

# 74FR245

## Octal Bidirectional Transceiver with TRI-STATE® Outputs

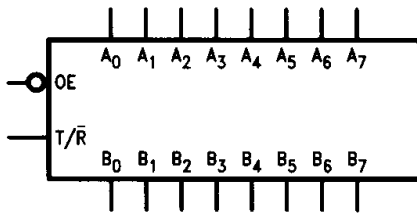
### General Description

The 74FR245 contains eight non-inverting bidirectional buffers with TRI-STATE outputs and is intended for bus-oriented applications. Current sinking capability is 64 mA on both the A and B ports. The Transmit/Receive ( $T/\bar{R}$ ) input determines the direction of data flow through the bidirectional transceiver. Transmit (active HIGH) enables data from A ports to B ports; Receive (active LOW) enables data from B ports to A ports. The Output Enable input, when HIGH, disables both A and B ports by placing them in a High Z condition.

### Features

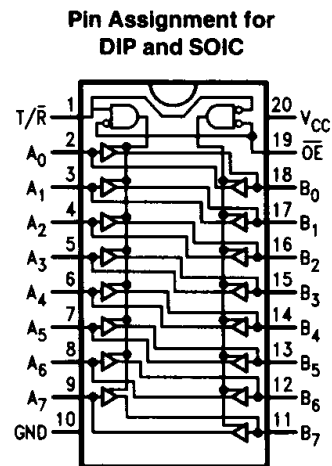
- Non-inverting buffers
- Bidirectional data path
- A and B output sink capability of 64 mA, source capability of 15 mA
- Guaranteed 4000V minimum ESD protection
- Guaranteed pin to pin skew

### Logic Symbol



TL/F/10887-1

### Connection Diagram



TL/F/10887-2

## Pin Descriptions

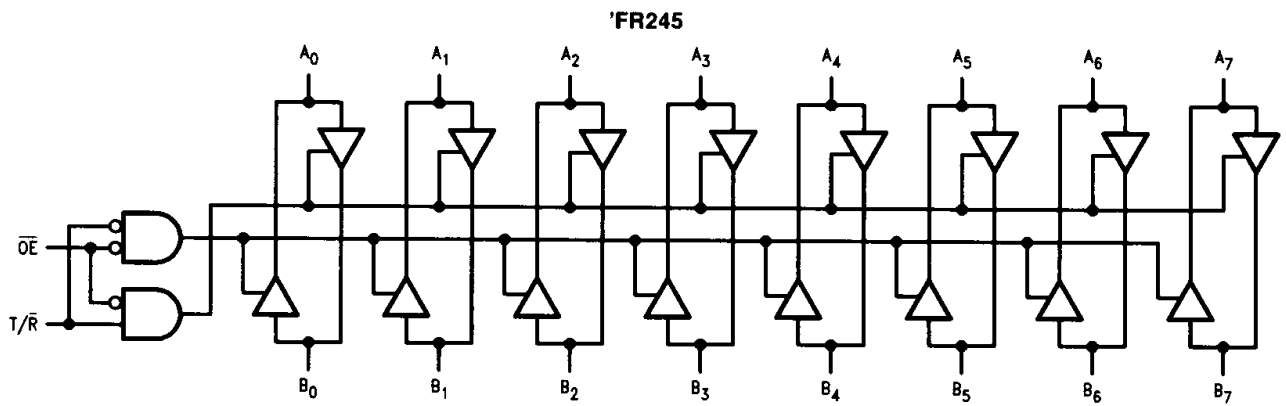
Pin Names	Description
$\overline{OE}$	Output Enable Input (Active LOW)
T/ $\overline{R}$	Transmit/Receive Input
A <sub>0</sub> -A <sub>7</sub>	Side A Inputs or TRI-STATE Outputs
B <sub>0</sub> -B <sub>7</sub>	Side B Inputs or TRI-STATE Outputs

## Truth Table

Inputs		Output
$\overline{OE}$	T/ $\overline{R}$	
L	L	Bus B Data to Bus A
L	H	Bus A Data to Bus B
H	X	High Z State

H = HIGH Voltage Level  
 L = LOW Voltage Level  
 X = Immaterial

## Logic Diagram



TL/F/10887-3



## AC Electrical Characteristics

Symbol	Parameter	74FR			74FR		Units
		$T_A = +25^\circ\text{C}$ $V_{CC} = +5.0\text{V}$ $C_L = 50\text{ pF}$			$T_A = \text{Comm}$ $V_{CC} = \text{Comm}$ $C_L = 50\text{ pF}$		
		Min	Typ	Max	Min	Max	
$t_{PLH}$ $t_{PHL}$	Propagation Delay $A_n$ to $B_n$ or $B_n$ to $A_n$	1.0 1.0	2.6 1.7	3.9 3.9	1.0 1.0	3.9 3.9	ns
$t_{PZH}$ $t_{PZL}$	Output Enable Time	2.5 2.5	5.0 4.3	7.0 7.0	2.5 2.5	7.0 7.0	ns
$t_{PHZ}$ $t_{PLZ}$	Output Disable Time	1.7 1.7	3.7 3.6	6.5 6.5	1.7 1.7	6.5 6.5	ns

