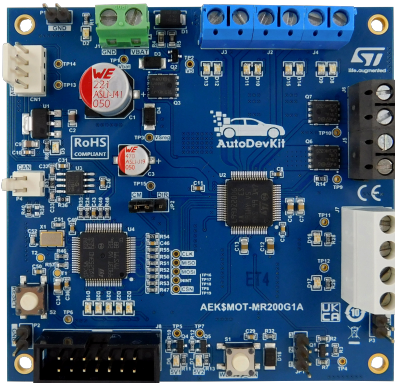


Vehicle mirror controller board based on L99DZ200G multioutput driver and SPC582B60E1 Chorus 1M microcontroller



Features

- Automotive-grade L99DZ200G multioutput driver
- Automotive-grade SPC582B60E1 chorus microcontroller
- The AEK-MOT-MR200G1 is able to control the following functions:
 - Folding and unfolding
 - X-Y mirror inclination
 - Heater
 - Electrochromic dimming
- Additional features supported by the board:
 - Two high-side outputs to drive bulbs, relays, and LEDs
 - CAN bus interface for remote control
 - Connectors for encoder positioning
- Device protection and supervisor features:
 - Constant current mode
 - Open load
 - Overcurrent recovery mode
 - Thermal warning and shutdown
- Size: 85 x 83 mm
- Included in the AutoDevKit ecosystem

Description

The **AEK-MOT-MR200G1** is designed as a mini zone controller for the side mirror application.

The **AEK-MOT-MR200G1** hosts an **SPC582B60E1** chorus 1M microcontroller and an **L99DZ200G** automotive-grade multioutput driver.

Thanks to the integrated **L99DZ200G**, the board allows controlling different functions related to a vehicle side mirror: folding, unfolding, X-Y mirror inclination, electrochromic dimming, and heating.

The **L99DZ200G** integrates the current monitor (high-side only) for X-Y, folding/unfolding, and LED outputs, in order to detect the mechanical end stop switches.

Through dedicated connectors, the **AEK-MOT-MR200G1** supports external encoders, which detect the effective position of the side mirror and send the acquired data to the **SPC582B60E1**. This information can be used to implement safety features or, for example, to create and store a specific profile for each vehicle user.

The board also allows driving two strings of LEDs (to be used, for example, for turn signals or puddle lights).

In the AutoDevKit software package, we have included two **AEK-MOT-MR200G1** evaluation demos that you can use for your own project development.

The first demo is preloaded on the **AEK-MOT-MR200G1** and, once running, it performs an activation sequence of the board outputs (motors, heater, electrochrome voltage (ECV)). It shows how to drive up to three 12 V DC motors (one up to 7.5 A and the other two up to 500 mA), turn on/off two LED strings (at 12 V, one up to 1.5 A and the other up to 700 mA), activate the heater and the electro-chrome functions.

