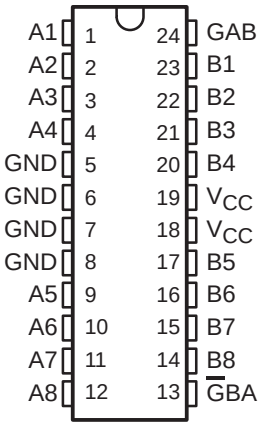
- **Inputs Are TTL-Voltage Compatible**
- **Local Bus-Latch Capability**
- **Flow-Through Architecture to Optimize PCB Layout**
- **Center-Pin V_{CC} and GND Configurations to Minimize High-Speed Switching Noise**
- **EPIC™ (Enhanced-Performance Implanted CMOS) 1-μm Process**
- **500-mA Typical Latch-Up Immunity at 125°C**
- **Package Options Include Plastic Small-Outline Packages, and Standard Plastic 300-mil DIPs**

DW OR NT PACKAGE
(TOP VIEW)



description

These octal bus transceivers are designed for asynchronous two-way communication between data buses. The control function implementation allows for maximum flexibility in timing.

These devices allow 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 enable inputs ($\overline{G}$BA and GAB).

The enable inputs can be used to disable the device so that the buses are effectively isolated.

The dual-enable configuration gives these devices the capability to store data by simultaneous eanbling of $\overline{G}$BA and GAB. Each output reinforces its input in this transceiver configuration. Thus, when both control inputs are enabled and all other data sources to the two sets of bus lines are at high impedance, both sets of bus lines (16 in all) will remain at their last states. The 8-bit codes appearing on the two sets of buses will be complementary for the 74ACT11620.

The 74ACT11620 is characterized for operation from – 40°C to 85°C.

FUNCTION TABLE

ENABLE INPUTS		OPERATION
$\overline{G}$BA	GAB	
L	L	$\overline{B}$ data to A bus
H	H	$\overline{A}$ data to B bus
H	L	Isolation
L	H	$\overline{B}$ data to A bus, $\overline{A}$ data to B bus

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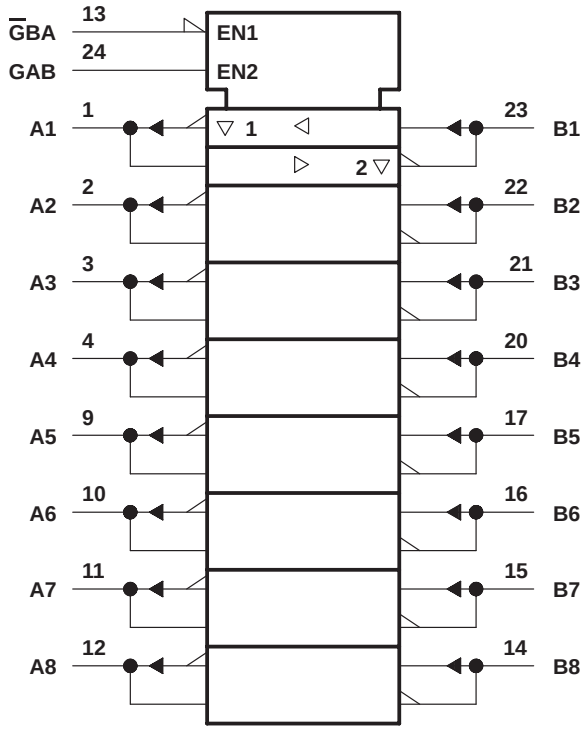
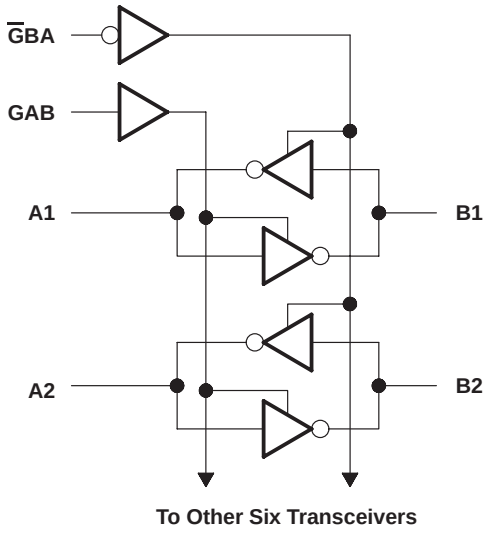
logic symbol†



