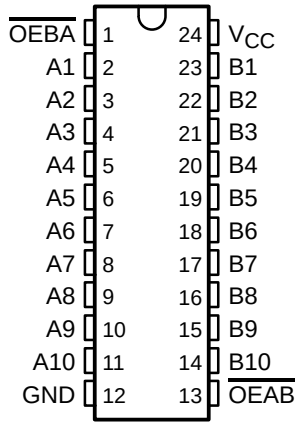
- **BiCMOS Design Substantially Reduces Standby Current**
- **Functionally Equivalent to SN74ALS29861 and AMD Am29861A**
- **Power-Up High-Impedance State**
- **Package Options Include Plastic Small-Outline (DW) Packages and Standard Plastic 300-mil DIPs (NT)**

DW OR NT PACKAGE
(TOP VIEW)



description

This 10-bit bus transceiver is designed for asynchronous communication between data buses. The control-function implementation allows for maximum flexibility in timing.

The device allows data transmission from the A bus to the B bus or from the B bus to the A bus, depending upon the logic levels at the output-enable ($\overline{OEBA}$ and $\overline{OEAB}$) inputs.

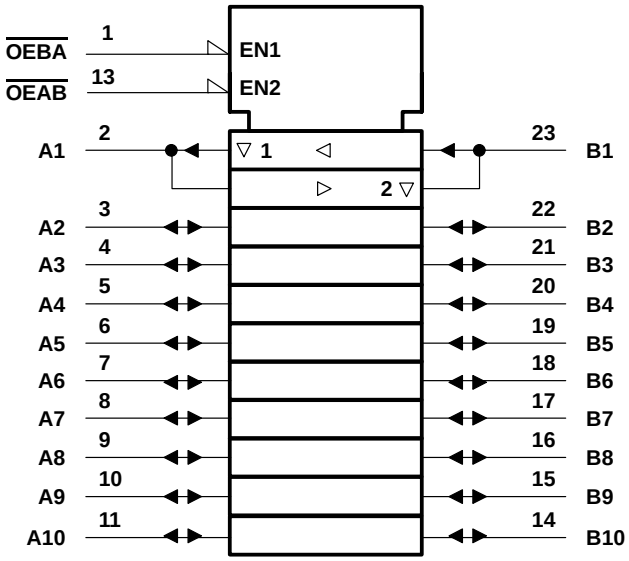
The outputs are in the high-impedance state during power-up and power-down conditions. The outputs remain in the high-impedance state while the device is powered-down.

The SN74BCT29861B is characterized for operation from 0°C to 70°C.

FUNCTION TABLE

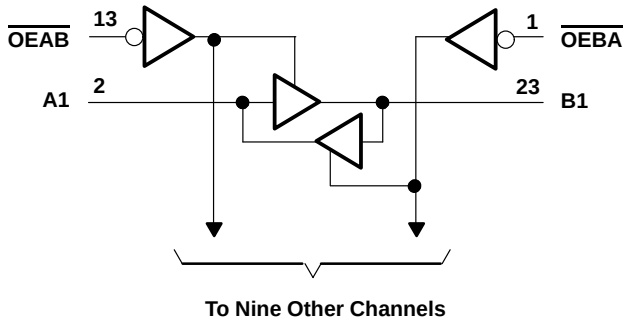
INPUTS		OPERATION
$\overline{OEAB}$	$\overline{OEBA}$	
L	H	A to B
H	L	B to A
H	H	Isolation
L	L	Latch A and B (A = B)

logic symbol†



† This symbol is in accordance with ANSI/IEEE Std 91-1984 and IEC Publication 617-12.

logic diagram (positive logic)



absolute maximum ratings over operating free-air temperature range (unless otherwise noted)‡

Supply voltage, V_{CC} . . . . . –0.5 V to 7 V
Input voltage (I/O ports) (see Note 1) . . . . . –0.5 V to 5.5 V
Input voltage (excluding I/O ports) (see Note 1) . . . . . –0.5 V to 7 V
Voltage applied to any output in the high state . . . . . –0.5 V to V_{CC}
Input clamp current . . . . . –30 mA
Current into any output in the low state . . . . . 96 mA
Operating free-air temperature range . . . . . 0°C to 70°C
Storage temperature range . . . . . –65°C to 150°C

‡ Stresses beyond those listed under “absolute maximum ratings” may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions beyond those indicated under “recommended operating conditions” is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

NOTE 1: The input negative voltage rating may be exceeded if the input clamp current rating is observed.

recommended operating conditions

		MIN	NOM	MAX	UNIT
V_{CC}	Supply voltage	4.5	5	5.5	V
V_{IH}	High-level input voltage	2			V
V_{IL}	Low-level input voltage			0.8	V
I_{IK}	Input clamp current			–18	mA
I_{OH}	High-level output current			–24	mA
I_{OL}	Low-level output current			48	mA
T_A	Operating free-air temperature	0		70	°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 V,	I_I = –18 mA			–1.2	V
V_{OH}		V_{CC} = 4.5 V	I_{OH} = –15 mA	2.4	3.3		V
			I_{OH} = –24 mA	2	3.1		
V_{OL}		V_{CC} = 4.5 V,	I_{OL} = 48 mA		0.35	0.5	V
I_I		V_{CC} = 5.5 V,	V_I = 5.5 V			0.1	mA
I_{IH}	Control inputs	V_{CC} = 5.5 V,	V_I = 2.7 V			20	µA
	A or B port‡					70	
I_{IL}	Control inputs	V_{CC} = 5.5 V,	V_I = 0.5 V			–0.2	mA
	A or B port‡					–0.2	
$I_{O(off)}$§		V_{CC} = 0,	V_O = 2.7 V			0.1	mA
I_{OS}¶		V_{CC} = 5.5 V,	V_O = 0	–75		–250	mA
I_{CC}		V_{CC} = 5.5 V	Outputs high		18	30	mA
			Outputs low		30	45	
			Outputs disabled		6.5	12	
C_i		V_{CC} = 5 V,	V_I = 0.5 V or 2.5 V		6		pF
C_o		V_{CC} = 5 V,	V_I = 0.5 V or 2.5 V		8		pF

† All typical values are at V_{CC} = 5 V, T_A = 25°C.
‡ For I/O ports, the parameters I_{IH} and I_{IL} include the off-state output current.
§ $I_{O(off)}$ = Power-off bus leakage current
¶ Not more than one output should be shorted at a time and duration of the short circuit should not exceed one second.

switching characteristics (see Note 2)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	V_{CC} = 5 V, C_L = 50 pF, R1 = 500 Ω, R2 = 500 Ω, T_A = 25°C			V_{CC} = 4.5 V to 5.5 V, C_L = 50 pF, R1 = 500 Ω, R2 = 500 Ω, T_A = MIN to MAX#		UNIT
			MIN	TYP	MAX	MIN	MAX	
t_{PLH}	A or B	B or A	1	3.2	4.6	1	5.1	ns
t_{PHL}			1	4.6	6.2	1	6.8	
t_{PZH}	$\overline{OEAB}$ or $\overline{OEBA}$	A or B	2	5.2	6.8	2	8.1	ns
t_{PZL}			2	8.3	10.1	2	11.7	
t_{PHZ}	$\overline{OEAB}$ or $\overline{OEBA}$	A or B	2	5.3	7.1	2	7.9	ns
t_{PLZ}			2	5	6.7	2	7.7	

For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating condtions.
NOTE 2: Load circuits and voltage waveforms are shown in Section 1.

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