

TRANSLATOR BOARD



VDD 5 V to 3.3V regulator;
Bidirectional I2C-bus signal translator

Supply Voltage Translator Board

Purpose

The Supply Voltage Translator Board enables interfacing low voltage RTC-Modules with the USB to I²C-bus dongle operating at 5.0V.

This board needs to be used when evaluating the RTC Modules RV-4162-C7 and RV-1805-C3.

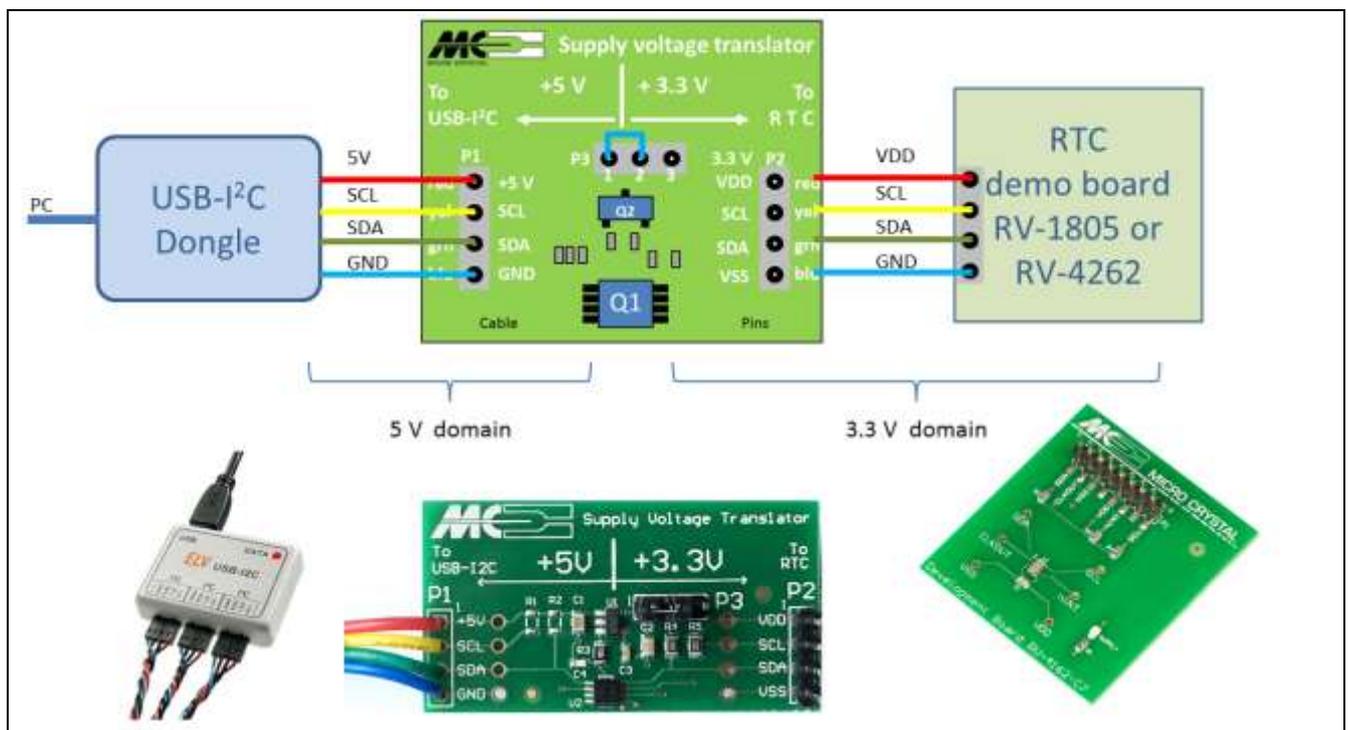
Function description

This board maintains 2 functions:

