NCV7451 System Basis Chip Evaluation Board User's Manual

NCV7451V1GEVB

ON Semiconductor®

www.onsemi.com

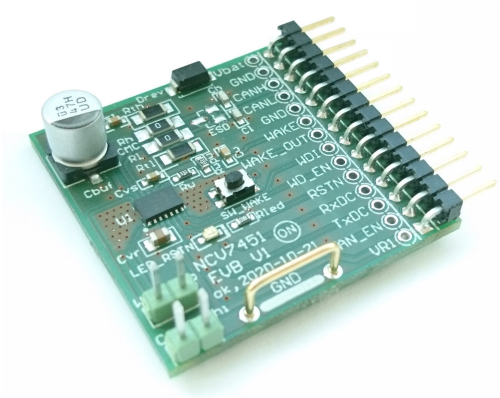
EVAL BOARD USER'S MANUAL

Introduction

This document describes the evaluation board for the ON Semiconductor system basis chip (SBC) NCV7451 containing a CAN−FD transceiver, 5 V / 250 mA LDO regulator and local wakeup comparator. The board provides basic connections for a device evaluation.

Evaluation Board Features

- One−row Pin Header Providing Access to All the Device Pins, Enables Easy Insertion of the Evaluation Board into a more Complex Application Setup
- Standard CAN Termination
- Position for Optional ESD Protection
- WAKE Pin External Components
- LED for RSTN Signal Activity Indication
- Jumpers for Configuration Signals



SCHEMATIC

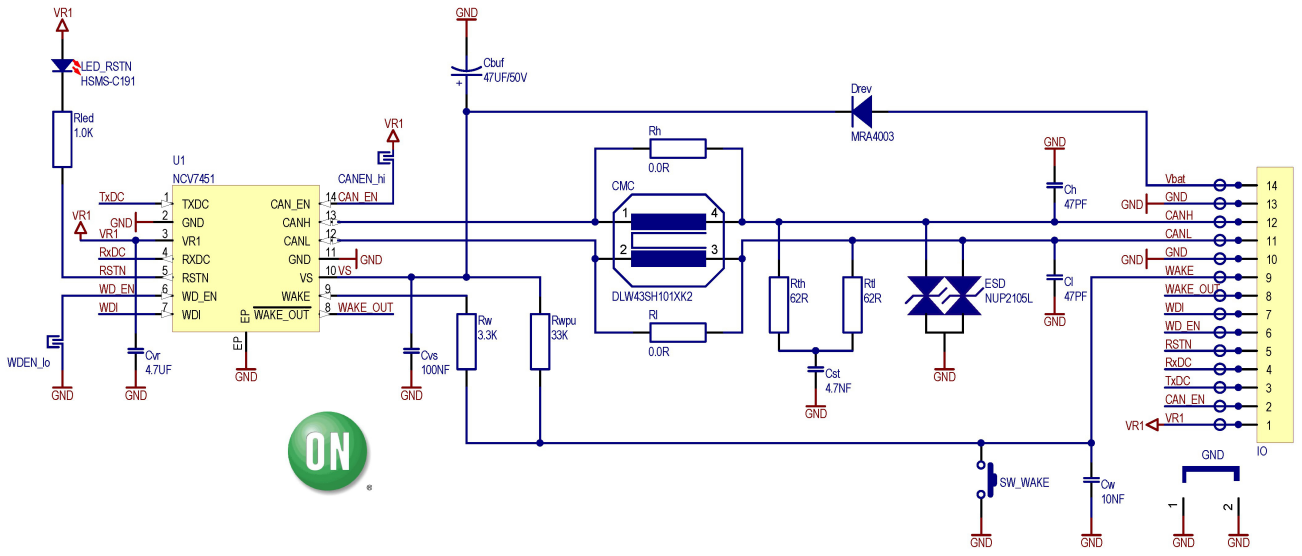


Figure 1. NCV7451 Evaluation Board Schematic

ABSOLUTE MAXIMUM RATINGS AND OPERATING RANGES

Table 1. ABSOLUTE MAXIMUM RATINGS

Rating	Pins	Min	Max	Unit
Battery Supply Voltage	Vbat	−40	40	V
LDO Regulator Output Voltage	VR1	−0.3	6 or VS+0.5 V (whichever is lower)	V
Digital Inputs / Outputs Voltage	TxDC, RxDC, EN_WD, EN_CAN, WAKE_OUT, WDI, RSTN	−0.3	VR1+0.3 V	V
CAN Bus Line Voltage	CANH, CANL	−40	40	V
Local Wakeup Input	WAKE	−40	40	V
NCV7451 Junction Temperature		−40	+150	°C
Board Temperature		−40	+125	°C

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

Table 2. RECOMMENDED BOARD OPERATING CONDITIONS

Rating	Pins	Min	Max	Unit
Battery Supply Voltage	Vbat	6	18	V
LDO Regulator Output Voltage	VR1	4.9	5.1	V
LDO Regulator Output Current	I(VR1)	0	250	mA
Digital Inputs / Outputs Voltage	TxDC, RxDC, EN_WD, EN_CAN, WAKE_OUT, WDI, RSTN	0	5	V
CAN Bus Line Voltage	CANH, CANL	0	5	V
Local Wakeup Input	WAKE	0	Vbat	V
NCV7451 Junction Temperature		−40	+150	°C
Board Temperature		−40	+125	°C

Functional operation above the stresses listed in the Recommended Operating Ranges is not implied. Extended exposure to stresses beyond the Recommended Operating Ranges limits may affect device reliability.