## Extended AC Characteristics

Symbol	Parameter	74FR		74FR		Units
		$T_A = +25^\circ\text{C}$ $V_{CC} = \text{Comm}$ $C_L = 50\text{ pF}$ Eight Outputs Switching (Note 2)		$T_A = \text{Comm}$ $V_{CC} = \text{Comm}$ $C_L = 250\text{ pF}$ (Note 3)		
		Min	Max	Min	Max	
$t_{PLH}$ $t_{PHL}$	Propagation Delay $A_n$ to $B_n$ or $B_n$ to $A_n$	1.0 1.0	5.9 5.9	2.5 2.5	7.5 7.5	ns
$t_{PZH}$ $t_{PZL}$	Output Enable Time	2.5 2.5	11.9 11.9			ns
$t_{PHZ}$ $t_{PLZ}$	Output Disable Time	1.3 1.3	6.5 6.5			ns
$t_{OSHL}$ (Note 1)	Pin to Pin Skew for HL Transitions		TBD			ns
$t_{OSLH}$ (Note 1)	Pin to Pin Skew for LH Transitions		TBD			ns
$t_{OST}$ (Note 1)	Pin to Pin Skew for HL/LH Transitions		TBD			ns

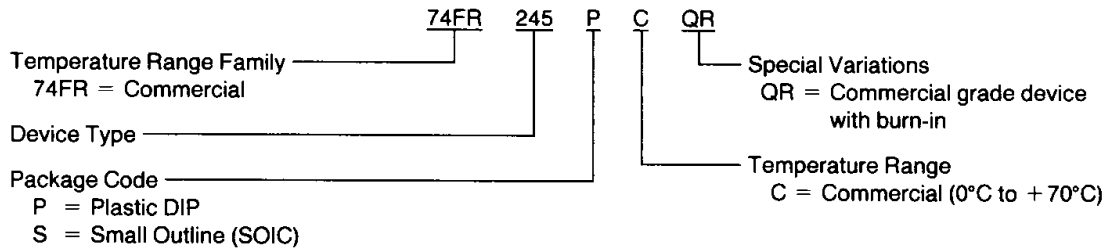
**Note 1:** Skew is defined as the absolute value of the difference between the actual propagation delays for any two outputs of the same device. The specification applies to any outputs switching high to low ( $t_{OSHL}$ ), low to high ( $t_{OSLH}$ ), or any combination of high to low and/or low to high ( $t_{OST}$ ).

**Note 2:** This specification is guaranteed but not tested. The limits apply to propagation delays for all paths described switching in phase, i.e., all low-to-high, high-to-low, TRI-STATE-to-high, etc.

