



## MICROCIRCUIT DATA SHEET

**MNDM54LS86-X REV 0A0**

Original Creation Date: 4/20/98  
Last Update Date: 06/17/98  
Last Major Revision Date: 04/20/98

### Quad 2- Input Exclusive - OR Gates

#### General Description

This device contains four independent gates each of which performs the logic exclusive-OR function.

#### Industry Part Number

54LS86

#### NS Part Numbers

DM54LS86J/883  
DM54LS86W/883

#### Prime Die

R086

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#### 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	-55 C to +175 C
Current Applied to Output in LOW state (Max)	twice the rated I <sub>ol</sub> (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	D1, D2		40	uA	1, 2, 3
IBVI	Input High Current	VCC=5.5V, VM=7.0V, VINH=4.5V, VINL=0.0V	1, 3	INPUTS		200	uA	1, 2, 3
IIL	Input LOW Current	VCC=5.5V, VM=0.4V, VINH=4.5V, VINL=0.0V	1, 3	D1, D2		-0.6	mA	1, 2, 3
VOL	Output LOW Voltage	VCC=4.5V, VIH=2.0V, IOL=4.0mA, VINH=4.5V, VIL=0.7V	1, 3	OUTPUTS		0.4	V	1, 2, 3
VOH	High Level Output Voltage	VCC=4.5V, VIL=0.7V, VIH=2.0V, VINH=4.5V, IOH=-0.4mA	1, 3	OUTPUTS	2.5		V	1, 2, 3
IOS	Short Circuit Output Current	VCC=5.5V, VINH=4.5V, VINL=0.0V, VOUT=0.0V	1, 3	OUTPUTS	-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	mA	1, 2, 3

### AC PARAMETER - 50pF

(The following conditions apply to all the following parameters, unless otherwise specified.)  
AC: CL=50pF Temp range: -55C to +125C

tpLH	Propagation Delay	VCC=5.0V, VINL=0V	2, 4, 5	A or B to Y		23	ns	9
			2, 4, 5	A or B to Y		28	ns	10, 11
tpHL	Propagation Delay	VCC=5.0V, VINL=0V	2, 4, 5	A or B to Y		21	ns	9
			2, 4, 5	A or B to Y		29	ns	10, 11
tpLH (2)	Propagation Delay	VCC=5.0V, VINH=4.5V	2, 4, 5	A or B to Y		15	ns	9
			2, 4, 5	A or B to Y		19	ns	10, 11
tpHL (2)	Propagation Delay	VCC=5.0V, VINH=4.5V	2, 4, 5	A or B to Y		15	ns	9
			2, 4, 5	A or B to Y		19	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.

**Revision History**

<b>Rev</b>	<b>ECN #</b>	<b>Rel Date</b>	<b>Originator</b>	<b>Changes</b>
0A0	M0002873	06/17/98	Linda Collins	Initial MDS Release: MNDM54LS86-X 0A0.