† 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 range, V_{CC} . . . . . –0.5 V to 7 V
Input voltage range, V_I (see Note 1) . . . . . –0.5 V to V_{CC} + 0.5 V
Output voltage range, V_O (see Note 1) . . . . . –0.5 V to V_{CC} + 0.5 V
Input clamp current, I_{IK} (V_I < 0 or V_I > V_{CC}) . . . . . ± 20 mA
Output clamp current, I_{OK} (V_O < 0 or V_O > V_{CC}) . . . . . ± 50 mA
Continuous output current, I_O (V_O = 0 to V_{CC}) . . . . . ± 50 mA
Continuous current through V_{CC} or GND . . . . . ± 200 mA
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 and output voltage ratings may be exceeded if the input and output current ratings are observed.

recommended operating conditions

		MIN	MAX	UNIT
V_{CC}	Supply voltage	4.5	5.5	V
V_{IH}	High-level input voltage	2		V
V_{IL}	Low-level input voltage		0.8	V
V_I	Input voltage	0	V_{CC}	V
V_O	Output voltage	0	V_{CC}	V
I_{OH}	High-level output current		–24	mA
I_{OL}	Low-level output current		24	mA
$\Delta t/\Delta v$	Input transition rise or fall rate	0	10	ns/V
T_A	Operating free-air temperature	– 40	85	°C

electrical characteristics over recommended operating free-air temperature range

PARAMETER		TEST CONDITIONS	V_{CC}	T_A = 25°C			MIN	MAX	UNIT
				MIN	TYP	MAX			
V_{OH}		I_{OH} = – 50 μA	4.5 V	4.4			4.4		V
			5.5 V	5.4			5.4		
		I_{OH} = – 24 mA	4.5 V	3.94			3.8		
			5.5 V	4.94			4.8		
		I_{OH} = – 75 mA†	5.5 V				3.85		
V_{OL}		I_{OL} = 50 μA	4.5 V			0.1		0.1	V
			5.5 V			0.1		0.1	
		I_{OL} = 24 mA	4.5 V			0.36		0.44	
			5.5 V			0.36		0.44	
		I_{OL} = 75 mA†	5.5 V					1.65	
I_{OZ}	A or B ports‡	$V_O = V_{CC}$ or GND	5.5 V			± 0.5		± 5	μA
I_I	$\overline{G}$BA or GAB	$V_I = V_{CC}$ or GND	5.5 V			± 0.1		± 1	μA
I_{CC}		$V_I = V_{CC}$ or GND, I_O = 0	5.5 V			8		8	μA
ΔI_{CC}§		One input at 3.4 V, Other inputs at GND or V_{CC}	5.5 V			0.9		1	mA
C_i	$\overline{G}$BA or GAB	$V_I = V_{CC}$ or GND	5 V		4				pF
C_o	A or B ports	$V_O = V_{CC}$ or GND	5 V		12				pF

† Not more than one output should be tested at a time, and the duration of the test should not exceed 10 ms.
‡ For I/O ports, the parameter I_{OZ} includes the input leakage.
§ This is the increase in supply current for each input that is at one of the specified TTL voltage levels rather than 0 V or V_{CC}.

