

**FAIRCHILD**  
SEMICONDUCTOR™

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## DM74LS365A Hex 3-STATE Buffer/Bus Driver

### General Description

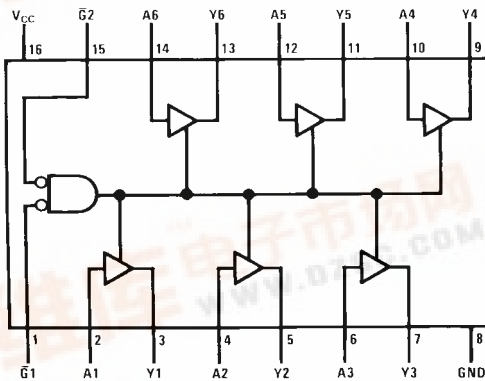
This device contains six independent gates each of which performs a non-inverting buffer function. The outputs have the 3-STATE feature. When enabled, the outputs exhibit the low impedance characteristics of a standard LS output with additional drive capability to permit the driving of bus lines without external resistors. When disabled, both the output transistors are turned OFF presenting a high-impedance state to the bus line. Thus the output will act neither as a significant load nor as a driver. To minimize the possibility that two outputs will attempt to take a common bus to opposite logic levels, the disable time is shorter than the enable time of the outputs.

### Ordering Code:

Order Number	Package Number	Package Description
DM74LS365AM	M16A	16-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-012, 0.150 Narrow
DM74LS365AN	N16E	16-Lead Plastic Dual-In-Line Package (PDIP), JEDEC MS-001, 0.300 Wide

Devices also available in Tape and Reel. Specify by appending the suffix letter "X" to the ordering code.

### Connection Diagram



### Function Table

$$Y = A$$

Input			Output
G1	G2	A	Y
H	X	X	Hi-Z
X	H	X	Hi-Z
L	L	H	H
L	L	L	L

H = HIGH Logic Level  
L = LOW Logic Level  
X = Either LOW or HIGH Logic Level  
Hi-Z = 3-STATE (Outputs are disabled)

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DM74LS365A

### Absolute Maximum Ratings (Note 1)

Supply Voltage	7V
Input Voltage	7V
Operating Free Air Temperature Range	0°C to +70°C
Storage Temperature Range	-65°C to +150°C

**Note 1:** The "Absolute Maximum Ratings" are those values beyond which the safety of the device cannot be guaranteed. The device should not be operated at these limits. The parametric values defined in the Electrical Characteristics tables are not guaranteed at the absolute maximum ratings. The "Recommended Operating Conditions" table will define the conditions for actual device operation.

### Recommended Operating Conditions

Symbol	Parameter	Min	Nom	Max	Units
V <sub>CC</sub>	Supply Voltage	4.75	5	5.25	V
V <sub>IH</sub>	HIGH Level Input Voltage	2			V
V <sub>IL</sub>	LOW Level Input Voltage			0.8	V
I <sub>OH</sub>	HIGH Level Output Current			-2.6	mA
I <sub>OL</sub>	LOW Level Output Current			24	mA
T <sub>A</sub>	Free Air Operating Temperature	0		70	°C

### Electrical Characteristics

over recommended operating free air temperature range (unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ (Note 2)	Max	Units	
V <sub>I</sub>	Input Clamp Voltage	V <sub>CC</sub> = Min, I <sub>I</sub> = -18 mA			-1.5	V	
V <sub>OH</sub>	HIGH Level Output Voltage	V <sub>CC</sub> = Min, I <sub>OH</sub> = Max V <sub>IL</sub> = Max, V <sub>IH</sub> = Min	2.4	3.4		V	
V <sub>OL</sub>	LOW Level Output Voltage	V <sub>CC</sub> = Min, I <sub>OL</sub> = Max V <sub>IL</sub> = Max, V <sub>IH</sub> = Min		0.35	0.5	V	
		I <sub>OL</sub> = 12 mA, V <sub>CC</sub> = Min		0.25	0.4		
I <sub>I</sub>	Input Current @ Max Input Voltage	V <sub>CC</sub> = Max, V <sub>I</sub> = 7V			0.1	mA	
I <sub>IH</sub>	HIGH Level Input Current	V <sub>CC</sub> = Max, V <sub>I</sub> = 2.7V			20	μA	
I <sub>IL</sub>	LOW Level Input Current	V <sub>CC</sub> = Max, V <sub>I</sub> = 0.5V (Note 3)	A Input			-20	mA
		V <sub>CC</sub> = Max, V <sub>I</sub> = 0.4V (Note 4)	A Input			-0.4	
		V <sub>CC</sub> = Max, V <sub>I</sub> = 0.4V	$\bar{G}$ Input			-0.4	
I <sub>OZH</sub>	Off-State Output Current with HIGH Level Output Voltage Applied	V <sub>CC</sub> = Max, V <sub>O</sub> = 2.4V V <sub>IH</sub> = Min, V <sub>IL</sub> = Max			20	μA	
I <sub>OZL</sub>	Off-State Output Current with LOW Level Output Voltage Applied	V <sub>CC</sub> = Max, V <sub>O</sub> = 0.4V V <sub>IH</sub> = Min, V <sub>IL</sub> = Max			-20	μA	
I <sub>OS</sub>	Short Circuit Output Current	V <sub>CC</sub> = Max (Note 5)	-20		-100	mA	
I <sub>CC</sub>	Supply Current	V <sub>CC</sub> = Max (Note 6)		14	24	mA	

