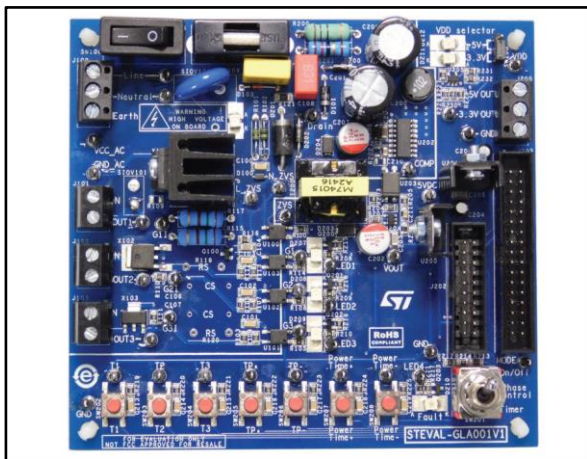


Insulated AC switch control evaluation board for home appliances

Data brief



Features

- Insulated control of three different AC switches used to drive AC loads up to 1 kW (230 V_{rms}) for residential appliances
- Interface with STM32 Nucleo-64 development board
- Three control modes available thanks to STM32 Nucleo-64 firmware (continuous or pulse gate current, timer option and phase control)
- Easy to configure through user-friendly interface
- Compatible with any external microcontroller
- Input voltage range: 90 V_{AC} to 265 V_{AC} 50 / 60 Hz
- Operating temperature: 0 °C to 60 °C
- 5 V and 3.3 V insulated power supply
- Low standby power losses (< 300 mW)
- Criteria A @ 2 kV IEC 61000-4-4
- Criteria B @ 4 kV IEC 61000-4-4
- RoHS compliant

Description

The STEVAL-GLA001V1 evaluation board allows insulated control of three AC loads up to 1 kW (230 V_{rms}) with Triacs and AC switches (instead of relay solutions), particularly suitable for residential appliances.

The board must be controlled with an STM32 microcontroller embedded on an STM32 Nucleo development board or other microcontroller supplied by the user.

If you are using an STM32 Nucleo development board, three AC switch control modes are available for load control: continuous or pulse gate current, timer option and phase control. The firmware is available for free download on www.st.com and easily programmable through a PC interface on a USB bus.

The main parameters can be adjusted through a common interface like HyperTerminal, without needing to edit the MCU firmware.

The hardware is designed to offer a wide input voltage range, low standby power losses, IEC61000-4-4 robustness and two low voltage power supplies.