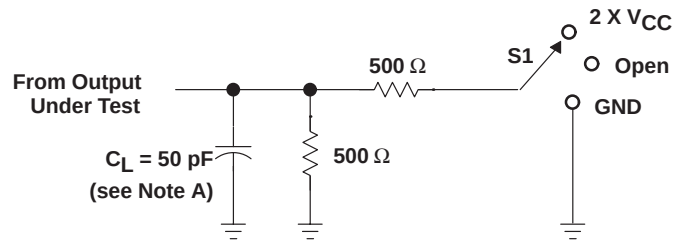
switching characteristics over recommended ranges of supply voltage and operating free-air temperature (unless otherwise noted) (see Figure 1)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	T_A = 25°C			MIN	MAX	UNIT
			MIN	TYP	MAX			
t_{PLH}	A or B	B or A	1.5	5.7	8.5	1.5	9.4	ns
t_{PHL}			1.5	5.9	7.7	1.5	8.6	
t_{PZH}	$\overline{G}$BA	A	1.5	7.2	9.1	1.5	10.3	ns
t_{PZL}			1.5	7.1	9.2	1.5	10.1	
t_{PHZ}	$\overline{G}$BA	A	1.5	7.9	9.6	1.5	10.4	ns
t_{PLZ}			1.5	8.3	10	1.5	10.9	
t_{PZH}	GAB	B	1.5	7.5	10.2	1.5	11.3	ns
t_{PZL}			1.5	7.7	9.8	1.5	11	
t_{PHZ}	GAB	B	1.5	7.2	8.9	1.5	9.4	ns
t_{PLZ}			1.5	7.2	8.9	1.5	9.6	

operating characteristics, V_{CC} = 5 V, T_A = 25°C

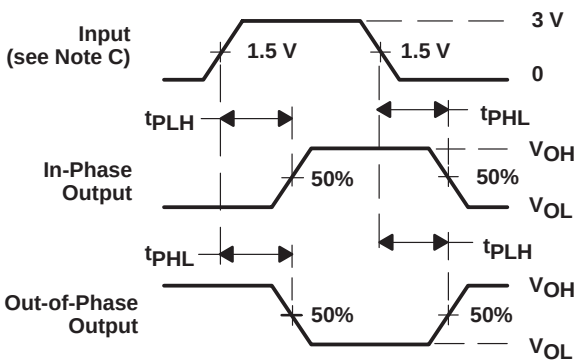
PARAMETER			TEST CONDITIONS		TYP	UNIT
C_{pd}	Power dissipation capacitance per transceiver	Outputs enabled	C_L = 50 pF,	f = 1 MHz	54	pF
		Outputs disabled			11	

PARAMETER MEASUREMENT INFORMATION

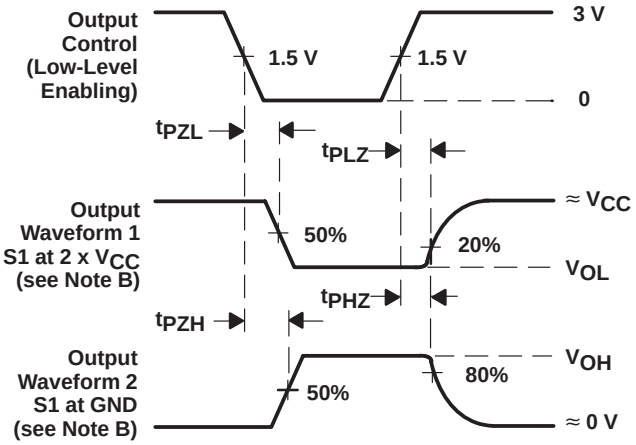


TEST	S1
t_{PLH}/t_{PHL}	OPEN
t_{PLZ}/t_{PZL}	2 x V_{CC}
t_{PHZ}/t_{PZH}	GND

LOAD CIRCUIT



VOLTAGE WAVEFORMS
PROPAGATION DELAY TIMES



VOLTAGE WAVEFORMS
ENABLE AND DISABLE TIMES

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.
D. The outputs are measured one at a time with one input transition per measurement.

Figure 1. Load Circuit and Voltage Waveforms

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