

FEATURES:

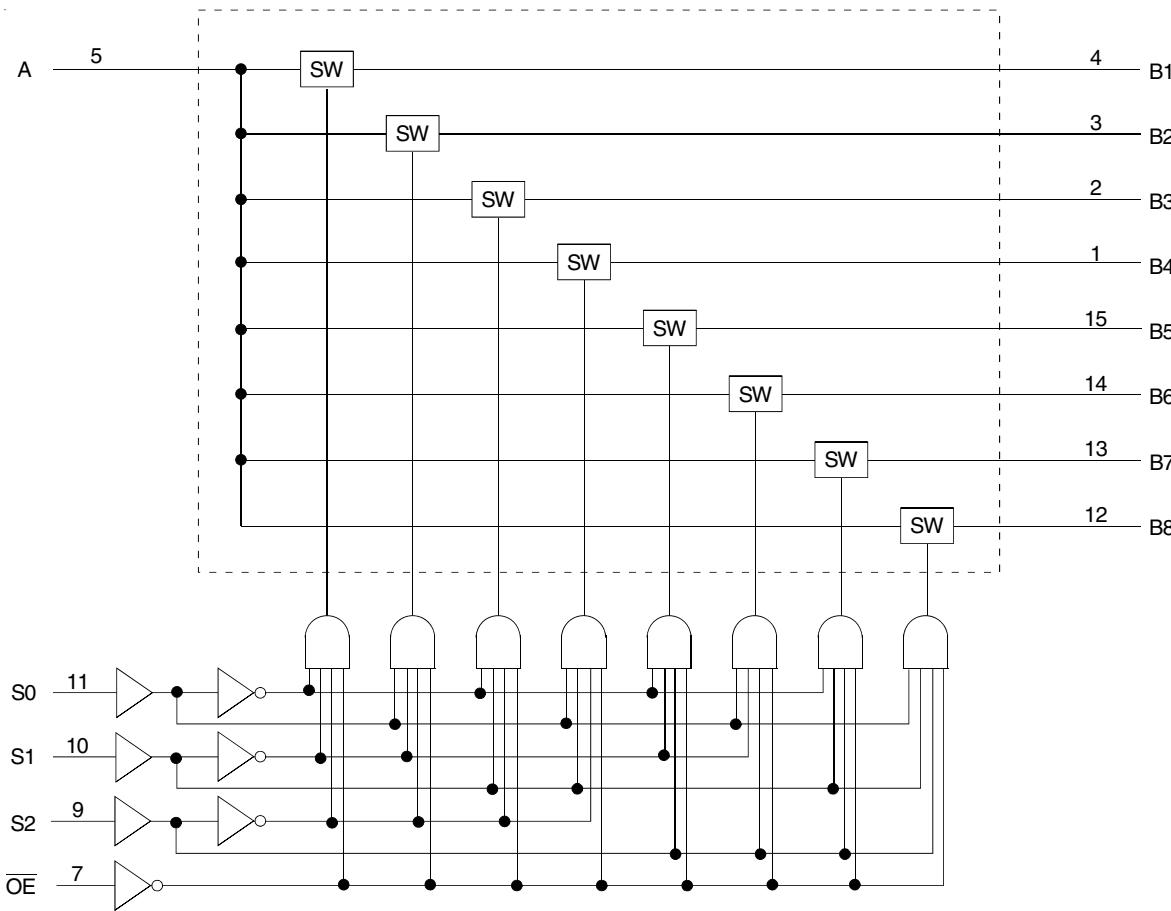
- Functionally equivalent to QS3251
- 5Ω bi-directional switch connection between two ports
- Isolation under power-off conditions
- Over-voltage tolerant
- Latch-up performance exceeds 100mA
- $V_{CC} = 2.3V - 3.6V$, Normal Range
- ESD > 2000V per MIL-STD-883, Method 3015;
 > 200V using machine model ($C = 200pF$, $R = 0$)
- Available in QSOP and TSSOP packages

DESCRIPTION:

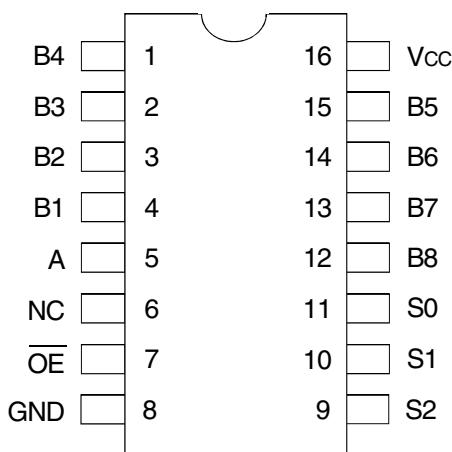
The CBTLV3251 is a 1-of-8 high-speed multiplexer/demultiplexer. The low on-state resistance of the switch allows connections to be made with minimal propagation delay.