- a) The linear voltage regulator lowers the 5.0 V from the Dongle to 3.3 V for the RTC module. The jumper connects P31 with P32.
 In case an alternative supply voltage is needed: remove the jumper and supply needed voltage between P32 and P33, P33 = GND
 The voltage on P32 must not exceed +3.6V.
- b) Translating the I²C-bus signals SDA and SCL by level shifting to comply with the RTC supply scheme. It is done by the PCA9306 from NXP Semiconductors

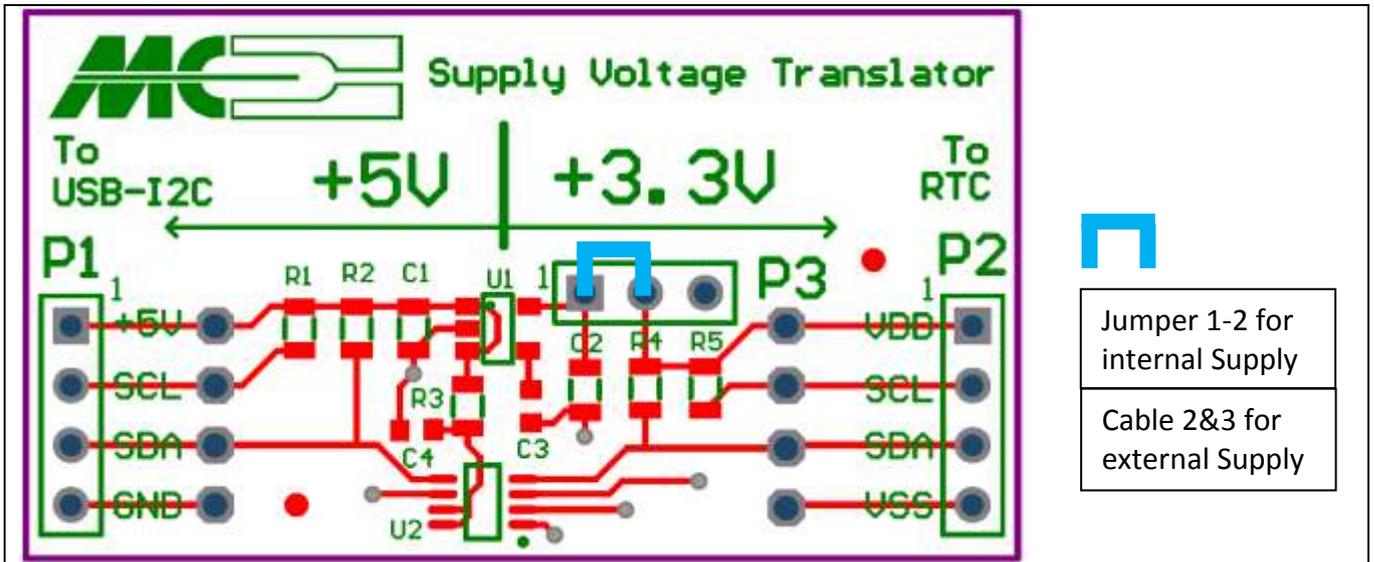
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Application set up



