

DM74LS279 Quad \bar{S} - \bar{R} Latches

General Description

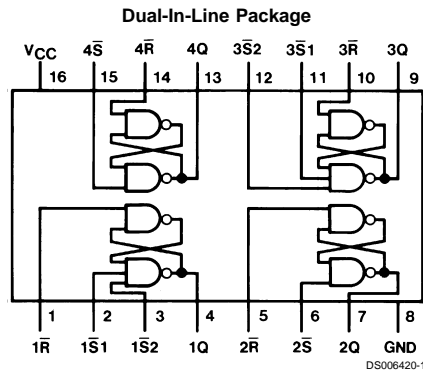
The 'LS279 consists of four individual and independent Set-Reset Latches with active low inputs. Two of the four latches have an additional \bar{S} input ANDed with the primary \bar{S} input. A low on any \bar{S} input while the \bar{R} input is high will be stored in the latch and appear on the corresponding Q output as a high. A low on the \bar{R} input while the \bar{S} input is high will clear the Q output to a low. Simultaneous transition of the \bar{R}

and \bar{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 |
|--------------------|-----------|------------|
| \bar{S} (Note 2) | \bar{R} | Q |
| L | L | H (Note 1) |
| 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: This output level is pseudo stable; that is, it may not persist when the \bar{S} and \bar{R} inputs return to their inactive (high) level.

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

H = both \bar{S} inputs high

L = one or both \bar{S} inputs low

Absolute Maximum Ratings (Note 3)

| | | | |
|--------------------------------------|----|---------------------------|-----------------|
| Supply Voltage | 7V | DM54LS and 54LS | -55°C to +125°C |
| Input Voltage | 7V | DM74LS | 0°C to +70°C |
| Operating Free Air Temperature Range | | Storage Temperature Range | -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 | DM54 | 2.5 | 3.5 | V |
| | | V _{IL} = Max, V _{IH} = Min | DM74 | 2.7 | 3.5 | |
| V _{OL} | Low Level Output Voltage | V _{CC} = Min, I _{OL} = Max | DM54 | 0.25 | 0.4 | V |
| | | V _{IL} = Max, V _{IH} = Min | DM74 | 0.35 | 0.5 | |
| | | I _{OL} = 4 mA, V _{CC} = Min | DM74 | 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 | DM54 | -20 | -100 | mA |
| | | (Note 5) | DM74 | -20 | -100 | |
| 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 \bar{R} inputs grounded, all \bar{S} inputs at 4.5V and all outputs open.

Switching Characteristics

at V_{CC} = 5V and T_A = 25°C

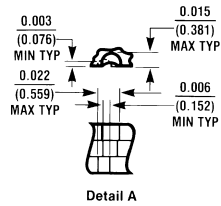
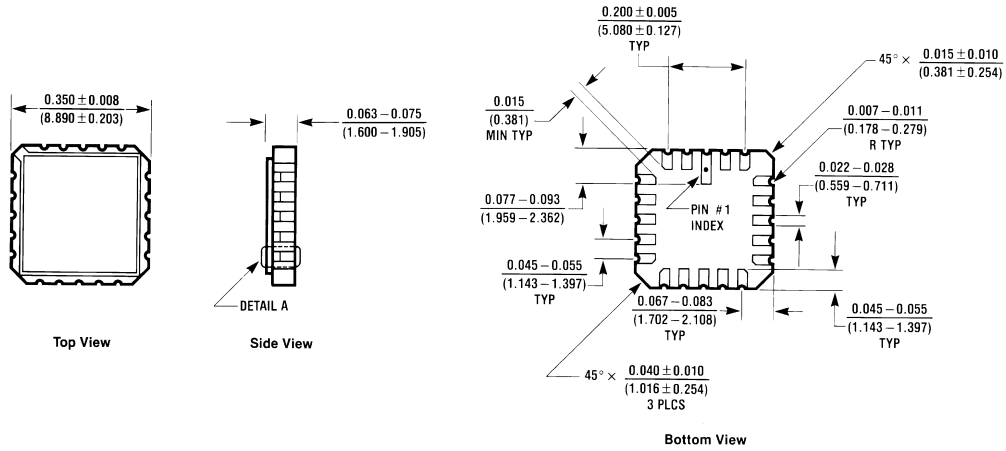
| Symbol | Parameter | From (Input) To (Output) | R _L = 2 kΩ | | | | Units |
|------------------|--|-----------------------------|------------------------|-----|------------------------|-----|-------|
| | | | C _L = 15 pF | | C _L = 50 pF | | |
| | | | Min | Max | Min | Max | |
| t _{PLH} | Propagation Delay Time Low to High Level Output | \bar{S} to Q | | 22 | | 25 | ns |
| t _{PHL} | Propagation Delay Time High to Low Level Output | \bar{S} to Q | | 15 | | 23 | ns |

