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FAST Products	

FAST 74F245

Transceiver

Octal Transceiver (3-State)

FEATURES

- Octal bidirectional bus interface
- 3-state buffer outputs sink 64mA
- 15 mA source current
- Outputs are placed in high impedance state during power-off conditions

DESCRIPTION

The 74F245 is an octal transceiver featuring non-inverting 3-state bus compatible outputs in both transmit and receive directions. The B port outputs are capable of sinking 64mA and sourcing 15mA, producing very good capacitive drive characteristics. The device features an Output Enable (\overline{OE}) input for easy cascading and Transmit/Receive (T/\overline{R}) input for direction control. The 3-state outputs, B_0 - B_7 , have been designed to prevent output bus loading if the power is removed from the device.

TYPE	TYPICAL PROPAGATION DELAY	TYPICAL SUPPLY CURRENT (TOTAL)
74F245	4.0ns	70mA

ORDERING INFORMATION

PACKAGES	COMMERCIAL RANGE $V_{CC} = 5V \pm 10\%$; $T_A = 0^\circ C$ to $+70^\circ C$
20-Pin Plastic DIP	N74F245N
20-Pin Plastic SOL	N74F245D

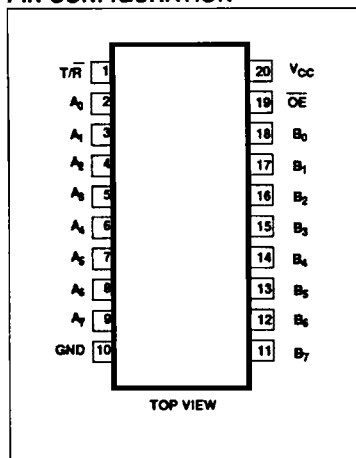
INPUT AND OUTPUT LOADING AND FAN-OUT TABLE

PINS	DESCRIPTION	74F(U.L.) HIGH/LOW	LOAD VALUE HIGH/LOW
A_0 - A_7 B_0 - B_7	Data inputs	3.5/1.0	70 μ A/0.6mA
\overline{OE}	Output enable input (active Low)	1.0/2.0	20 μ A/1.2mA
T/\overline{R}	Transmit/Receive input	1.0/2.0	20 μ A/1.2mA
A_0 - A_7	A port outputs	150/40	3.0mA/24mA
B_0 - B_7	B Port outputs	750/106.7	15mA/64mA

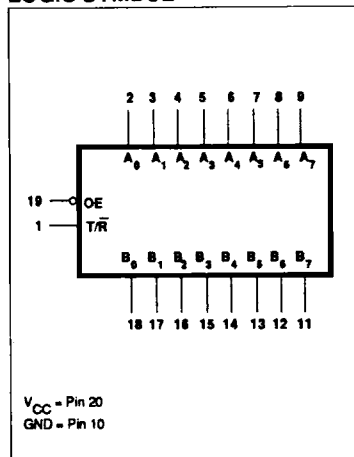
NOTE:

One (1.0) FAST Unit Load is defined as: 20 μ A in the High state and 0.6mA in the Low state.

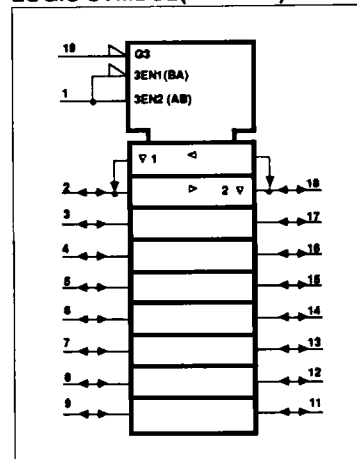
PIN CONFIGURATION



LOGIC SYMBOL



LOGIC SYMBOL (IEEE/IEC)



