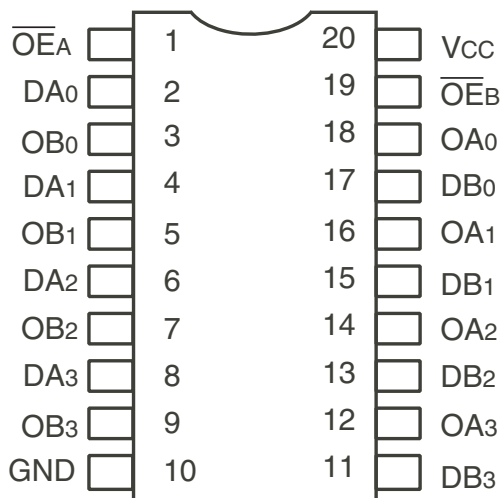
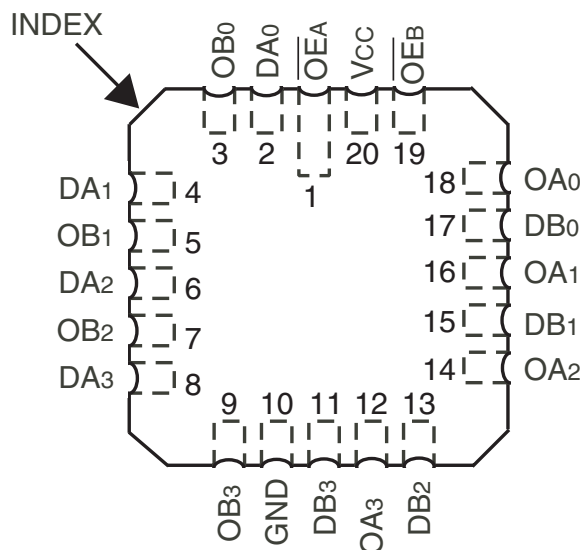


PIN CONFIGURATION



CERDIP/ SOIC/ SSOP/ QSOP/ TSSOP
TOP VIEW



LCC
TOP VIEW

ABSOLUTE MAXIMUM RATINGS⁽¹⁾

Symbol	Description	Max	Unit
V _{TERM} ⁽²⁾	Terminal Voltage with Respect to GND	-0.5 to +7	V
V _{TERM} ⁽³⁾	Terminal Voltage with Respect to GND	-0.5 to V _{CC} +0.5	V
T _{STG}	Storage Temperature	-65 to +150	°C
I _{OUT}	DC Output Current	-60 to +120	mA

NOTES:

- Stresses greater than those listed under ABSOLUTE MAXIMUM RATINGS may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect reliability. No terminal voltage may exceed V_{CC} by +0.5V unless otherwise noted.
- Inputs and V_{CC} terminals only.
- Output and I/O terminals only.

CAPACITANCE (T_A = +25°C, F = 1.0MHz)

Symbol	Parameter ⁽¹⁾	Conditions	Typ.	Max.	Unit
C _{IN}	Input Capacitance	V _{IN} = 0V	6	10	pF
C _{OUT}	Output Capacitance	V _{OUT} = 0V	8	12	pF

NOTE:

- This parameter is measured at characterization but not tested.

PIN DESCRIPTION

Pin Names	Description
\overline{OE}_A , \overline{OE}_B	3-State Output Enable Inputs (Active LOW)
D _{xx}	Inputs
O _{xx}	Outputs

FUNCTION TABLE⁽¹⁾

Inputs			Outputs
\overline{OE}_A	\overline{OE}_B	D	
L	L	L	L
L	L	H	H
H	H	X	Z

NOTE:

- H = HIGH Voltage Level
X = Don't Care
L = LOW Voltage Level
Z = High Impedance

DC ELECTRICAL CHARACTERISTICS OVER OPERATING RANGE

Following Conditions Apply Unless Otherwise Specified:

Industrial: $T_A = -40^{\circ}\text{C}$ to $+85^{\circ}\text{C}$, $V_{CC} = 5.0\text{V} \pm 5\%$; Military: $T_A = -55^{\circ}\text{C}$ to $+125^{\circ}\text{C}$, $V_{CC} = 5.0\text{V} \pm 10\%$

