TEXAS INSTRUMENTS
SN65176B, SN75176B
SLLS101H – JULY 1985 – REVISED DECEMBER 2021

SNx5176B Differential Bus Transceivers

1 Features

- Bidirectional transceivers
- Meet or exceed the requirements of ANSI standards TIA/EIA-422-B and TIA/EIA-485-A and ITU Recommendations V.11 and X.27
- Designed for multipoint transmission on long bus lines in noisy environments
- 3-State driver and receiver outputs
- Individual driver and receiver enables
- Wide positive and negative input/output bus voltage ranges
- ± 60-mA Maximum driver output capability
- Thermal shutdown protection
- Driver positive and negative current limiting
- 12-kΩ Minimum Receiver Input Impedance
- ± 200-mV Receiver input sensitivity
- 50-mV Typical receiver input hysteresis
- Operate from single 5-V supply

2 Applications

- Chemical and gas sensors
- Digital signage
- HMI (human machine interfaces)
- Motor controls: AC induction, brushed and brush-less dc, low- and high-voltage, stepper motors, and permanent magnets
- TETRA Base stations
- Telecom towers: remote electrical tilt units (ret) and tower mounted amplifiers (TMA)
- Weigh scales
- Wireless repeaters

3 Description

The SN65176B and SN75176B differential bus transceivers are designed for bidirectional data communication on multipoint bus transmission lines. They are designed for balanced transmission lines and meet ANSI Standards TIA/EIA-422-B and TIA/EIA-485-A and ITU Recommendations V.11 and X.27.

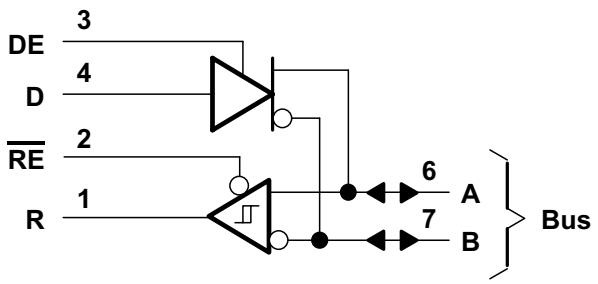
The SN65176B and SN75176B devices combine a 3-state differential line driver and a differential input line receiver, both of which operate from a single 5-V power supply. The driver and receiver have active-high and active-low enables, respectively, that can be connected together externally to function as a direction control. The driver differential outputs and the receiver differential inputs are connected internally to form differential input/output (I/O) bus ports that are designed to offer minimum loading to the bus when the driver is disabled or V_{CC} = 0. These ports feature wide positive and negative common-mode voltage ranges, making the device suitable for party-line applications.

The driver is designed for up to 60 mA of sink or source current. The driver features positive and negative current limiting and thermal shutdown for protection from line-fault conditions. Thermal shutdown is designed to occur at a junction temperature of approximately 150°C. The receiver features a minimum input impedance of 12 kΩ, an input sensitivity of ±200 mV, and a typical input hysteresis of 50 mV.

Device Information

PART NUMBER	PACKAGE (PIN)(1)	BODY SIZE (NOM)
SNx5176	SOIC (8)	4.90 mm × 3.91 mm
	PDIP (8)	9.81 mm × 6.35 mm
	SOP (8)	6.20 mm × 5.30 mm

(1) For all available packages, see the orderable addendum at the end of the datasheet.



Simplified Schematic

5 Pin Configuration and Functions

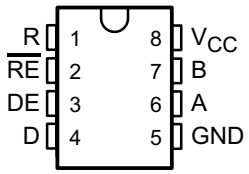


Figure 5-1. Top View

Table 5-1. Pin Functions

PIN		TYPE	DESCRIPTION
NAME	NO.		
R	1	O	Logic Data Output from RS-485 Receiver
$\overline{RE}$	2	I	Receive Enable (active low)
DE	3	I	Driver Enable (active high)
D	4	I	Logic Data Input to RS-485 Driver
GND	5	—	Device Ground Pin
A	6	I/O	RS-422 or RS-485 Data Line
B	7	I/O	RS-422 or RS-485 Data Line
V_{CC}	8	—	Power Input. Connect to 5-V Power Source.