National Semiconductor

MICROCIRCUIT DATA SHEET

MNDM54LS279-X REV 1A0

Original Creation Date: 04/13/98
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QUAD SET-RESET LATCH

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 on the input data.

Industry Part Number

54LS279

NS Part Numbers

DM54LS279J/883
DM54LS279W/883

Prime Die

L279

Processing

MIL-STD-883, Method 5004

Quality Conformance Inspection

MIL-STD-883, Method 5005

Subgrp	Description	Temp (^{o}C)
1	Static tests at	+25
2	Static tests at	+125
3	Static tests at	-55
4	Dynamic tests at	+25
5	Dynamic tests at	+125
6	Dynamic tests at	-55
7	Functional tests at	+25
8A	Functional tests at	+125
8B	Functional tests at	-55
9	Switching tests at	+25
10	Switching tests at	+125
11	Switching tests at	-55

Features

(Absolute Maximum Ratings)

(Note 1)

Storage Temperature	-65 C to +150 C
Ambient Temperature under Bias	-55 C to +125 C
Input Voltage	-0.5V to +10.0V
VCC Pin Potential to Ground Pin	-0.5V to +7.0V
Junction Temperature under Bias	-55 C to +175 C
Current Applied to Output in LOW state (Max)	twice the rated Iol (ma)

Note 1: Absolute Maximum ratings are those values beyond which the device may be damaged or have its useful life impaired. Functional operation under these conditions is not implied.

Recommended Operating Conditions

Free Air Ambient Temperature	
Military	-55 C to +125 C
Supply Voltage	
Military	+4.5V to +5.5V

Electrical Characteristics

DC PARAMETER

(The following conditions apply to all the following parameters, unless otherwise specified.)
DC: VCC 4.5V to 5.5V, Temp range: -55C to 125C

SYMBOL	PARAMETER	CONDITIONS	NOTES	PIN-NAME	MIN	MAX	UNIT	SUB-GROUPS
IIH	Input High Current	VCC=5.5V, VM=2.7V, VINH=4.5V, VINL=0.0V	1, 3	INPUTS		20.0	uA	1, 2, 3
IBVI	Input High Current	VCC=5.5V, VM=10.0V, VINH=4.5V, VINL=0.0V	1, 3	INPUTS		100	uA	1, 2, 3
IIL	Input LOW Current	VCC=5.5V, VM=0.4V, VINH=4.5V, VINL=0.0V	1, 3	INPUTS	-0.03	-0.4	mA	1, 2, 3
VOL	Output LOW Voltage	VCC=4.5V, VIH=2.0V, IOL=4.0mA, VINH=4.5V, VIL=0.7V	1, 3	OUTPUTS		0.4	V	1, 2, 3
VOH	Output HIGH Voltage	VCC=4.5V, VIL=0.7V, IOH=-0.4mA, VINH=4.5V, VINL=0.0V, VIH=2.0V	1, 3	OUTPUTS	2.5		V	1, 2, 3
IOS	Short-Circuit Current	VCC=5.5V, VINL=0.0V, VOUT=0.0V, VINH=4.5V	1, 3	OUTPUTS	-20	-100	mA	1, 2, 3
VCD	Input Clamp Diode Voltage	VCC=4.5V, IM=-18mA, VINH=4.5V	1, 3	INPUTS		-1.5	V	1, 2, 3
ICC	Supply Current	VCC=5.5V, VINL=0.0V, VINH=4.5V	1, 3	VCC		7.0	mA	1, 2, 3

AC PARAMETER - 15pF

(The following conditions apply to all the following parameters, unless otherwise specified.)
AC: CL=15pF, RL=2k ohms Temp range: +25C

tpLH	Propagation Delay	VCC=5.0V	5	$\overline{S}$ to Q		22.0	ns	9
tpHL	Propagation Delay	VCC=5.0V	5	$\overline{S}$ to Q		15.0	ns	9
tpHL 2	Propagation Delay	VCC=5.0V	5	$\overline{R}$ to Q		27.0	ns	9

AC PARAMETER - 50pF

(The following conditions apply to all the following parameters, unless otherwise specified.)
AC: CL=50pF, RL=2k ohms Temp range: -55C to +125C

tpLH	Propagation Delay	VCC=5.0V	2, 4	$\overline{S}$ to Q	2.0	27.0	ns	9
			2, 4	$\overline{S}$ to Q	2.0	35.0	ns	10, 11
tpHL	Propagation Delay	VCC=5.0V	2, 4	$\overline{S}$ to Q	2.0	20.0	ns	9
			2, 4	$\overline{S}$ to Q	2.0	26.0	ns	10, 11
tpHL 2	Propagation Delay	VCC=5.0V	2, 4	$\overline{R}$ to Q	2.0	32.0	ns	9
			2, 4	$\overline{R}$ to Q	2.0	42.0	ns	10, 11

Note 1: Screen tested 100% on each device at -55C, +25C & +125C temperature, subgroups A1, 2, 3, 7 & 8.
Note 2: Screen tested 100% on each device at +25C temperature only, subgroup A9.
Note 3: Sample tested (Method 5005, Table 1) on each MFG. lot at +25C, +125C & -55C temperature, subgroups A1, 2, 3, 7 & 8.
Note 4: Sample tested (Method 5005, Table 1) on each MFG. lot at +25C, subgroup A9. Subgroups 10 & 11 are guaranteed, not tested.

(Continued)

Note 5: Guaranteed, not tested.

Revision History

Rev	ECN #	Rel Date	Originator	Changes
1A0	M0002150	07/17/98	Linda Collins	Initial MDS release: MNDM54LS279-X Rev. 1A0. Added note 4 to the AC (50pF) notes reference column. Reworded the phrase in note 4 from "and periodically at +125C & -55C, subgroups 10 & 11" to "Subgroups 10 & 11 are guaranteed, not tested".