Symbol	Parameter	Test Conditions ⁽¹⁾		Min.	Typ. ⁽²⁾	Max.	Unit
V_{IH}	Input HIGH Level	Guaranteed Logic HIGH Level		2	—	—	V
V_{IL}	Input LOW Level	Guaranteed Logic LOW Level		—	—	0.8	V
I_{IH}	Input HIGH Current ⁽⁴⁾	$V_{CC} = \text{Max.}$	$V_I = 2.7\text{V}$	—	—	± 1	μA
I_{IL}	Input LOW Current ⁽⁴⁾	$V_{CC} = \text{Max.}$	$V_I = 0.5\text{V}$	—	—	± 1	μA
I_{OZH}	High Impedance Output Current (3-State output pins) ⁽⁴⁾	$V_{CC} = \text{Max.}$	$V_O = 2.7\text{V}$	—	—	± 1	μA
I_{OZL}			$V_O = 0.5\text{V}$	—	—	± 1	
I_I	Input HIGH Current ⁽⁴⁾	$V_{CC} = \text{Max.}, V_I = V_{CC} (\text{Max.})$		—	—	± 1	μA
V_{IK}	Clamp Diode Voltage	$V_{CC} = \text{Min.}, I_{IN} = -18\text{mA}$		—	-0.7	-1.2	V
V_H	Input Hysteresis	—		—	200	—	mV
I_{CC}	Quiescent Power Supply Current	$V_{CC} = \text{Max.}, V_{IN} = \text{GND or } V_{CC}$		—	0.01	1	mA

OUTPUT DRIVE CHARACTERISTICS

Symbol	Parameter	Test Conditions ⁽¹⁾		Min.	Typ. ⁽²⁾	Max.	Unit
V_{OH}	Output HIGH Voltage	$V_{CC} = \text{Min.}$ $V_{IN} = V_{IH} \text{ or } V_{IL}$	$I_{OH} = -6\text{mA MIL}$ $I_{OH} = -8\text{mA IND}$	2.4	3.3	—	V
			$I_{OH} = -12\text{mA MIL}$ $I_{OH} = -15\text{mA IND}$	2	3	—	
V_{OL}	Output LOW Voltage	$V_{CC} = \text{Min.}$ $V_{IN} = V_{IH} \text{ or } V_{IL}$	$I_{OL} = 48\text{mA MIL}$ $I_{OL} = 64\text{mA IND}$	—	0.3	0.55	V
I_{OS}	Short Circuit Current	$V_{CC} = \text{Max.}, V_O = \text{GND}^{(3)}$		-60	-120	-225	mA

NOTES:

- For conditions shown as Min. or Max., use appropriate value specified under Electrical Characteristics for the applicable device type.
- Typical values are at $V_{CC} = 5.0\text{V}$, $+25^{\circ}\text{C}$ ambient.
- Not more than one output should be tested at one time. Duration of the test should not exceed one second.
- The test limit for this parameter is $\pm 5\mu\text{A}$ at $T_A = -55^{\circ}\text{C}$.

POWER SUPPLY CHARACTERISTICS

Symbol	Parameter	Test Conditions ⁽¹⁾		Min.	Typ. ⁽²⁾	Max.	Unit
ΔI_{CC}	Quiescent Power Supply Current TTL Inputs HIGH	$V_{CC} = \text{Max.}$ $V_{IN} = 3.4V^{(3)}$		—	0.5	2	mA
I_{CCD}	Dynamic Power Supply Current ⁽⁴⁾	$V_{CC} = \text{Max.}$ Outputs Open $\overline{OE}_A = \overline{OE}_B = \text{GND}$ One Input Toggling 50% Duty Cycle	$V_{IN} = V_{CC}$ $V_{IN} = \text{GND}$	—	0.15	0.25	mA/ MHz
I_C	Total Power Supply Current ⁽⁶⁾	$V_{CC} = \text{Max.}$ Outputs Open $f_i = 10\text{MHz}$ 50% Duty Cycle $\overline{OE}_A = \overline{OE}_B = \text{GND}$ One Bit Toggling	$V_{IN} = V_{CC}$ $V_{IN} = \text{GND}$	—	1.5	3.5	mA
			$V_{IN} = 3.4V$ $V_{IN} = \text{GND}$	—	1.8	4.5	
		$V_{CC} = \text{Max.}$ Outputs Open $f_i = 2.5\text{MHz}$ 50% Duty Cycle $\overline{OE}_A = \overline{OE}_B = \text{GND}$ Eight Bits Toggling	$V_{IN} = V_{CC}$ $V_{IN} = \text{GND}$	—	3	6 ⁽⁵⁾	
			$V_{IN} = 3.4V$ $V_{IN} = \text{GND}$	—	5	14 ⁽⁵⁾	

