

CN54F151A-X REV 0A0

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8-INPUT MULTIPLEXER

General Description

The F151A is a high-speed 8-input digital multiplexer. It provides in one package the ability to select one line of data from up to eight sources. The F151A can be used as a universal function generator to generate any logic function of four variables. Both assertion and negation outputs are provided.

Industry Part Number

54F151A

NS Part Numbers

54F151ADC

Prime Die

M151A

Processing

(blank)

Quality Conformance Inspection

(blank)

Subgrp	Description	Temp (°C)
1	Static tests at	+25
2	Static tests at	+70
3	Static tests at	0
4	Dynamic tests at	+25
5	Dynamic tests at	+70
6	Dynamic tests at	0
7	Functional tests at	+25
8A	Functional tests at	+70
8B	Functional tests at	0
9	Switching tests at	+25
10	Switching tests at	+70
11	Switching tests at	0

(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)	-30 mA 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)

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.

Note 2: Either voltage limit or current limit is sufficient to protect inputs.

Recommended Operating Conditions

Free Air Ambient Temperature	0 C to +70 C
Supply Voltage	+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: 0°C to +70°C

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, 2	INPUTS		5.0	uA	1, 2, 3
IBVI	Input High Current	VCC=5.5V, VM=7.0V, VINH=5.5V, VINL=0.0V	1, 2	INPUTS		7.0	uA	1, 2, 3
IIL	Input LOW Current	VCC=5.5V, VM=0.5V, VINL=0.0V, VINH=5.5V	1, 2	INPUTS		-0.6	mA	1, 2, 3
VOL	Output LOW Voltage	VCC=4.5V, VIL=0.8V, VIH=2.0V, IOL=20mA, VINL=0.0V	1, 2	OUTPUTS		0.5	V	1, 2, 3
VOH	Output HIGH Voltage	VCC=4.5V, VIL=0.8V, VINH=5.5V, VIH=2.0V, IOH=-1.0mA, VINL=0.0V	1, 2	OUTPUTS	2.5		V	1, 2, 3
		VCC=4.75V, VIL=0.8V, VINH=5.5V, VIH=2.0V, IOH=-1.0mA, VINL=0.0V	1, 2	OUTPUTS	2.7		V	1, 2, 3
IOS	Short Circuit Current	VCC=5.5V, VINH=5.5V, VINL=0.0V, VM=0.0V	1, 2	OUTPUTS	-60	-150	mA	1, 2, 3
VCD	Input Clamp Diode Voltage	VCC=4.5V, IM=-18mA, VINH=5.5V	1, 2	INPUTS		-1.2	V	1, 2, 3
VID	Input Leakage Test	VCC=0V, IID=1.9uA, All other pins grounded	1, 2	INPUTS	4.75		V	1, 2, 3
IOD	Output Leakage Circuit Current	VCC=0V, VIOD=150mV, All other pins grounded	1, 2	OUTPUTS		4.75	uA	1, 2, 3
VIH	Input HIGH Voltage	Recognized as a HIGH signal	4	INPUTS	2.0		V	1, 2, 3
VIL	Input LOW Voltage	Recognized as a LOW signal	4	INPUTS		0.8	V	1, 2, 3
ICC	Supply Current	VCC=5.5V, VINH=5.5V	1, 2	VCC		21	mA	1, 2, 3
ICEX	Output HIGH Leakage Current	VCC=5.5V, VINH=5.5V, VINL=0.0V, VM=5.5V	1, 2	OUTPUTS		100	uA	1, 2, 3

Electrical Characteristics

AC PARAMETER

(The following conditions apply to all the following parameters, unless otherwise specified.)

AC: CL=50pf, RL=500 OHMS, TR=2.5ns, TF=2.5ns

SYMBOL	PARAMETER	CONDITIONS	NOTES	PIN-NAME	MIN	MAX	UNIT	SUB-GROUPS
tpLH(1)	Propagation Delay	VCC=5.0V @25C, VCC=4.5V & 5.5V @ 0C/ +70C	1, 2	In to Z	3.0	6.5	ns	9
			1, 2	In to Z	2.5	7.5	ns	10, 11
tpHL(1)	Propagation Delay	VCC=5.0V @25C, VCC=4.5V & 5.5V @ 0C/ +70C	1, 2	In to Z	3.7	7.0	ns	9
			1, 2	In to Z	3.7	7.5	ns	10, 11
tpLH(2)	Propagation Delay	VCC=5.0V @25C, VCC=4.5V & 5.5V @ 0C/ +70C	1, 2	In to Z	3.0	6.5	ns	9
			1, 2	In to Z	3.0	7.0	ns	10, 11
tpHL(2)	Propagation Delay	VCC=5.0V @25C, VCC=4.5V & 5.5V @ 0C/ +70C	1, 2	In to Z	1.5	4.0	ns	9
			1, 2	In to Z	1.5	5.0	ns	10, 11
tpLH(3)	Propagation Delay	VCC=5.0V @25C, VCC=4.5V & 5.5V @ 0C/ +70C	1, 2	Sn to Z	4.5	10.5	ns	9
			1, 2	Sn to Z	4.5	12.0	ns	10, 11
tpHL(3)	Propagation Delay	VCC=5.0V @25C, VCC=4.5V & 5.5V @ 0C/ +70C	1, 2	Sn to Z	4.0	9.0	ns	9
			1, 2	Sn to Z	4.0	9.0	ns	10, 11
tpLH(4)	Propagation Delay	VCC=5.0V @25C, VCC=4.5V & 5.5V @ 0C/ +70C	1, 2	Sn to Z	4.0	9.0	ns	9
			1, 2	Sn to Z	3.5	9.5	ns	10, 11
tpHL(4)	Propagation Delay	VCC=5.0V @25C, VCC=4.5V & 5.5V @ 0C/ +70C	1, 2	Sn to Z	3.2	7.5	ns	9
			1, 2	Sn to Z	3.2	7.5	ns	10, 11
tpLH(5)	Propagation Delay	VCC=5.0V @25C, VCC=4.5V & 5.5V @ 0C/ +70C	1, 2	E to Z	5.0	9.5	ns	9
			1, 2	E to Z	4.0	10.5	ns	10, 11
tpHL(5)	Propagation Delay	VCC=5.0V @25C, VCC=4.5V & 5.5V @ 0C/ +70C	1, 2	E to Z	3.5	7.0	ns	9
			1, 2	E to Z	3.0	7.5	ns	10, 11
tpLH(6)	Propagation Delay	VCC=5.0V @25C, VCC=4.5V & 5.5V @ 0C/ +70C	1, 2	E to Z	3.0	6.1	ns	9
			1, 2	E to Z	3.0	7.0	ns	10, 11
tpHL(6)	Propagation Delay	VCC=5.0V @25C, VCC=4.5V & 5.5V @ 0C/ +70C	1, 2	E to Z	3.0	6.0	ns	9
			1, 2	E to Z	2.5	6.0	ns	10, 11

Note 1: Screen tested 100% on each device at +75C temperature only, subgroups 2, 8A & 10.

Note 2: Sample tested (Method 5005, Table 1) on each MFG. lot at +75C temperature only, subgroups 2, 8A & 10.

Note 3: Guaranteed, but not tested.

Note 4: Guaranteed by applying specific input condition and testing VOL & VOH.

Revision History

Rev	ECN #	Rel Date	Originator	Changes
0A0	M0003055	11/12/98	Donald B. Miller	Initial MDS Release