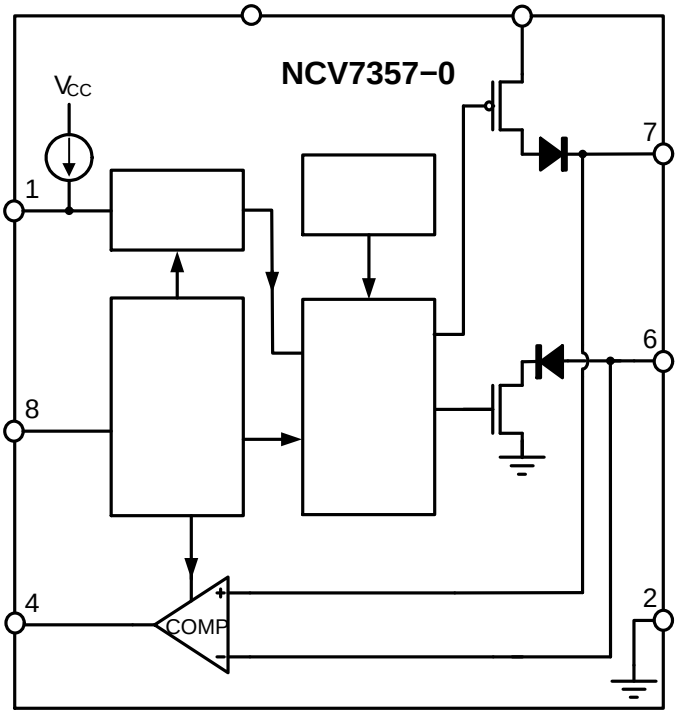
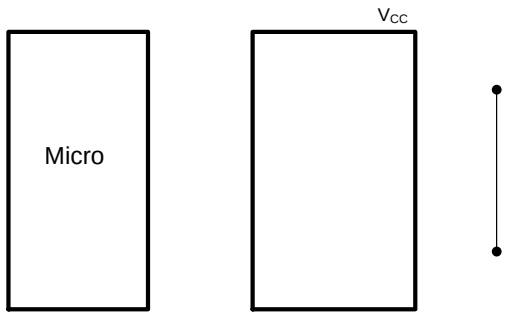


Figure 1. NCV7357−0 Block Diagram


V_{CC}
Micro

FUNCTIONAL DESCRIPTION

High speed CAN FD transceiver

NCV7357 implements high−speed physical layer CAN FD transceiver compatible with ISO11898−2, implementing following optional features or alternatives:

- Extended bus load range
- Transmit dominant timeout, long
- Support of bit rates up to 5 Mbps
- Normal Bus biasing

Operating Modes

NCV7357 provides two modes of operation as illustrated in Table 2. These modes are selectable through pin S.

Table 2. OPERATING MODES

Pin S	Mode	Pin TxD	BUS	Pin RxD
Low	Normal	0	Dominant	0
		1	Recessive	1
High	Silent	X	Dominant (1)	0
		X	Recessive	1

1. CAN BUS driven by another transceiver on the BUS
2. 'X' = don't care

Power−off

This virtual mode is entered as soon as the V_{CC} or V_{IO} undervoltage condition is detected. The internal logic is reset and the transceiver is disabled. CAN bus pins are kept floating. As soon as both V_{CC} and V_{IO} voltages rise above corresponding undervoltage recovery thresholds, the device proceeds to Normal or Silent mode, depending on S pin state.

state.

Figure 7). Pins TxD and S are biased internally should the input become disconnected. Pins TxD, S and RxD will be floating, preventing reverse supply should the VCC supply be removed.

V

Table 5. ELECTRICAL CHARACTERISTICS (V_{CC} = 4.75 V to 5.25 V; V_{IO} = 2.8 V to 5.5 V; for typical values T_A = 25°C, for min/max values T_J = 40 to +150°C; R_{LT} = 60 Ω, C_{RxD} = 15 pF; unless otherwise noted. All voltages are referenced to GND (pin 2). Positive currents flow into the respective pin)

RECEIVER DATA OUTPUT (Pin RxD)

I_{OH}	High level output current	Normal mode $V_{RxD} = V_{CC} / V_{IO} – 0.4$ V	8.0	3.0	1.0	mA
I_{OL}	Low level output current	V_{RxD} = 0.4 V	1.0	6.0	12	mA

CAN TRANSMITTER (PINS CANH AND CANL)

