

DM74LS279 Quad $\overline{S}$ - $\overline{R}$ Latches

General Description

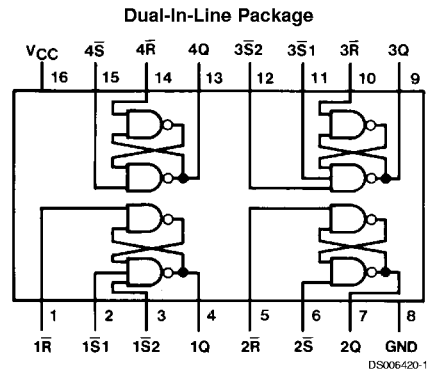
The 'LS279 consists of four individual and independent Set-Reset Latches with active low inputs. Two of the four latches have an additional $\overline{S}$ input ANDed with the primary $\overline{S}$ input. A low on any $\overline{S}$ input while the $\overline{R}$ input is high will be stored in the 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.

Features

- Alternate military/aerospace device (54LS279) is available. Contact a Fairchild Semiconductor Sales Office/Distributor for specifications.

Connection Diagram



Order Number 54LS279DMQB, 54LS279FMQB, 54LS279LMQB,
DM54LS279J, DM74LS279M or DM74LS279N
See Package Number E20A, J16A, M16A, N16E or W16A

Function Table

Inputs		Output
$\overline{S}$ (Note 2)	$\overline{R}$	Q
L	L	H (Note 1)
L	H	H
H	L	L
H	H	Q ₀

H = High Level

L = Low Level

Q₀ = The Level of Q before the indicated input conditions were established.

Note 1: 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.

Note 2: For latches with double $\overline{S}$ inputs:

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

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

Absolute Maximum Ratings (Note 3)

Supply Voltage

Input Voltage

Operating Free Air Temperature Range

7V

7V

DM54LS and 54LS

DM74LS

Storage Temperature Range

–55°C to +125°C

0°C to +70°C

–65°C to +150°C

Recommended Operating Conditions

Symbol	Parameter	DM54LS279			DM74LS279			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			0.8	V
I _{OH}	High Level Output Current			–0.4			–0.4	mA
I _{OL}	Low Level Output Current			4			8	mA
T _A	Free Air Operating Temperature	–55		125	0		70	°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" table are not guaranteed at the absolute maximum ratings. The "Recommended Operating Conditions" table will define the conditions for actual device operation.

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	DM54 2.5 DM74 2.7	3.5 3.5		V
V _{OL}	Low Level Output Voltage	V _{CC} = Min, I _{OL} = Max V _{IL} = Max, V _{IH} = Min I _{OL} = 4 mA, V _{CC} = Min	DM54 DM74 DM74	0.25 0.35 0.25	0.4 0.5 0.4	V
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)	DM54 –20 DM74 –20		–100 –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 Characteristicsat 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

Switching Characteristics (Continued)

at $V_{CC} = 5V$ and $T_A = 25^\circ C$

Symbol	Parameter	From (Input) To (Output)	R _L = 2 kΩ				Units
			C _L = 15 pF		C _L = 50 pF		
			Min	Max	Min	Max	
t _{PHL}	Propagation Delay Time High to Low Level Output	R̄ to Q		27		33	ns

