National Semiconductor

MICROCIRCUIT DATA SHEET

MNCD4081BM-X REV 1A0

Original Creation Date: 10/12/95
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QUAD 2-INPUT AND BUFFERED B SERIES GATE

General Description

These quad gates are monolithic complemenatary MOS (CMOS) integrated circuits constructed with N- and P-channel enhancement mode transitors. They have equal source and sink current capabilities and conform to standard B series output drive. The devices also have buffered outputs which improve transfer characteristics by providing very high gain.

All inputs protected against static discharge with diodes to Vdd and Vss.

Industry Part Number

CD4081BM

NS Part Numbers

CD4081BMJ/883
CD4081BMW/883

Prime Die

CD4081BM

Processing

MIL-STD-883, Method 5004

Quality Conformance Inspection

MIL-STD-883, Method 5005

Subgrp	Description	Temp (^{o}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

- Low power TTL compatibility — Fan out of 2 driving 74L or 1 driving 74LS
- 5V-10V-15V parametric ratings
- Symmetrical output characteristics
- Maximum input leakage 1uA at 15V over full temperature range

(Absolute Maximum Ratings)

(Note 1, 2)

DC Supply Voltage (Vdd)	-0.5 to +18Vdc
Input Voltage (Vin)	-0.5 to Vdd +0.5Vdc
Storage Temperature Range (Ts)	-65 C to +150 C
Power Dissipation (Pd)	
Dual-In-Line	700mW
Small Outline	500mW
Lead Temperature (Tl) (Soldering, 10 seconds)	260 C

Note 1: "Absolute Maximum Ratings" are those values beyond which the safety of the device cannot be guaranteed. Except for "Operating Temperature Range" they are not meant to imply that the devices should be operated at these limits. The table of "Electrical Characteristics" provides conditions for actual device operation.

Note 2: All voltages measured with respect to Vss unless otherwise specified.

Recommended Operating Conditions

DC Supply Voltage (Vdd)	3V to 15Vdc
Input Voltage (Vin)	0V to Vdd Vdc
Operating Temperature Range (TA)	
CD4081BM	-55 C to +125 C

Electrical Characteristics

DC PARAMETERS

(The following conditions apply to all the following parameters, unless otherwise specified.)
DC: All voltages measured with respect to Vss

SYMBOL	PARAMETER	CONDITIONS	NOTES	PIN-NAME	MIN	MAX	UNIT	SUB-GROUPS
Idd	Quiescent Device Current	Vdd = 15V, Vih = 15V, Vil = 0V				1000	nA	1, 3
						30	uA	2
		Vdd = 10V, Vih = 10V, Vil = 0V				0.50	uA	1, 3
						15	uA	2
		Vdd = 5V, Vih = 5V, Vil = 0V				0.25	uA	1, 3
						7.5	uA	2
Voh	Logical "1" Output Voltage	Vdd = 5V, Vih = 5V, Vil = 0V, Iout = 0mA			4.95		V	1, 2, 3
		Vdd = 10V, Vih = 10V, Vil = 0V, Iout = 0mA			9.95		V	1, 2, 3
		Vdd = 15V, Vih = 15V, Vil = 0V, Iout = 0mA			14.95		V	1, 2, 3
Vol	Logical "0" Output Voltage	Vdd = 5V, Vih = 5V, Vil = 0V, Iout = 0uA				0.05	V	1, 2, 3
		Vdd = 10V, Vih = 10V, Vil = 0V, Iout = 0uA				0.05	V	1, 2, 3
		Vdd = 15V, Vih = 15V, Vil = 0V, Iout = 0uA				0.05	V	1, 2, 3
Vih	Logical "1" Input Voltage	Vdd = 5V, Vout = 4.5V (min)	1		3.5		V	1, 2, 3
		Vdd = 10V, Vout = 9.0V (min)	1		7		V	1, 2, 3
		Vdd = 15V, Vout = 13.5V (min)	1		11		V	1, 2, 3
Vil	Logical "0" Input Voltage	Vdd = 5V, Vout = 0.5V (max)	1			1.5	V	1, 2, 3
		Vdd = 10V, Vout = 1.0V (max)	1			3	V	1, 2, 3
		Vdd = 15V, Vout = 1.5V (max)	1			4	V	1, 2, 3
Iih	Logical "1" Input Current	Vdd = 15V, Vin = 15V (all inputs tied)				100	nA	1, 3
						1000	nA	2
Iil	Logical "0" Input Current	Vdd = 15V, Vin = 0V (all inputs tied)				-100	nA	1, 3
						-1000	nA	2

Electrical Characteristics

DC PARAMETERS(Continued)

(The following conditions apply to all the following parameters, unless otherwise specified.)
DC: All voltages measured with respect to Vss

SYMBOL	PARAMETER	CONDITIONS	NOTES	PIN-NAME	MIN	MAX	UNIT	SUB-GROUPS
Ioh	Logical "1" Output Current	Vdd = 5V, Vih = 5V, Vil = 0V, Vout = 4.6V			-0.51		mA	1
					-0.36		mA	2
					-0.64		mA	3
		Vdd = 10V, Vih = 10V, Vil = 0V, Vout = 9.5V			-1.3		mA	1
					-0.9		mA	2
					-1.6		mA	3
		Vdd = 15V, Vih = 15V, Vil = 0V, Vout = 13.5V			-3.4		mA	1
					-2.4		mA	2
					-4.2		mA	3
Iol	Logical "0" Output Current	Vdd = 5V, Vih = 5V, Vil = 0V, Vout = 0.4V			0.51		mA	1
					0.36		mA	2
					0.64		mA	3
		Vdd = 10V, Vih = 10V, Vil = 0V, Vout = 0.5V			1.3		mA	1
					0.9		mA	2
					1.6		mA	3
		Vdd = 15V, Vih = 15V, Vil = 0V, Vout = 1.5V			3.4		mA	1
					2.4		mA	2
					4.2		mA	3

AC PARAMETERS

(The following conditions apply to all the following parameters, unless otherwise specified.)
AC: Cl = 50pF, or equivalent impedance provided by diode load.

tPHL	Propagation Delay: To Logical "0"	Vdd = 5V	2			250	nS	9
			2			375	nS	10, 11
tPLH	Propagation Delay: To Logical "1"	Vdd = 5V	2			250	nS	9
			2			375	nS	10, 11
tTHL	Transition Time: To Logical "0"	Vdd = 5V	2			200	nS	9
			2			300	nS	10, 11
tTLH	Transition Time: To Logical "1"	Vdd = 5V	2			200	nS	9
			2			300	nS	10, 11
		Continuity Tests	3					9, 10, 11

Note 1: Parameter tested go-no-go only.
Note 2: Tested at 25 C; guaranteed but not tested at +125 C & -55 C.
Note 3: Engineering setup tests, no limits.

Revision History

Rev	ECN #	Rel Date	Originator	Changes
1A0	M0000536	06/16/98	Linda Collins	Converted from RETS4081BX rev. 1A to MDS MNCD4081BM-X rev. 1A0. Deleted the Drift values.