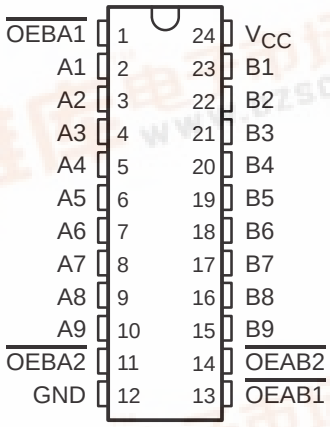
- **Functionally Equivalent to AMD's AM29863**
- **Power-Up High-Impedance State**
- **Package Options Include Plastic Small-Outline (DW) Packages and Standard Plastic (NT) 300-mil DIPs**

DW OR NT PACKAGE
(TOP VIEW)



description

This 9-bit transceiver is designed for asynchronous two-way communication between data buses. The control-function implementation allows for maximum flexibility in timing.

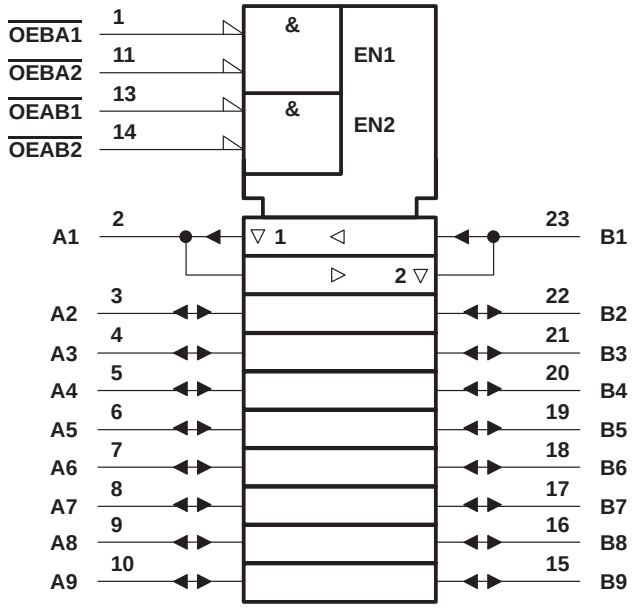
This device allows data transmission from the A bus to the B bus or from the B bus to the A bus, depending on the logic levels at the output-enable ($\overline{OEAB1}$, $\overline{OEAB2}$, $\overline{OEBA1}$, and $\overline{OEBA2}$) inputs.

The SN74ALS29863 is characterized for operation from 0°C to 70°C.

FUNCTION TABLE

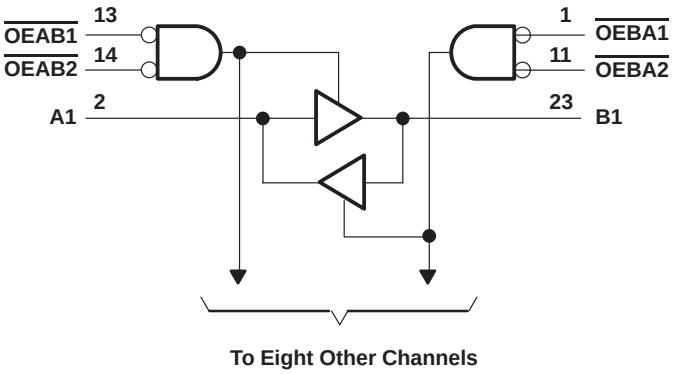
INPUTS				OPERATION
$\overline{OEAB1}$	$\overline{OEAB2}$	$\overline{OEBA1}$	$\overline{OEBA2}$	
L	L	L	L	Latch A and B
L	L	H	X	A to B
L	L	X	H	
H	X	L	L	B to A
X	H	L	L	
H	X	H	X	Isolation
H	X	X	H	
X	H	X	H	
X	H	H	X	

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} . . . . . 7 V
Input voltage, V_I (all inputs and I/O ports) . . . . . 5.5 V
Operating free-air temperature range, T_A . . . . . 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.

recommended operating conditions

		MIN	NOM	MAX	UNIT
V_{CC}	Supply voltage	4.75	5	5.25	V
V_{IH}	High-level input voltage	2			V
V_{IL}	Low-level input voltage			0.8	V
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)

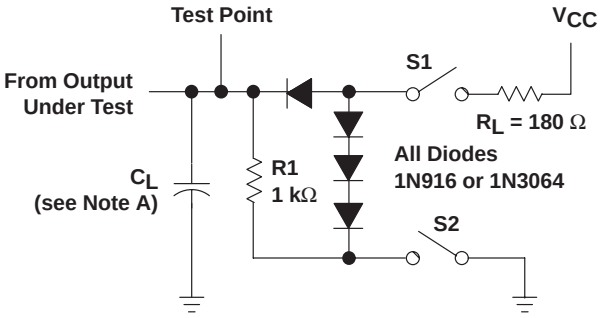
PARAMETER		TEST CONDITIONS		MIN	TYP†	MAX	UNIT
V_{IK}		V_{CC} = 4.75 V,	I_I = –18 mA			–1.2	V
V_{OH}		V_{CC} = 4.75 V	I_{OH} = –15 mA	2.4			V
			I_{OH} = –24 mA	2			
V_{OL}		V_{CC} = 4.75 V,	I_{OL} = 48 mA		0.35	0.5	V
I_I		V_{CC} = 5.25 V,	V_I = 5.5 V			0.1	mA
I_{IH}	Control inputs	V_{CC} = 5.25 V,	V_I = 2.7 V			20	µA
	A or B ports‡					20	
I_{IL}	Control inputs	V_{CC} = 5.25 V,	V_I = 0.4 V			–0.1	mA
	A or B ports‡					–0.1	
I_{OS}§		V_{CC} = 5.25 V,	V_O = 0	–75		–250	mA
I_{CC}		V_{CC} = 5.25 V			40	65	mA