inches (millimeters) unless otherwise noted

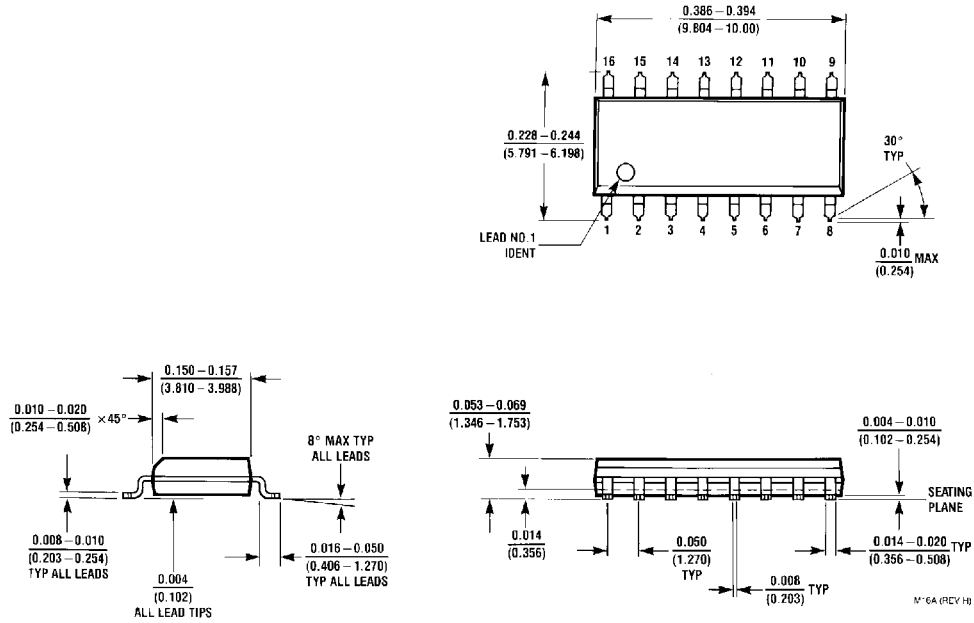


Order Number 54LS279LMQB
Package Number E20A

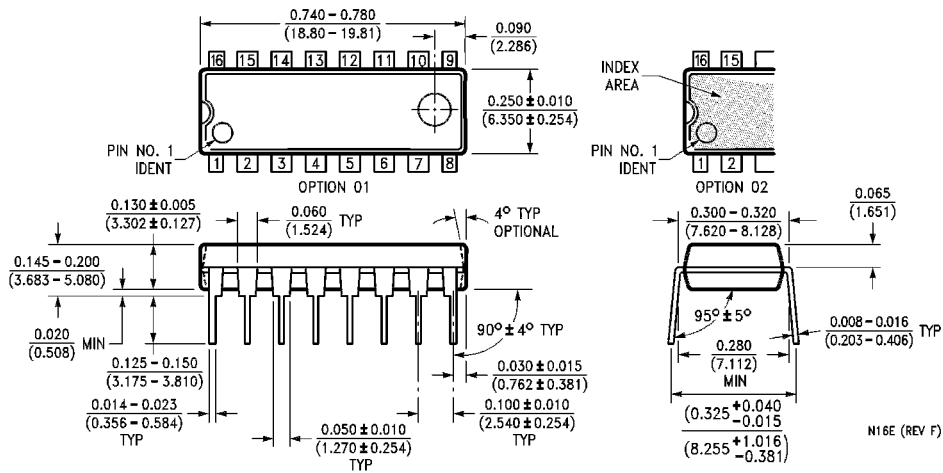


16-Lead Ceramic Dual-In-Line Package (J)
Order Number 54LS279DMQB or DM54LS279J
Package Number J16A

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

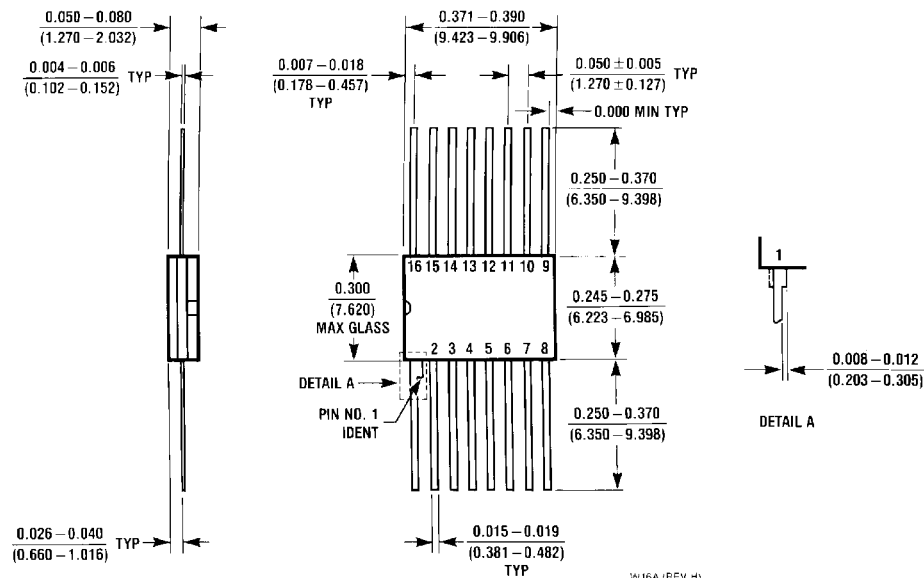


16-Lead Small Outline Molded Package (M)
Order Number DM74LS279M
Package Number M16A



16-Lead Molded Dual-In-Line Package (N)
Order Number DM74LS279N
Package Number N16E

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



16-Lead Ceramic Flat Package (W)
Order Number 54LS279FMB or DM54LS279W
Package Number W16A

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Fairchild Semiconductor
 Corporation
 Americas
 Customer Response Center
 Tel: 1-888-522-5372

www.fairchildsemi.com

Fairchild Semiconductor
 Europe
 Fax: +49 (0) 1 80-530 85 86
 Email: europe.support@nsc.com
 Deutsch Tel: +49 (0) 8 141-35-0
 English Tel: +44 (0) 1 793-85-68-56
 Italy Tel: +39 (0) 2 57 5631

Fairchild Semiconductor
 Hong Kong Ltd.
 13th Floor, Straight Block,
 Ocean Centre, 5 Canton Rd.
 Tsimshatsui, Kowloon
 Hong Kong
 Tel: +852 2737-7200
 Fax: +852 2314-0061

National Semiconductor
 Japan Ltd.
 Tel: 81-3-5620-6175
 Fax: 81-3-5620-6179