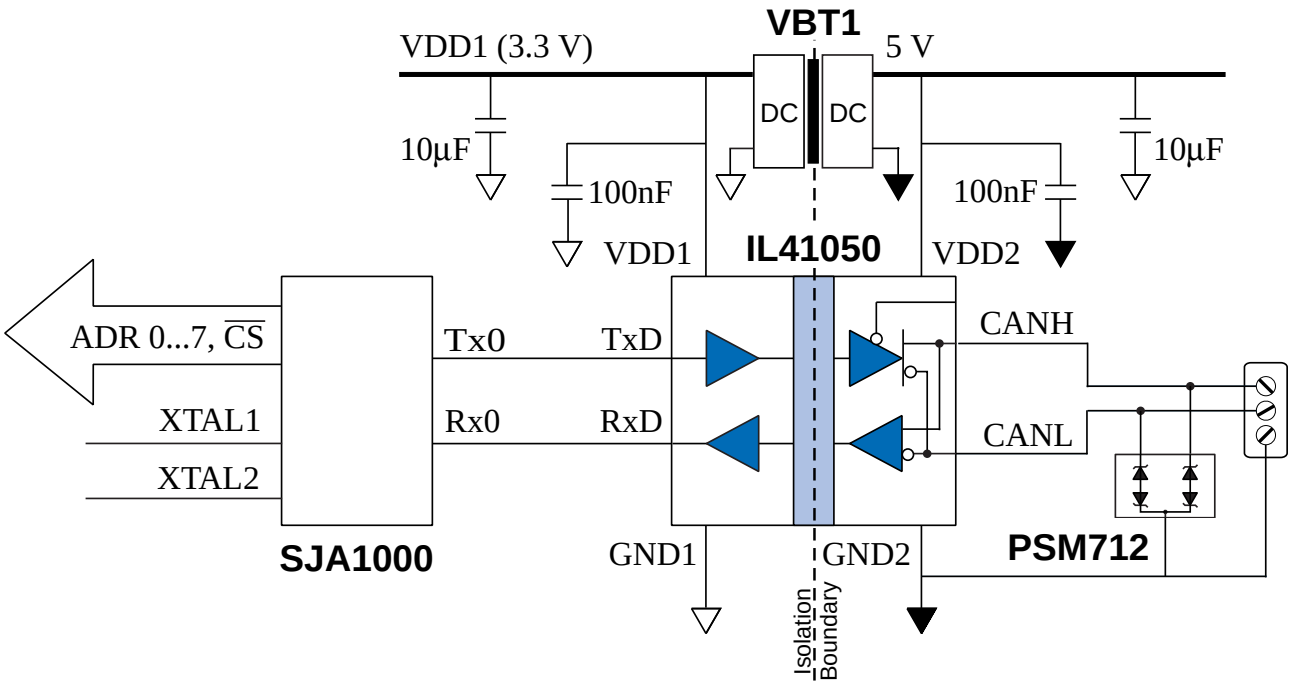
# AB-21: Isolated CAN Reference Design




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

The IL41050 single-chip isolated CAN transceiver provides an isolated CAN interface in a single chip. The isolator operates on the 3.3 V microcontroller power supply, and the dc-dc convertor provides 5 V to power the bus side. The IL41050 can withstand 200 V transients on the bus; the PSM712 provides additional ESD protection if necessary.

The 10 µF bypass capacitors should be low-ESR electrolytic capacitors close to the dc-dc convertor to reduce ripple and reflected ripple. The 100 nF bypass capacitors should be low-ESR capacitors close to the IL41050 pins.

Designed for harsh CAN and DeviceNet environments, IL41050 transceivers have a -55 to +125°C operating range, transmit data dominant time-out, bus pin transient protection, thermal shutdown protection, short-circuit protection, 2,500 V isolation, and typical transient immunity of 30 kV/µs. Unique edge-triggered inputs improve noise performance.

An innovative non-volatile 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 IL41050 will remain silent until a dominant bus state.

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