Transceiver

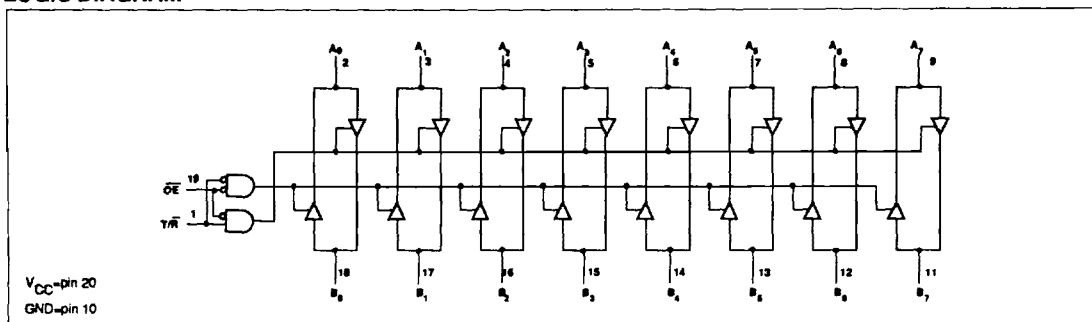
FAST 74F245

FUNCTION TABLE

INPUTS		OUTPUTS
OE	T/R	
L	L	Bus B data to Bus A
L	H	Bus A data to Bus B
H	X	Z

H=High voltage level
 L=Low voltage level
 X=Don't care
 Z=High impedance "off" state

LOGIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS (Operation beyond the limits set forth in this table may impair the useful life of the device. Unless otherwise noted these limits are over the operating free-air temperature range.)

SYMBOL	PARAMETER	RATING	UNIT
V_{CC}	Supply voltage	-0.5 to +7.0	V
V_{IN}	Input voltage	-0.5 to +7.0	V
I_{IN}	Input current	-30 to +5	mA
V_{OUT}	Voltage applied to output in High output state	-0.5 to +5.5	V
I_{OUT}	Current applied to output in Low output state	A_0-A_7	48
		B_0-B_7	128
T_A	Operating free-air temperature range	0 to +70	°C
T_{STG}	Storage temperature	-65 to +150	°C

RECOMMENDED OPERATING CONDITIONS

SYMBOL	PARAMETER	LIMITS			UNIT
		Min	Nom	Max	
V_{CC}	Supply voltage	4.5	5.0	5.5	V
V_H	High-level input voltage	2.0			V
V_L	Low-level input voltage			0.8	V
I_{IK}	Input clamp current			-18	mA
I_{OH}	High-level output current	A_0-A_7		-3	mA
		B_0-B_7		-15	mA
I_{OL}	Low-level output current	A_0-A_7		24	mA
		B_0-B_7		64	mA
T_A	Operating free-air temperature range	0		70	°C

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DC ELECTRICAL CHARACTERISTICS (Over recommended operating free-air temperature range unless otherwise noted.)

SYMBOL	PARAMETER		TEST CONDITIONS ¹			LIMITS			UNIT	
						Min	Typ ²	Max		
V _{OH}	High-level output voltage	A ₀ -A ₇ B ₀ -B ₇	V _{CC} = MIN, V _{IL} = MAX, V _{IH} = MIN	I _{OH} = -3mA	±10%V _{CC}	2.4			V	
					±5%V _{CC}	2.7	3.4		V	
		B ₀ -B ₇		I _{OH} = -15mA	±10%V _{CC}	2.0			V	
					±5%V _{CC}	2.0			V	
V _{OL}	Low-level output voltage	A ₀ -A ₇	V _{CC} = MIN, V _{IL} = MAX, V _{IH} = MIN	I _{OL} = 20mA	±10%V _{CC}		0.30	0.50	V	
					I _{OL} = 24mA	±5%V _{CC}		0.35	0.50	V
		B ₀ -B ₇		I _{OL} = MAX	±10%V _{CC}			0.55	V	
					±5%V _{CC}		0.42	0.55	V	
V _{IK}	Input clamp voltage		V _{CC} = MIN, I _I = I _{IK}				-0.73	-1.2	V	
I _I	Input current at maximum input voltage	\overline{OE} , T/ \overline{R}	V _{CC} = 5.5V, V _I = 7.0V					100	μA	
		A ₀ -A ₇ , B ₀ -B ₇	V _{CC} = 5.5V, V _I = 5.5V					1	mA	
I _{IH}	High-level input current	\overline{OE} , T/ \overline{R} only	V _{CC} = MAX, V _I = 2.7V					20	μA	
I _{IL}	Low-level input current	\overline{OE} , T/ \overline{R} only	V _{CC} = MAX, V _I = 0.5V					-1.2	mA	
I _{IH} +I _{OZH}	Off-state output current High-level voltage applied		V _{CC} = MAX, V _O = 2.7V					70	μA	
I _{IL} +I _{OZL}	Off-state output current Low-level voltage applied		V _{CC} = MAX, V _O = 0.5V					-600	μA	
I _{OS}	Short-circuit output current ³	A ₀ -A ₇	V _{CC} = MAX				-60		-150	mA
		B ₀ -B ₇					-100		-225	mA
I _{CC}	Supply current (total)	I _{CCH}	V _{CC} = MAX				60	87	mA	
		I _{CCL}					70	100	mA	
		I _{CCZ}					75	110	mA	