Switching Characteristics (Continued)

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

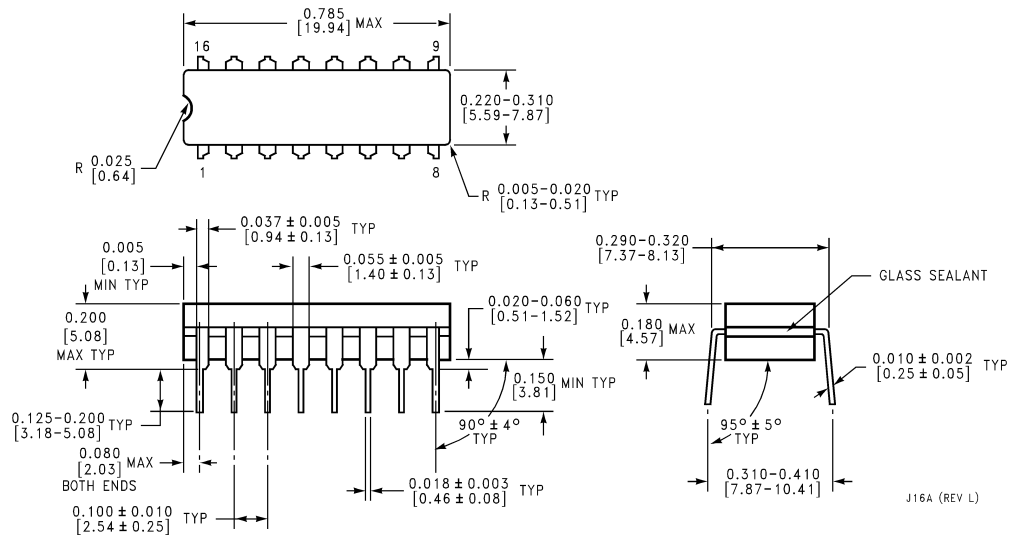
| Symbol | Parameter | From (Input) To (Output) | $R_L = 2\text{ k}\Omega$ | | | | Units |
|-----------|--|-----------------------------|--------------------------|-----|----------------------|-----|-------|
| | | | $C_L = 15\text{ pF}$ | | $C_L = 50\text{ pF}$ | | |
| | | | Min | Max | Min | Max | |
| t_{PHL} | Propagation Delay Time High to Low Level Output | \bar{R} to Q | | 27 | | 33 | ns |

Physical Dimensions inches (millimeters) unless otherwise noted



Ceramic Leadless Chip Carrier Package (E)
Order Number 54LS279LMQB
Package Number E20A

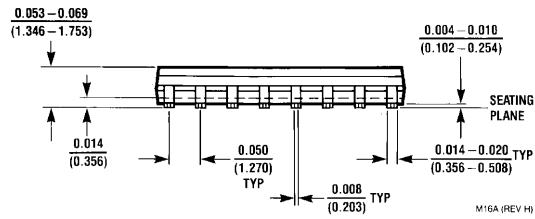
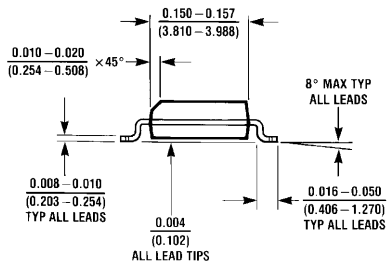
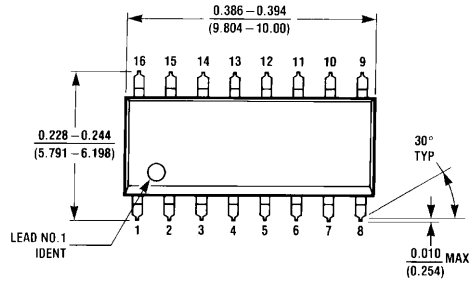
E20A (REV D)



