National Semiconductor

MICROCIRCUIT DATA SHEET

MN54F373-X REV 2A0

Original Creation Date: 05/30/96
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OCTAL TRANSPARANT LATCH WITH 3-STATE OUTPUTS

General Description

The F373 consists of eight latches with 3-state outputs for bus organized system applications. The flip-flops appear transparant to the data when Latch Enable (LE) is HIGH. When LE is LOW, the data that meets the setup times are latched. Data appear on the bus when the Output Enable ($\overline{OE}$) is LOW. When $\overline{OE}$ is HIGH, the bus output is in the high impedance state.

Industry Part Number

54F373

NS Part Numbers

54F373DMQB
54F373FMQB
54F373LMQB

Prime Die

M373

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

- 3-State Outputs for Bus Lines Interfacing
- Eight Latches in a single package

(Absolute Maximum Ratings)

(Note 1)

Storage Temperature	-65 C to +150 C
Ambient Temperature under Bias	-55 C to +125 C
Junction Temperature under Bias	-55 C to +175 C
Vcc Pin Potential to Ground Pin	-0.5V to +7.0V
Input Voltage (Note 2)	-0.5V to +7.0V
Input Current (Note 2)	-30mA to +5.0mA
Voltage Applied to Output in HIGH State (with Vcc=0V)	
Standard Output	-0.5V to Vcc
TRI-STATE Output	-0.5V to +5.5V
Current Applied to Output in LOW State (Max)	twice the rated Iol(mA)
ESD Last Passing Voltage (Min)	4000V

Note 1: Absolute Maximum ratings are those values beyond which the device may be damaged or have its useful life impaired.
Note 2: Either voltage limit or current limit is sufficient to protect inputs.

Recommended Operating Conditions

Free Air Ambient Temperature	
Commercial	0 C to +70 C
Military	-55 C to +125 C
Supply Voltage	
Military	+4.5V to +5.5V
Commercial	+4.5V to +5.5V

Electrical Characteristics

DC PARAMETERS

(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=5.5V	1, 3	INPUTS		20	uA	1, 2, 3
IBVI	Input High Current	VCC=5.5V, VM=7.0V, VINH=5.5V	1, 3	INPUTS		100	uA	1, 2, 3
IIL	Input LOW Current	VCC=5.5V, VM=0.5V, VINH=5.5V	1, 3	INPUTS		-0.6	mA	1, 2, 3
VOL	Output LOW Voltage	VCC=4.5V, VIL=0.8V, IOL=20mA, VINH=5.5V	1, 3	OUTPUTS		0.5	V	1, 2, 3
VOH	Output HIGH Voltage	VCC= 4.5V, VIH=2.0V, IOH=-1.0mA, VINH=5.5V, VINL=0.0V	1, 3	OUTPUTS	2.5		V	1, 2, 3
VOH3	Output HIGH Voltage	IOH3=-3.0mA, VCC=4.5V, VIH=2.0V, VINH=5.5V, VINL=0.0V	1, 3	OUTPUTS	2.5		V	1
			1, 3	OUTPUTS	2.4		V	2, 3
IOS	Short Circuit Current	VCC=5.5V, VINH=5.5V, VINL=0.0V, VM=0.0V	1, 3	OUTPUTS	-60	-150	mA	1, 2, 3
VCD	Input Clamp Diode Voltage	VCC=4.5V, IM=-18mA, VINH=5.5V	1, 3	INPUTS		-1.2	V	1, 2, 3
ICCZ	Supply Current	VCC=5.5V, VINH=5.5V, VINL=0.0V	1, 3	VCC		55	mA	1, 2, 3
ICEX	Output HIGH Leakage Current	VCC=5.5V, VINH=5.5V, VINL=0.0V, VM=5.5V	1, 3	OUTPUTS		250	uA	1, 2, 3
IOZH	Output Leakage Current	VCC=5.5V, VM=2.7V, VIH=2.0V, VINH=5.5V, VINL=0.0V	1, 3	OUTPUTS		50	uA	1, 2, 3
IOZL	Output Leakage Current	VCC=5.5V, VM=0.5V, VIH=2.0V, VINH=5.5V	1, 3	OUTPUTS		-50	uA	1, 2, 3

Electrical Characteristics

AC PARAMETERS

(The following conditions apply to all the following parameters, unless otherwise specified.)
AC: CL=50pf, RL=500 OHMS, TR=2.5ns, TF=2.5ns SEE AC FIGS

