



VORA1010M4 for CAN Bus Devices With Integrated Switchable Termination Resistor

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INTRODUCTION

This application note introduces a way to make CAN bus systems more flexible and reliable by using the VORA1010M4 for an integrated switchable termination resistor. The circuit is easy to adjust for changes in the bus configuration. Splitting the termination resistor improves protection from static electricity, and adding a filter (typically 4.7 nF) reduces noise. With this setup, terminations can be added or removed at different points along the signal path just by changing software settings, making the network more reliable without sacrificing signal quality.

VORA1010M4

The VORA1010M4 is an SOP-4 packaged, normally open solid-state relay (SSR) consisting of an infrared LED, a photovoltaic generator (PVG), and two MOSFETs. When the current flows through the LED, it emits light. This light travels through the isolation barrier to the PVG. The PVG generates voltage and current, which drive the gates of the MOSFETs, turning them on.



Fig. 1 - VORA1010M4 - Automotive 100 V Solid-State Relay

With its low turn-on current, the VORA1010M4 can be easily driven by a microcontroller. This feature simplifies the control process and enhances compatibility with digital control systems.

SSRs offer fast switching speeds, making them suitable for applications requiring rapid response times. In addition, their absence of moving parts ensures silent operation and greater durability compared to mechanical relays.

Furthermore, SSRs exhibit high resistance to shock and vibration, making them ideal for harsh environments.

Overall, SSRs provide efficient and reliable switching solutions for a wide range of electronic applications.

CONTROLLER AREA NETWORK (CAN)

The CAN bus is a serial communication protocol used for data exchange between various control units or nodes in a network. It enables reliable and robust communication at high speeds.

Various types of devices can be connected to the CAN bus, such as engine control units, transmission control units, airbag control units, ABS systems, sensors, and more.

The impedances of the drivers are measured in the de-energized state and typically fall within the range of 20 k Ω to 40 k Ω .

Each end of the CAN bus network should be terminated with a resistor of approximately 120 Ω to minimize signal reflections and ensure signal quality.

INTEGRATED SWITCHABLE TERMINATION RESISTOR

The integrated switchable termination resistor offers the flexibility to seamlessly connect the device to the CAN bus. With the termination resistor directly controllable via an internal microcontroller, users can conveniently activate or deactivate it as needed. This functionality ensures optimal signal integrity and compatibility with the CAN bus network, while providing the versatility to adapt to varying system requirements.

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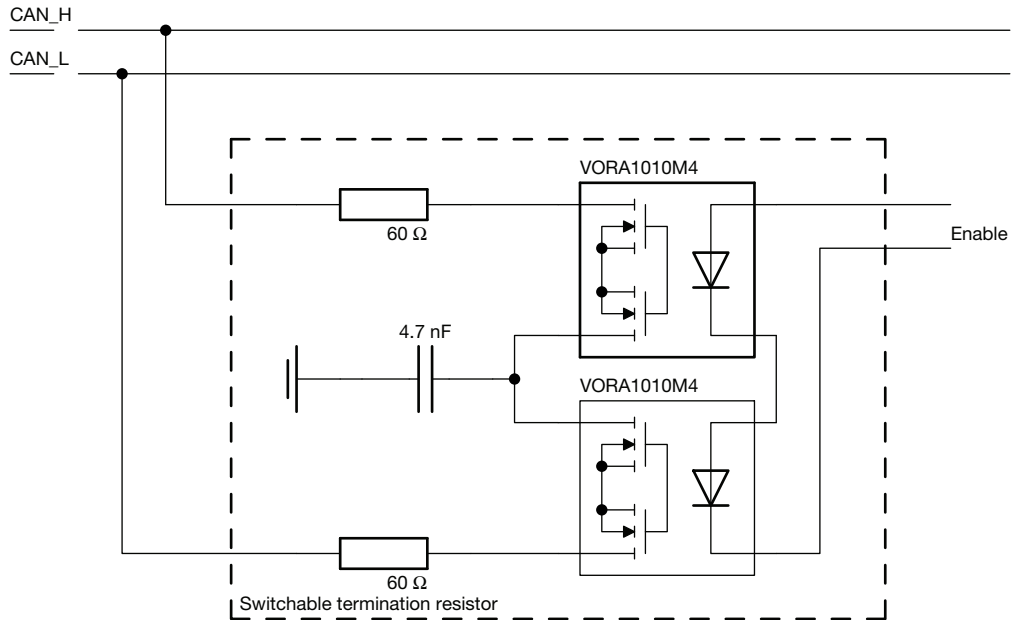


Fig. 2 - Switchable CAN Bus Termination Resistor Using the VORA1010M4