



DM54L75A/DM74L75A Quad Latches

General Description

These latches are ideally suited for use as temporary storage for binary information between processing units and input/output or indicator units. Information present at a data (D) input is transferred to the Q input when the enable (G) is high, and the Q output will follow the data input as long as the enable remains high. When the 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.

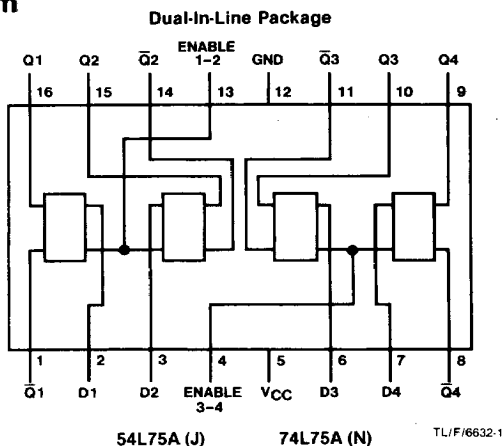
These latches feature complementary Q and \bar{Q} outputs from a 4-bit latch, and are available in 16-pin packages.

Absolute Maximum Ratings (Note 1)

Supply Voltage	8V
Input Voltage	5.5V
Storage Temperature Range	-65°C to 150°C

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

Connection Diagram

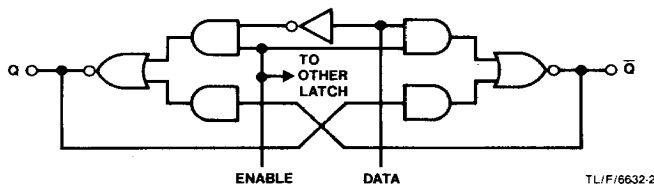


Function Table (Each Latch)

Inputs		Outputs	
D	G	Q	\bar{Q}
L	H	L	H
H	H	H	L
X	L	Q ₀	\bar{Q} ₀

H = High Level, L = Low Level, X = Don't Care
 Q₀ = The Level of Q Before the High-to-Low Transition of G

Logic Diagram (Each Latch)



Recommended Operating Conditions

Sym	Parameter	DM54L75A			DM74L75A			Units
		Min	Nom	Max	Min	Nom	Max	
V _{CC}	Supply Voltage	4.5	5	5.5	4.75	5	5.25	V
V _{IH}	High Level Input Voltage	2			2			V
V _{IL}	Low Level Input Voltage			0.7			0.7	V
I _{OH}	High Level Output Current			-0.2			-0.2	mA
I _{OL}	Low Level Output Current			2			3.6	mA
t _W	Enable Pulse Width	100			100			ns
t _{SU}	Setup Time	100			100			ns
t _H	Hold Time	25			25			ns
T _A	Free Air Operating Temperature	-55		125	0		70	°C

Electrical Characteristics over recommended operating free air temperature (unless otherwise noted)

Sym	Parameter	Conditions	Min	Typ (Note 1)	Max	Units
V _{OH}	High Level Output Voltage	V _{CC} = Min, I _{OH} = Max V _{IL} = Max, V _{IH} = Min	2.4	3.4		V
V _{OL}	Low Level Output Voltage	V _{CC} = Min I _{OL} = Max V _{IL} = Max V _{IH} = Min	DM54	0.15	0.3	V
			DM74	0.2	0.4	
I _I	Input Current @ Max Input Voltage	V _{CC} = Max V _I = 5.5V	D Input		0.2	mA
			G Input		0.4	
I _{IH}	High Level Input Current	V _{CC} = Max V _I = 2.4V	D Input		20	μA
			G Input		40	
I _{IL}	Low Level Input Current	V _{CC} = Max V _I = 0.3V	D Input		-0.36	mA
			G Input		-0.72	
I _{OS}	Short Circuit Output Current	V _{CC} = Max (Note 2)	DM54	-3	-15	mA
			DM74	-3	-15	
I _{CC}	Supply Current	V _{CC} = Max (Note 3)		3.5	5	mA

Note 1: All typicals are at V_{CC} = 5V, T_A = 25°C.

Note 2: Not more than one output should be shorted at a time.

Note 3: I_{CC} is measured with all outputs open and all inputs grounded.

Switching Characteristics at $V_{CC} = 5V$ and $T_A = 25^\circ C$ (See Section 1 for Test Waveforms and Output Load)

Parameter	From (Input) To (Output)	$R_L = 4\text{ k}\Omega$ $C_L = 50\text{ pF}$			Units
		Min	Typ	Max	
t_{PLH} Propagation Delay Time Low to High Level Output	D to Q		55	100	ns
t_{PHL} Propagation Delay Time High to Low Level Output	D to Q		50	100	ns
t_{PLH} Propagation Delay Time Low to High Level Output	D to \bar{Q}		75	120	ns
t_{PHL} Propagation Delay Time High to Low Level Output	D to \bar{Q}		32	80	ns
t_{PLH} Propagation Delay Time Low to High Level Output	G to Q		50	100	ns
t_{PHL} Propagation Delay Time High to Low Level Output	G to Q		32	80	ns
t_{PLH} Propagation Delay Time Low to High Level Output	G to \bar{Q}		48	100	ns
t_{PHL} Propagation Delay Time High to Low Level Output	G to \bar{Q}		38	80	ns