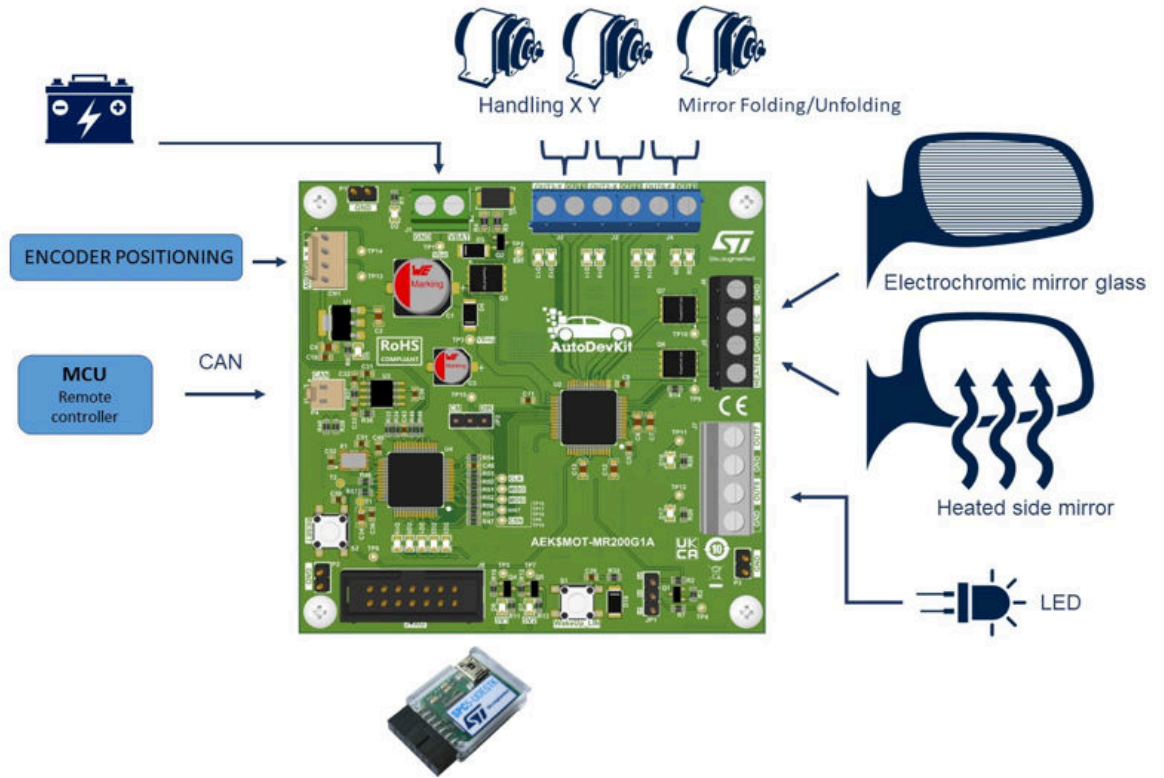
| Product summary | |
|---|--|
| Vehicle mirror controller board based on L99DZ200G multioutput driver and SPC582B60E1 Chorus 1M microcontroller | AEK-MOT-MR200G1 |
| Automotive Front Door device with LIN and HS-CAN providing Dual H-bridge driving | L99DZ200GTR |
| 32-bit Power Architecture MCU for Automotive General Purpose Applications - Chorus family | SPC582B60E1MH00Y |
| AutoDevKit Studio for 32-bit power architecture MCUs | STSW-AUTODEVKIT |
| Application | Automotive Motor Control |

In addition, the downloaded firmware enables board control through CAN messages received from a host ECU, after flashing the second demo on an [AEK-MCU-C4MLIT1](#). At the end of the first demo sequence, the board waits for 8 seconds to receive CAN messages. In case of no message reception, it restarts the automatic sequence from the beginning. To transmit control CAN messages, connect the [AEK-MCU-C4MLIT1](#) to the [AEK-MOT-MR200G1](#) and press user button 1 (SW_1) or user button 3 (SW_3).

To program the onboard SPC582B60E1 microcontroller, connect the [SPC5-UDESTK](#) to the JTAG connector, and connect the board to a PC via USB and run the PLS UDE to flash the code.

1 Block diagram

Figure 1. AEK-MOT-MR200G1 block diagram



2 Schematic diagrams

Figure 2. AEK-MOT-MR200G1 circuit schematic (1 of 6)

