

SN74AVCB164245:

16-bit Dual-Supply Bus Transceiver with Configurable Voltage Translation and 3-state Outputs

Product Feature Sheet

Features

- DOC™ circuitry dynamically changes output impedance, resulting in noise reduction without speed degation
- Dynamic drive capability is equivalent to standard outputs with I_{OH} and of ± 24 mA at $2.5 V_{CC}$
- Control inputs V_{IH}/V_{IL} levels are referenced to V_{CCB} voltage
- If either V_{CC} input is at GND, both ports are in the high-impedance state
- Overvoltage-tolerant inputs/outputs allow mixed-voltage-mode data communications
- I_{off} supports partial-power-down mode operation
- Fully configurable dual-rail design allows each port to operate over full 1.4 V to 3.6 V power-supply range
- Latch-up performance exceeds 100 Ma per JESD 78, Class II
- ESD protection exceeds JESD 22
 - 2000 V human-body model (A114-A)
 - 200 V machine model (A115-A)
 - 1000 V charged device model (C101)

Device Overview

This 16-bit (dual-octal) noninverting bus transceiver uses two separate configurable power supply rails. The A port is designed to track V_{CCA} . V_{CCA} accepts any supply voltage from 1.4 V to 3.6 V. The B port is designed to track V_{CCB} . V_{CCB} accepts any supply voltage from 1.4 V to 3.6 V. This allows for universal low-voltage bidirectional translation between any of the 1.5 V, 1.8 V, 2.5 V, and 3.3 V voltage nodes.

The SN74AVCB164245 is designed for asynchronous communication between data buses. The device transmits data from the A bus to the B bus or from the B bus to the A bus, depending on the logic level at the direction-control (DIR) input. The output-enable (\overline{OE}) input can be used to disable the outputs so the buses are effectively isolated.

The SN74AVCB164245 is designed so that the control pins (1DIR, 2DIR, \overline{OE} , and $\overline{2OE}$) are supplied by V_{CCB} . To ensure the high-impedance state during power up or power down, \overline{OE} should be tied to V_{CCB} through a pullup resistor; the minimum value of the resistor is determined by the current-sinking capability of the driver.

This device is fully specified for partial-power-down applications using loff. The loff circuitry disables the outputs, preventing damaging current backflow through the device when it is powered down. If either V_{CC} input is at GND, both ports are in the high-impedance state.

Absolute Maximum Ratings:

Supply voltage range	-0.5 V to 4.6 V
Input voltage range: I/O Ports (A, B Port), control inputs	-0.5 V to 4.6 V
Voltage range applied to any output in the high-impedance or power-off state (A, B Port)	-0.5 V to 4.6 V
Voltage range applied to any output in the high or low state (A Port)	$-0.5 V_{CCA}$ to + 0.5 V
Voltage range applied to any output in the high or low state (B Port)	$-0.5 V_{CCB}$ to + 0.5 V
Input clamp current ($V_1 < 0$)	-50 mA
Output clamp current ($V_o < 0$)	-50 mA
Continuous output current	50 mA
Continuous current through V_{CCA} , V_{CCB} , or GND	100 mA
Package thermal impedance (DGG Package)	75 °C/W
Package thermal impedance (DGV Package)	58 °C/W
Package thermal impedance (GQL/ZQL Package)	28 °C/W
Package thermal impedance (GRD/ZRD Package)	36 °C/W
Storage temperature range	-65 °C to 150 °C