

✓ **54LS/74LS374** 011566
OCTAL D-TYPE FLIP-FLOP
 (With 3-State Outputs)

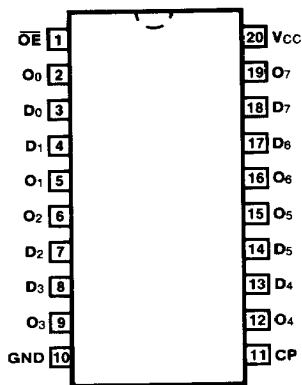
DESCRIPTION — The '374 is a high speed, low power octal D-type flip-flop featuring separate D-type inputs for each flip-flop and 3-state outputs for bus oriented applications. A buffered Clock (CP) and Output Enable (\overline{OE}) is common to all flip-flops. The '374 is manufactured using advanced low power Schottky technology and is compatible with all Fairchild TTL families.

- **EDGE-TRIGGERED D-TYPE INPUTS**
- **BUFFERED POSITIVE EDGE-TRIGGERED CLOCK**
- **3-STATE OUTPUTS FOR BUS ORIENTED APPLICATIONS**

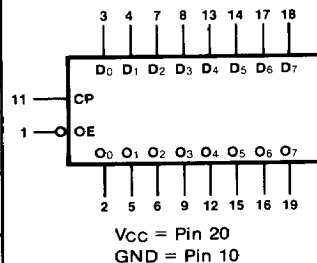
ORDERING CODE: See Section 9

PKGS	PIN OUT	COMMERCIAL GRADE	MILITARY GRADE	PKG TYPE
		V _{CC} = +5.0 V ±5%, T _A = 0°C to +70°C	V _{CC} = +5.0 V ±10%, T _A = -55°C to +125°C	
Plastic DIP (P)	A	74LS374PC		9Z
Ceramic DIP (D)	A	74LS374DC	54LS374DM	4E
Flatpak (F)	A	74LS374FC	54LS374FM	4F

CONNECTION DIAGRAM
PINOUT A



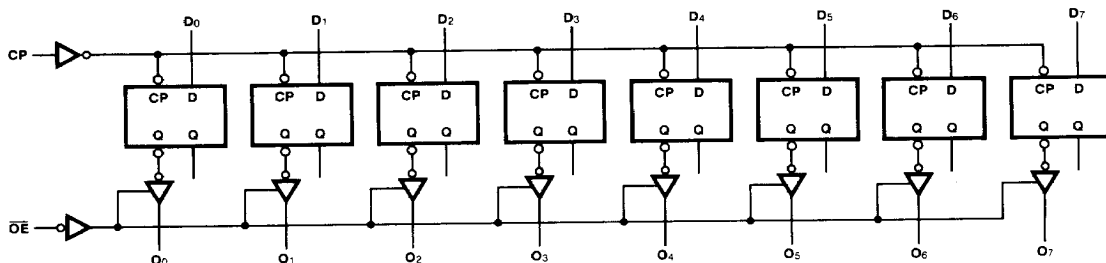
LOGIC SYMBOL



INPUT LOADING/FAN-OUT: See Section 3 for U.L. definitions



PIN NAMES	DESCRIPTION	54/74LS (U.L.) HIGH/LOW
D ₀ — D ₇	Data Inputs	0.5/0.25
CP	Clock Pulse Input (Active Rising Edge)	0.5/0.25
\overline{OE}	3-State Output Enable Input (Active LOW)	0.5/0.25
O ₀ — O ₇	3-State Outputs	65/15 (25)/(7.5)

LOGIC DIAGRAM



FUNCTIONAL DESCRIPTION — The '374 consists of eight edge-triggered flip-flops with individual D-type inputs and 3-state true outputs. The buffered Clock and buffered Output Enable are common to all flip-flops. The eight flip-flops will store the state of their individual D inputs that meet the setup and hold times requirements on the LOW-to-HIGH Clock (CP) transition. With the Output Enable (\overline{OE}) LOW, the contents of the eight flip-flops are available at the outputs. When the \overline{OE} is HIGH, the outputs go to the high impedance state. Operation of the \overline{OE} input does not affect the state of the flip-flops.

TRUTH TABLE

INPUTS		OUTPUTS	
D _n	CP	OE	O _n
H		L	H
L		L	L
X	X	H	Z

H = HIGH Voltage Level
L = LOW Voltage Level
X = Immaterial
Z = High Impedance

DC CHARACTERISTICS OVER OPERATING TEMPERATURE RANGE (unless otherwise specified)

SYMBOL	PARAMETER	54/74LS		UNITS	CONDITIONS
		Min	Max		
I _{CC}	Power Supply Current, Outputs OFF		45	mA	V _{CC} = Max, D _n = Gnd \overline{OE} = 4.5 V

AC CHARACTERISTICS: V_{CC} = +5.0 V, T_A = +25°C (See Section 3 for waveforms and load configurations)

SYMBOL	PARAMETER	54/74LS		UNITS	CONDITIONS
		C _L = 45 pF			
		Min	Max		
f _{max}	Maximum Clock Frequency	35		MHz	Figs. 3-1, 3-8
t _{PLH} t _{PHL}	Propagation Delay CP to O _n	28		ns	Figs. 3-1, 3-8
t _{PZH} t _{PZL}	Output Enable Time	28		ns	Figs. 3-3, 3-11, 3-12 R _L = 667 Ω
t _{PHZ} t _{PLZ}	Output Disable Time	20 25		ns	Figs. 3-3, 3-11, 3-12 R _L = 667 Ω, C _L = 5 pF

AC OPERATING REQUIREMENTS: V_{CC} = +5.0 V, T_A = +25°C

SYMBOL	PARAMETER	54/74LS		UNITS	CONDITIONS
		Min	Max		
t _s (H) t _s (L)	Setup Time HIGH or LOW D _n to CP	20		ns	Fig. 3-6
t _h (H) t _h (L)	Hold Time HIGH or LOW D _n to CP	0		ns	
t _w (H) t _w (L)	CP Pulse Width HIGH or LOW	15		ns	Fig. 3-8