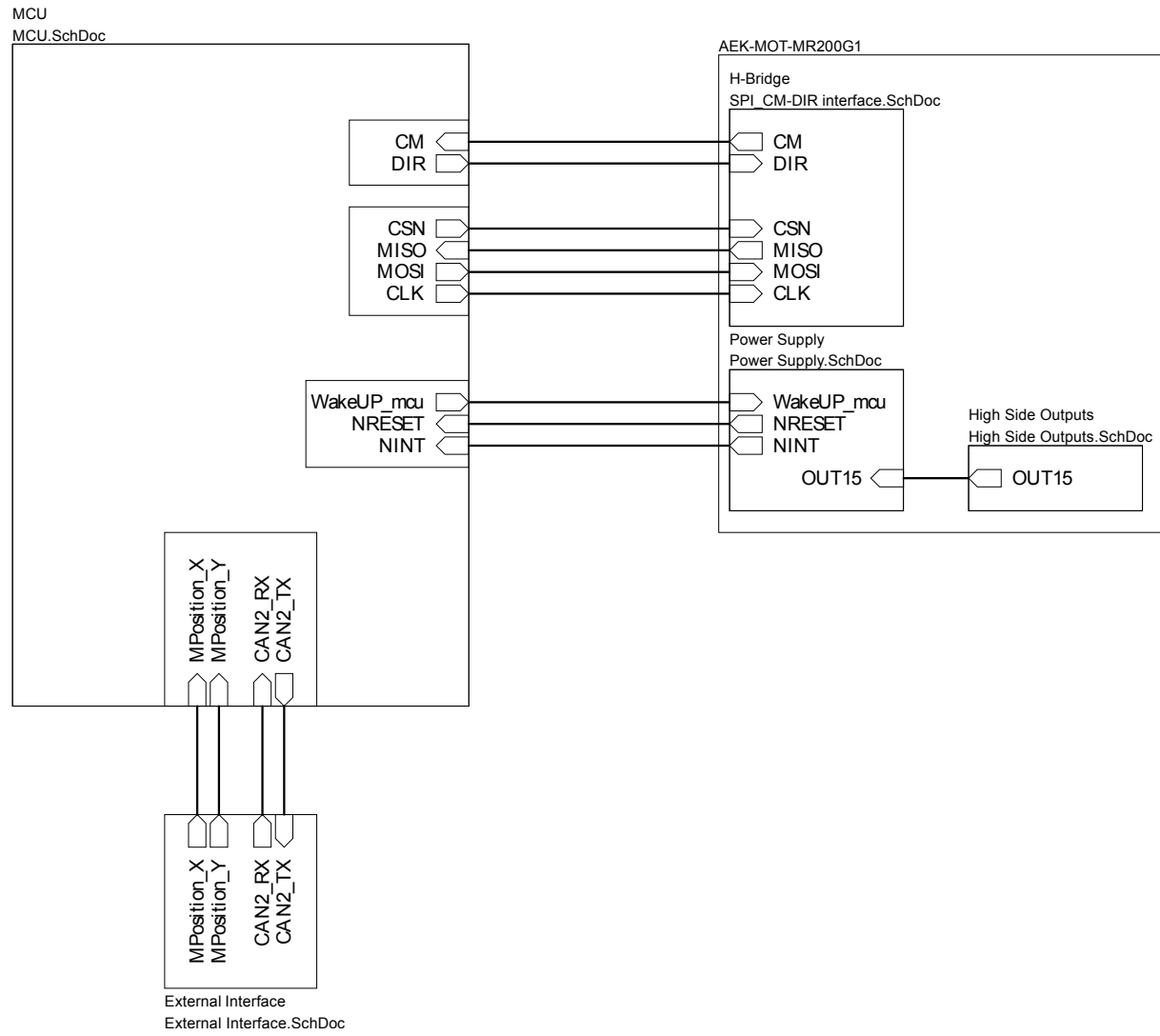


Figure 3. AEK-MOT-MR200G1 circuit schematic (2 of 6)

