

MN54F398-X REV 1A0

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QUAD 2-PORT REGISTER
General Description

The F398 is the logical equivalent of a quad 2-input multiplexer feeding into four edge-triggered flip-flops. A common Select input determines which of the two 4-bit words is accepted. The selected data enters the flip-flops on the rising edge of the clock.

Industry Part Number

54F398

NS Part Numbers

 54F398DMQB
 54F398FMQB
 54F398LMQB

Prime Die

M398

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

- Select inputs from Two Data Sources
- Fully Positive Edge-Triggered Operation
- Both True and Complement Outputs- F398

(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 rated I _{ol} (mA)

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

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, VINL=0.0V	1, 3	INPUTS		20	uA	1, 2, 3
IBVI	Input High Current	VCC=5.5V, VM=7.0V, VINH=5.5V, VINL=0.0V	1, 3	INPUTS		100	uA	1, 2, 3
IIL	Input LOW Current	VCC=5.5V, VM=0.5V, VINH=5.5V, VINL=0.0V	1, 3	INPUTS		-0.6	mA	1, 2, 3
VOL	Output LOW Voltage	VCC=4.5V, VIL=0.8V, IOL=20mA, VIH=2.0V, 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, VIL=0.8V, VINL=0.0V, VINH=5.5V	1, 3	OUTPUTS	2.5		V	1, 2, 3
IOS	Output Short-Circuit Current	VCC=5.5V, VINH=5.5V, VM=0.0V, VINL=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
ICC	Power Supply Current	VCC=5.5V, VINH=5.5V	1, 3	VCC		38	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

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	Propagation Delay	VCC=5.0V @ 25C, VCC=4.5V & 5.5V @ -55/125C	2, 4	CP to Q or \bar{Q}	3.0	7.5	ns	9
			2, 4	CP to Q or \bar{Q}	3.0	9.5	ns	10, 11
tpHL	Propagation Delay	VCC=5.0V @ 25C, VCC=4.5V & 5.5V @ -55/125C	2, 4	CP to Q or \bar{Q}	3.0	9.5	ns	9
			2, 4	CP to Q or \bar{Q}	3.0	11.5	ns	10, 11
ts(H/L)(1)	Setup Time HIGH or LOW	VCC=5.0V @ 25C, VCC=4.5V & 5.5V @ -55/125C	5	In to CP	3.0		ns	9
			5	In to CP	4.5		ns	10, 11
th(H/L)(1)	Hold Time HIGH or LOW	VCC=5.0V @ 25C, VCC=4.5V & 5.5V @ -55/125C	5	In to CP	1.0		ns	9
			5	In to CP	1.5		ns	10, 11
ts(H/L)(2)	Setup Time	VCC=5.0V @ 25C, VCC=4.5V & 5.5V @ -55/125C	5	S to CP	7.5		ns	9
			5	S to CP	10.5		ns	10, 11
th(H/L)(2)	Hold Time	VCC=5.0V @ 25C, VCC=4.5V & 5.5V @ -55/125C	5	S to CP	0		ns	9, 10, 11
tw(H)	Pulse Width	VCC=5.0V @ 25C, VCC=4.5V & 5.5V @ -55/125C TR/TF=1.0ns	5	CP	4.0		ns	9, 10, 11
tw(L)	Pulse Width	VCC=5.0V @ 25C, VCC=4.5V & 5.5V @ -55/125C TR/TF=1.0ns	5	CP	6.0		ns	9
			5	CP	7.0		ns	10, 11
fMAX	Pulse Width	VCC=5.0V @ 25C, VCC=4.5V & 5.5V @ -55/125C TR/TF=1.0ns	5		100		MHz	9
			5		80		MHz	10, 11

Note 1: Screen tested 100% on each device at -55 C, +25 C & +125 C temperature, Subgroups A1, 2, 3, 7 & 8.

Note 2: Screen tested 100% on each device at +25 C temperature only, Subgroup A9.

Note 3: Sample tested (Method 5005, Table 1) on each MFG. lot at +25 C, +125 C & -55 C temp., Subgroups A1, 2, 3, 7 & 8.

Note 4: Sample Tested (Method 5005, Table 1) on each MFG. lot at +25 C Subgroup A9, & periodically at +125 C & -55 C temp., Subgroups 10 & 11.

Note 5: Guaranteed but not tested. (DESIGN CHARACTERIZATION DATA)

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:

54F398DMQB - <http://www.ti.com/product/54f398dmqb?HQS=TI-null-null-dscatalog-df-pf-null-ww>

54F398LMQB - <http://www.ti.com/product/54f398lmqb?HQS=TI-null-null-dscatalog-df-pf-null-ww>



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