OPERATIONAL GUIDELINES

NCV7451 evaluation board allows easy evaluation of NCV7451 system basis chip. It provides connection to all the device's pins as well as positions for all the necessary CAN bus external components.

Configurations and assembly options are listed in Table 3.

For more information please check NCV7451 transceiver datasheet at www.onsemi.com.

Table 3. ASSEMBLY OPTIONS AND CONFIGURATIONS

Component	Default	Function
Rth, Rtl, Cst	2x 62R, 4.7 nF	CAN bus termination
ESD	–	Position for optional NUP2105 ESD protection
Ch, Cl	47 pF	ESD capacitors. Should be selected per application needs and ESD used
CMC	–	Optional common−mode choke
Rl, Rh	0 R	Bypass of CMC
CANEN_hi	Close	CAN_EN pin connection Open = CAN_EN weak internal pull−down = CAN transceiver disabled Close = CAN_EN connected to VR1 = CAN transceiver enabled
WDNEN_lo	Close	WD_EN pin connection Open = WD_EN weak internal pull−up current source (periodically activated) = watchdog enabled Close = WD_EN shorted to GND = watchdog disabled

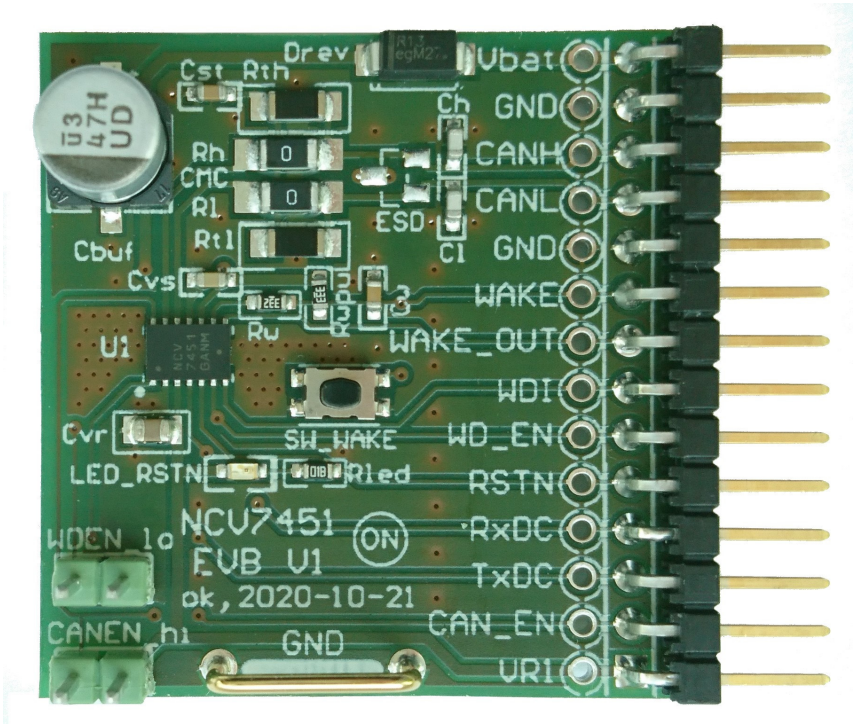


Figure 2. NCV7451 Evaluation Board Picture, Top Side

PCB DRAWINGS

Composite Drawings

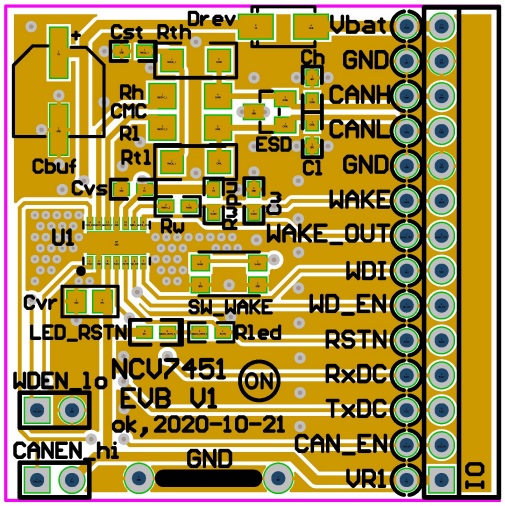


Figure 3. NCV7451 EVB PCB Top Drawing

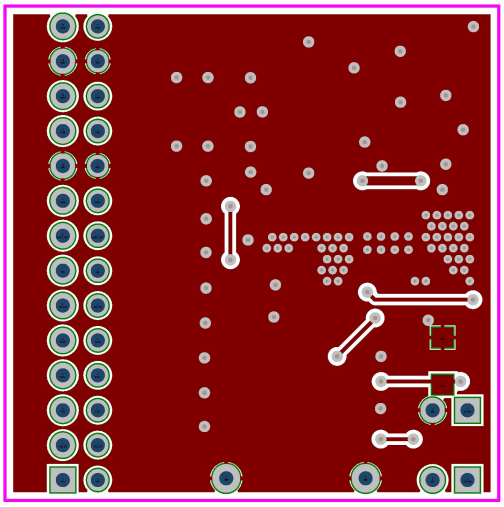


Figure 4. NCV7451 EVB PCB Bottom Drawing (Bottom View)

ADDITIONAL INFORMATION

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