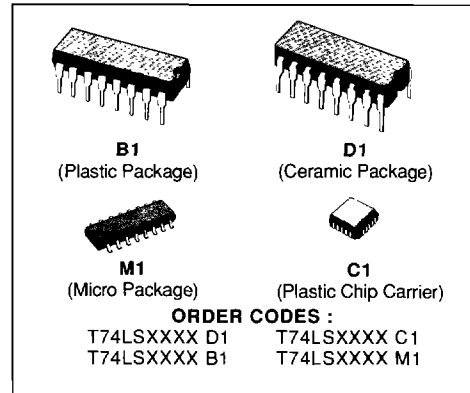


## 3-STATE HEX BUFFERS

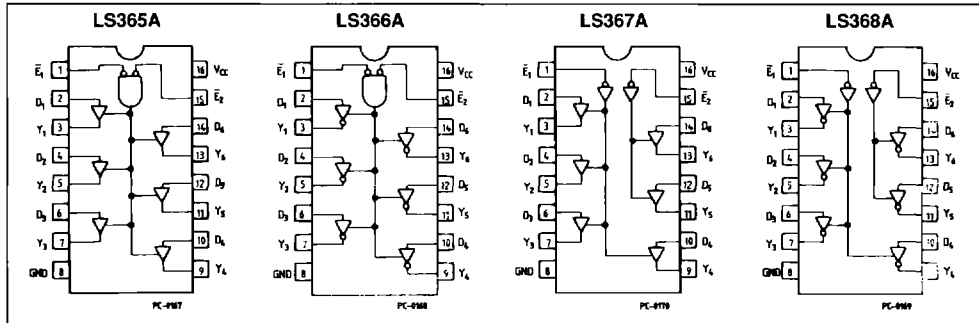
### DESCRIPTION

These devices are high-speed Hex Buffers with 3-state outputs. They are organized as single 6-bit or 2-bit/4-bit, with inverting or non-inverting data (D) paths. The outputs are designed to drive 15 TTL Unit Loads or 60 Low Power Schottky loads when the Enable ( $\bar{E}$ ) is LOW.

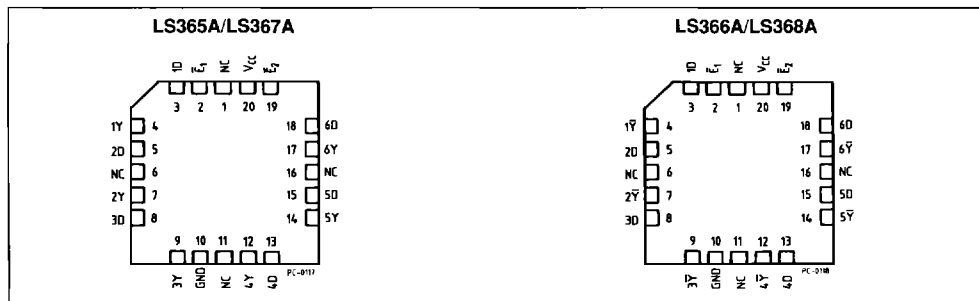
When the output Enable input ( $\bar{E}$ ) is HIGH, the outputs are forced to a high impedance "off" state. If the outputs of the 3-state devices are tied together, all but one device must be in the high impedance state to avoid high currents that would exceed the maximum ratings. Designers should ensure that Output Enable signals to 3-state devices, whose outputs are tied together, are designed so there is no overlap.



### PIN CONNECTION (top view) DUAL IN LINE



### CHIP CARRIER



TRUTH TABLES

LS365A				LS366A			
Inputs			Output	Inputs			Output
$\bar{E}_1$	$\bar{E}_2$	D		$\bar{E}_1$	$\bar{E}_2$	D	
L	L	L	L	L	L	H	
L	L	H	L	L	H	L	
H	X	X	(Z)	H	X	(Z)	
X	H	X	(Z)	X	H	(Z)	
LS367A				LS368A			
Inputs		Output	Inputs		Output		
$\bar{E}$	D		$\bar{E}$	D			
L	L	L	L	L	H		
L	H	H	L	H	L		
H	X	(Z)	H	X	(Z)		

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
$V_{CC}$	Supply Voltage	- 0.5 to 7	V
$V_I$	Input Voltage, Applied to Input	- 0.5 to 15	V
$V_O$	Output Voltage, Applied to Output	0 to 10	V
$I_I$	Input Current, into Inputs	- 30 to 5	mA
$I_O$	Output Current, into Outputs	50	mA

Stresses in excess of those listed "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 in excess of those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

GUARANTEED OPERATING RANGE

Part Numbers	Supply Voltage			Temperature
	Min.	Typ.	Max.	
T74LS365A/366A/367A/368AXX	4.75 V	5.0 V	5.25 V	0 °C to + 70 °C

XX = Package type.

