FAIRCHILD SEMICONDUCTOR™

August 1986
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DM74LS279
Quad $\overline{S}$-$\overline{R}$ Latch

General Description

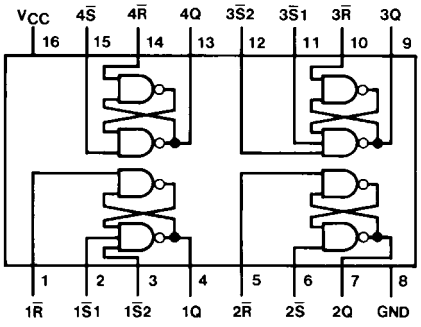
The DM74LS279 consists of four individual and independent Set-Reset Latches with active low inputs. Two of the four latches have an additional $\overline{S}$ input ANDed with the primary $\overline{S}$ input. A LOW on any $\overline{S}$ input while the $\overline{R}$ input is HIGH will be stored in the latch and appear on the corresponding Q output as a HIGH. A LOW on the $\overline{R}$ input while the $\overline{S}$ input is HIGH will clear the Q output to a LOW. Simultaneous transition of the $\overline{R}$ and $\overline{S}$ inputs from LOW-to-HIGH will cause the Q output to be indeterminate. Both inputs are voltage level triggered and are not affected by transition time of the input data.

Ordering Code:

Order Number	Package Number	Package Description
DM74LS279M	M16A	16-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-012, 0.150 Narrow
DM74LS279N	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

Inputs		Output
$\overline{S}$ (Note 1)	$\overline{R}$	Q
L	L	H (Note 2)
L	H	H
H	L	L
H	H	Q_0

H = HIGH Level
L = LOW Level
Q_0 = The Level of Q before the indicated input conditions were established.

Note 1: For latches with double $\overline{S}$ inputs:

H = both $\overline{S}$ inputs HIGH

L = one or both $\overline{S}$ inputs LOW

Note 2: This output level is pseudo stable; that is, it may not persist when the $\overline{S}$ and $\overline{R}$ inputs return to their inactive (HIGH) level.

Absolute Maximum Ratings(Note 3)

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 3: 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_{CC}	Supply Voltage	4.75	5	5.25	V
V_{IH}	HIGH Level Input Voltage	2			V
V_{IL}	LOW Level Input Voltage			0.8	V
I_{OH}	HIGH Level Output Current			−0.4	mA
I_{OL}	LOW Level Output Current			8	mA
T_A	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 4)	Max	Units
V_I	Input Clamp Voltage	V_{CC} = Min, I_I = −18 mA			−1.5	V
V_{OH}	HIGH Level Output Voltage	V_{CC} = Min, I_{OH} = Max, V_{IL} = Max, V_{IH} = Min	2.7	3.5		V
V_{OL}	LOW Level Output Voltage	V_{CC} = Min, I_{OL} = Max, V_{IL} = Max, V_{IH} = Min		0.35	0.5	V
		I_{OL} = 4 mA, V_{CC} = Min		0.25	0.4	
I_I	Input Current @ Max Input Voltage	V_{CC} = Max, V_I = 7V			0.1	mA
I_{IH}	HIGH Level Input Current	V_{CC} = Max, V_I = 2.7V			20	µA
I_{IL}	LOW Level Input Current	V_{CC} = Max, V_I = 0.4V			−0.4	mA
I_{OS}	Short Circuit Output Current	V_{CC} = Max (Note 5)	−20		−100	mA
I_{CC}	Supply Current	V_{CC} = Max (Note 6)		3.8	7	mA

Note 4: All typicals are at V_{CC} = 5V, T_A = 25°C.