1 Schematic diagrams

Figure 1: STEVAL-GLA001V1 - AC input

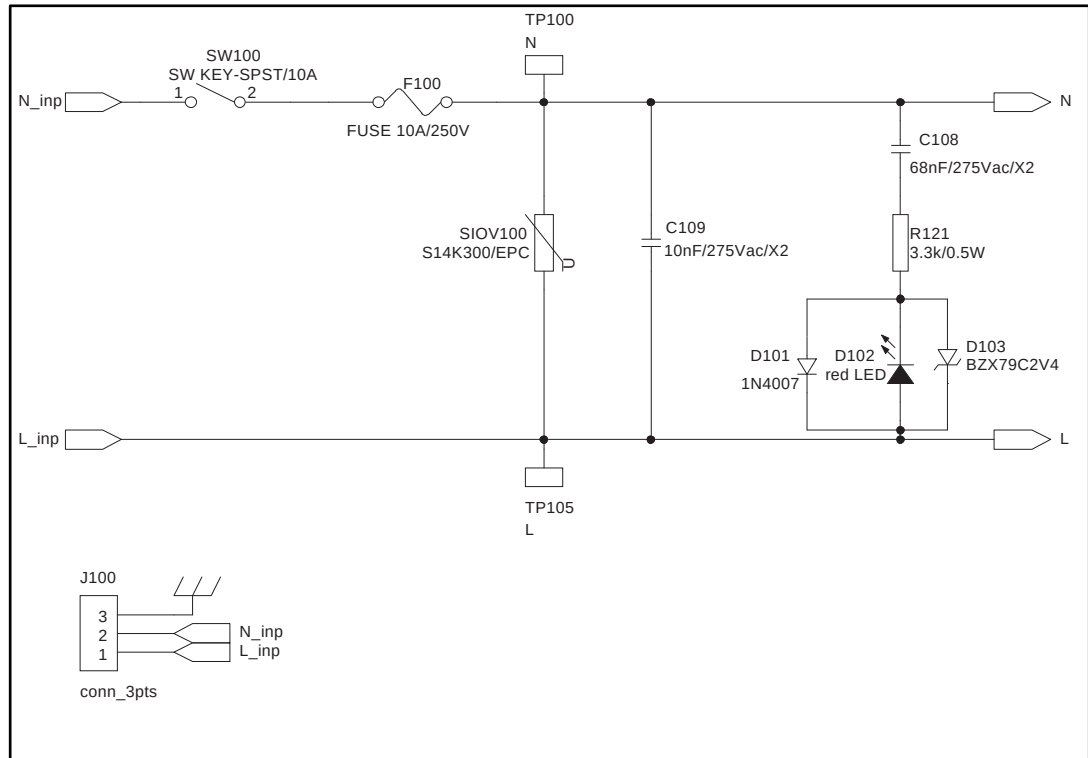


Figure 2: STEVAL-GLA001V1 - ZVS detection

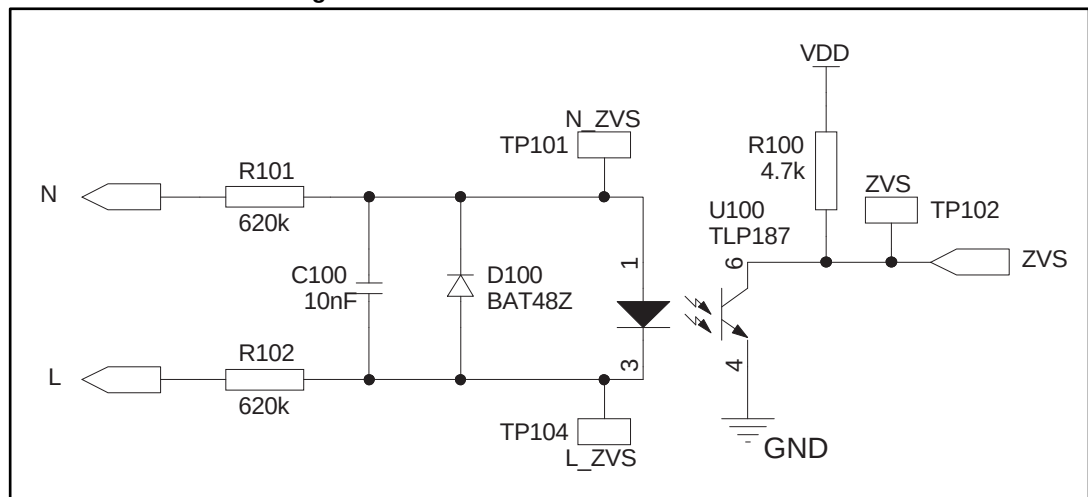