## DC CHARACTERISTICS OVER OPERATING TEMPERATURE RANGE

Symbol	Parameter		Limits			Test Condition (note 1)	Unit	
			Min.	Typ. (*)	Max.			
V <sub>IH</sub>	Input HIGH Voltage		2.0			Guaranteed Input HIGH Voltage for All Inputs	V	
V <sub>IL</sub>	Input LOW Voltage				0.8	Guaranteed Input LOW Voltage for All Inputs	V	
V <sub>CD</sub>	Input Clamp Diode Voltage			- 0.65	- 1.5	V <sub>CC</sub> = MIN, I <sub>IN</sub> = -18 mA	V	
V <sub>OH</sub>	Output HIGH Voltage		2.4	3.1		V <sub>CC</sub> = MIN, I <sub>OH</sub> = - 2.6 mA V <sub>IN</sub> = V <sub>IH</sub> or V <sub>IL</sub> per Truth Table	V	
V <sub>OL</sub>	Output LOW Voltage			0.25	0.4	I <sub>OL</sub> = 12 mA	V <sub>CC</sub> = MIN, V <sub>IN</sub> = V <sub>IH</sub> or V <sub>IL</sub> per Truth Table	V
				0.35	0.5	I <sub>OL</sub> = 24 mA		V
I <sub>OZH</sub>	Output Off Current HIGH				20	V <sub>CC</sub> = MAX, V <sub>OUT</sub> = 2.7 V V <sub>E</sub> = 2.0 V	μA	
I <sub>OZL</sub>	Output Off Current LOW				- 20	V <sub>CC</sub> = MAX, V <sub>IN</sub> = 0.4 V V <sub>E</sub> = 2.0 V	μA	
I <sub>IH</sub>	Input HIGH Current				20 0.1	V <sub>CC</sub> = MAX, V <sub>IN</sub> = 2.7 V V <sub>CC</sub> = MAX, V <sub>IN</sub> = 7.0 V	μA	
I <sub>IL</sub>	Input LOW Current	D Inputs			- 20	V <sub>CC</sub> = MAX, V <sub>IN</sub> = 0.5 V Either E Input at 2 V	mA	
					- 0.4	V <sub>CC</sub> = MAX, V <sub>IN</sub> = 0.4 V Both E Inputs at 0.4 V	mA	
		E Inputs			- 0.4		mA	
I <sub>OS</sub>	Output Short Circuit Current (note 2)		- 40		- 225	V <sub>CC</sub> = MAX, V <sub>OUT</sub> = 0 V	mA	
I <sub>CC</sub>	Power Supply Current	LS365A/367A		13.5	24	V <sub>CC</sub> = MAX, V <sub>IN</sub> = 0.4 V V <sub>E</sub> = 4.5 V	mA	
		LS366A/368A		11.8	21		mA	

**Notes :** 1. For Conditions shown as MIN or MAX, use the appropriate value specified under guaranteed operating conditions for the device type.  
2. Not more than one output should be shorted at a time.  
(\*) Typical values are at V<sub>CC</sub> = 5.0 V, T<sub>A</sub> = 25 °C.

AC CHARACTERISTICS : T<sub>A</sub> = 25 °C

Symbol	Parameter	Limits						Test Conditions	Unit
		LS365A/367A			LS366A/368A				
		Min.	Typ.	Max.	Min.	Typ.	Max.		
t <sub>PLH</sub> t <sub>PHL</sub>	Propagation Delay,		10 9.0	16 22		7.0 12	15 18	V <sub>CC</sub> = 5.0 V C <sub>L</sub> = 45 pF R <sub>L</sub> 667 Ω	ns
t <sub>PLH</sub> t <sub>PHL</sub>	Output Enable Time		19 24	35 40		18 28	35 45		ns
t <sub>PLH</sub> t <sub>PHL</sub>	Output Disable Time			30 35			32 35	V <sub>CC</sub> = 5.0 V C <sub>L</sub> = 5.0 pF	ns

AC WAVEFORMS

Figure 1.

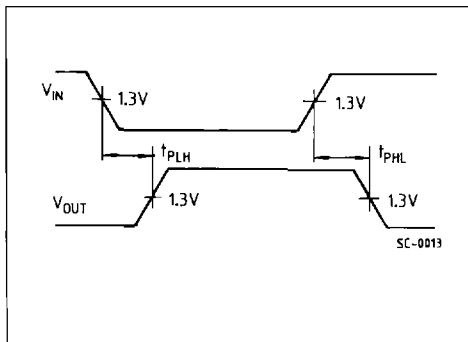


Figure 2.

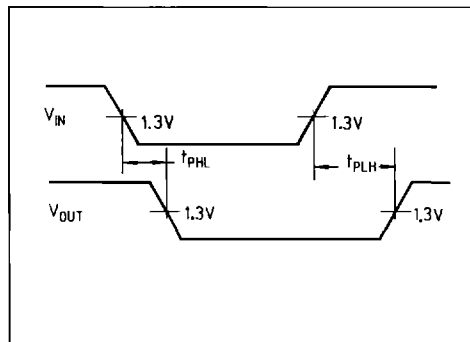


Figure 3.

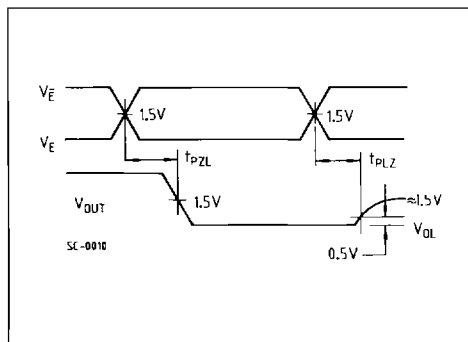


Figure 4.