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

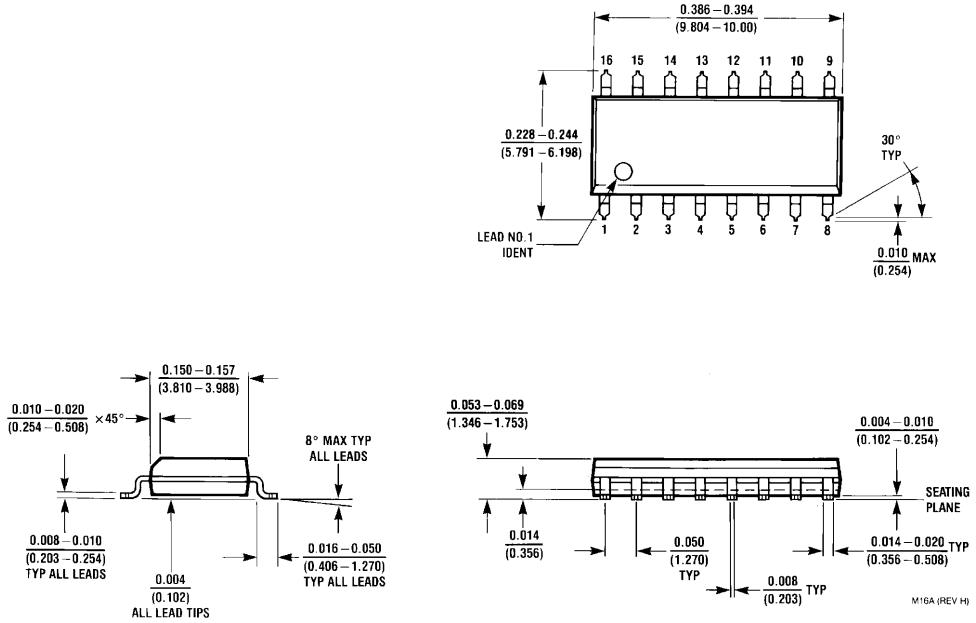
Note 6: I_{CC} is measured with all $\overline{R}$ inputs grounded, all $\overline{S}$ inputs at 4.5V and all outputs OPEN.

Switching Characteristics

at V_{CC} = 5V and T_A = 25°C

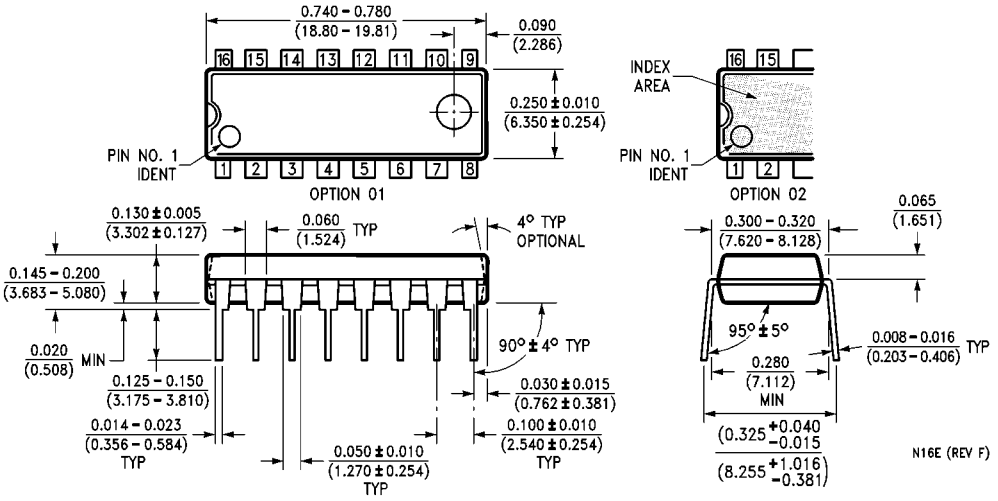
Symbol	Parameter	From (Input) To (Output)	R_L = 2 kΩ				Units
			C_L = 15 pF		C_L = 50 pF		
			Min	Max	Min	Max	
t_{PLH}	Propagation Delay Time LOW-to-HIGH Level Output	$\overline{S}$ to Q		22		25	ns
t_{PHL}	Propagation Delay Time HIGH-to-LOW Level Output	$\overline{S}$ to Q		15		23	ns
t_{PHL}	Propagation Delay Time HIGH-to-LOW Level Output	$\overline{R}$ to Q		27		33	ns

Physical Dimensions inches (millimeters) unless otherwise noted



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

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



16-Lead Plastic Dual-In-Line Package (PDIP), JEDEC MS-001, 0.300 Wide
Package Number N16E