The select input (S_0 , S_1 , S_2) controls the data flow. The multiplexer/demultiplexer switches are disabled when the output-enable (\overline{OE}) input is high.

To ensure that the device is in high-impedance state during power up or power down, \overline{OE} should be tied to V_{CC} through a pullup resistor; the minimum value of the resistor is determined by the current-sinking capability of the driver.

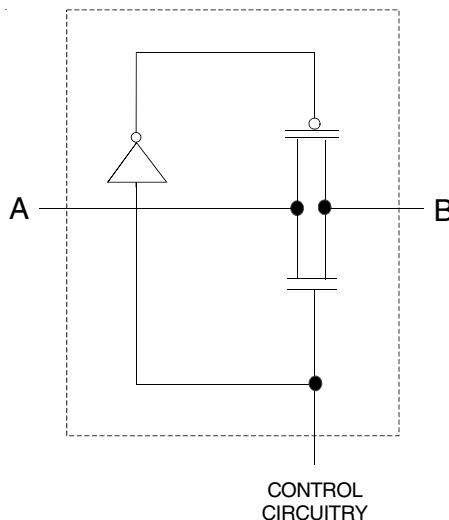
FUNCTIONAL BLOCK DIAGRAM


PIN CONFIGURATION



QSOP / TSSOP
TOP VIEW

SIMPLIFIED SCHEMATIC, EACH SWITCH



ABSOLUTE MAXIMUM RATINGS⁽¹⁾

Symbol	Description	Max	Unit
Vcc	Supply Voltage Range	-0.5 to +4.6	V
VI	Input Voltage Range	-0.5 to +4.6	V
	Continuous Channel Current	128	mA
IIK	Input Clamp Current, VI<0	-50	mA
TSTG	Storage Temperature	-65 to +150	°C

NOTE:

1. Stresses greater than those listed under ABSOLUTE MAXIMUM RATINGS may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect reliability.

FUNCTION TABLE⁽¹⁾

Inputs				Function
\overline{OE}	S2	S1	S0	
L	L	L	L	A Port = B1 Port
L	L	L	H	A Port = B2 Port
L	L	H	L	A Port = B3 Port
L	L	H	H	A Port = B4 Port
L	H	L	L	A Port = B5 Port
L	H	L	H	A Port = B6 Port
L	H	H	L	A Port = B7 Port
L	H	H	H	A Port = B8 Port
H	X	X	X	Disconnect

NOTE:

1. H = HIGH Voltage Level
- L = LOW Voltage Level
- X = Don't Care

OPERATING CHARACTERISTICS, TA = 25°C⁽¹⁾

Symbol	Parameter	Test Conditions	Min.	Max.	Unit
Vcc	Supply Voltage		2.3	3.6	V
VIH	High-Level Control Input Voltage	Vcc = 2.3V to 2.7V	1.7	—	V
VIL		Vcc = 2.7V to 3.6V	2	—	
VIL	Low-Level Control Input Voltage	Vcc = 2.3V to 2.7V	—	0.7	V
		Vcc = 2.7V to 3.6V	—	0.8	
TA	Operating Free-Air Temperature		-40	85	°C

NOTE:

1. All unused control inputs of the device must be held at Vcc or GND to ensure proper device operation.

DC ELECTRICAL CHARACTERISTICS OVER OPERATING RANGE

Following Conditions Apply Unless Otherwise Specified:

Operating Conditions: TA = -40°C to +85°C

Symbol	Parameter	Test Conditions	Min.	Typ. ⁽¹⁾	Max.	Unit
V _{IK}	Control Inputs, Data Inputs	V _{CC} = 3V, I _I = -18mA	—	—	-1.2	V
I _I	Control Inputs	V _{CC} = 3.6V, V _I = V _{CC} or GND	—	—	±1	µA
I _{OZ}	Data I/O	V _{CC} = 3.6V, V _O = 0 or 3.6V, switch disabled	—	—	5	µA
I _{OFF}		V _{CC} = 0, V _I or V _O = 0 to 3.6V	—	—	50	µA
I _{CC}		V _{CC} = 3.6V, I _O = 0, V _I = V _{CC} or GND	—	—	10	µA
ΔI _{CC} ⁽²⁾	Control Inputs	V _{CC} = 3.6V, one input at 3V, other inputs at V _{CC} or GND	—	—	300	µA
C _I	Control Inputs	V _I = 3V or 0	—	4	—	pF
C _{O(OFF)}	A Port	V _O = 3V or 0, \overline{OE} = V _{CC} = 3.3V	—	40.5	—	pF
	B Port		—	6	—	
R _{ON} ⁽³⁾	V _{CC} = 2.3V Typ. at V _{CC} = 2.5V	V _I = 0	I _O = 64mA	—	5	8
			I _O = 24mA	—	5	8
		V _I = 1.7V	I _O = 15mA	—	27	40
	V _{CC} = 3V	V _I = 0	I _O = 64mA	—	5	7
			I _O = 24mA	—	5	7
		V _I = 2.4V	I _O = 15mA	—	10	15

NOTES:

1. Typical values are at V_{CC} = 3.3V, +25°C ambient.
2. The increase in supply current is attributable to each current that is at the specified voltage level rather than V_{CC} or GND.
3. This is 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 lower of the voltages of the two (A or B) terminals.

