4-Bit Bidirectional Voltage Level Translator for Open Drain and Push-Pull Applications

Features

- **4-Bit Bidirectional Translator for Open Drain and Push-Pull Bus Applications**
- **I^2C and SMBus Compatible**
- **Less than 1.5ns Maximum Propagation Delay to Accommodate Standard-Mode and Fast-Model I^2C Devices and Multiple Masters**
- **Allows Voltage-Level Translator Between**
  - **1.8V V_{CCA} and 2.5V, 3.3V, 5V V_{CCB}**
  - **2.5V V_{CCA} and 3.3V, 5V V_{CCB}**
  - **3.3V V_{CCA} and 5V V_{CCB}**
  - **$V_{CCA} \leqq V_{CCB}$**
- **Provides Bidirectional Voltage Translation without Direction Pin**
- **Max Data Rates**
  - **24Mbps for Push Pull**
  - **Over 1.3Mbps for Open Drain**
- **Low 3.5Ω ON-State Connection Between Input and Output Ports Provides Less Signal Distortion**
- **Open-Drain I^2C I/O Ports**
- **5V Tolerant I^2C I/O Ports to Support Mixed Mode Signal Operation**
- **High Impedance A_N and B_N Pins for OE=Low**
- **Lock-up-Free Operation for Isolation When OE=Low**
- **IEC 61000-4-2 Level 4 (±8kV Contact Discharge and ±15kV Air-gap Discharge) ESD Protection for pins B1, B2, B3, B4, OE and VCCB. 2kV HBM IEC61340-3-1 Protection for All Other Pins.**

General Description

The G3402 is a qual bidirectional I^2C and SMBUS voltage-level translator with an output enable (OE) input, and is operational from 1.2V to 3.3V V_{CCA} and 2.5V to 5.5V V_{CCB}. It allows bidirectional voltage translations between 1.2V and 5V, without use of directional pin. The low ON-state resistance (r_{ON}) of the switch ensures the connections to be with minimal propagation delay. When OE is high, the translator switch is ON, and the A_N I/O are connected to the B_N I/O, respectively, allowing bidirectional data flow between ports. When OE is low, the translator switch is off, and a high-impedance exists between ports.

Pull-up resistors are included on input and output lines internally to provide the logic high levels on the translator's bus. The size of the pull-up resistors are 10kΩ, and is allowed to use lower pull-up resistor value to minimal 1kΩ by adding external resistor.

All channels have the same electrical characteristics, and there is minimal deviation from one output to another in voltage or propagation delay. This is a benefit over discrete translation solutions, since the fabrication of the switch is symmetrical.

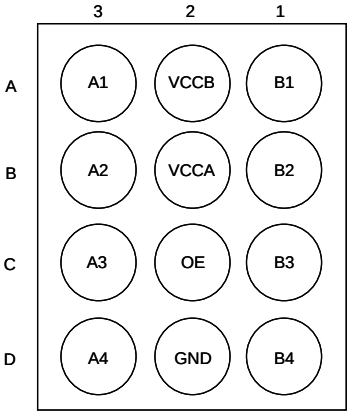
Ordering Information

ORDER NUMBER	MARKING	TEMP. RANGE	PACKAGE (Green)
G3402B51U	3402	-40°C to 85°C	WLCSP3X4-12
G3402B51D	3402	-40°C to 85°C	WLCSP3X4-12

Note: B5: WLCSP3X4-12
1: Bonding Code
U & D: Tape & Reel

Pin Configuration

12 Bump WLCSP



Bottom View
WLCSP3X4-12