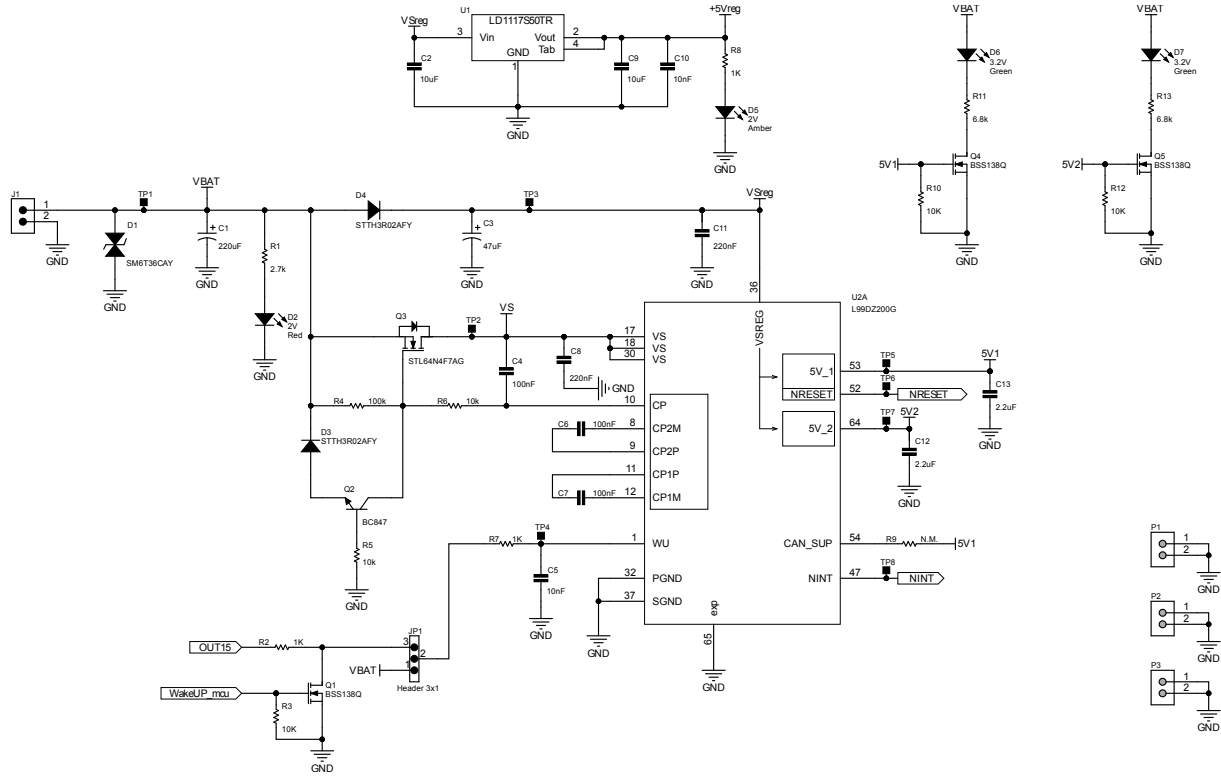


Figure 4. AEK-MOT-MR200G1 circuit schematic (3 of 6)

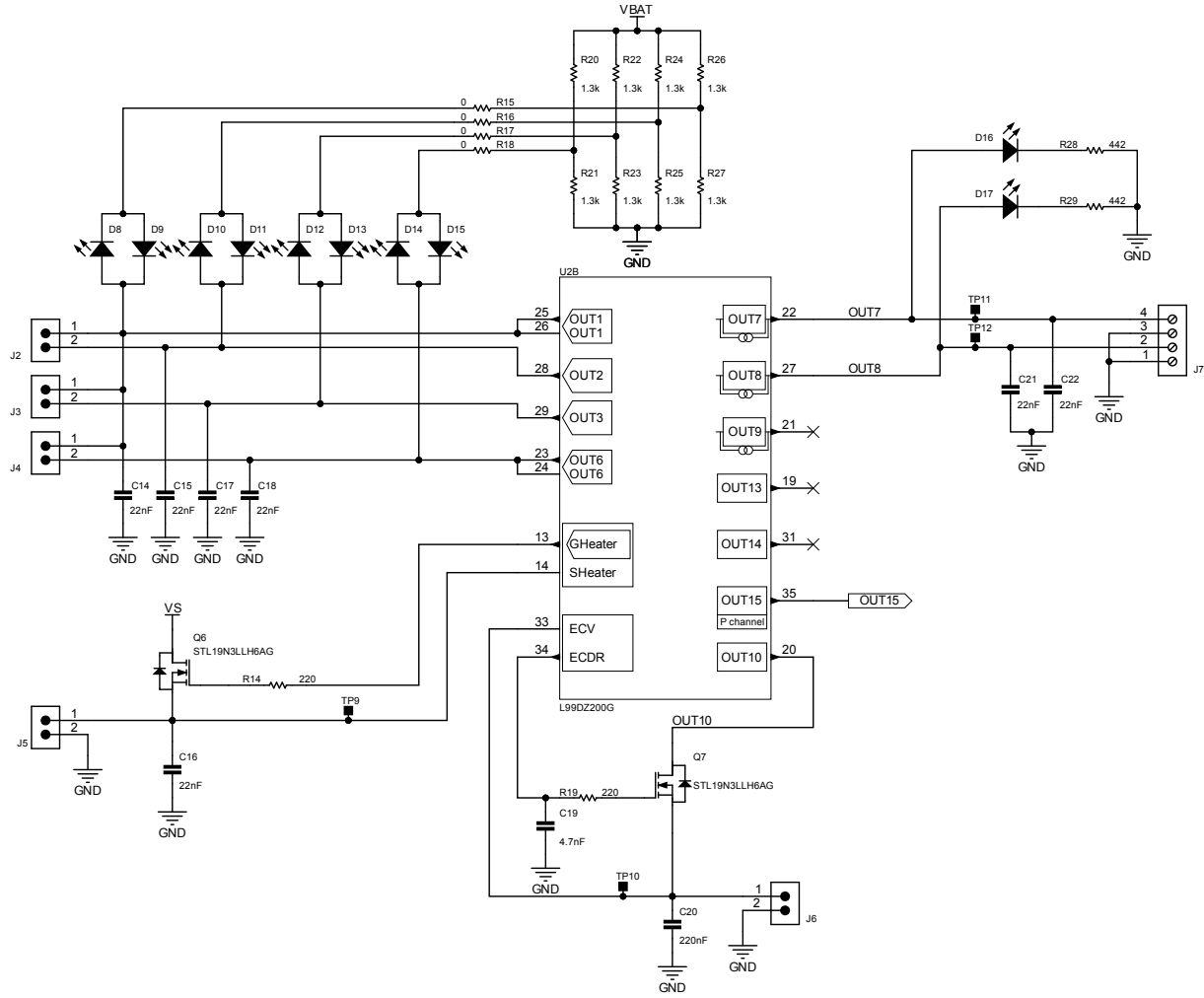


Figure 5. AEK-MOT-MR200G1 circuit schematic (4 of 6)