Supply Voltage Translator Board

Translator board

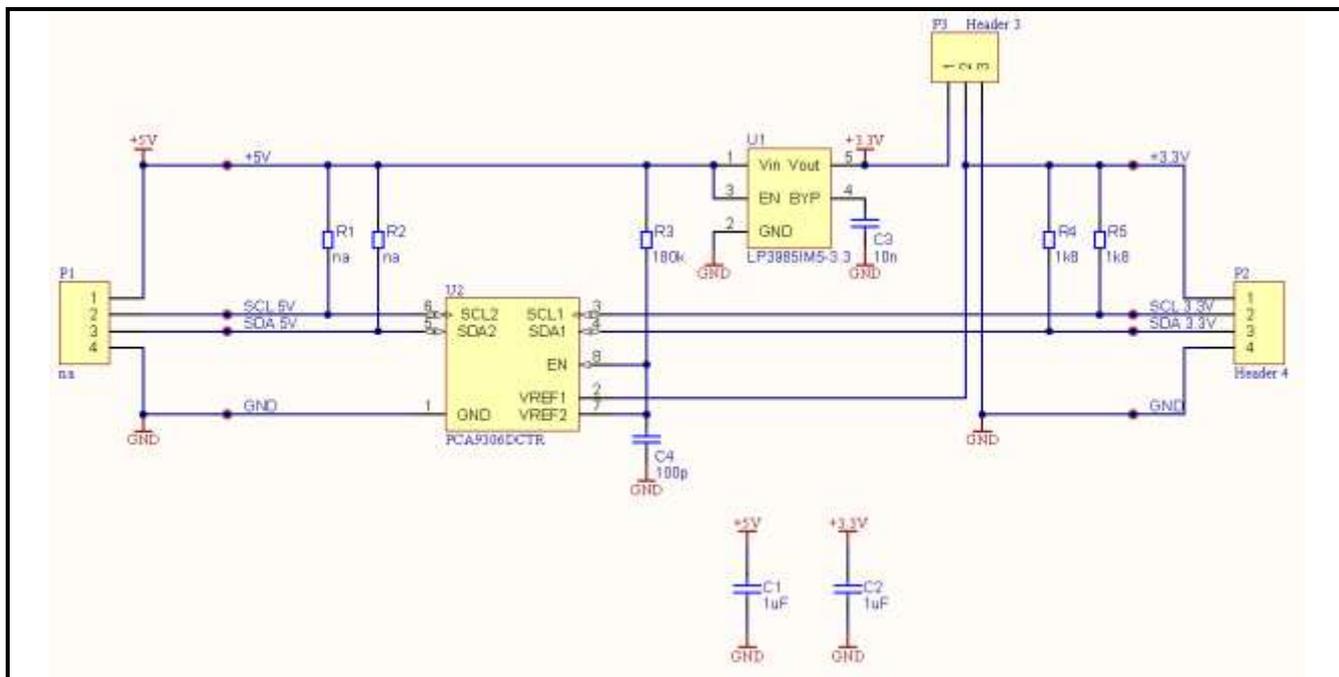


PIN DESCRIPTION

Symbol	Pin #	Description
+5V	P1 1	5 V power supplied by the USB to I ² C-Bus dongle
SCL	P1 2	I ² C-Bus clock line from dongle
SDA	P1 3	I ² C-Bus data line from dongle
GND	P1 4	Ground
VDD	P2 1	Supply voltage to RTC demo board (3.3V when jumper set to 1-2)
SCL	P2 2	I ² C-Bus clock line to demo board
SDA	P2 3	I ² C-Bus data line to demo board
GND	P2 4	Ground
3.3 V	P3 1	3.3 V output from voltage regulator
VDD	P3 2	Supply voltage to demo board (same as P2 1)
GND	P3 3	Ground

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SCHEMATICS



Parts list

Part	Value	Description
C1	1.0 µF	Decoupling capacitor between V _{SS} and +5V
C2	1.0 µF	Decoupling capacitor between V _{SS} and +3.3V
C3	10 nF	Bypass capacitor
C4	100 pF	Decoupling capacitor on level translator
P1	Cable	Connection to the USB / I ² C-bus dongle
P2	Pins	Connection to RTC demo board
P3	Pins	- Place Jumper pin 1-2 for supplying internal 3.3V to the RTC demo board - Option to connect external supply voltage* to pin 2, pin 3 to GND * 1.0 to 3.6V
R1	na	option to lower the I ² C SCL pull-up resistance, U2 has internal one
R2	na	option to lower the I ² C SDA pull-up resistance, U2 has internal one
R3	180 kΩ	enable connection
R4	1.8 kΩ	I ² C SCL pull-up resistor on 3.3 V domain
R5	1.8 kΩ	I ² C SDA pull-up resistor on 3.3 V domain
U1	LP3985IM5-3.3	Linear voltage regulator
U2	PCA9306DCTR	I ² C-bus Level translator / shifter NXP Semiconductors