

August 1986 Revised March 2000

DM74LS279 Quad S-R Latch

General Description

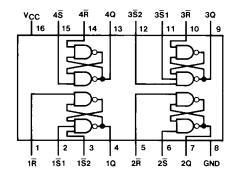
The DM74LS279 consists of four individual and independent Set-Reset Latches with active low inputs. Two of the four latches have an additional S input ANDed with the primary \overline{S} input. A LOW on any \overline{S} input while the \overline{R} input is HIGH will be stored in the latch and appear on the corresponding Q output as a HIGH. A LOW on the \overline{R} input while the 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	
S (Note 1)	R	Q
L	L	H (Note 2)
L	Н	Н
Н	L	L
Н	Н	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 $\overline{\mathbb{S}}$ 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 $0^{\circ}\text{C to } +70^{\circ}\text{C}$ Storage Temperature Range $-65^{\circ}\text{C to } +150^{\circ}\text{C}$

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
VI	Input Clamp Voltage	$V_{CC} = Min, I_I = -18 \text{ mA}$			-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	
l _l	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	μΑ
I _{IL}	LOW Level Input Current	$V_{CC} = Max, V_I = 0.4V$			-0.4	mA
Ios	Short Circuit Output Current	V _{CC} = Max (Note 5)	-20		-100	mA
Icc	Supply Current	V _{CC} = Max (Note 6)		3.8	7	mA

Note 4: All typicals are at $V_{CC} = 5V$, $T_A = 25^{\circ}C$.

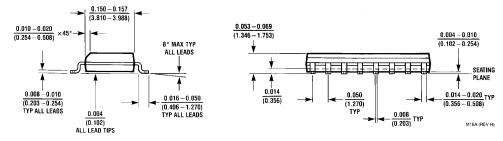
Note 5: Not more than one output should be shorted at a time, and the duration should not exceed one second.

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 $T_A = 25^{\circ}C$

		From (Input)	$R_L = 2 k\Omega$				Units
Symbol Parameter		To (Output)	C _L = 15 pF		C _L = 50 pF		
			Min	Max	Min	Max	
t _{PLH}	Propagation Delay Time LOW-to-HIGH Level Output	S to Q		22		25	ns
t _{PHL}	Propagation Delay Time HIGH-to-LOW Level Output	∇ to Q		15		23	ns
t _{PHL}	Propagation Delay Time HIGH-to-LOW Level Output	R to Q		27		33	ns



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

Physical Dimensions inches (millimeters) unless otherwise noted (Continued) 0.740 - 0.780 0.090 (18.80 - 19.81)(2.286)**16 15 14 13 12 11 10 9** 16 T5 F INDEX AREA 0.250 ± 0.010 $\overline{(6.350 \pm 0.254)}$ PIN NO. 1 PIN NO. 1 1 2 3 4 5 6 7 8 1 2 _ OPTION 01 OPTION 02 0.065 $\frac{0.130 \pm 0.005}{(3.302 \pm 0.127)}$ $\frac{0.060}{(1.524)}$ TYP (1.651)4° TYP 0.300 - 0.320 OPTIONAL (7.620 - 8.128) 0.145 - 0.200 $\overline{(3.683 - 5.080)}$ 95°±5° $\frac{0.008 - 0.016}{(0.203 - 0.406)} \text{ TYP}$ 90° ± 4° TYP 0.020 $\frac{0.280}{(7.112)}$ MIN (0.508)0.125 - 0.150 (3.175 - 3.810) 0.030 ± 0.015 (0.762 ± 0.381)

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

0.050 ± 0.010

(1.270 ± 0.254)

0.100 ± 0.010

 (2.540 ± 0.254)

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LIFE SUPPORT POLICY

0.014 - 0.023

(0.356 - 0.584)

TYP

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- A critical component in any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

(0.325 +0.040 -0.015

N16E (REV F)

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