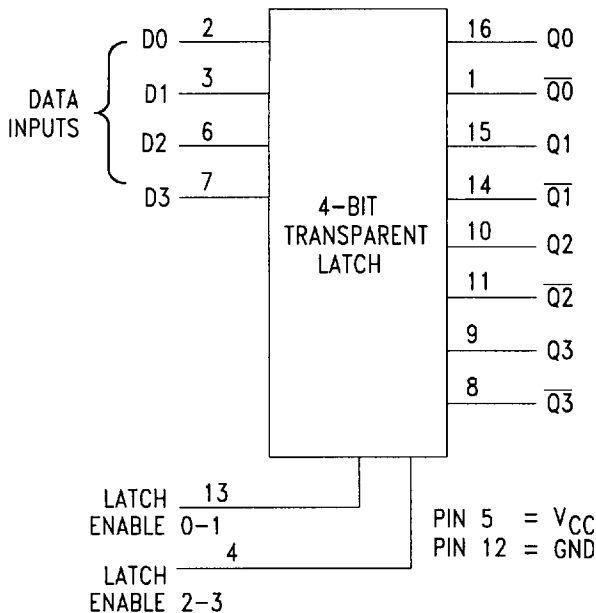
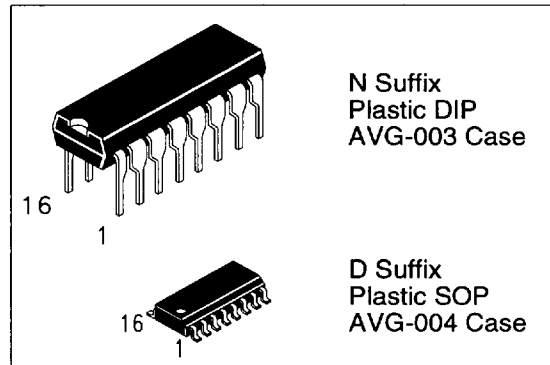


4-Bit D Latch

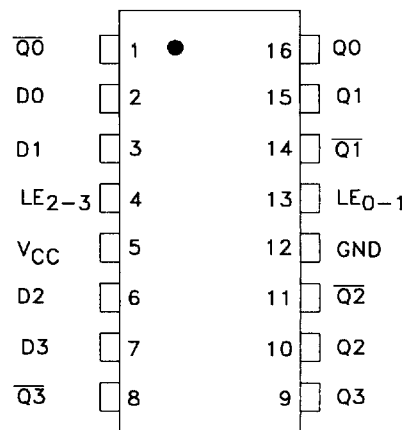
The 4-Bit D Latch can be used as temporary storage for binary information between processing units and input/output or indicator units. Information present at a data input is transferred to the Q output when the Latch Enable is HIGH and the Q output will follow the data input as long as the Enable remains HIGH. When the Latch Enable goes LOW, the information (that was present at the data input at the time the transition occurred) is retained at the Q output until the Enable is permitted to go HIGH.

- AVG's LS operates over extended V_{CC} from 4.5 to 5.5 V
- AVG's LS and ALS both have guaranteed DC and AC specification over full temperature and V_{CC} range
- Switching specifications for ALS at 50 pF
- AVG's ALS has the lowest speed power product (4pJ per gate typical) of all logic series

DV74LS75 DV74ALS75



PIN ASSIGNMENT



TRUTH TABLE Each Latch

t_n	t_{n+1}
D	Q
H	H
L	L

t_n = bit time before enable negative-going transition
 t_{n+1} = bit time after enable negative-going transition

ABSOLUTE MAXIMUM RATINGS

Maximum ratings are those values beyond which damage to the device may occur.

Symbol	Parameter	LS75	ALS75	Unit
V_{CC}	Supply Voltage	7.0	7.0	V
V_{IN}	Input Voltage	7.0	7.0	V
T_{STG}	Storage Temperature Range	-65 to +150	-65 to +150	°C

GUARANTEED OPERATING CONDITIONS

Symbol	Parameter	LS75		ALS75		Unit
		Min	Max	Min	Max	
V _{CC}	Supply Voltage	4.5	5.5	4.5	5.5	V
V _{IH}	High Level Input Voltage	2.0		2.0		V
V _{IL}	Low Level Input Voltage		0.8		0.8	V
I _{OH}	High Level Output Current		-0.4		-0.4	mA
I _{OL}	Low Level Output Current		8.0		8.0	mA
T _A	Ambient Temperature Range	-10 to +70		-10 to +70		°C

DC ELECTRICAL CHARACTERISTICS over full operating conditions

Symbol	Parameter	Conditions	LS75			ALS75			Unit
			Min	Typ	Max	Min	Typ	Max	
V _{IK}	Input Clamp Voltage	V _{CC} = min, I _{IN} = -18 mA			-1.5			-1.5	V
V _{OH}	High Level Output Voltage	V _{CC} =min, I _{OH} =max	V _{CC} -2	3.5		V _{CC} -2	3.5		V
V _{OL}	Low Level Output Voltage	V _{CC} =min; I _{OL} =4.0mA		0.25	0.4		0.25	0.4	V
		V _{CC} =min; I _{OL} =8.0 mA		0.35	0.5		0.35	0.5	V
I _{IH}	High Level Input Current V _{CC} =max, V _{IN} =2.7V	D Input LE Input			20 80			20 80	μA
		V _{CC} =max, V _{IN} = 7.0V			0.1 0.4			0.1 0.4	mA
I _{IL}	Low Level Input Current V _{CC} =max, V _{IN} =0.4V	D Input LE Input			-0.4 -1.6			-0.4 -1.6	mA
I _O	Short Circuit Current	V _{CC} =max; V _O =2.25V	-20		-110	-30		112	mA
I _{CC}	Supply Current	V _{CC} =max			12			6.0	mA

SWITCHING CHARACTERISTICS over full operating conditions

Symbol	Parameter	LS75 C _L =15pF		ALS75 C _L =50pF R _L =500Ω		Unit
		Min	Max	Min	Max	
t _{PLH}	Propagation Delay, Data to Q		27		15	ns
t _{PHL}			17		10	
t _{PLH}	Propagation Delay, Data to $\bar{Q}$		20		12	ns
t _{PHL}			15		8	
t _{PLH}	Propagation Delay, Enable to Q		27		16	ns
t _{PHL}			25		15	
t _{PLH}	Propagation Delay, Enable to $\bar{Q}$		30		18	ns
t _{PHL}			15		8	

AC SETUP REQUIREMENTS over full operating conditions

Symbol	Parameter	LS75		ALS75		Unit
		Min	Max	Min	Max	
t_w	Enable Pulse Width High	20		15		ns
t_s	Setup Time	20		20		ns
t_h	Hold Time	0		0		ns

SWITCHING WAVEFORMS