$V_{o(dom)(CANH)}$	Dominant output voltage at pin CANH	Normal mode; V_{TxD} = Low; $t < t_{dom(TxD)}$; 50 Ω < R_{LT} < 65 Ω	2.75	3.5	4.5	V
$V_{o(dom)(CANL)}$	Dominant output voltage at pin CANL	Normal mode; V_{TxD} = Low; $t < t_{dom(TxD)}$; 50 Ω < R_{LT} < 65 Ω	0.5	1.5	2.25	V
$V_{o(rec)}$	Recessive output voltage at pins CANH and CANL	Normal or Silent mode; V_{TxD} = High or V_{TxD} = Low and $t > t_{dom(TxD)}$; no load	2.0	2.5	3.0	V
$V_{o(dom)(diff)}$	Differential dominant output voltage (V_{CANH} V_{CANL})	Normal mode; V_{TxD} = Low; $t < t_{dom(TxD)}$; 45 Ω < R_{LT} < 65 Ω	1.5			

Table 5. ELECTRICAL CHARACTERISTICS (V_{CC} = 4.75 V to 5.25 V; V_{IO} = 2.8 V to 5.5 V; for typical values T_A = 25°C, for min/max values T_J = 40 to +150°C; R_{LT} = 60 Ω, C_{RxD} = 15 pF; unless otherwise noted. All voltages are referenced to GND (pin 2). Positive currents flow into the respective pin)

$R_{i(cm)(m)}$	Matching between pin CANH and pin CANL common mode input resistance	$V_{CANH} = V_{CANL}$ = + 5 V	1	0	+1	%
$R_{i(diff)}$	Differential input resistance	$R_{i(diff)} = R_{i(cm)(CANH)} + R_{i(cm)(CANL)}$ 2 V ≤ V_{CANH}, V_{CANL} ≤ +7 V				

MEASUREMENTS SETUPS AND DEFINITIONS

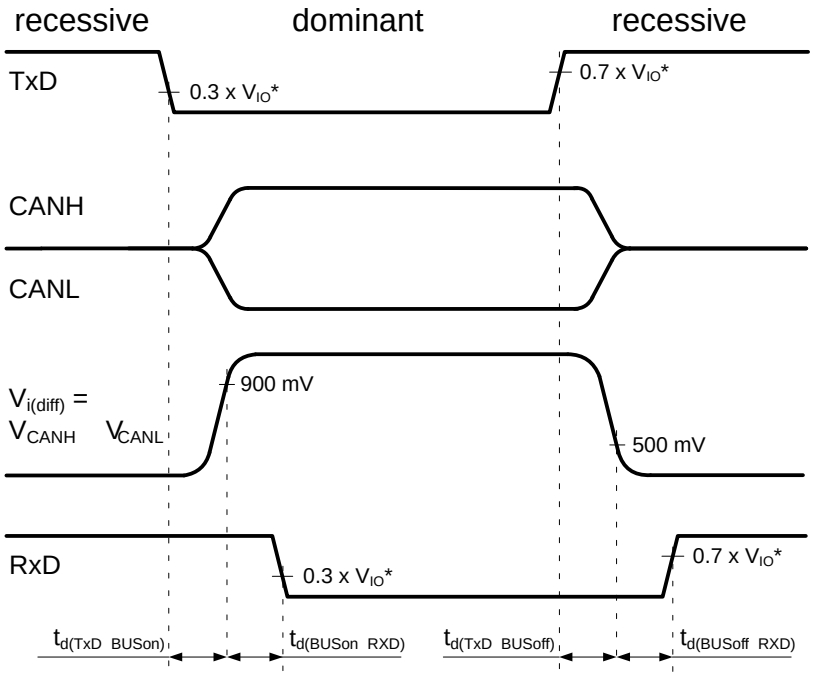
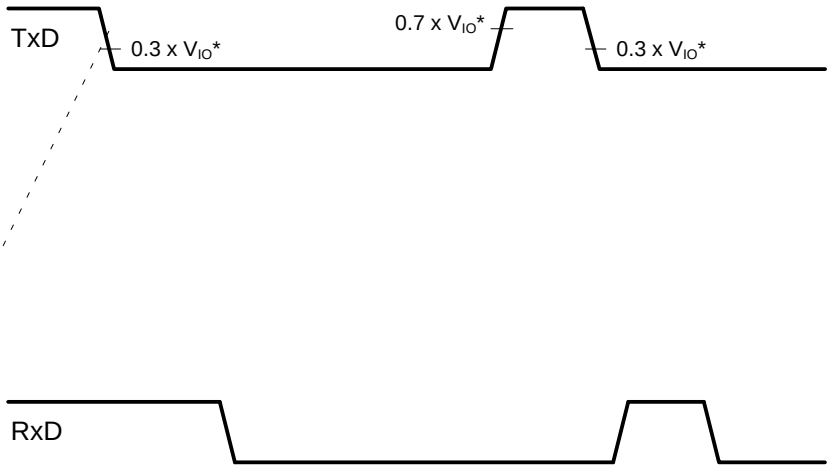


