SENSYLINK Microelectronics

(CA9306)

Dual Bidirectional I²C Bus and SMBus Voltage-Level Translator

The CA9306 device is a dual bidirectional I²C and SMBus voltage-level translator with an enable input, and is operational from 1.2V to 3.3V V$_{REF1}$ and 1.8V to 5.5V V$_{REF2}$.

It is ideally used in Servers, Routers, PC, Industrial Automation and two-signal interfaces (I²C, SMBus, PMBus, MDIO, UART, low-speedSDIO,GPIO)

Dual Bidirectional I²C Bus and SMBus Voltage-Level Translator

1. Description

The CA9306 device is a dual bidirectional I²C and SMBus voltage-level translator with an enable input, and is operational from 1.2V to 3.3V V_{REF1} and 1.8V to 5.5V V_{REF2}.

The CA9306 device allows bidirectional voltage translations between 1.2V and 5V without a direction pin. The low ON-state resistance (RON) of the switch allows connections to be made with minimal propagation delay. When EN is high, the translator switch is ON, and the SCL1 and SDA1 I/O are connected to the SCL2 and SDA2 I/O respectively, allowing bidirectional data flow between ports. When EN is low, the translator switch is OFF, and a high-impedance state exists between ports.

The CA9306 device can be used to isolate a 400kHz bus from a 100kHz bus by controlling the EN pin to disconnect the slower bus during fast-mode communication in addition to voltage translation.

Available Package: MSOP-8, DFN3x4-8, DFN2x3-8 package.

2. Features

- 2-Bit bidirectional translator for SDA and SCL in mixed-mode I²C applications
- I²C and SMBus compatible
- Less than 1.5ns maximum propagation delay to accommodate standard-mode and fast-mode I²C devices and multiple masters
- Allows voltage-level translation between
  – 1.2V V_{REF1} and 1.8V, 2.5V, 3.3V, or 5V V_{REF2}
  – 1.8V V_{REF1} and 2.5V, 3.3V, or 5V V_{REF2}
  – 2.5V V_{REF1} and 3.3V or 5V V_{REF2}
  – 3.3V V_{REF1} and 5V V_{REF2}
- Provides bidirectional voltage translation with no direction pin
- Low 3.5Ω ON-state resistance between input and output ports provides less signal distortion
- 5V tolerant I²C I/O ports to support mixed-mode signal operation
- High-impedance SCL1, SDA1, SCL2, and SDA2 pins for EN = Low
- Lockup-free operation for isolation when EN = Low
- Flow-through pin out for ease of printed-circuit-board trace routing

3. Applications

- I²C, SMBus, PMBus, MDIO, UART, low-speed SDIO, GPIO, and other two-signal interfaces
- Servers
- Routers (Telecom Switching Equipment)
- Personal Computers
- Industrial Automation Applications

4. PIN Configurations

MSOP-8(Package Code MM)

DFN3x4-8(Package Code DN)

