



**MOTOROLA**

*Product Preview*

**Octal Bidirectional Transceiver with 3-State Outputs**

The MC74AC643/74ACT643 octal bus transceiver is designed for asynchronous two-way communication between data buses. The device transmits data from bus A to bus B when  $T/\bar{R} = \text{HIGH}$ , or from bus B to bus A when  $T/\bar{R} = \text{LOW}$ . The enable input can be used to disable the device so the buses are effectively isolated.

- Noninverting Buffers
- Bidirectional Data Path
- A and B Outputs Sink 24 mA/Source - 24 mA
- \*ACT643 Has TTL Compatible Inputs

**PIN NAMES**

- $A_0$ - $A_7$  Side A Inputs or 3-State Outputs
- $\overline{OE}$  Output Enable Input
- $T/\bar{R}$  Transmit/Receive Input
- $B_0$ - $B_7$  Side B Inputs or 3-State Outputs

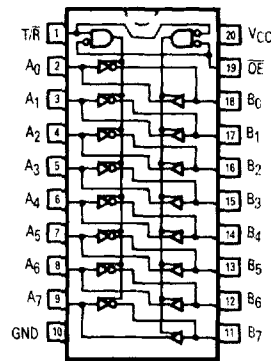
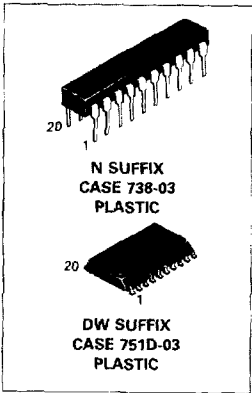
**TRUTH TABLE**

$\overline{OE}$	$T/\bar{R}$	Applied Inputs	Valid Direction I/P→O/P	Output
H	X	X	X	X
L	H	H	A to B	L
L	H	L	A to B	H
L	L	H	B to A	H
L	L	L	B to A	L

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

**MC74AC643  
 MC74ACT643**

**OCTAL BIDIRECTIONAL  
 TRANSCEIVER WITH  
 3-STATE OUTPUTS**



5

This document contains information on a product under development. Motorola reserves the right to change or discontinue this product without notice.

## MC74AC643 • MC74ACT643

### DC CHARACTERISTICS (unless otherwise specified)

Symbol	Parameter	Value	Units	Test Conditions
I <sub>CC</sub>	Maximum Quiescent Supply Current	80	μA	V <sub>IN</sub> = V <sub>CC</sub> or Ground, V <sub>CC</sub> = 5.5 V, T <sub>A</sub> = Worst Case
I <sub>CC</sub>	Maximum Quiescent Supply Current	8.0	μA	V <sub>IN</sub> = V <sub>CC</sub> or Ground, V <sub>CC</sub> = 5.5 V, T <sub>A</sub> = 25°C
I <sub>CC</sub> T	Maximum Additional I <sub>CC</sub> /Input (*ACT643)	1.5	mA	V <sub>IN</sub> = V <sub>CC</sub> - 2.1 V, V <sub>CC</sub> = 5.5 V, T <sub>A</sub> = Worst Case

### AC CHARACTERISTICS (For Figures and Waveforms — See Section 3)

Symbol	Parameter	V <sub>CC</sub> * (V)	74AC			74ACT		Units	Fig. No.
			T <sub>A</sub> = +25°C C <sub>L</sub> = 50 pF			T <sub>A</sub> = -40°C to +85°C C <sub>L</sub> = 50 pF			
			Min	Typ	Max	Min	Max		
t <sub>PLH</sub>	Propagation Delay A <sub>n</sub> to B <sub>n</sub> or B <sub>n</sub> to A <sub>n</sub>	3.3 5.0		5.5 4.0			ns	3-5	
t <sub>PHL</sub>	Propagation Delay A <sub>n</sub> to B <sub>n</sub> or B <sub>n</sub> to A <sub>n</sub>	3.3 5.0		5.5 4.0			ns	3-5	
t <sub>PZH</sub>	Output Enable Time	3.3 5.0		8.0 6.0			ns	3-7	
t <sub>PZL</sub>	Output Enable Time	3.3 5.0		7.5 5.5			ns	3-8	
t <sub>PHZ</sub>	Output Disable Time	3.3 5.0		7.0 6.0			ns	3-7	
t <sub>PLZ</sub>	Output Disable Time	3.3 5.0		7.5 6.0			ns	3-8	

\*Voltage Range 3.3 is 3.3 V ± 0.3 V  
Voltage Range 5.0 is 5.0 V ± 0.5 V

### AC CHARACTERISTICS (For Figures and Waveforms — See Section 3)

Symbol	Parameter	V <sub>CC</sub> * (V)	74ACT			74ACT		Units	Fig. No.
			T <sub>A</sub> = +25°C C <sub>L</sub> = 50 pF			T <sub>A</sub> = -40°C to +85°C C <sub>L</sub> = 50 pF			
			Min	Typ	Max	Min	Max		
t <sub>PLH</sub>	Propagation Delay A <sub>n</sub> to B <sub>n</sub> or B <sub>n</sub> to A <sub>n</sub>	5.0		5.0			ns	3-5	
t <sub>PHL</sub>	Propagation Delay A <sub>n</sub> to B <sub>n</sub> or B <sub>n</sub> to A <sub>n</sub>	5.0		5.0			ns	3-5	
t <sub>PZH</sub>	Output Enable Time	5.0		7.0			ns	3-7	
t <sub>PZL</sub>	Output Enable Time	5.0		6.0			ns	3-8	
t <sub>PHZ</sub>	Output Disable Time	5.0		6.5			ns	3-7	
t <sub>PLZ</sub>	Output Disable Time	5.0		6.0			ns	3-8	

\*Voltage Range 5.0 is 5.0 V ± 0.5 V

### CAPACITANCE

Symbol	Parameter	Value Typ	Units	Test Conditions
C <sub>IN</sub>	Input Capacitance	4.5	pF	V <sub>CC</sub> = 5.0 V
C <sub>I/O</sub>	Input/Output Capacitance	15	pF	V <sub>CC</sub> = 5.0 V
C <sub>PD</sub>	Power Dissipation Capacitance		pF	V <sub>CC</sub> = 5.0 V