Figure 3: STEVAL-GLA001V1 - Triac gate control

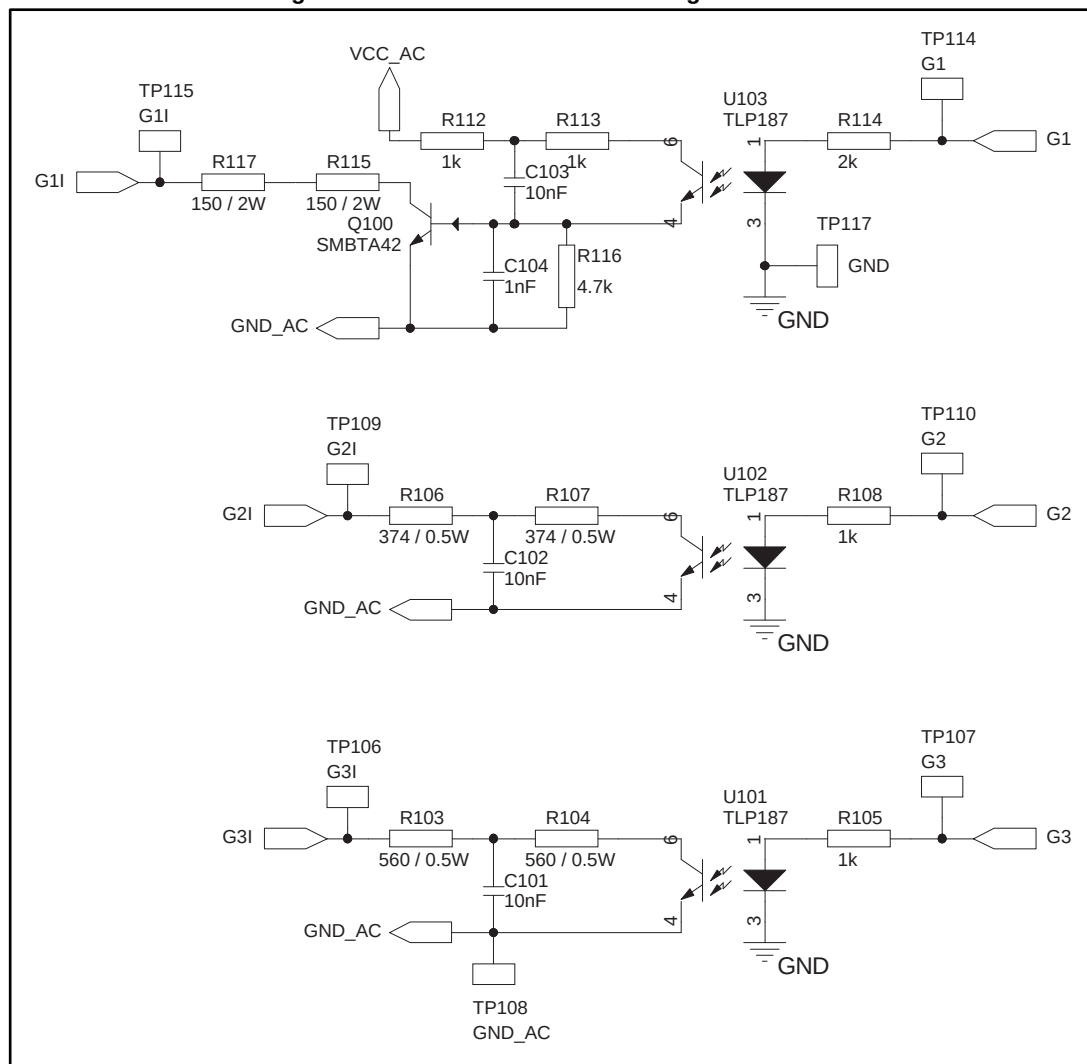


Figure 4: STEVAL-GLA001V1 - Triacs/ACS connection

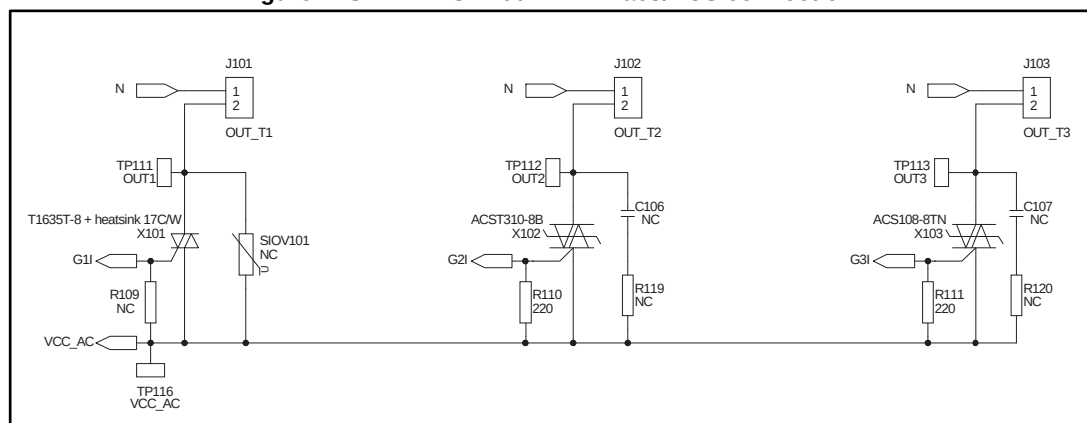