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

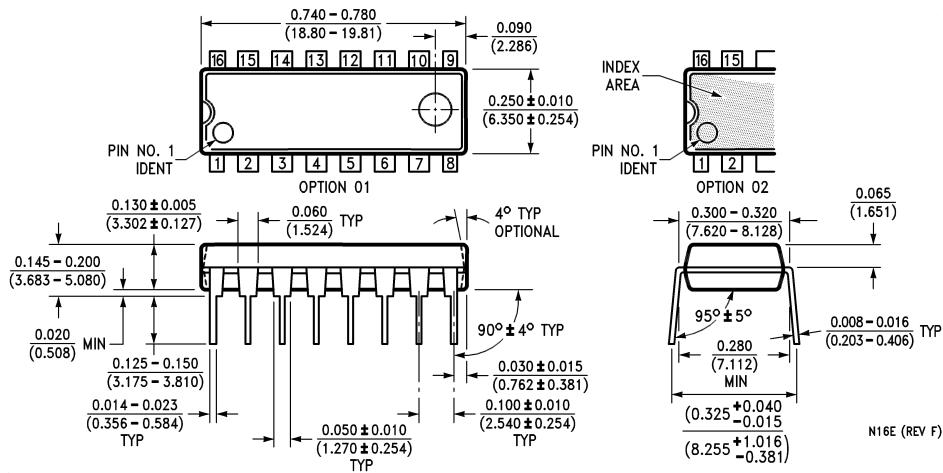
J16A (REV L)

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



M16A (REV H)

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

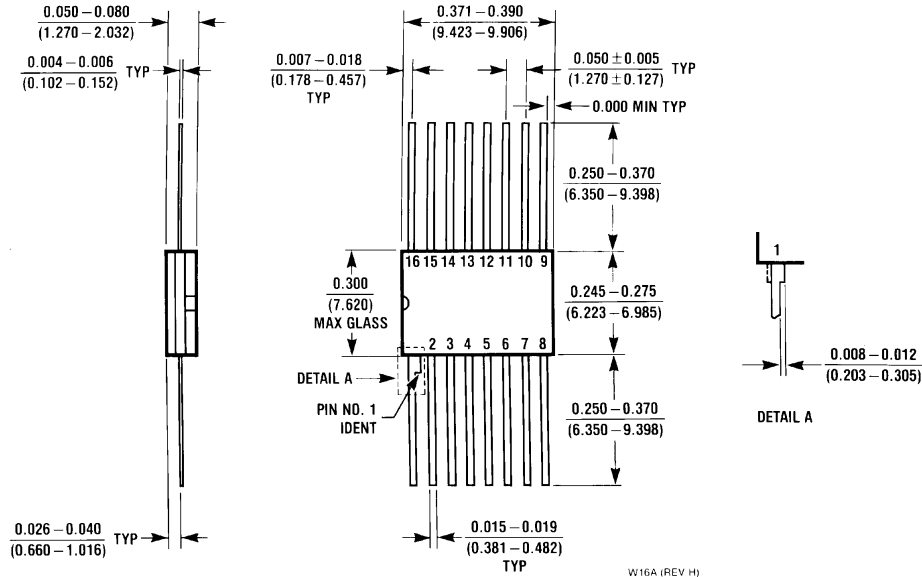


N16E (REV F)

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

DM74LS279 Quad S-R Latches

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



16-Lead Ceramic Flat Package (W)
Order Number 54LS279FMQB or DM54LS279W
Package Number W16A

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