NOTES:

- For conditions shown as Min. or Max., use appropriate value specified under Electrical Characteristics for the applicable device type.
- Typical values are at $V_{CC} = 5.0V$, $+25^\circ\text{C}$ ambient.
- Per TTL driven input; ($V_{IN} = 3.4V$). All other inputs at V_{CC} or GND.
- This parameter is not directly testable, but is derived for use in Total Power Supply Calculations.
- Values for these conditions are examples of ΔI_{CC} formula. These limits are guaranteed but not tested.
- $I_C = I_{QUIESCENT} + I_{INPUTS} + I_{DYNAMIC}$
 $I_C = I_{CC} + \Delta I_{CC} \text{DH}Nt + I_{CCD} (f_{CP}/2 + f_i N_i)$
 $I_{CC} = \text{Quiescent Current}$
 $\Delta I_{CC} = \text{Power Supply Current for a TTL High Input } (V_{IN} = 3.4V)$
 $DH = \text{Duty Cycle for TTL Inputs High}$
 $Nt = \text{Number of TTL Inputs at } DH$
 $I_{CCD} = \text{Dynamic Current caused by an Input Transition Pair (HLH or LHL)}$
 $f_{CP} = \text{Clock Frequency for Register Devices (Zero for Non-Register Devices)}$
 $f_i = \text{Output Frequency}$
 $N_i = \text{Number of Outputs at } f_i$

All currents are in milliamps and all frequencies are in megahertz.

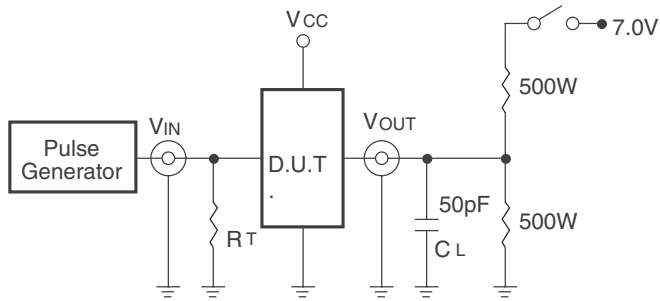
SWITCHING CHARACTERISTICS OVER OPERATING RANGE

Symbol	Parameter	Condition ⁽¹⁾	54FCT244T		54/74FCT244AT				54/74FCT244CT				Unit
			Mil.		Ind.		Mil.		Ind.		Mil.		
			Min. ⁽²⁾	Max.	Min. ⁽²⁾	Max.	Min. ⁽²⁾	Max.	Min. ⁽²⁾	Max.	Min. ⁽²⁾	Max.	
t_{PLH}	Propagation Delay	$C_L = 50\text{pF}$ $R_L = 500\Omega$	1.5	7	1.5	4.8	1.5	5.1	1.5	4.1	1.5	4.6	ns
t_{PHL}	Dx to Ox												
t_{PZH}	Output Enable Time		1.5	8.5	1.5	6.2	1.5	6.5	1.5	5.8	1.5	6.5	
t_{PZL}	Output Disable Time												
t_{PHZ}	Output Disable Time												
t_{PLZ}	Output Disable Time												

NOTES:

