

- 5-Ω Switch Connection Between Two Ports
- TTL-Compatible Input and Output Levels
- Package Options Include Plastic 300-mil Shrink Small-Outline (DL), Thin Shrink Small-Outline (DGG), and Thin Very Small-Outline (DGV) Packages

description

The SN74CBT16211 provides 24 bits of high-speed TTL-compatible bus switching. The low on-state resistance of the switch allows connections to be made with minimal propagation delay.

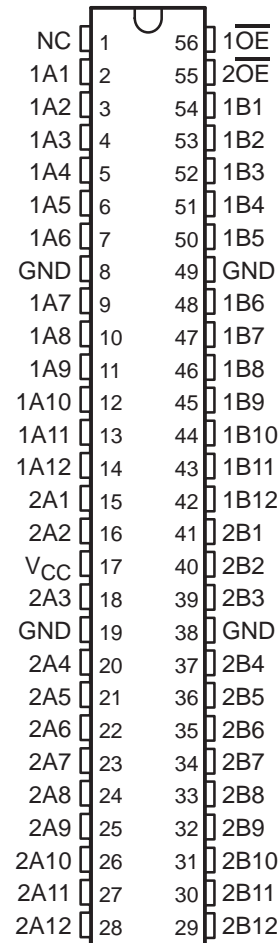
The device operates as a 12-bit or 24-bit bus switch. When $\overline{1OE}$ is low, 1A is connected to 1B. When $\overline{2OE}$ is low, 2A is connected to 2B.

The SN74CBT16211 is characterized for operation from -40°C to 85°C .

FUNCTION TABLE

INPUTS		INPUTS/OUTPUTS	
$\overline{1OE}$	$\overline{2OE}$	1A, 1B	2A, 2B
L	L	1A = 1B	2A = 2B
L	H	1A = 1B	Z
H	L	Z	2A = 2B
H	H	Z	Z

DGG, DGV, OR DL PACKAGE
(TOP VIEW)



NC – No internal connection



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**TEXAS
INSTRUMENTS**

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Supply voltage range, V_{CC}	−0.5 V to 7 V
Input voltage range, V_I (see Note 1)	−0.5 V to 7 V
Continuous channel current	128 mA
Input clamp current, I_{IK} ($V_I < 0$)	−50 mA
Package thermal impedance, θ_{JA} (see Note 2): DGG package	81°C/W
DGV package	86°C/W
DL package	74°C/W
Storage temperature range, T_{stg}	−65°C to 150°C

NOTES: 1. The input and output negative-voltage ratings may be exceeded if the input and output clamp-current ratings are observed.
2. The package thermal impedance is calculated in accordance with EIA/JEDEC Std JESD51.

		MIN	MAX	UNIT
V _{CC}	Supply voltage	4	5.5	V
V _{IH}	High-level control input voltage	2		V
V _{IL}	Low-level control input voltage		0.8	V
T _A	Operating free-air temperature	−40	85	°C

electrical characteristics over recommended operating free-air temperature range (unless otherwise noted)

PARAMETER		TEST CONDITIONS	MIN	TYP†	MAX	UNIT
V_{IK}		$V_{CC} = 4.5\text{ V}$, $I_I = -18\text{ mA}$			-1.2	V
I_I		$V_{CC} = 0\text{ V}$, $V_I = 5.5\text{ V}$			10	μA
		$V_{CC} = 5.5\text{ V}$, $V_I = 5.5\text{ V or GND}$			± 1	
I_{CC}		$V_{CC} = 5.5\text{ V}$, $I_O = 0$, $V_I = V_{CC}\text{ or GND}$			3	μA
ΔI_{CC}^\ddagger	Control pins	$V_{CC} = 5.5\text{ V}$, One input at 3.4 V, Other inputs at $V_{CC}\text{ or GND}$			2.5	mA
C_i	Control pins	$V_I = 3\text{ V or 0}$			4.5	pF
$C_{io(OFF)}$		$V_O = 3\text{ V or 0}$, $\overline{OE} = V_{CC}$			5.5	pF
r_{on}^\S		$V_{CC} = 4\text{ V}$, $V_I = 2.4\text{ V}$, $I_I = 15\text{ mA}$			14 20	Ω
		$V_{CC} = 4.5\text{ V}$	$V_I = 0$	$I_I = 64\text{ mA}$	5 7	
				$I_I = 30\text{ mA}$	5 7	
				$V_I = 2.4\text{ V}$, $I_I = 15\text{ mA}$	8 12	

† All typical values are at $V_{CC} = 5\text{ V}$, $T_A = 25^\circ\text{C}$.