NOTES:

- For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions for the applicable type.
- All typical values are at V_{CC} = 5V, T_A = 25°C.
- Not more than one output should be shorted at a time. For testing I_{OS}, the use of high-speed test apparatus and/or sample-and-hold techniques are preferable in order to minimize internal heating and more accurately reflect operational values. Otherwise, prolonged shorting of a High output may raise the chip temperature well above normal and thereby cause invalid readings in other parameter tests. In any sequence of parameter test, I_{OS} tests should be performed last.

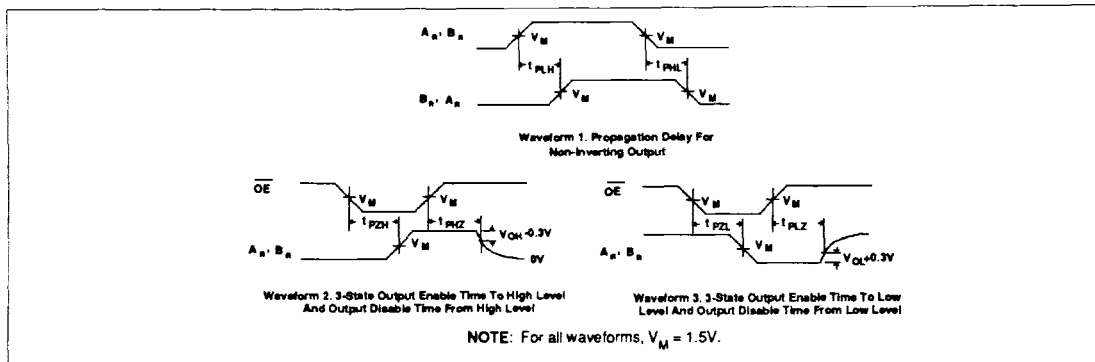
Transceiver

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AC ELECTRICAL CHARACTERISTICS

SYMBOL	PARAMETER	TEST CONDITION	LIMITS					UNIT
			$T_A = +25^\circ\text{C}$ $V_{CC} = 5\text{V}$ $C_L = 50\text{pF}$ $R_L = 500\Omega$			$T_A = 0^\circ\text{C to } +70^\circ\text{C}$ $V_{CC} = 5\text{V} \pm 10\%$ $C_L = 50\text{pF}$ $R_L = 500\Omega$		
			Min	Typ	Max	Min	Max	
t_{PLH} t_{PHL}	Propagation delay A_n to B_n , B_n to A_n	Waveform 1	2.5 2.5	3.5 4.0	6.0 6.0	2.5 2.5	7.0 7.0	ns
t_{PZH} t_{PZL}	Output Enable time to High or Low level	Waveform 2 Waveform 3	2.0 3.5	4.5 5.5	7.0 8.0	2.0 3.5	8.0 9.0	ns
t_{PHZ} t_{PLZ}	Output Disable time from High or Low level	Waveform 2 Waveform 3	2.5 1.0	5.0 3.5	6.5 6.0	2.0 1.0	7.5 7.0	ns

AC WAVEFORMS



TEST CIRCUIT AND WAVEFORMS