† 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.
§ 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 Figure 1)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	TEST CONDITIONS	V_{CC} = 4.75 V to 5.25 V		UNIT
				MIN	MAX	
t_{PLH}	A or B	B or A	C_L = 300 pF		15	ns
t_{PHL}					15	
t_{PLH}	A or B	B or A	C_L = 50 pF		8	ns
t_{PHL}					8	
t_{PZH}	$\overline{OEAB}$ or $\overline{OEBA}$	A or B	C_L = 300 pF		20	ns
t_{PZL}					23	
t_{PZH}	$\overline{OEAB}$ or $\overline{OEBA}$	A or B	C_L = 50 pF		15	ns
t_{PZL}					15	
t_{PHZ}	$\overline{OEAB}$ or $\overline{OEBA}$	A or B	C_L = 50 pF		17	ns
t_{PLZ}					12	
t_{PHZ}	$\overline{OEAB}$ or $\overline{OEBA}$	A or B	C_L = 5 pF		9	ns
t_{PLZ}					9	

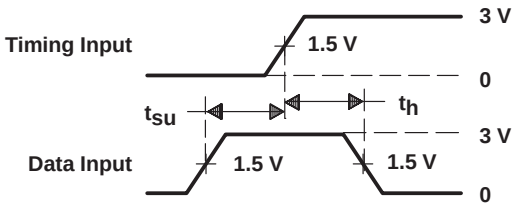
PARAMETER MEASUREMENT INFORMATION



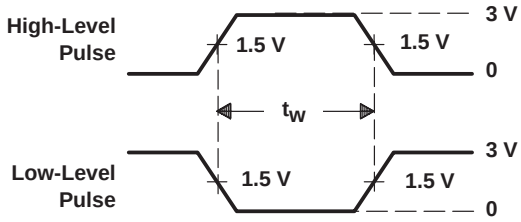
LOAD CIRCUIT

SWITCH POSITION TABLE

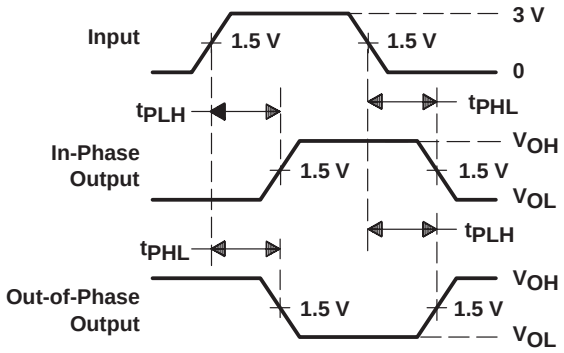
TEST	S1	S2
t_{PLH}	Closed	Closed
t_{PHL}	Closed	Closed
t_{PZH}	Open	Closed
t_{PZL}	Closed	Open
t_{PHZ}	Closed	Closed
t_{PLZ}	Closed	Closed



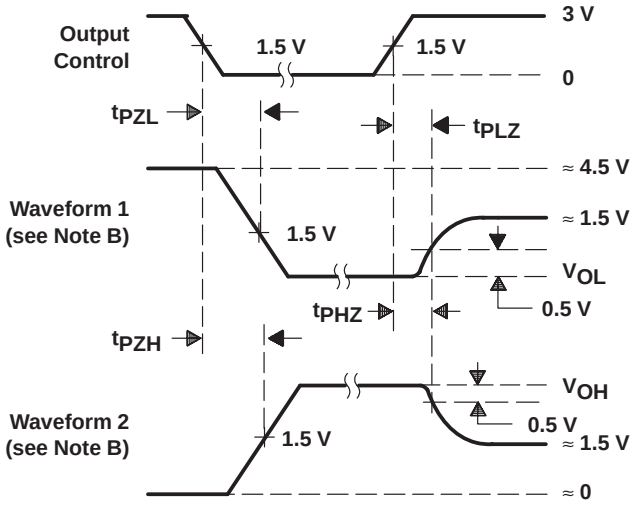
VOLTAGE WAVEFORMS
SETUP AND HOLD TIMES



VOLTAGE WAVEFORMS
PULSE DURATIONS



VOLTAGE WAVEFORMS
PROPAGATION DELAY TIMES



VOLTAGE WAVEFORMS
ENABLE AND DISABLE TIMES, 3-STATE OUTPUTS

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 ≤ 10 MHz, Z_O = 50 Ω, t_r ≤ 2.5 ns, t_f ≤ 2.5 ns.

Figure 1. Load Circuit and Voltage Waveforms

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