National Semiconductor

MICROCIRCUIT DATA SHEET

MNDM54LS373-X REV 0A0

Original Creation Date: 04/15/98
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OCTAL TRANSPARENT LATCH with TRI-STATE OUTPUTS

General Description

The 'LS373 consists of eight latches with Tri-state outputs for bus organized system applications. The flip-flops appear transparent to the data when Latch Enable (LE) is HIGH. When LE is LOW, the data that meets the setup times is latched. Data appears on the bus when the Output Enable (/OE) is LOW. When /OE is HIGH the bus output is in the high impedance state.

Industry Part Number

54LS373

NS Part Numbers

DM54LS373J/883

Prime Die

R373

Processing

MIL-STD-883, Method 5004

Quality Conformance Inspection

MIL-STD-883, Method 5005

Subgrp	Description	Temp (°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 +7.0V
VCC Pin Potential to Ground Pin	-0.5V to +7.0V
Junction Temperature under Bias	-55C to +175C
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=7.0.V, 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		-0.4	mA	1, 2, 3
VOL	Output LOW Voltage	VCC=4.5V, IOL=12.0mA, VINH=4.5V, VIL=0.7V, VIH=2.0V	1, 3	OUTPUTS		0.4	V	1, 2, 3
VOH	High Level Output Voltage	VCC=4.5V, IOH=-1.0mA, VIL=0.7V, VINH=4.5V, VIH=2.0V	1, 3	OUTPUTS	2.4		V	1, 2, 3
IOS	Short Circuit Output Current	VCC=5.5V, VINH=4.5V, VOUT=0.0V, VINL=0.0V	1, 3	OUTPUT	-20.0	-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		40.0	mA	1, 2, 3
IOZH	Off-State Output Current (High)	VCC=5.5V, VM=2.7V, VIH=2.0V, VIL=0.7V	1, 3	OUTPUTS		20.0	uA	1, 2, 3
IOZL	Off-State Output Current (Low)	VCC=5.5V, VM=0.4V, VIH=2.0V, VIL=0.7V	1, 3	OUTPUTS		-20.0	uA	1, 2, 3

Electrical Characteristics

AC PARAMETER - Standard Load

(The following conditions apply to all the following parameters, unless otherwise specified.)
AC: VCC=5.0V Temp range: -55C to +125C

SYMBOL	PARAMETER	CONDITIONS	NOTES	PIN-NAME	MIN	MAX	UNIT	SUB-GROUPS
tpLH/HL 1	Propagation Delay	VCC=5.0V, CL=50pF	2, 4, 5	Dx to Qx		18.0	ns	9
			2, 4, 5	Dx to Qx		30.0	ns	10, 11
tpLH/HL 2	Propagation Delay	VCC=5.0V, CL=50pF	2, 4, 5	LE to Qx		30.0	ns	9
			2, 4, 5	LE to Qx		45.0	ns	10, 11
tpZH	Output Enable	VCC=5.0V, CL=50pF	2, 4, 5	$\overline{OE}$ to Qx		30.0	ns	9
			2, 4, 5	$\overline{OE}$ to Qx		38.0	ns	10, 11
tpZL	Output Enable	VCC=5.0V, CL=50pF	2, 4, 5	$\overline{OE}$ to Qx		37.0	ns	9
			2, 4, 5	$\overline{OE}$ to Qx		46.0	ns	10, 11
tpHZ	Output Disable	VCC=5.0V, CL=5pF	2, 4, 5	$\overline{OE}$ to Qx		35.0	ns	9
			2, 4, 5	$\overline{OE}$ to Qx		44.0	ns	10, 11
tpLZ	Output Disable	VCC=5.0V, CL=5pF	2, 4, 5	$\overline{OE}$ to Qx		26.0	ns	9
			2, 4, 5	$\overline{OE}$ to Qx		33.0	ns	10, 11
tw (H/L)	Pulse Width	VCC=5.0V, CL=50pF	2, 4	Clock, LE	15.0		ns	9
ts	Set-up Time	VCC=5.0V, CL=50pF	2, 4	Data	5.0		ns	9
th	Hold Time	VCC=5.0V, CL=50pF	2, 4	Data	20.0		ns	9

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.
Note 5: Guaranteed, not tested at +125C & -55C, subgroups 10 & 11.

Revision History

Rev	ECN #	Rel Date	Originator	Changes
0A0	M0002312	07/08/98	Linda Collins	Initial MDS Release: MNDM54LS373-X Rev. 0A0