



U74HC245

CMOS IC

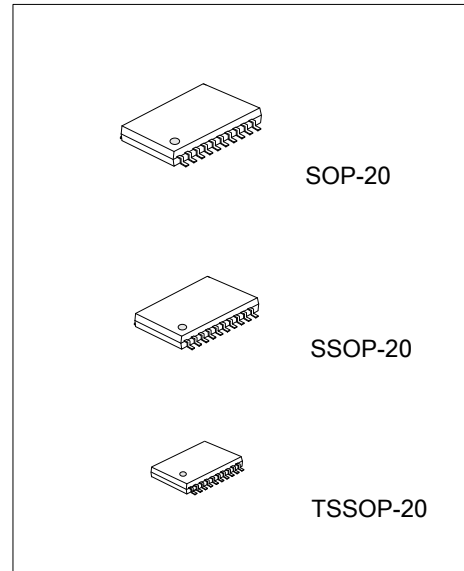
OCTAL BUS TRANSCEIVERS WITH 3-STATE OUTPUTS

DESCRIPTION

The **U74HC245** is designed for the asynchronous communication between data buses. While the direction-control(DIR) is high, data transmits from the A bus to the B bus. Data transmits from the B bus to the A bus if DIR is low. The output-enable($\overline{OE}$) will isolate the device from the buses when high voltage is applied on it.

FEATURES

- * Operate from 2V to 6V
- * Max t_{PD} is 18ns at 6V

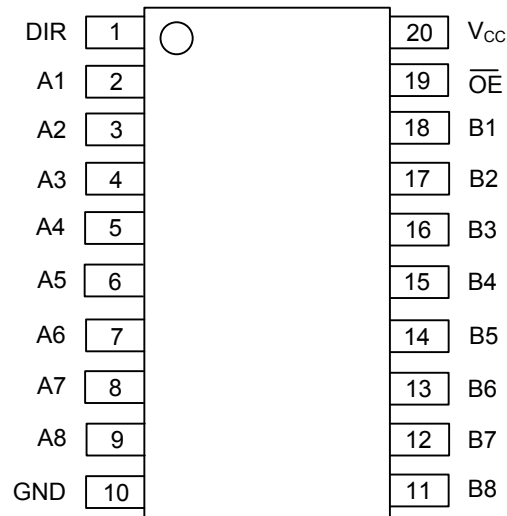


ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74HC245L-S20-R	U74HC245G-S20-R	SOP-20	Tape Reel
U74HC245L-S20-T	U74HC245G-S20-T	SOP-20	Tube
U74HC245L-R20-R	U74HC245G-R20-R	SSOP-20	Tape Reel
U74HC245L-R20-T	U74HC245G-R20-T	SSOP-20	Tube
U74HC245L-P20-R	U74HC245G-P20-R	TSSOP-20	Tape Reel
U74HC245L-P20-T	U74HC245G-P20-T	TSSOP-20	Tube

U74HC245L-R20-R (1)Packing Type (2)Package Type (3)Lead Free	(1) R: Tape Reel, T: Tube (2) P20: TSSOP-20, R20: SSOP-20, S20: SOP-20 (3) G: Halogen Free, L: Lead Free
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PIN CONFIGURATION

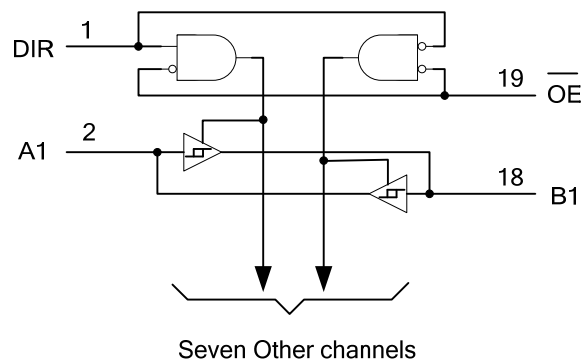


FUNCTION TABLE

INPUT		FUNCTION
$\overline{OE}$	DIR	
H	X	Isolation
L	H	Transmit data from A bus to B bus
L	L	Transmit data from B bus to A bus

Note: H: HIGH voltage level; L: LOW voltage level.

LOGIC DIAGRAM



■ ABSOLUTE MAXIMUM RATING ($T_A=25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V_{CC}	-0.5~7.0	V
Input Clamp Current ($V_{IN}<0$)	I_{IK}	± 20	mA
Output Clamp Current ($V_{OUT}<0$)	I_{OK}	± 20	mA
Output Current	I_{OUT}	± 35	mA
V_{CC} or GND Current	I_{CC}	± 70	mA
Storage Temperature	T_{STG}	-65 ~ +150	$^\circ\text{C}$

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	V_{CC}		2	5	6	V
Input Voltage	V_{IN}		0		V_{CC}	V
Output Voltage	V_{OUT}		0		V_{CC}	V
Input Transition Rise or Fall Rate	t_R	$V_{CC}=2V$			1000	ns
		$V_{CC}=4.5V$			500	ns
		$V_{CC}=6V$			400	ns
Operating Temperature	T_{OPR}		-40		85	$^\circ\text{C}$

