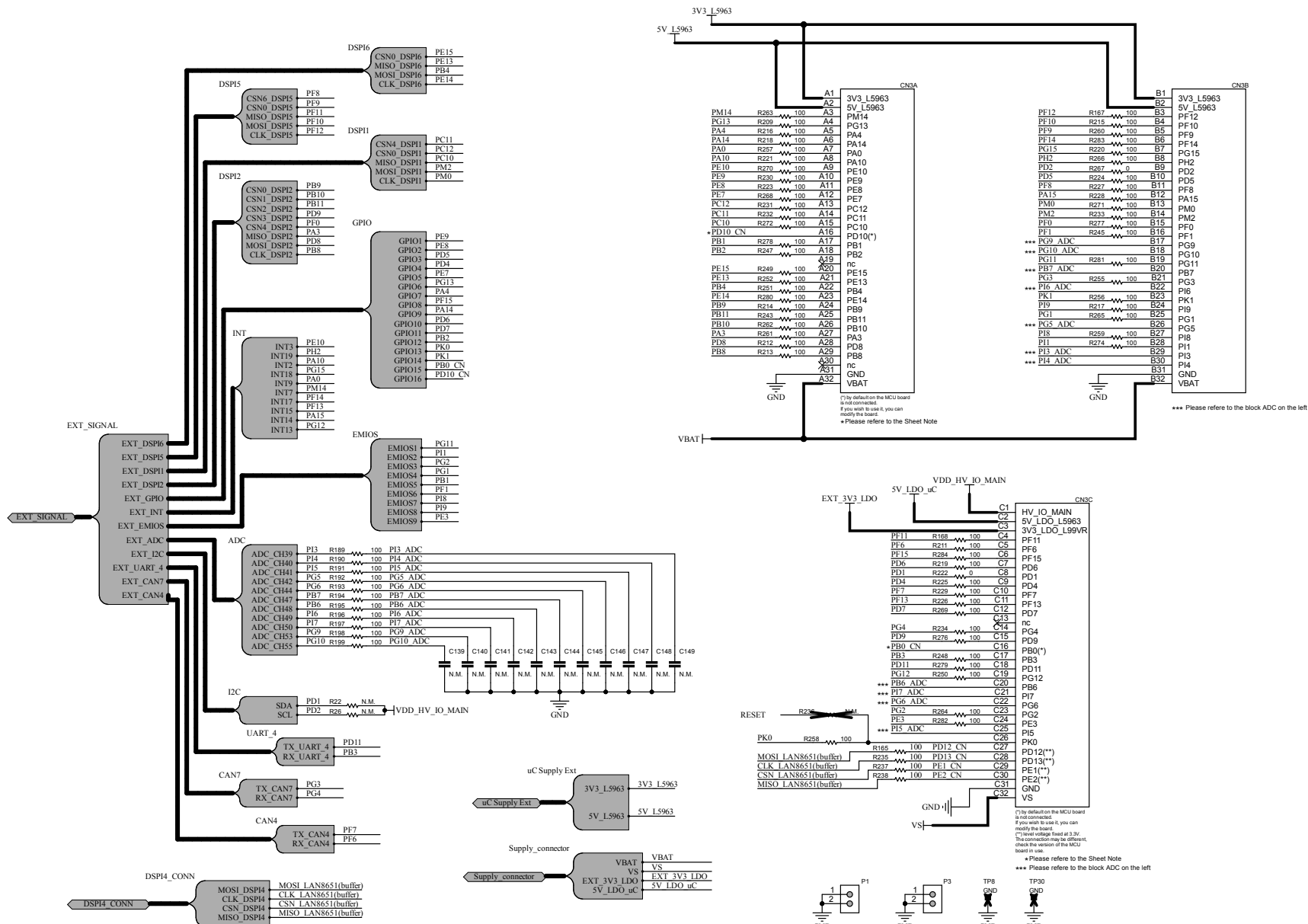
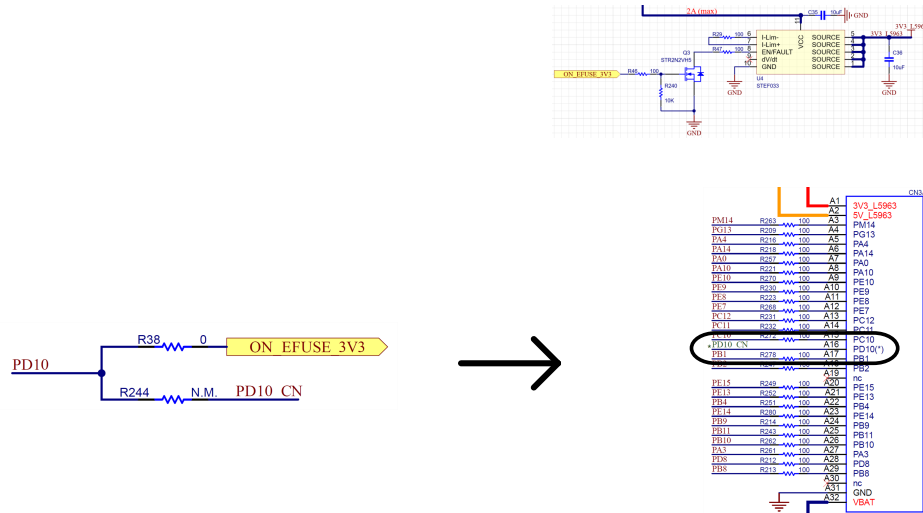
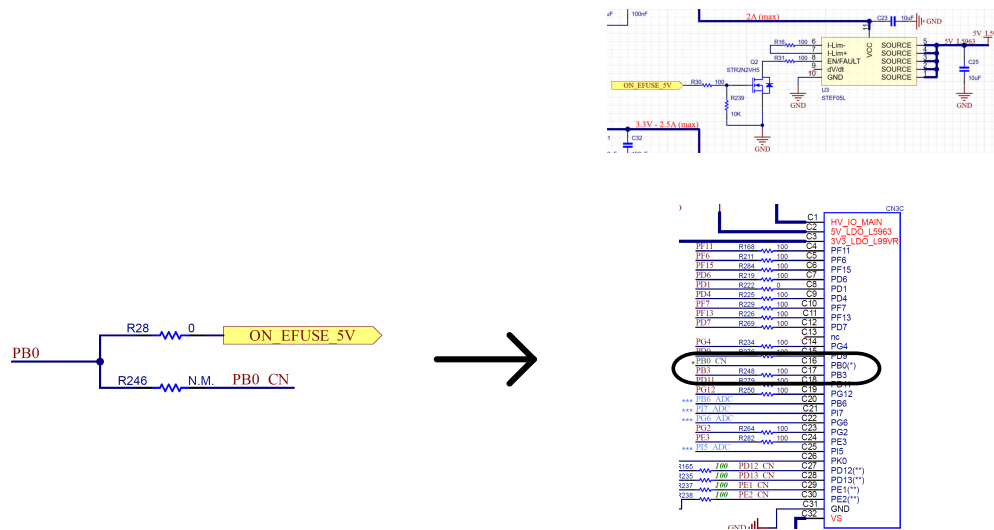


Figure 14. AEK-MCU-C4MLIT3 circuit schematic (11 of 11)



Pin not connected on the "96pin connector," by default it is used to enable/disable the eFuse @3.3V (U4_STEF033).

To connect PD10 to the "96pin connector" remove R38 and mount a 0R on R244 (this way the eFuse always stays on and is no longer managed by the MCU).



Pin not connected on the "96pin connector," by default it is used to enable/disable the eFuse @5V (U3_STEF05L).

To connect PB0 to the "96pin connector" remove R28 and mount a 0R on R246 (this way the eFuse always stays on and is no longer managed by the MCU).



3 Board versions

Table 1. AEK-MCU-C4MLIT3 versions

Finished good	Schematic diagrams	Bill of materials
AEK\$MCU-C4MLIT3A ⁽¹⁾	AEK\$MCU-C4MLIT3A schematic diagrams	AEK\$MCU-C4MLIT3A bill of materials

1. This code identifies the AEK-MCU-C4MLIT3 evaluation board first version.

Revision history

Table 2. Document revision history

Date	Revision	Changes
10-Sep-2025	1	Initial release.

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