Figure 5: STEVAL-GLA001V1 - Power supply

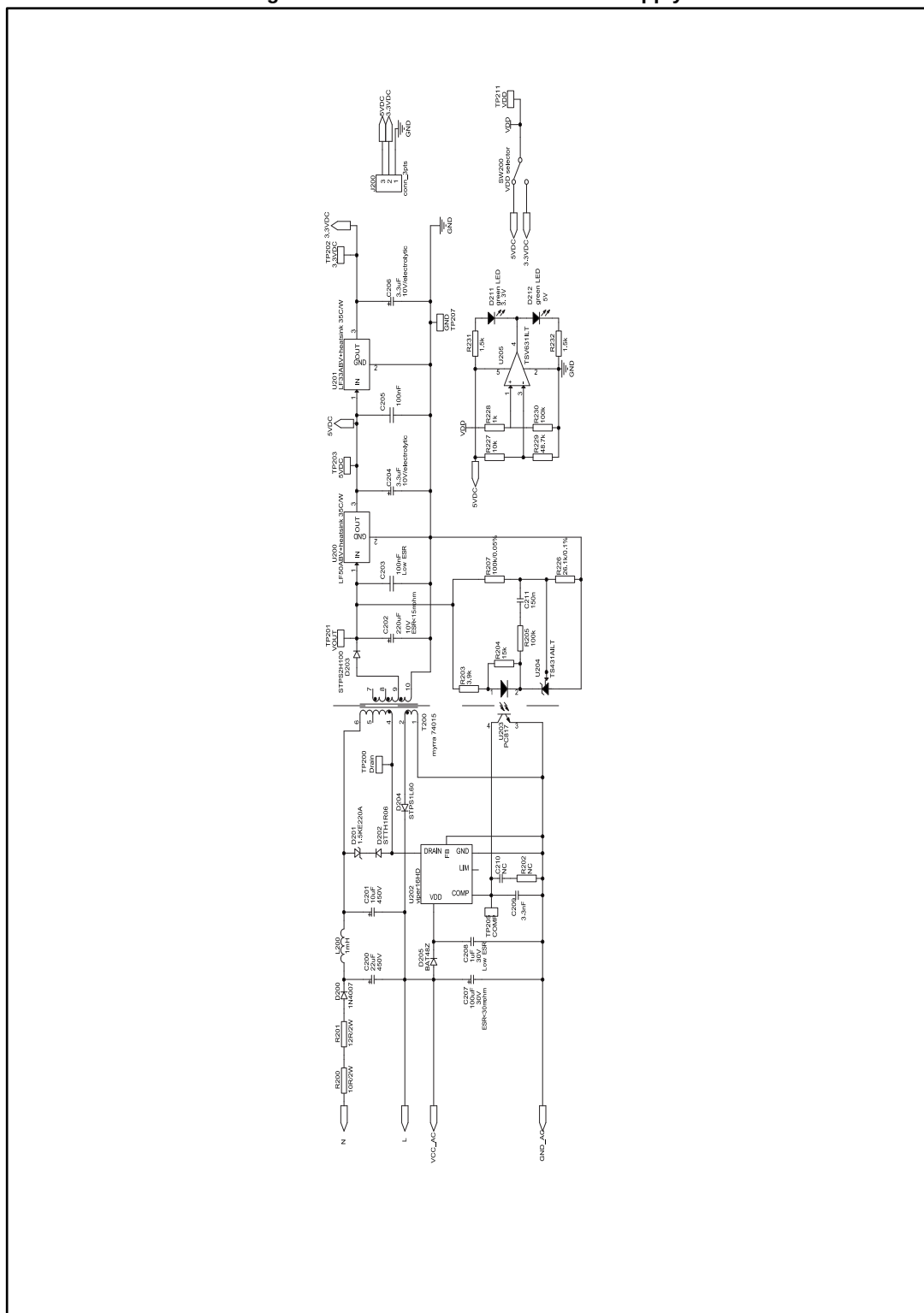


Figure 6: STEVAL-GLA001V1 - LED indicators

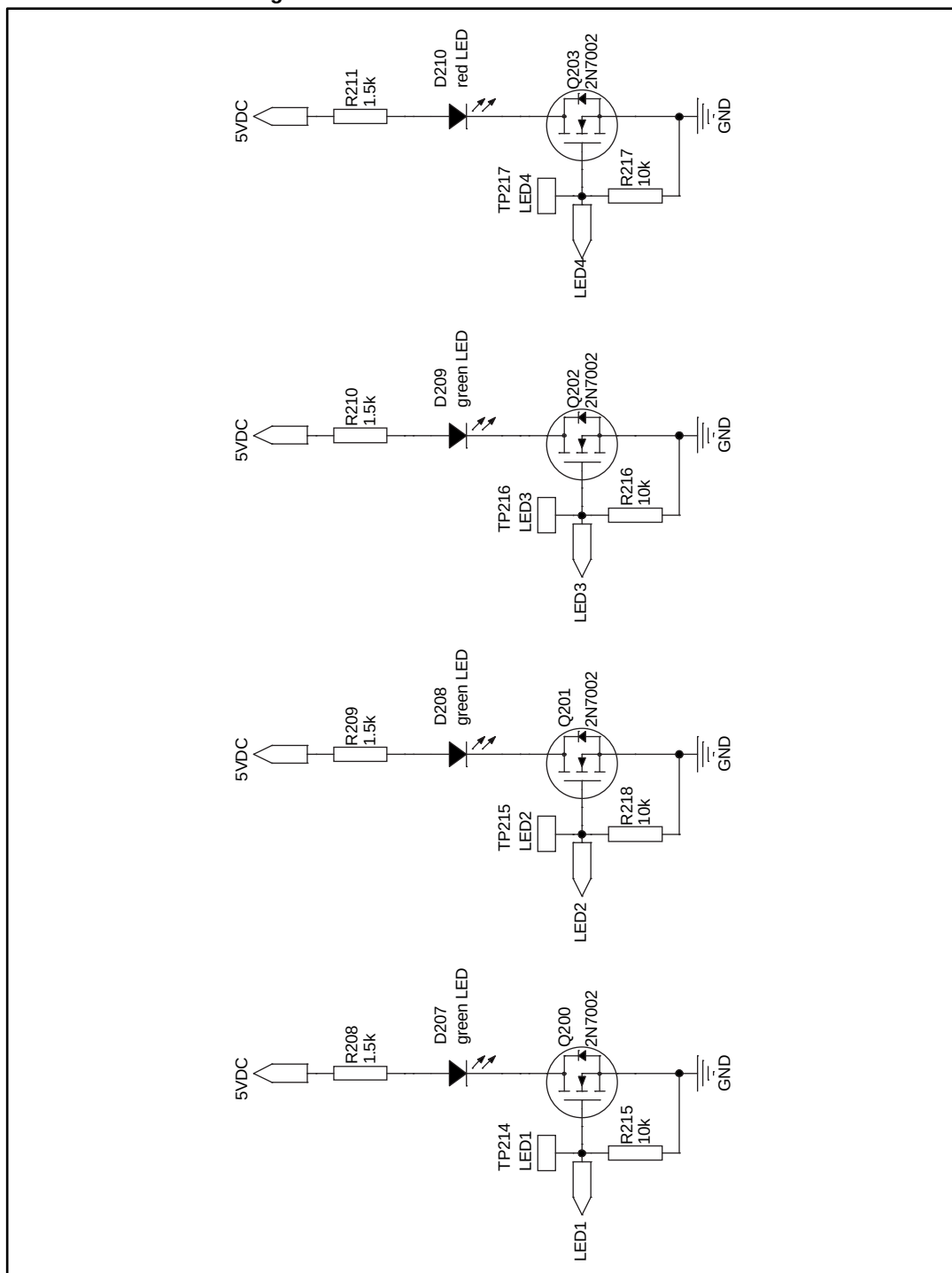