SWITCHING CHARACTERISTICS

Symbol	Parameter	V _{CC} = 2.5V ± 0.2V		V _{CC} = 3.3V ± 0.3V		Unit
		Min.	Max.	Min.	Max.	
t _{PD} ⁽¹⁾	Propagation Delay A to B or B to A	—	0.15	—	0.25	ns
t _{SEL}	Select Time S to A or B	1	4.8	1	4.5	ns
t _{EN}	Enable Time S to B	1	4.8	1	4.5	ns
t _{DIS}	Disable Time S to B	1	5.1	1	5.3	ns
t _{EN}	Output Enable Time \overline{OE} to A or B	1	5	1	4.8	ns
t _{DIS}	Output Disable Time \overline{OE} to A or B	1	5.5	1	6	ns

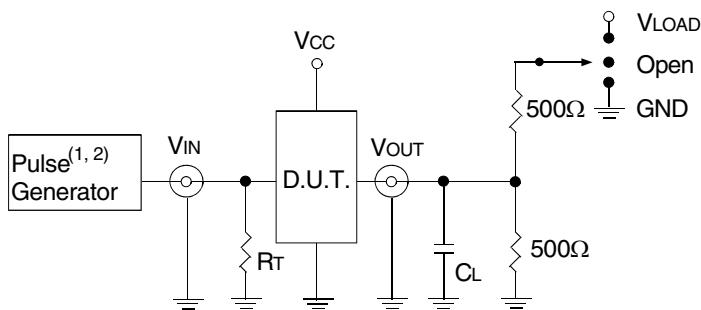
NOTE:

1. The propagation delay is the calculated RC time constant of the typical on-state resistance of the switch and the specified load capacitance driven by an ideal voltage source (zero output impedance).

TEST CIRCUITS AND WAVEFORMS

TEST CONDITIONS

Symbol	$V_{CC}^{(1)} = 3.3V \pm 0.3V$	$V_{CC}^{(2)} = 2.5V \pm 0.2V$	Unit
V_{LOAD}	6	$2 \times V_{CC}$	V
V_{IH}	3	V_{CC}	V
V_T	1.5	$V_{CC}/2$	V
V_{LZ}	300	150	mV
V_{HZ}	300	150	mV
C_L	50	30	pF



Test Circuits for All Outputs

DEFINITIONS:

CL = Load capacitance: includes jig and probe capacitance.

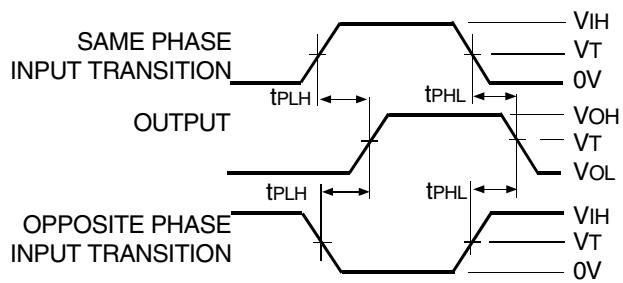
R_T = Termination resistance: should be equal to Z_{OUT} of the Pulse Generator.

NOTES:

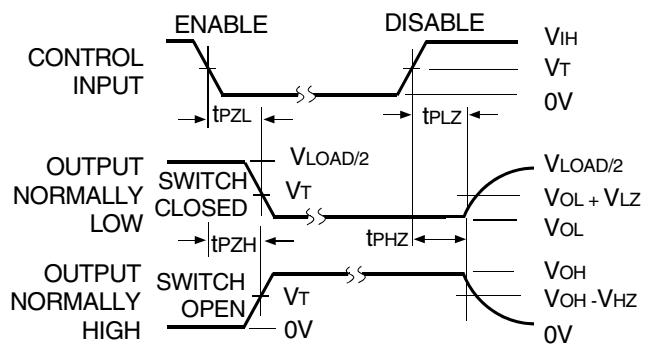
1. Pulse Generator for All Pulses: Rate $\leq 10MHz$; $t_f \leq 2.5ns$; $t_r \leq 2.5ns$.
2. Pulse Generator for All Pulses: Rate $\leq 10MHz$; $t_f \leq 2ns$; $t_r \leq 2.5ns$.