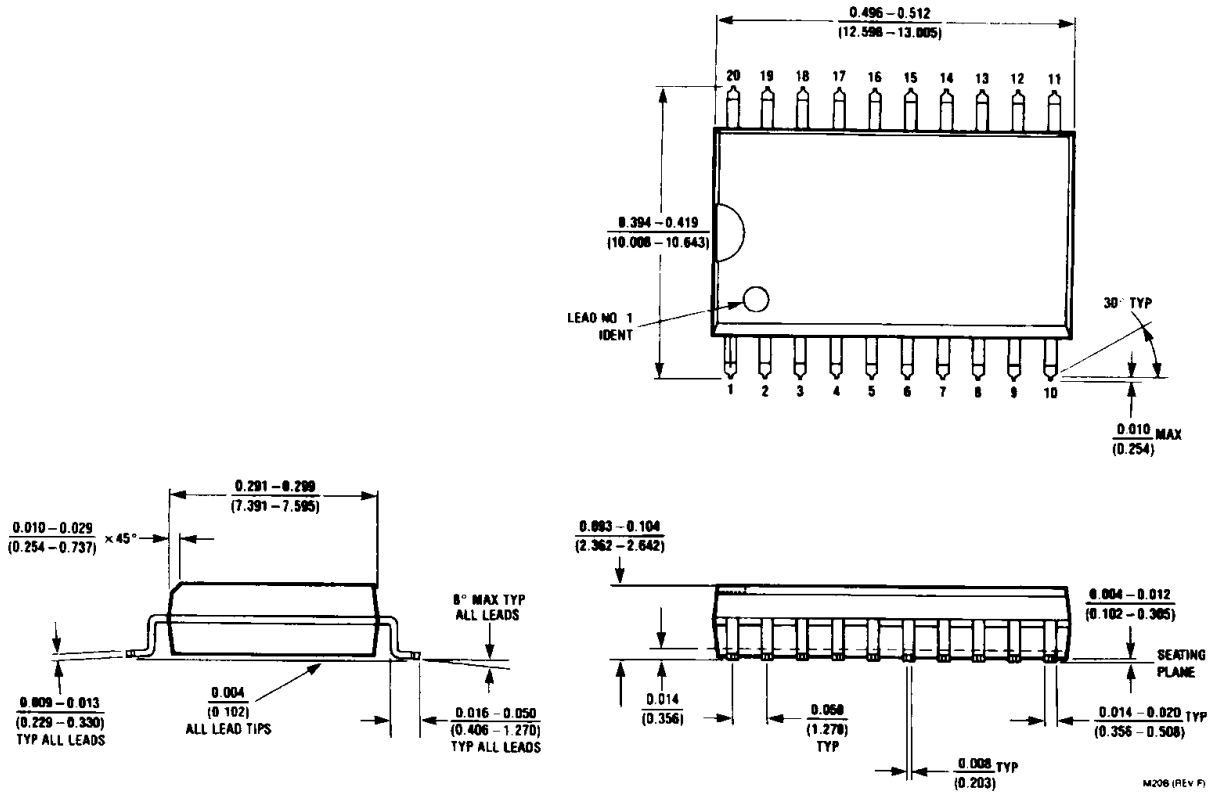
**Note 3:** These specifications guaranteed but not tested. The limits represent propagation delays with 250 pF load capacitors in place of the 50 pF load capacitors in the standard AC load. This specification pertains to single output switching only.

## Ordering Information

The device number is used to form part of a simplified purchasing code where the package type and temperature range are defined as follows:



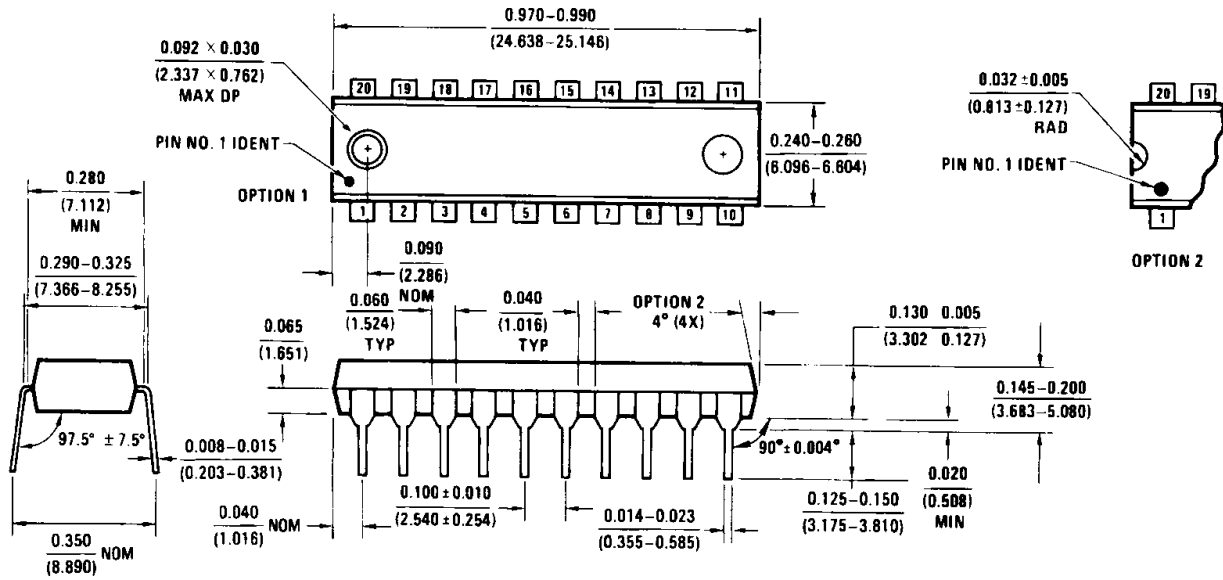
## Physical Dimensions inches (millimeters)



**20-Lead Small Outline Integrated Circuit (S)  
NS Package Number M20B**

**Physical Dimensions** inches (millimeters) (Continued)

Lit # 114630



**20-Lead Plastic Dual-In-Line Package (P)  
NS Package Number N20B**

N20B (REV A)

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