Figure 5. Transceiver Timing Diagram − Propagation Delays



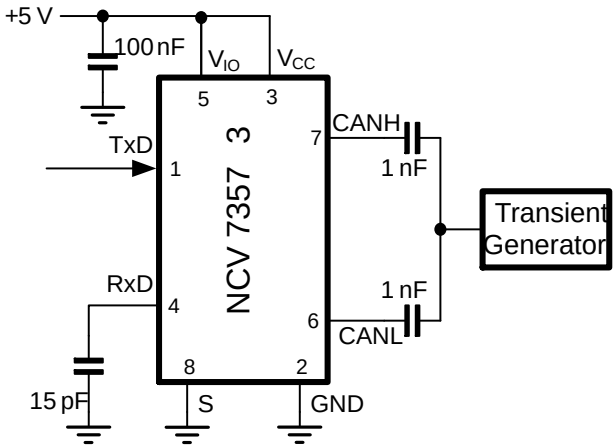


Figure 7. Test Circuit for Automotive Transients

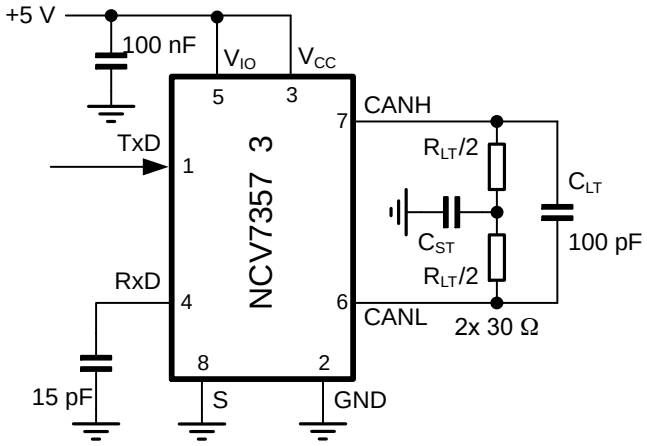


Figure 8. Test Circuit for Timing Characteristics

Table 6. ISO 11898−2:2016 Parameter Cross−Refe

ISO 11898−2:2016 Spec
Parameter
DOMINANT OUTPUT CHARACTERISTICS
Single ended voltage on CAN_H
Single ended voltage on CAN_L
Differential voltage on normal bus load
Differential voltage on effective resistance during arbitration
Differential voltage on extended bus load range (optional)
DRIVER SYMMETRY
Driver symmetry
DRIVER OUTPUT CURRENT
Absolute current on CAN_H
Absolute current on CAN_L
RECEIVER OUTPUT CHARACTERISTICS, BUS BIASING ACTIVE
Single ended output voltage on CAN_H
Single ended output voltage on CAN_L
Differential output voltage

Received recessive bit width @ 5 Mbit / s	Δt_{Rec}	Δt_{rec}

MAXIMUM RATINGS OF V_{CAN_H}, V_{CAN_L} AND V_{DIFF}

Maximum rating V_{Diff}	V_{Diff}	V_{CANH} $CANL$
General maximum rating V_{CAN_H} and V_{CAN_L}	V_{CAN_H} V_{CAN_L}	V_{CANH} V_{CANL}
Optional: Extended maximum rating V_{CAN_H} and V_{CAN_L}	V_{CAN_H} V_{CAN_L}	NA

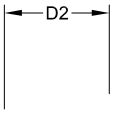
MAXIMUM LEAKAGE CURRENTS ON CAN_H AND CAN_L, UNPOWERED

Leakage current on CAN_H, CAN_L	I_{CAN_H}, I_{CAN_L}	$I_{LEAK(off)}$

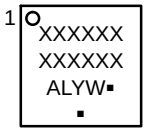
SCALE 2:1

DFNW8 3x3, 0.65P
CASE 507AB
ISSUE E

DATE 02 JUL 2021



GENERIC
MARKING DIAGRAM*



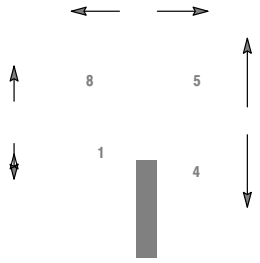
XXXXXX = Specific Device Code
A = Assembly Location
L = Wafer Lot
Y = Year
W = Work Week
▪ = Pb−Free Package

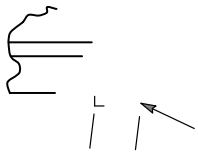
(Note: Microdot may be in either location)

*This information is generic. Please refer to device data sheet for actual part marking. Pb−Free indicator, “G” or microdot “ ▪”, may or may not be present. Some products may not follow the Generic Marking.

SOIC 8 NB
CASE 751−07
ISSUE AK

DATE 16 FEB 2011





SEATING
PLANE