

54LS279, DM54LS279, DM74LS279

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

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.

Rochester Electronics Manufactured Components

Rochester branded components are manufactured using either die/wafers purchased from the original suppliers or Rochester wafers recreated from the original IP. All recreations are done with the approval of the OCM.

Parts are tested using original factory test programs or Rochester developed test solutions to guarantee product meets or exceeds the OCM data sheet.

Quality Overview

- ISO-9001
- AS9120 certification
- Qualified Manufacturers List (QML) MIL-PRF-38535
 - Class Q Military
 - Class V Space Level
- Qualified Suppliers List of Distributors (QSLD)
 - Rochester is a critical supplier to DLA and meets all industry and DLA standards.

Rochester Electronics, LLC is committed to supplying products that satisfy customer expectations for quality and are equal to those originally supplied by industry manufacturers.

The original manufacturer's datasheet accompanying this document reflects the performance and specifications of the Rochester manufactured version of this device. Rochester Electronics guarantees the performance of its semiconductor products to the original OEM specifications. 'Typical' values are for reference purposes only. Certain minimum or maximum ratings may be based on product characterization, design, simulation, or sample testing.



54LS279/DM54LS279/DM74LS279 Quad \bar{S} - \bar{R} Latches

General Description

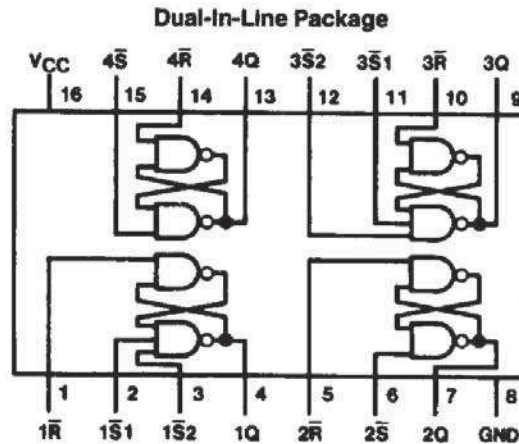
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to be indeterminate. Both inputs are voltage level triggered and are not affected by transition time of the input data.

Features

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

Connection Diagram



TL/F/6420-1

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

Function Table

Inputs		Output
$\bar{S}(1)$	\bar{R}	Q
L	L	H*
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.

*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 1: 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)

If Military/Aerospace specified devices are required, please contact the National Semiconductor Sales Office/Distributors for availability and specifications.

Supply Voltage	7V
Input Voltage	7V
Operating Free Air Temperature Range	
DM54LS and 54LS	-55°C to +125°C
DM74LS	0°C to +70°C
Storage Temperature Range	-65°C to +150°C

Note: 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.

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

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

Symbol	Parameter	Conditions	Min	Typ (Note 1)	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	V
		V _{IL} = Max, V _{IH} = Min	DM74		0.35	
		I _{OL} = 4 mA, V _{CC} = Min	DM74		0.25	
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 2)	DM54	-20	-100	mA
			DM74	-20	-100	
I _{CC}	Supply Current	V _{CC} = Max (Note 3)		3.8	7	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, and the duration should not exceed one second.

Note 3: I_{CC} is measured with all \bar{A} inputs grounded, all \bar{B} inputs at 4.5V and all outputs open.

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

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_{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
t_{PHL}	Propagation Delay Time High to Low Level Output	\bar{R} to Q		27		33	ns