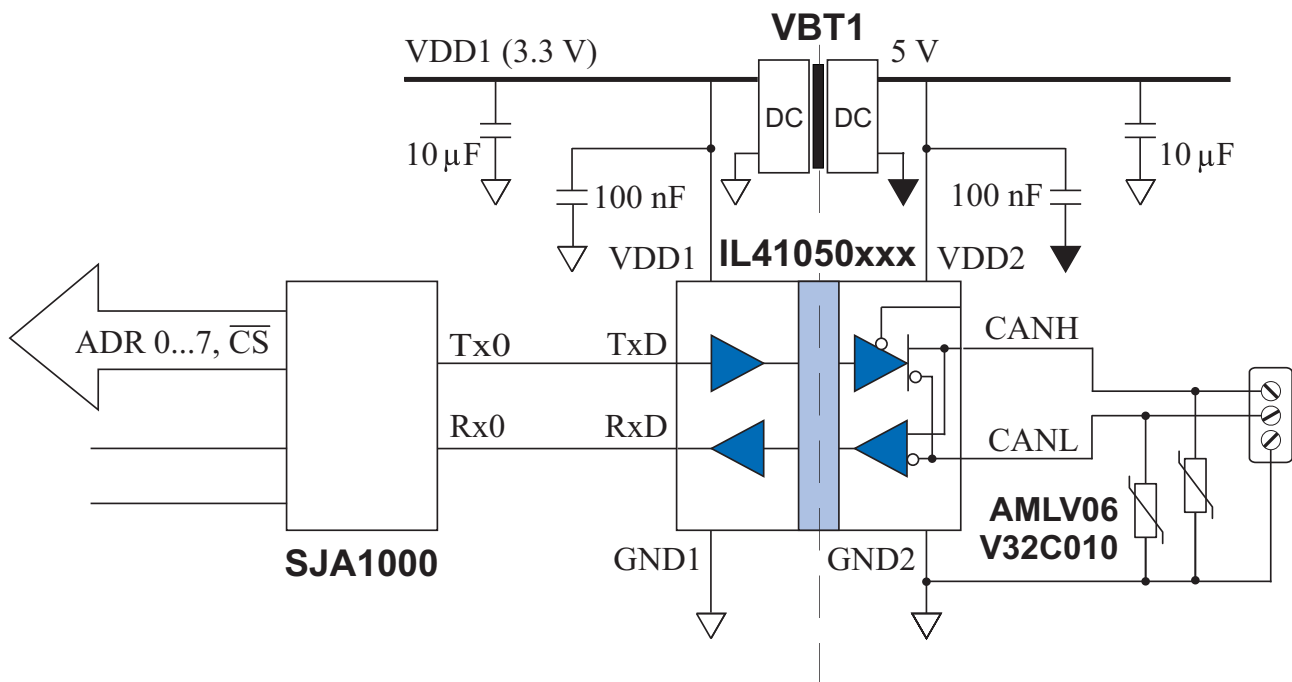


AB-21: Isolated CAN Reference Design



This bulletin describes a complete isolated CAN node including a dc-dc convertor and additional bus transient voltage protection.

IL41050xxx single-chip isolated CAN transceivers provide an isolated CAN interface in a single chip. The isolator operates on the 3.3 volt microcontroller power supply, and the dc-dc convertor provides 5 volt to power the bus side. The IL41050xxx can withstand ± 150 -volt transients on the bus. An ESD suppressor suitable for the particular application based on the maximum voltage in the system and the data transmission speed (taking into account the junction capacitance) provides additional ESD protection if necessary.

Designed for harsh CAN environments, IL41050xxx transceivers have a -55°C to $+125^{\circ}\text{C}$ operating range, transmit data dominant time-out, bus pin transient protection, thermal shutdown protection, short-circuit protection, 2.5 kilovolts isolation, and typical transient immunity of 30 kilovolts per microsecond. Unique edge-triggered inputs improve noise performance.

An innovative nonvolatile programmable power-up feature prevents unstable nodes. A state that needs to be present at node power up can be programmed at the last power down. For example if a CAN node is required to “pulse” dominant at power up, TxD can be sent low by the controller immediately prior to power down. When power is resumed, the node will immediately go dominant allowing self-check code in the microcontroller to verify node operation. If desired, the node can also power up silently by presetting the TxD line high at power down. At the next power on, the IL41050xxx will remain silent, awaiting a dominant state from the bus.

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