DFN2x3-8 (Package Code DNA)
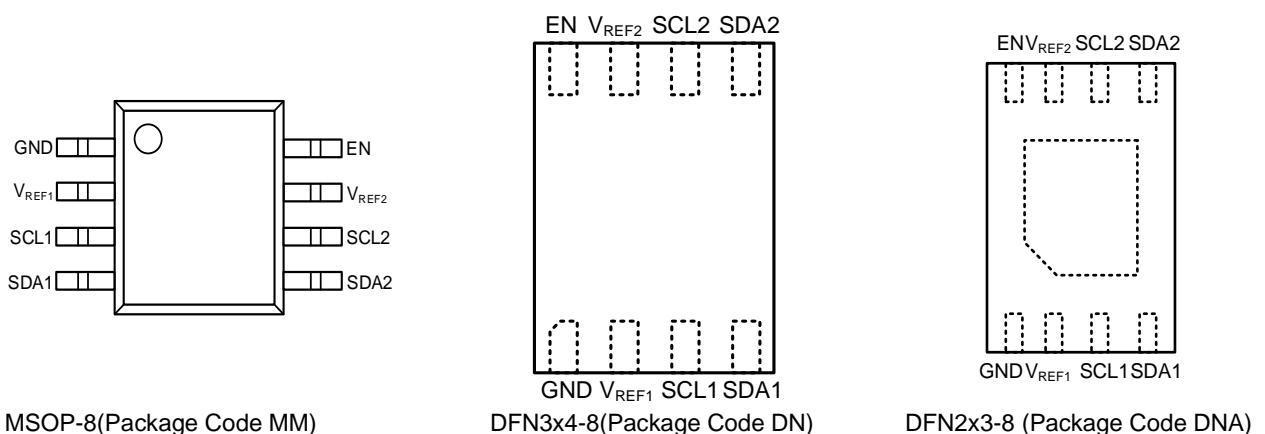
5. Typical Application
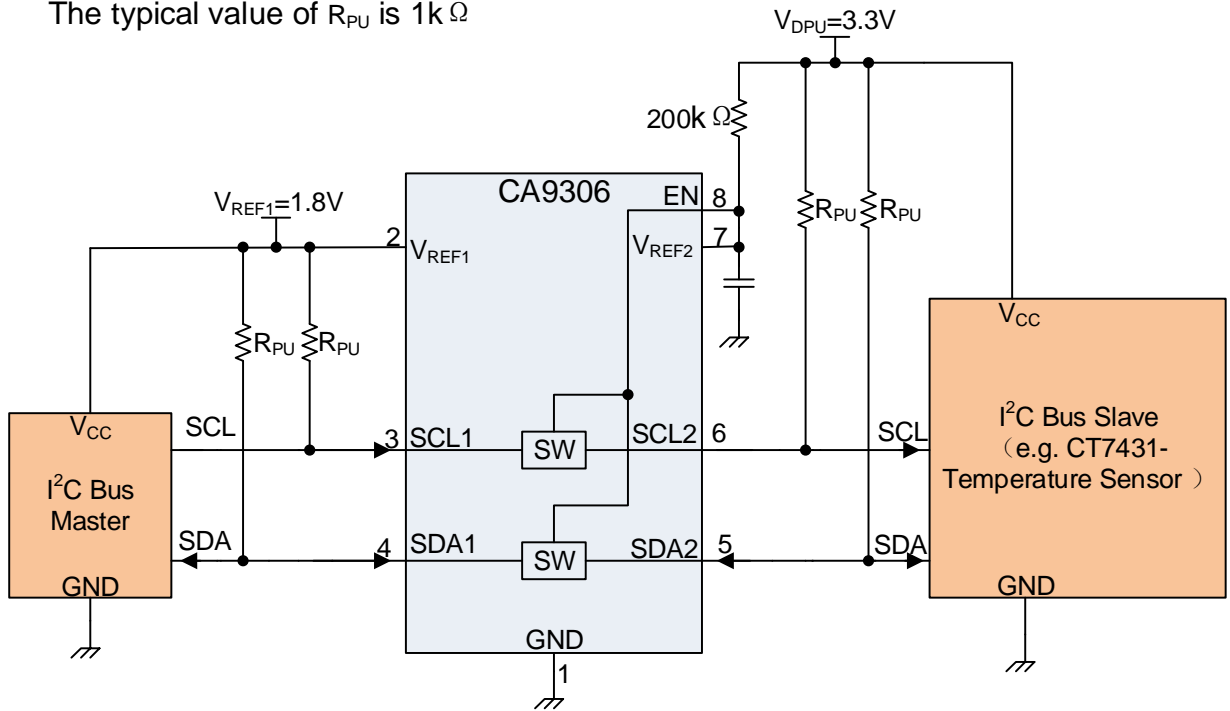
The typical value of R_{PU} is 1kΩ

Figure 1 Typical Application Circuit (Switch Always Enable)

