

**CN54F151A-X REV 0A0**

 Original Creation Date: 10/20/98  
 Last Update Date: 11/12/98  
 Last Major Revision Date: 10/20/98

**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**

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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: 0C to +70C

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 $\bar{Z}$	3.0	6.5	ns	9
			1, 2	In to $\bar{Z}$	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 $\bar{Z}$	1.5	4.0	ns	9
			1, 2	In to $\bar{Z}$	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 $\bar{Z}$	4.0	9.0	ns	9
			1, 2	Sn to $\bar{Z}$	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 $\bar{Z}$	3.2	7.5	ns	9
			1, 2	Sn to $\bar{Z}$	3.2	7.5	ns	10, 11
tpLH(5)	Propagation Delay	VCC=5.0V @25C, VCC=4.5V & 5.5V @ 0C/ +70C	1, 2	$\bar{E}$ to Z	5.0	9.5	ns	9
			1, 2	$\bar{E}$ 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	$\bar{E}$ to Z	3.5	7.0	ns	9
			1, 2	$\bar{E}$ 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	$\bar{E}$ to $\bar{Z}$	3.0	6.1	ns	9
			1, 2	$\bar{E}$ to $\bar{Z}$	3.0	7.0	ns	10, 11
tpHL(6)	Propagation Delay	VCC=5.0V @25C, VCC=4.5V & 5.5V @ 0C/ +70C	1, 2	$\bar{E}$ to $\bar{Z}$	3.0	6.0	ns	9
			1, 2	$\bar{E}$ to $\bar{Z}$	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