‡ This is the increase in supply current for each input that is at the specified TTL voltage level rather than V_{CC} or GND.

§ Measured by the voltage drop between the A and B terminals at the indicated current through the switch. On-state resistance is determined by the lowest voltage of the two (A or B) terminals.

switching characteristics over recommended operating free-air temperature range, $C_L = 50\text{ pF}$ (unless otherwise noted) (see Figure 1)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	$V_{CC} = 5\text{ V} \pm 0.5\text{ V}$		$V_{CC} = 4\text{ V}$		UNIT
			MIN	MAX	MIN	MAX	
t_{pd}^\parallel	A or B	B or A		0.25		0.25	ns
t_{en}	\overline{OE}	A or B	3.9	9.3	10.1		ns
t_{dis}	\overline{OE}	A or B	3.3	8.5	7.1		ns

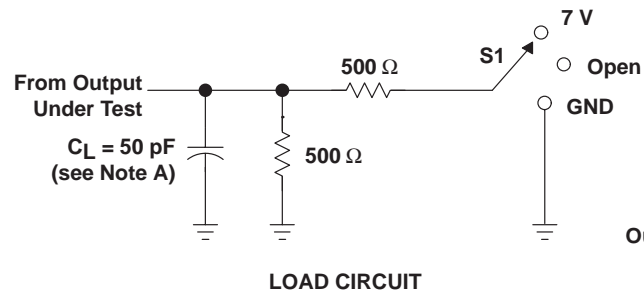
¶ This parameter is warranted but not production tested. The propagation delay is based on the RC time constant of the typical on-state resistance of the switch and a load capacitance of 50 pF, when driven by an ideal voltage source (zero output impedance).

SN74CBT16211

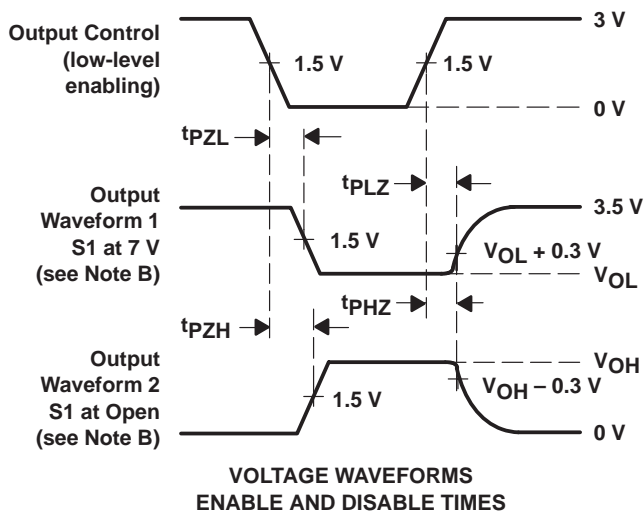
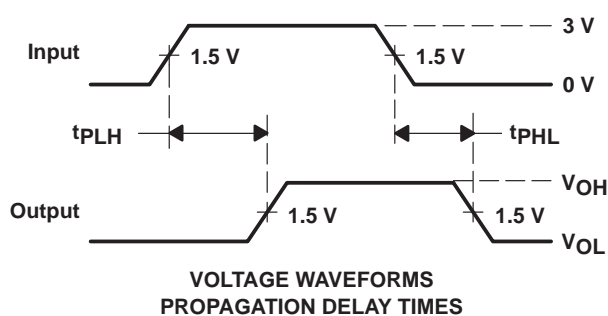
24-BIT BUS SWITCH

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PARAMETER MEASUREMENT INFORMATION



TEST	S1
t_{pd}	Open
t_{PLZ}/t_{PZL}	7 V
t_{PHZ}/t_{PZH}	Open



- NOTES:
- A. C_L includes probe and jig capacitance.
 - B. Waveform 1 is for an output with internal conditions such that the output is low except when disabled by the output control. Waveform 2 is for an output with internal conditions such that the output is high except when disabled by the output control.
 - C. All input pulses are supplied by generators having the following characteristics: $PRR \leq 10 \text{ MHz}$, $Z_O = 50 \Omega$, $t_r \leq 2.5 \text{ ns}$, $t_f \leq 2.5 \text{ ns}$.
 - D. The outputs are measured one at a time with one transition per measurement.
 - E. t_{PLZ} and t_{PHZ} are the same as t_{dis} .
 - F. t_{PZL} and t_{PZH} are the same as t_{en} .
 - G. t_{PLH} and t_{PHL} are the same as t_{pd} .

Figure 1. Load Circuit and Voltage Waveforms

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