Figure 7: STEVAL-GLA001V1 - Commands/parameters push buttons

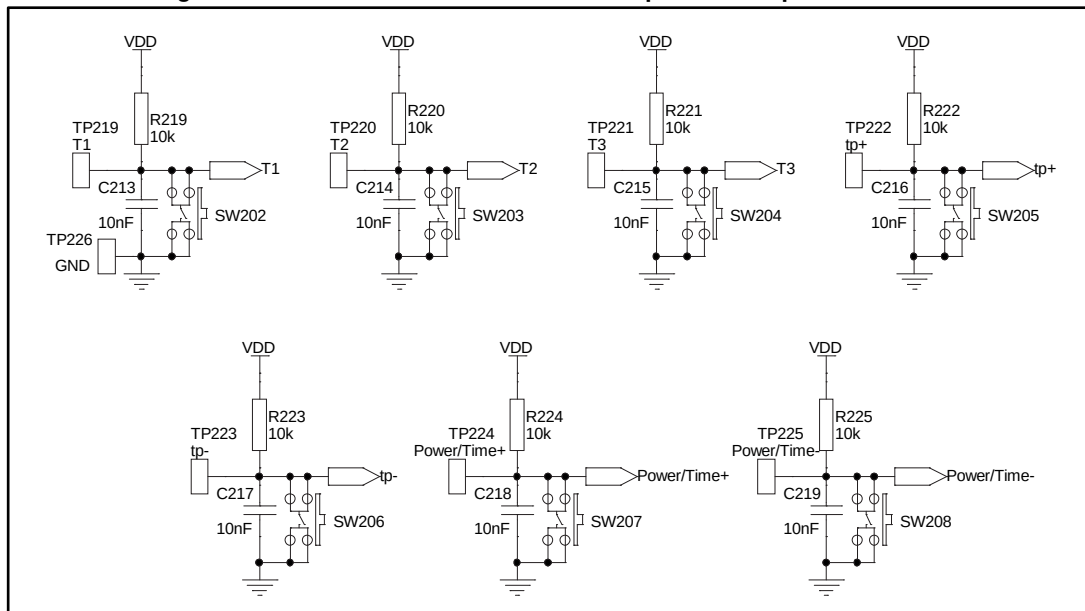


Figure 8: STEVAL-GLA001V1 - Mode selector switch

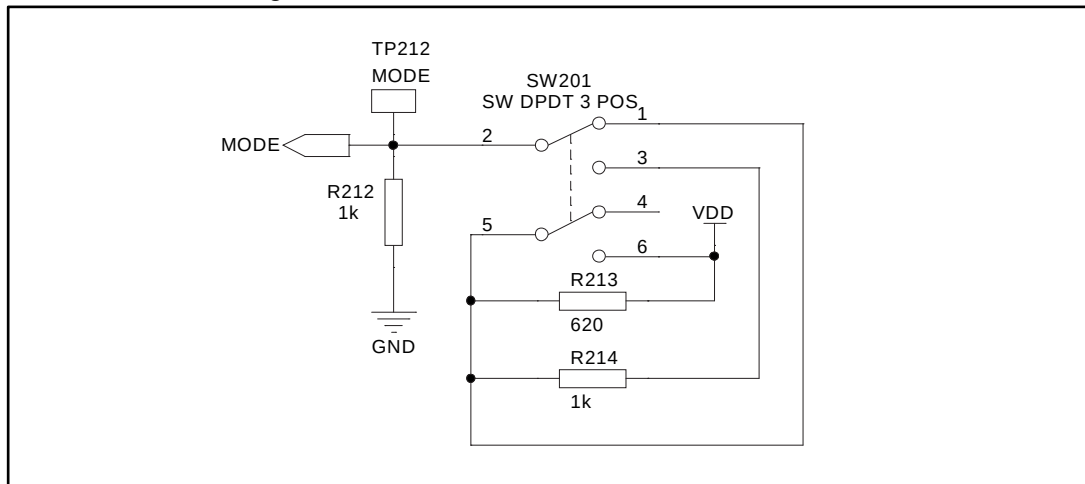