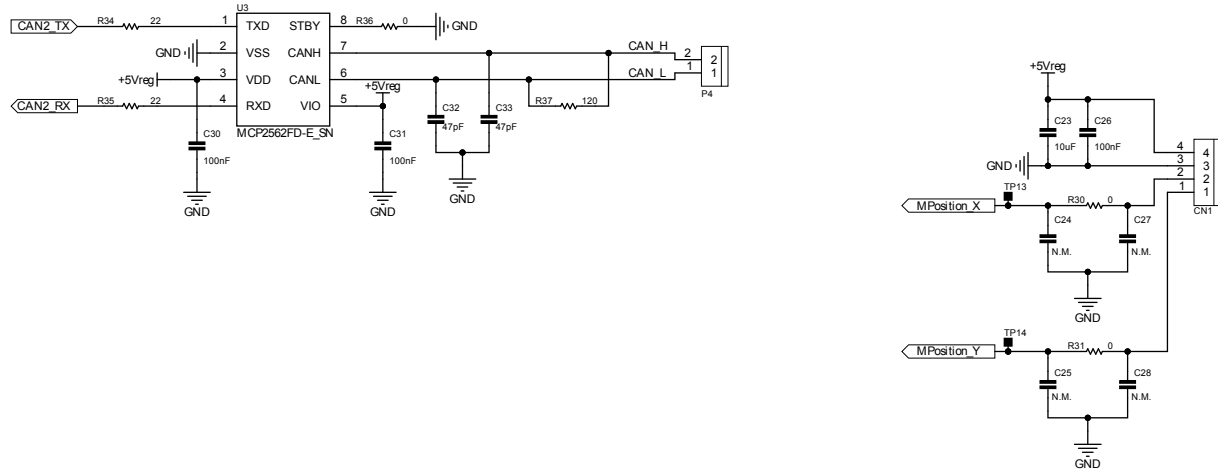


Figure 6. AEK-MOT-MR200G1 circuit schematic (5 of 6)