SYMBOL	PARAMETER	CONDITIONS	NOTES	PIN-NAME	MIN	MAX	UNIT	SUB-GROUPS
tpLH(1)	Propagation Delay	VCC=5.0V @25C, VCC=4.5V & 5.5V @-55/125C	2, 4	Dn to Qn	3.0	7.0	ns	9
			2, 4	Dn to Qn	3.0	8.5	ns	10, 11
tpHL(1)	Propagation Delay	VCC=5.0V @25C, VCC=4.5V & 5.5V @-55/125C	2, 4	Dn to Qn	2.0	5.0	ns	9
			2, 4	Dn to Qn	2.0	7.0	ns	10, 11
tpLH(2)	Propagation Delay	VCC=5.0V @25C, VCC=4.5V & 5.5V @-55/125C	2, 4	LE to Qn	5.0	11.5	ns	9
			2, 4	LE to Qn	5.0	15.0	ns	10, 11
tpHL(2)	Propagation Delay	VCC=5.0V @25C, VCC=4.5V & 5.5V @-55/125C	2, 4	LE to Qn	3.0	7.0	ns	9
			2, 4	LE to Qn	3.0	8.5	ns	10, 11
tpZH	Output Enable Time	VCC=5.0V @25C, VCC=4.5V & 5.5V @-55/125C	2, 4	OUTPUT ENABLE	2.0	11.0	ns	9
			2, 4	OUTPUT ENABLE	2.0	13.5	ns	10, 11
tpZL	Output Enable Time	VCC=5.0V @25C VCC=4.5V & 5.5V @-55/125C	2, 4	OUTPUT ENABLE	2.0	7.5	ns	9
			2, 4	OUTPUT ENABLE	2.0	10.0	ns	10, 11
tpHZ	Output Disable Time	VCC=5.0V @25C, VCC=4.5V & 5.5V @-55/125C	2, 4	OUTPUT DISABLE	1.5	6.5	ns	9
			2, 4	OUTPUT DISABLE	1.5	10.0	ns	10, 11
tpLZ	Output Disable Time	VCC=5.0V @25C, VCC=4.5V & 5.5V @-55/125C	2, 4	OUTPUT DISABLE	1.5	5.0	ns	9
			2, 4	OUTPUT DISABLE	1.5	7.0	ns	10, 11
ts(H/L)	Setup Time	VCC=5.0V @25C, VCC=4.5V & 5.5V @-55/125C	5	Dn to LE	2.0		ns	9, 10, 11
th(H)	Setup Time	VCC=5.0V @25C, VCC=4.5V & 5.5V @-55/125C	5	Dn to LE	3.0		ns	9, 10, 11
th(L)	Setup Time	VCC=5.0V @25C, VCC=4.5V & 5.5V @-55/125C	5	Dn to LE	3.0		ns	9
			5	Dn to LE	4.0		ns	10, 11

Electrical Characteristics

AC PARAMETERS(Continued)

(The following conditions apply to all the following parameters, unless otherwise specified.)
AC: CL=50pf, RL=500 OHMS, TR=2.5ns, TF=2.5ns SEE AC FIGS

SYMBOL	PARAMETER	CONDITIONS	NOTES	PIN-NAME	MIN	MAX	UNIT	SUB-GROUPS
tw(H)	Pulse Width	VCC=5.0V @25C, VCC=4.5V & 5.5V @-55/125C	5	LE	6.0		ns	9, 10, 11

Note 1: Screen tested 100% on each device at +25C, +125C & -55C 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, and periodically at +125C & -55C temperature, subgroups 10 & 11.
Note 5: GUARANTEED BUT NOT TESTED. (Design Characterization Data)

Revision History

Rev	ECN #	Rel Date	Originator	Changes
2A0	M0002831	04/14/98	Linda Collins	New update: MN54F373-X rev 2A0. Corrected a typo in the VOH test conditions, IOH was listed as positive 1.0mA, should have been negative 1.0mA.

National Semiconductor was acquired by Texas Instruments.

http://www.ti.com/corp/docs/investor_relations/pr_09_23_2011_national_semiconductor.html

This file is the datasheet for the following electronic components:

JM38510/34601BSA - http://www.ti.com/product/jm38510/34601bsa?HQS=TI-null-null-dscatalog-df-pf-null-wwe

JM38510/34601SRA - http://www.ti.com/product/jm38510/34601sra?HQS=TI-null-null-dscatalog-df-pf-null-wwe

54F373DMQB - http://www.ti.com/product/54f373dmqb?HQS=TI-null-null-dscatalog-df-pf-null-wwe

54F373FMQB - http://www.ti.com/product/54f373fmqb?HQS=TI-null-null-dscatalog-df-pf-null-wwe

JM38510/34601SSA - http://www.ti.com/product/jm38510/34601ssa?HQS=TI-null-null-dscatalog-df-pf-null-wwe

JM38510/34601BRA - http://www.ti.com/product/jm38510/34601bra?HQS=TI-null-null-dscatalog-df-pf-null-wwe

JM38510/34601B2A - http://www.ti.com/product/jm38510/34601b2a?HQS=TI-null-null-dscatalog-df-pf-null-wwe

54F373LMQB - http://www.ti.com/product/54f373lmqb?HQS=TI-null-null-dscatalog-df-pf-null-wwe

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