



MICROCIRCUIT DATA SHEET

MNDM54LS251-X REV 0A0

Original Creation Date: 04/05/98
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Last Major Revision Date: 04/05/98

8 - INPUT MULTIPLEXER with TRI-STATE OUTPUTS

General Description

The 'LS251 is a high-speed 8 - input digital multiplexer. It provides, in one package, the ability to select one bit of data from up to eight sources. It 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

54LS251

NS Part Numbers

DM54LS251J/883
DM54LS251W/883

Prime Die

R251

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 I _{ol} (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		10.0	mA	1, 2, 3
ICCZ	Supply Current	VCC=5.5V, VINH=4.5V, VINL=0.0V	1, 3	VCC		12.0	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

AC PARAMETER - 50pF

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

tpLH/HL 1	Propagation Delay	VCC=5.0V, CL=50pF, RL=667 ohms	2, 4, 5	Select to Y		45.0	ns	9
			2, 4, 5	Select to Y		56.0	ns	10, 11
tpLH/HL 2	Propagation Delay	VCC=5.0V, CL=50pF, RL=667 ohms	2, 4, 5	Select to W		33.0	ns	9
			2, 4, 5	Select to W		41.0	ns	10, 11
tpLH/HL 3	Propagation Delay	VCC=5.0V, CL=50pF, RL=667 ohms	2, 4, 5	Data to Y		28.0	ns	9
			2, 4, 5	Data to Y		35.0	ns	10, 11

Electrical Characteristics

AC PARAMETER - 50pF(Continued)

(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 4	Propagation Delay	VCC=5.0V, CL=50pF, RL=667 ohms	2, 4, 5	Data to W		15.0	ns	9
			2, 4, 5	Data to W		19.0	ns	10, 11
tpZH 1	Output Enable	VCC=5.0V, CL=50pF, RL=667 ohms	2, 4, 5	\overline{OE} to Y		45.0	ns	9
			2, 4, 5	\overline{OE} to Y		56.0	ns	10, 11
tpZL 1	Output Enable	VCC=5.0V, CL=50pF, RL=667 ohms	2, 4, 5	\overline{OE} to Y		40.0	ns	9
			2, 4, 5	\overline{OE} to Y		50.0	ns	10, 11
tpZH 2	Output Enable	VCC=5.0V, CL=50pF, RL=667 ohms	2, 4, 5	\overline{OE} to W		27.0	ns	9
			2, 4, 5	\overline{OE} to W		34.0	ns	10, 11
tpZL 2	Output Enable	VCC=5.0V, CL=50pF, RL=667 ohms	2, 4, 5	\overline{OE} to W		40.0	ns	9
			2, 4, 5	\overline{OE} to W		50.0	ns	10, 11
tpHZ 1	Output Disable	VCC=5.0V, CL=50pF, RL=667 ohms	2, 4, 5	\overline{OE} to Y		45.0	ns	9
			2, 4, 5	\overline{OE} to Y		56.0	ns	10, 11
tpLZ 1	Output Disable	VCC=5.0V, CL=50pF, RL=667 ohms	2, 4, 5	\overline{OE} to Y		25.0	ns	9
			2, 4, 5	\overline{OE} to Y		31.0	ns	10, 11
tpHZ 2	Output Disable	VCC=5.0V, CL=50pF, RL=667 ohms	2, 4, 5	\overline{OE} to W		55.0	ns	9
			2, 4, 5	\overline{OE} to W		69.0	ns	10, 11
tpLZ 2	Output Disable	VCC=5.0V, CL=50pF, RL=667 ohms	2, 4, 5	\overline{OE} to W		25.0	ns	9
			2, 4, 5	\overline{OE} to W		31.0	ns	10, 11

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	M0002101	07/17/98	Linda Collins	Initial MDS Release: MNDM54LS251-X Rev. 0A0