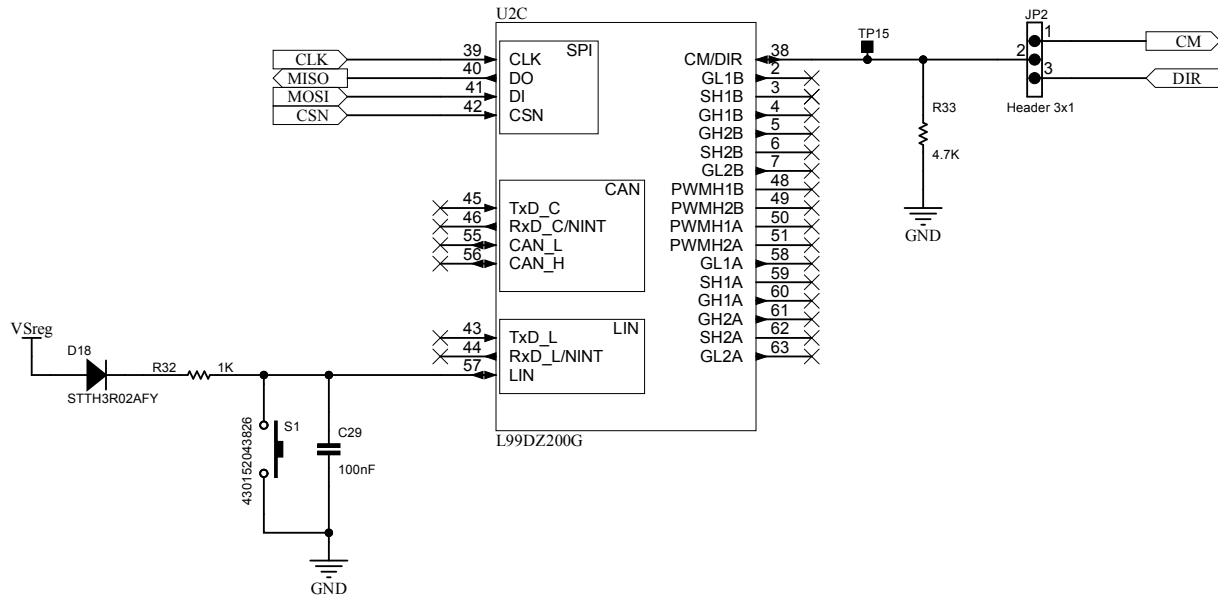
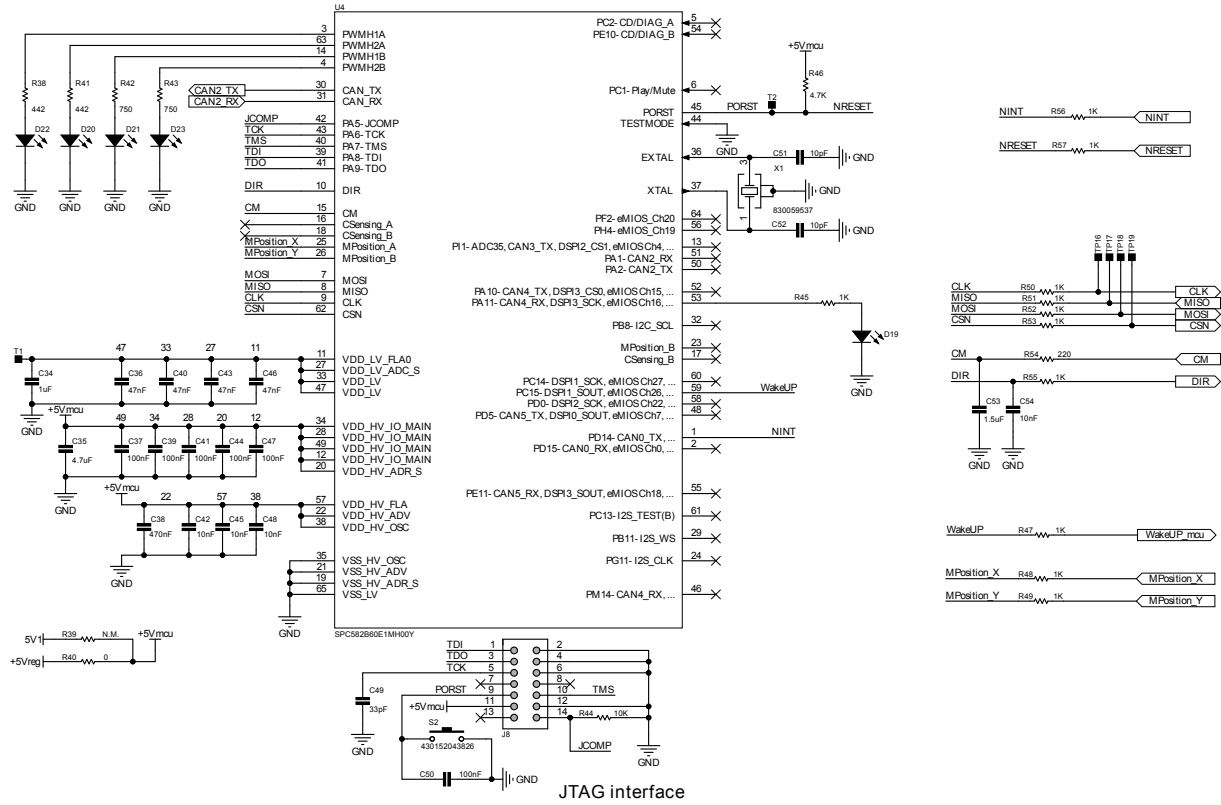


Figure 7. AEK-MOT-MR200G1 circuit schematic (6 of 6)



3 Board versions

Table 1. AEK-MOT-MR200G1 versions

| PCB version | Schematic diagrams | Bill of materials |
|----------------------------------|--|---|
| AEK\$MOT-MR200G1A ⁽¹⁾ | AEK\$MOT-MR200G1A schematic diagrams | AEK\$MOT-MR200G1A bill of materials |

1. This code identifies the AEK-MOT-MR200G1 evaluation board first version. It is printed on the board PCB.

Revision history

Table 2. Document revision history

| Date | Revision | Changes |
|-------------|----------|------------------|
| 19-Jul-2023 | 1 | Initial release. |

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