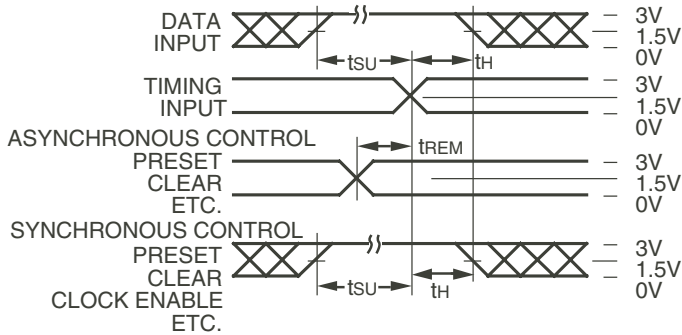
- See test circuit and waveforms.
- Minimum limits are guaranteed but not tested on Propagation Delays.

TEST CIRCUITS AND WAVEFORMS



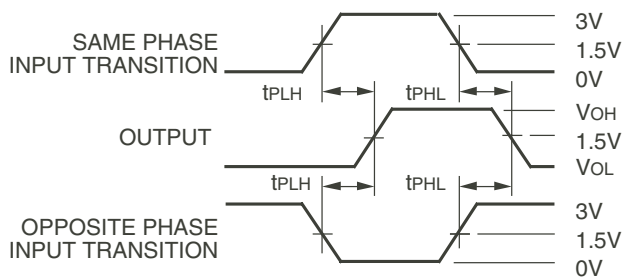
Octal Link

Test Circuits for All Outputs



Octal Link

Set-Up, Hold, and Release Times



Octal Link

Propagation Delay

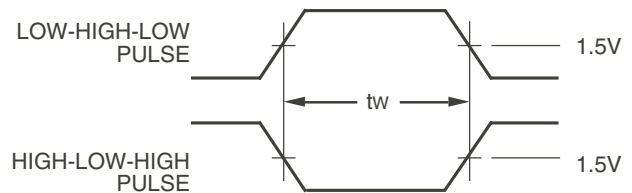
SWITCH POSITION

Test	Switch
Open Drain Disable Low Enable Low	Closed
All Other Tests	Open

DEFINITIONS:

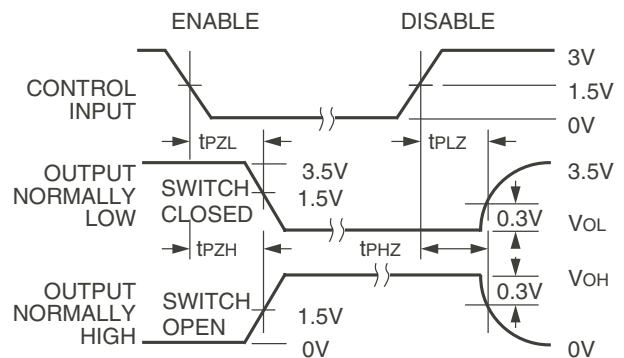
C_L = Load capacitance: includes jig and probe capacitance.

R_T = Termination resistance: should be equal to Z_{OUT} of the Pulse Generator.



Pulse Width

Octal Link



Octal Link

Enable and Disable Times

NOTES:

- Diagram shown for input Control Enable-LOW and input Control Disable-HIGH.
- Pulse Generator for All Pulses: Rate $\leq 1.0\text{MHz}$; $t_r \leq 2.5\text{ns}$; $t_f \leq 2.5\text{ns}$.

ORDERING INFORMATION

XX	FCT	XXXX	XX	X	
Temp. Range		Device Type	Package	Process	
				Blank	Industrial
				B	MIL-STD-883, Class B
					<u>Industrial Options</u>
				SOG	Small Outline IC - Green
				PYG	Shrink Small Outline Package - Green
				QG	Quarter-size Small Outline Package - Green
				PGG	Thin Shrink Small Outline Package - Green
					<u>Military Options</u>
				D	CERDIP
				L	Leadless Chip Carrier
				244T	Fast CMOS Octal Buffer/Line Driver
				244AT	
				244CT	
				54	- 55°C to +125°C
				74	- 40°C to +85°C

Datasheet Document History

09/29/09 Pg. 6 Updated the ordering information by removing the "IDT" notation and non RoHS part.



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