TCAN10xx Behavior During Bus Failures

Description of bus failure	Behavior of network
One node becomes disconnected from the bus	The remaining nodes continue communicating normally as long as there are at least two nodes connected to the bus.
One node loses power	The remaining nodes continue communicating with some deviation in bus voltage levels due to leakage current into the unpowered transceiver.
One node loses ground	The remaining nodes continue communicating with some deviation in bus voltage levels due to leakage current into the unpowered transceiver.
Loss of the shield connection at any node (if applicable)	If the shield is used to distribute a ground reference potential, a loss of connection could result in a shift in the apparent common mode voltage of the bus signals at each node with respect to their local transceiver ground. Communication will continue working normally as long as this common mode shift does not exceed the rating of the transceiver.
Open and short failures	See items 1-9 below.
1 CAN_H interrupted	As long as the interruption does not open the connection between the termination network and the rest of the bus, then the nodes with an open signal line will see a static recessive-level bias on the open signal (e.g., CAN_H) when receiving a frame while the complementary signal line (e.g., CAN_L) continues to toggle. The receiver input of this interrupted node will continue to see a differential signal that corresponds to the bus signaling, and if the amplitude and timing of this signal is still within a suitable range communication may be possible.
2 CAN_L interrupted	Same as (1).
3 CAN_H shorted to battery voltage	If the short results in voltages at the CAN_H/L pins greater than the absolute maximum rating of the pin, damage could occur. Otherwise, the CAN_L signal will toggle with increased amplitude since the recessive level will become biased to the battery voltage. The sinked current into CAN_L during dominant periods will be higher than in normal operation, but as long as the time the transceiver spends in the dominant state is not so long as to trigger thermal shutdown communication may continue to function (likely with some degradation in timing).
4 CAN_L shorted to ground	The CAN_H signal will toggle with increased amplitude since the recessive level will become biased to ground. The sourced current from CAN_H during dominant periods will be higher than in normal operation, but as long as the time the transceiver spends in the dominant state is not so long as to trigger thermal shutdown and as long as the VCC rail remains in regulation at the increased load current communication may continue to function (likely with some degradation in timing).
5 CAN_H shorted to ground	The differential signal amplitude will be heavily reduced; communication cannot occur between any nodes on the bus.
6 CAN_L shorted to battery voltage	If the short results in voltages at the CAN_H/L pins greater than the absolute maximum rating of the pin, damage could occur. Otherwise, the differential signal amplitude will be heavily reduced; communication cannot occur between any nodes on the bus.
7 CAN_L wire shorted to CAN_H wire	The differential signal amplitude will be heavily reduced; communication cannot occur between any nodes on the bus.
8 CAN_H and CAN_L wires interrupted at the same location	Nodes that continue to share a connection may still communicate normally as long as a termination network is present on their respective bus segment. Without termination present (or with insufficient termination), communication may only function at very low data rates.
9 Loss of one connection to termination network	Termination network becomes high impedance; communication may only function at very low data rates.