SWITCH POSITION

Test	Switch
t_{PLZ}/t_{PZL}	V_{LOAD}
t_{PHZ}/t_{PZH}	GND
t_{SEL}	Open
t_D	Open

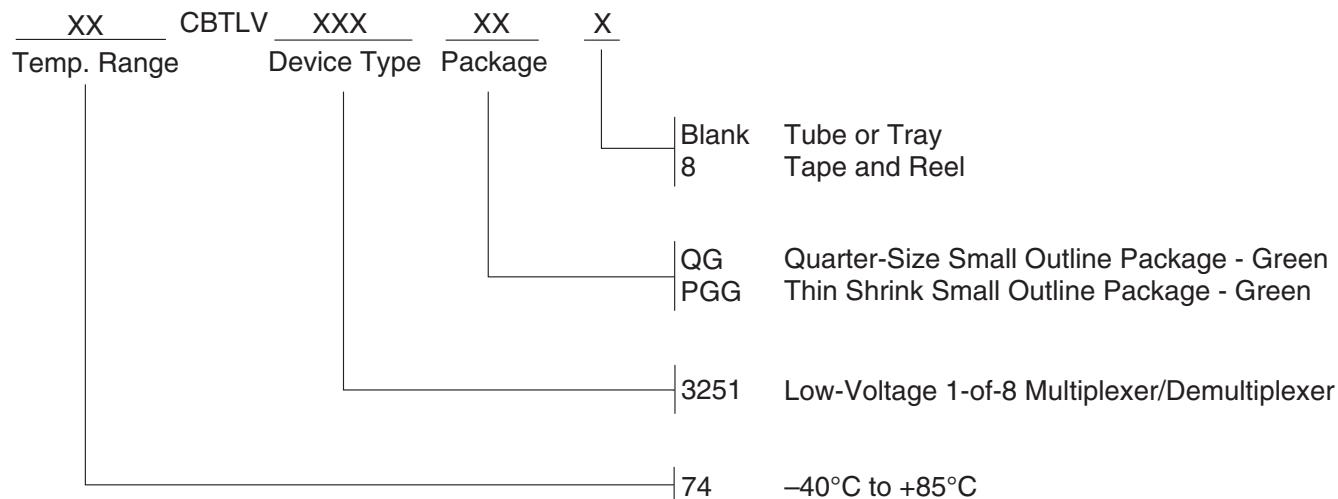


Propagation Delay



Enable and Disable Times

ORDERING INFORMATION



Datasheet Document History

12/18/2014 Pg. 5 Updated the ordering information by removing non RoHS part and adding Tape and Reel information.



CORPORATE HEADQUARTERS
6024 Silver Creek Valley Road
San Jose, CA 95138

for **SALES:**
800-345-7015 or 408-284-8200
fax: 408-284-2775
www.idt.com

for **Tech Support:**
logichelp@idt.com

ООО "ЛайфЭлектроникс"

"LifeElectronics" LLC

ИНН 7805602321 КПП 780501001 Р/С 40702810122510004610 ФАКБ "АБСОЛЮТ БАНК" (ЗАО) в г.Санкт-Петербурге К/С 30101810900000000703 БИК 044030703

Компания «Life Electronics» занимается поставками электронных компонентов импортного и отечественного производства от производителей и со складов крупных дистрибуторов Европы, Америки и Азии.

С конца 2013 года компания активно расширяет линейку поставок компонентов по направлению коаксиальный кабель, кварцевые генераторы и конденсаторы (керамические, пленочные, электролитические), за счёт заключения дистрибуторских договоров

Мы предлагаем:

- Конкурентоспособные цены и скидки постоянным клиентам.
- Специальные условия для постоянных клиентов.
- Подбор аналогов.
- Поставку компонентов в любых объемах, удовлетворяющих вашим потребностям.
- Приемлемые сроки поставки, возможна ускоренная поставка.
- Доставку товара в любую точку России и стран СНГ.
- Комплексную поставку.
- Работу по проектам и поставку образцов.
- Формирование склада под заказчика.
- Сертификаты соответствия на поставляемую продукцию (по желанию клиента).
- Тестирование поставляемой продукции.
- Поставку компонентов, требующих военную и космическую приемку.
- Входной контроль качества.
- Наличие сертификата ISO.

В составе нашей компании организован Конструкторский отдел, призванный помочь разработчикам, и инженерам.

Конструкторский отдел помогает осуществить:

- Регистрацию проекта у производителя компонентов.
- Техническую поддержку проекта.
- Защиту от снятия компонента с производства.
- Оценку стоимости проекта по компонентам.
- Изготовление тестовой платы монтаж и пусконаладочные работы.



Тел: +7 (812) 336 43 04 (многоканальный)
Email: org@lifeelectronics.ru