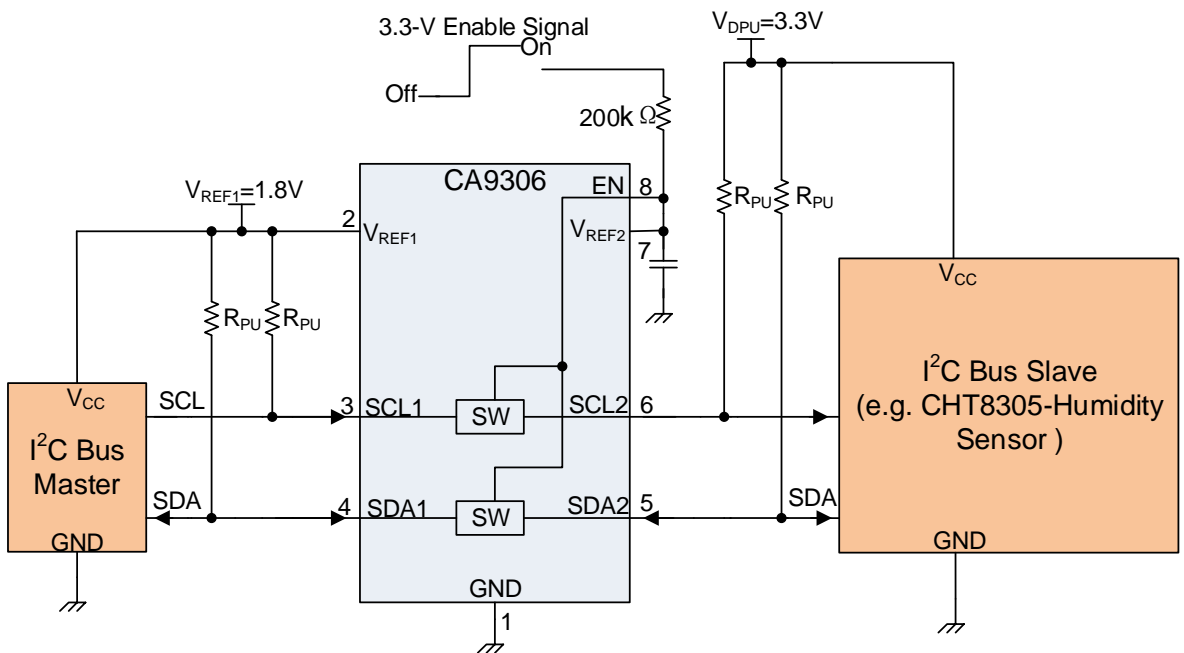The typical value of R_{PU} is 1kΩ

Figure 2 Typical Application Circuit (Switch Enable Control)

6. Pin Description

| PIN Name	PIN No.	Description
GND	1	Supply ground
V_{REF1}	2	Low-voltage-side reference supply voltage for SCL1 and SDA1
SCL1	3	Serial clock, low-voltage side
SDA1	4	Serial data, low-voltage side
SDA2	5	Serial data, high-voltage side
SCL2	6	Serial clock, high-voltage side
V_{REF2}	7	High-voltage-side reference supply voltage for SCL2 and SDA2
EN	8	Switch enable input

7. Function Block
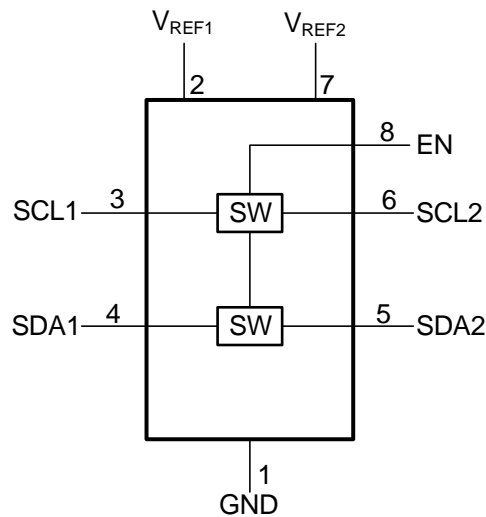
Figure 3 CA9306 Function Block

Dual Bidirectional I²C Bus and SMBus Voltage-Level Translator

8. Ordering Information

CA9306 X X

Package Type
MM:MSOP-8
DN :DFN3x4-8
DNA:DFN2x3-8
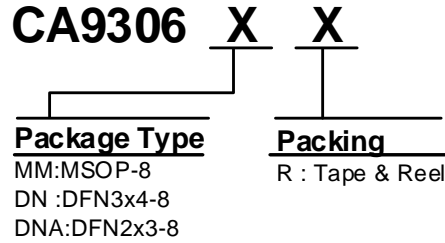
Packing
R : Tape & Reel

Order PN	Green[1]	Package	Marking ID[2]	Packing	MPQ	Operation Temperature
CA9306MMR	Halogen free	MSOP-8	9306 YWWAXX	Tape & Reel	3,000	-40°C~+85°C
CA9306DNR	Halogen free	DFN3x4-8	9306 YWWAXX	Tape & Reel	5,000	-40°C~+85°C
CA9306DNAR	Halogen free	DFN2x3-8	HF YWXA	Tape & Reel	3,000	-40°C~+85°C

Notes：
1. Sensylink can meet RoHS2.0/REACH requirement. Most package types Sensylink offers only states halogen free, instead of lead free.
2. Marking ID includes 2 rows of characters. In general, the 1st row of characters are part number, and the 2nd row of characters are date code plus production information.

SENSYLINK Microelectronics Inc.

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