Figure 9: STEVAL-GLA001V1 - Customer board connector

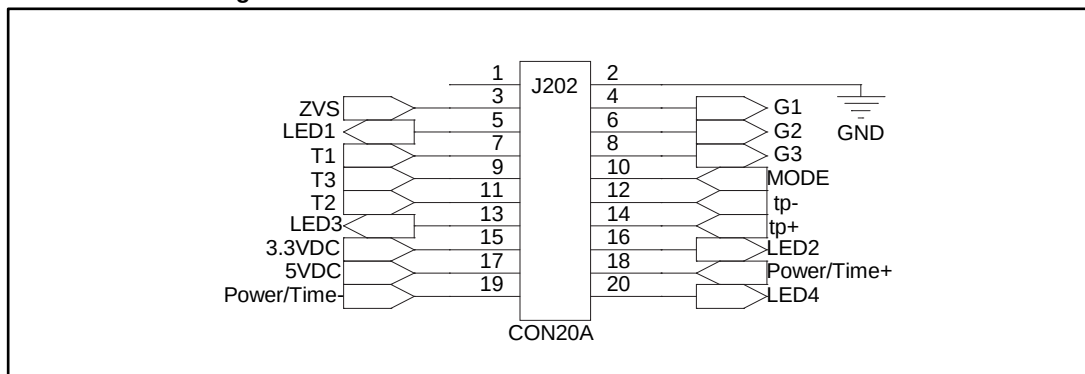
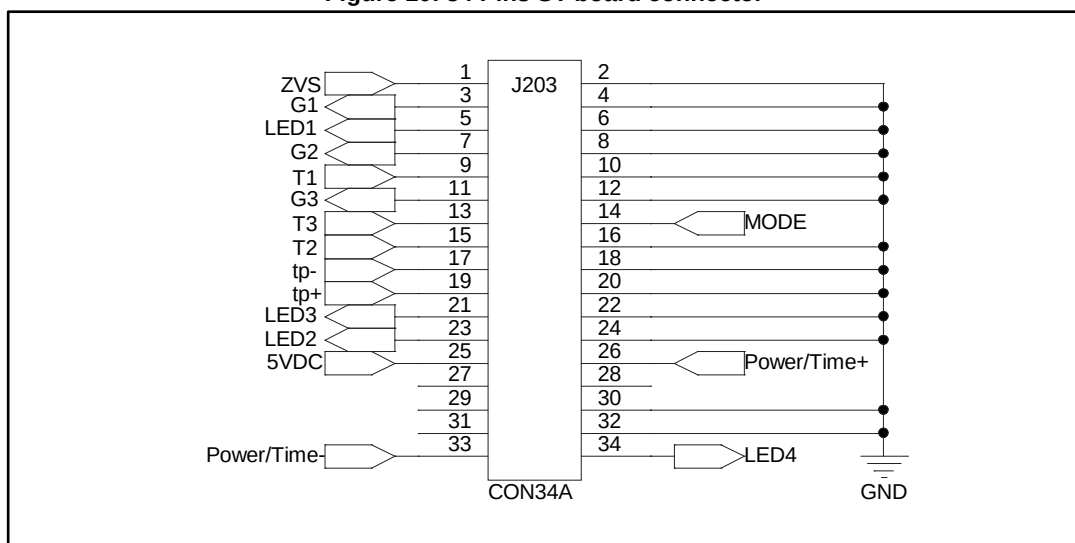


Figure 10: 34 Pins ST board connector



2 Revision history

Table 1: Document revision history

Date	Version	Changes
15-Nov-2017	1	Initial release.

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