■ ELECTRICAL CHARACTERISTICS ($T_A=25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
High-level input voltage	V_{IH}	$V_{CC}=2V$	1.5			V
		$V_{CC}=4.5V$	3.15			V
		$V_{CC}=6V$	4.2			V
Low-level output voltage	V_{IL}	$V_{CC}=2V$			0.5	V
		$V_{CC}=4.5V$			1.35	V
		$V_{CC}=6V$			1.8	V
High-Level Output Voltage	V_{OH}	$V_{CC}=2V, I_{OH}=-20\mu A$	1.9	1.998		V
		$V_{CC}=4.5V, I_{OH}=-20\mu A$	4.4	4.499		V
		$V_{CC}=6V, I_{OH}=-20\mu A$	5.9	5.999		V
		$V_{CC}=4.5V, I_{OH}=-6mA$	3.98	4.3		V
		$V_{CC}=6V, I_{OH}=-7.8mA$	5.48	5.8		V
Low-Level Output Voltage	V_{OL}	$V_{CC}=2V, I_{OL}=20\mu A$		0.002	0.1	V
		$V_{CC}=4.5V, I_{OL}=20\mu A$		0.001	0.1	V
		$V_{CC}=6V, I_{OL}=20\mu A$		0.001	0.1	V
		$V_{CC}=4.5V, I_{OH}=6mA$		0.17	0.26	V
		$V_{CC}=6V, I_{OL}=7.8mA$		0.15	0.26	V
Input Current of DIR or $\overline{OE}$	$I_{I(LEAK)}$	$V_{CC}=6V, V_{IN}=V_{CC}$ or GND		± 0.1	± 100	nA
Output OFF-state current	I_{OZ}	$V_{CC}=6V, V_{OUT}=V_{CC}$ or GND		± 0.01	± 0.5	μA
Quiescent Supply Current	I_Q	$V_{CC}=6V, V_{IN}=V_{CC}$ or GND, $I_{OUT}=0$			8	μA
Input Capacitance of DIR or $\overline{OE}$	C_{IN}	$V_{CC}=6V, V_{IN}=V_{CC}$ or GND		3	10	pF

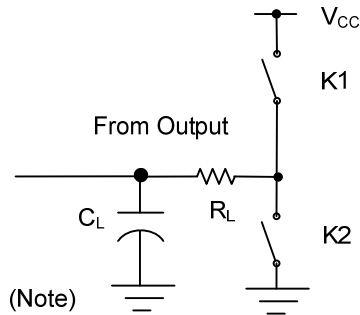
■ SWITCHING CHARACTERISTICS ($T_A=25^{\circ}\text{C}$, $C_L=50\text{pF}$, $R_L=1\text{k}\Omega$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Propagation delay from input (A or B) to output (B or A)	t_{PD} (t_{PLH}/t_{PHL})	$V_{CC}=2\text{V}$		40	105	ns
		$V_{CC}=4.5\text{V}$		15	21	ns
		$V_{CC}=6\text{V}$		12	18	ns
3-state output enable time from input ($\overline{OE}$) to output (A or B)	t_{EN} (t_{PZL}/t_{PZH})	$V_{CC}=2\text{V}$		125	230	ns
		$V_{CC}=4.5\text{V}$		23	46	ns
		$V_{CC}=6\text{V}$		20	39	ns
3-state output disable time from input ($\overline{OE}$) to output (A or B)	t_{DIS} (t_{PLZ}/t_{PHZ})	$V_{CC}=2\text{V}$		74	200	ns
		$V_{CC}=4.5\text{V}$		25	40	ns
		$V_{CC}=6\text{V}$		21	34	ns
Output transition time, (A or B)	t_T (t_R/t_F)	$V_{CC}=2\text{V}$		20	60	ns
		$V_{CC}=4.5\text{V}$		8	12	ns
		$V_{CC}=6\text{V}$		6	10	ns

■ OPERATING CHARACTERISTICS

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Power Dissipation Capacitance	C_{PD}	No load		40		pF

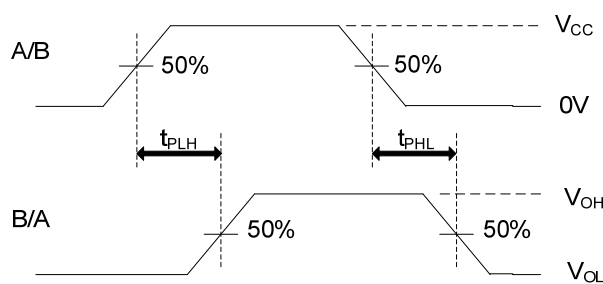
■ TEST CIRCUIT AND WAVEFORMS



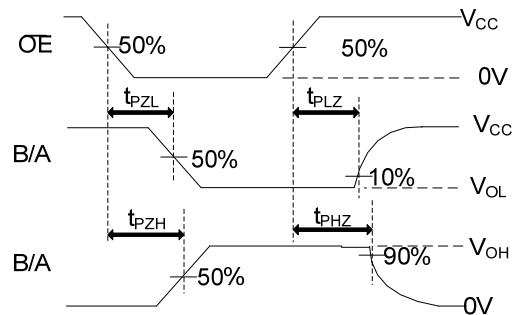
TEST	K1	K2
t_{PLH}/t_{PHL}	Open	Open
t_{PHZ}/t_{PZH}	Open	Close
t_{PLZ}/t_{PZL}	Close	Open

Note: C_L includes probe and jig capacitance.

$$P_{RR} \leq 1\text{MHz}, Z_O = 50\Omega, t_R \leq 6\text{ns}, t_F \leq 6\text{ns}$$



Propagation Delay Times



Enable and Disable Times

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