**Note 2:** All typicals are at V<sub>CC</sub> = 5V, T<sub>A</sub> = 25°C.

**Note 3:** Both  $\bar{G}$  inputs are at 2V.

**Note 4:** Both  $\bar{G}$  inputs at 0.4V.

**Note 5:** Not more than one output should be shorted at a time, and the duration should not exceed one second.

**Note 6:** I<sub>CC</sub> is measured with the DATA inputs grounded and the OUTPUT CONTROLS at 4.5V.

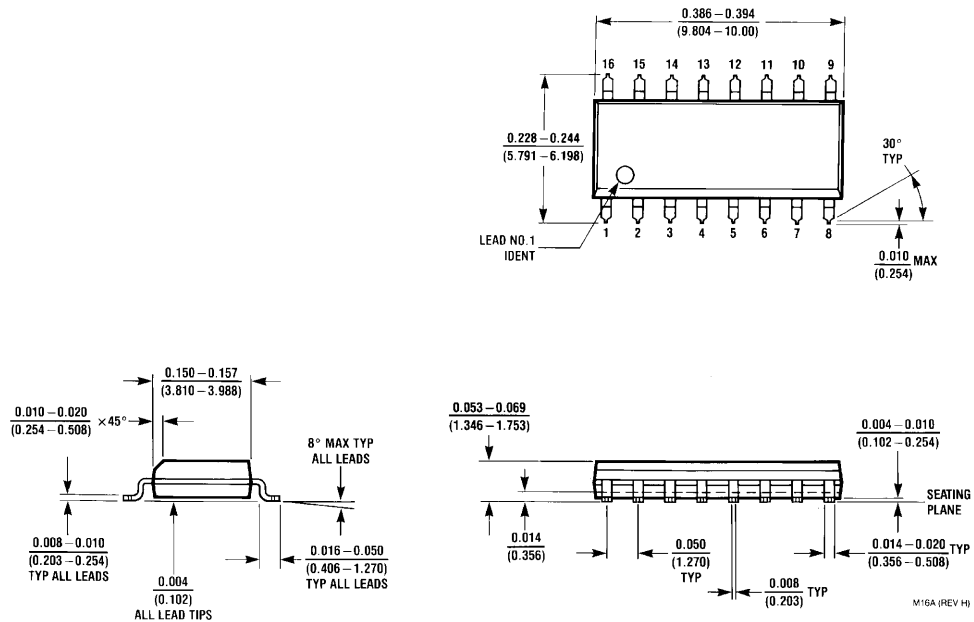
### Switching Characteristics

at V<sub>CC</sub> = 5V and T<sub>A</sub> = 25°C

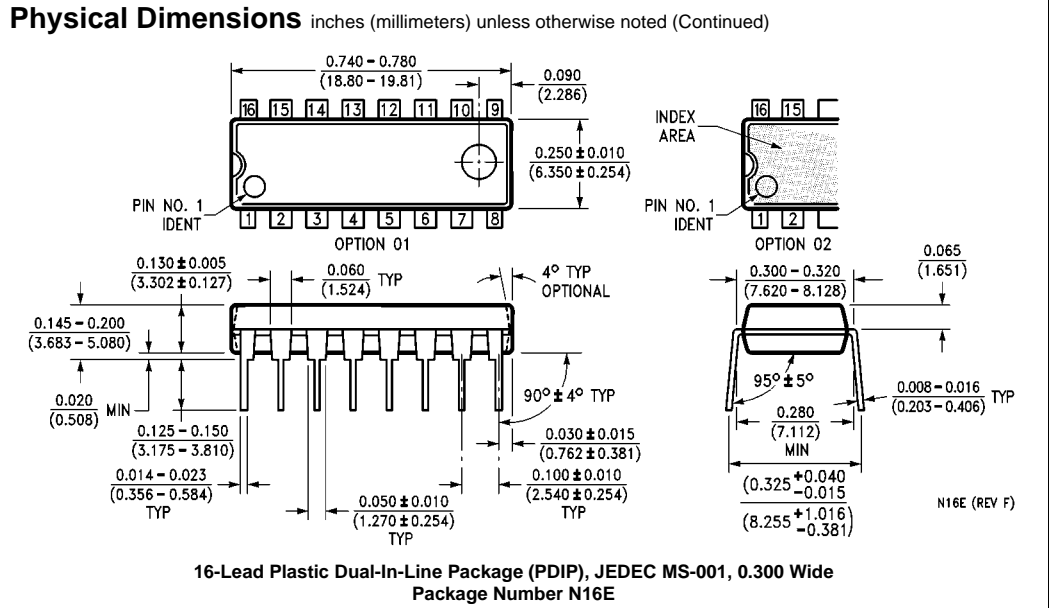
Symbol	Parameter	R <sub>L</sub> = 667Ω				Units
		C <sub>L</sub> = 50 pF		C <sub>L</sub> = 150 pF		
		Min	Max	Min	Max	
t <sub>PLH</sub>	Propagation Delay Time LOW-to-HIGH Level Output		16		25	ns
t <sub>PHL</sub>	Propagation Delay Time HIGH-to-LOW Level Output		16		25	ns
t <sub>PZH</sub>	Output Enable Time to HIGH Level Output		30		40	ns
t <sub>PZL</sub>	Output Enable Time to LOW Level Output		30		40	ns
t <sub>PHZ</sub>	Output Disable Time from HIGH Level Output (Note 7)		20			ns
t <sub>PLZ</sub>	Output Disable Time from LOW Level Output (Note 7)		20			ns

**Note 7:** C<sub>L</sub> = 5 pF.

**Physical Dimensions** inches (millimeters) unless otherwise noted



**16-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-012, 0.150 Narrow Package Number M16A**



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