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54AC/74AC640 • 54ACT/74ACT640

T-52-31

Octal Bidirectional Transceiver With 3-State Outputs

Description

The 'AC/'ACT640 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/$\overline{R}$ = HIGH, or from bus B to bus A when T/$\overline{R}$ = LOW. The enable input can be used to disable the device so the buses are effectively isolated.

- **Bidirectional Data Path**
- **A and B Outputs Sink 24 mA/Source -24 mA**
- **'ACT640 has TTL-Compatible Inputs**

Ordering Code: See Section 6

Pin Names

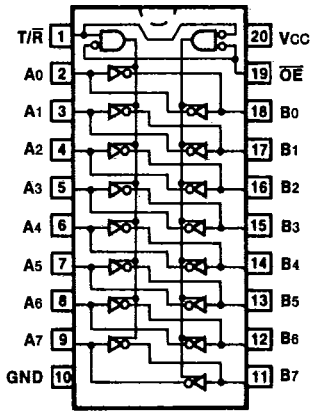
A_0 - A_7	Side A Inputs or 3-State Outputs
$\overline{OE}$	Output Enable Input
T/$\overline{R}$	Transmit/Receive Input
B_0 - B_7	Side B Inputs or 3-State Outputs

Truth Table

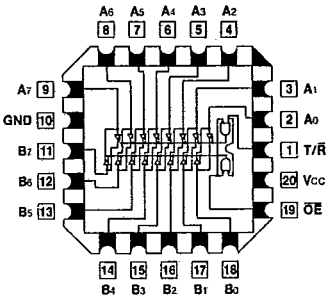
$\overline{OE}$	T/$\overline{R}$	Applied Inputs	Valid Direction I/P→O/P	Output
H	X	X	X	X
L	H	H	A to B	L
L	H	L	A to B	H
L	L	H	B to A	L
L	L	L	B to A	H

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

Connection Diagrams



Pin Assignment for DIP, Flatpak and SOIC



Pin Assignment for LCC

DC Characteristics (unless otherwise specified)

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Symbol	Parameter	54AC/ACT	74AC/ACT	Units	Conditions
I_{CC}	Maximum Quiescent Supply Current	160	80	μA	$V_{IN} = V_{CC}$ or Ground, $V_{CC} = 5.5$ V, T_A = Worst Case
I_{CC}	Maximum Quiescent Supply Current	8.0	8.0	μA	$V_{IN} = V_{CC}$ or Ground, $V_{CC} = 5.5$ V, $T_A = 25°C$
I_{CCT}	Maximum Additional Icc/Input ('ACT640)	1.6	1.5	mA	$V_{IN} = V_{CC} - 2.1$ V, $V_{CC} = 5.5$ V, T_A = Worst Case

AC Characteristics

Symbol	Parameter	Vcc* (V)	74AC $T_A = +25°C$, $C_L = 50$ pF			54AC $T_A = -55°C$ to $+125°C$, $C_L = 50$ pF		74AC $T_A = -40°C$ to $+85°C$, $C_L = 50$ pF		Units	Fig. No.
			Min	Typ	Max	Min	Max	Min	Max		
t_{PLH}	Propagation Delay A_n to B_n or B_n to A_n	3.3 5.0		5.5 4.0						ns	3-5
t_{PHL}	Propagation Delay A_n to B_n or B_n to A_n	3.3 5.0		5.5 4.0						ns	3-5
t_{PZH}	Output Enable Time	3.3 5.0		8.0 6.0						ns	3-7
t_{PZL}	Output Enable Time	3.3 5.0		7.5 5.5						ns	3-8
t_{PHZ}	Output Disable Time	3.3 5.0		7.0 6.0						ns	3-7
t_{PLZ}	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

Military parameters given herein are for general references only. For current military specifications and subgroup testing information please request Fairchild's Table I data sheet from your Fairchild sales engineer or account representative.

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AC Characteristics

Symbol	Parameter	Vcc* (V)	74ACT $T_A = +25°C$, $C_L = 50$ pF			54ACT $T_A = -55°C$ to $+125°C$, $C_L = 50$ pF		74ACT $T_A = -40°C$ to $+85°C$, $C_L = 50$ pF		Units	Fig. No.
			Min	Typ	Max	Min	Max	Min	Max		
t_{PLH}	Propagation Delay A_n to B_n or B_n to A_n	5.0		5.0						ns	3-5
t_{PHL}	Propagation Delay A_n to B_n or B_n to A_n	5.0		5.0						ns	3-5
t_{PZH}	Output Enable Time	5.0		7.0						ns	3-7
t_{PZL}	Output Enable Time	5.0		6.0						ns	3-8
t_{PHZ}	Output Disable Time	5.0		6.5						ns	3-7
t_{PLZ}	Output Disable Time	5.0		6.0						ns	3-8

*Voltage Range 5.0 is 5.0 V ± 0.5 V

Military parameters given herein are for general references only. For current military specifications and subgroup testing information please request Fairchild's Table I data sheet from your Fairchild sales engineer or account representative.

Capacitance

Symbol	Parameter	54/74AC/ACT Typ	Units	Conditions
C_{IN}	Input Capacitance	4.5	pF	$V_{CC} = 5.5$ V
$C_{I/O}$	Input/Output Capacitance	15.0	pF	$V_{CC} = 5.5$ V
C_{PD}	Power Dissipation Capacitance		pF	$V_{CC} = 5.5$ V