MNMM54C08-X REV 1A0

QUAD 2-INPUT AND GATE

General Description

Employing complementary MOS (CMOS) transistors to achieve wide power supply operating range, low power consumption and high noise margin, these gates provide basic functions used in the implementation of digital integrated circuit systems. The N- and P-channel enhancement mode transistors provide a symmetrical circuit with output swing essentially equal to the supply voltage. No DC power other than that caused by leakage current is consumed during static conditions. All inputs are protected from damage due to static discharge by diode clamps to Vcc and Gnd.

Industry Part Number

MM54C08

Prime Die

MM54C08

NS Part Numbers

MM54C08J/883
MM54C08W/883

Processing

MIL-STD-883, Method 5004

Quality Conformance Inspection

MIL-STD-883, Method 5005

Subgrp	Description	Temp ($^{\circ}$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

- Wide supply voltage range   3.0V to 15V
- Guaranteed noise margin   1.0V
- High noise immunity   0.45 Vcc (typ.)
- Low power   Fan out of 2
  TTL compatibility   driving 74L
- Low power consumption   10nW/package (typ.)

(Absolute Maximum Ratings)
(Note 1)

Voltage at Any Pin

                                                -0.3V to Vcc +0.3V

Operating Temperature Range

                                                -55 C to +125 C

Storage Temperature Range

                                                -65 C to +150 C

Power Dissipation (Pd)
    Dual-In-Line   700mW
    Small Outline   500mW

Operating Vcc Range

                                                3.0V to 15V

Absolute Maximum Vcc

                                                18V

Lead Temperature
    (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.

Electrical Characteristics

DC PARAMETERS:

SYMBOL	PARAMETER	CONDITIONS	NOTES	PIN-NAME	MIN	MAX	UNIT	SUB-GROUPS
Voh	Logical "1" Output Voltage	Vcc = 5V, Iout = –10uA			4.5		V	1, 2, 3
		Vcc = 10V, Iout = –10uA			9		V	1, 2, 3
		Vcc = 4.5V, Iout = –360uA			2.4		V	1, 2, 3
Vol	Logical "0" Output Voltage	Vcc = 5V, Iout = 10uA				0.5	V	1, 2, 3
		Vcc = 10V, Iout = 10uA				1	V	1, 2, 3
		Vcc = 4.5V, Iout = 360uA				0.4	V	1, 2, 3
Iih	Logical "1" Input Current	Vcc = 15V, Vin = 15V				0.15	uA	1, 3
						1	uA	2
Iil	Logical "0" Input Current	Vcc = 15V, Vin = 0V				–0.15	uA	1, 3
						–1	uA	2
Icc	Quiescent Device Current	Vcc = 15V				0.15	uA	1, 3
						15	uA	2
Isource	Output Source Current	Vcc = 5V, Vout = 0			–1.75		mA	1
		Vcc = 10V, Vout = 0, Vin = 10V, (all inputs)			–8		mA	1
Isink	Output Sink Current	Vcc = 5V, Vin = 0 (all inputs)			1.75		mA	1
		Vcc = 10V, Vout = 10V, Vin = 0 (all inputs)			8		mA	1
Vih	Logical "1" Input Voltage	Vcc = 5V	1		3.5		V	1, 2, 3
		Vcc = 10V	1		8		V	1, 2, 3
		Vcc = 4.5V (LP to CMOS)	1		3		V	1, 2, 3
Vil	Logical "0" Input Voltage	Vcc = 5V	1			1.5	V	1, 2, 3
		Vcc = 10V	1			2	V	1, 2, 3
		Vcc = 4.5V, (LP to CMOS)	1			0.8	V	1, 2, 3

Electrical Characteristics

AC PARAMETERS: <u>PROPAGATION DELAY TIME</u>:

(The following conditions apply to all the following parameters, unless otherwise specified.)
AC: Vcc = 5V, Cl = 50pF or equivalent impedance provided by diode load.

SYMBOL	PARAMETER	CONDITIONS	NOTES	PIN-NAME	MIN	MAX	UNIT	SUB-GROUPS
tPHL		Vcc = 5V	2			140	nS	9
			2			195	nS	10
			2			110	nS	11
tPLH		Vcc = 5V	2			140	nS	9
			2			195	nS	10
			2			110	nS	11

Note 1:   Parameter tested go-no-go only.
Note 2:   Tested at 25 C; guaranteed but not tested at +125 C and -55 C.

National Semiconductor was acquired by Texas Instruments.

This file is the datasheet for the following electronic components:

MM54C08J/883 - http://www.ti.com/product/mm54c08j/883?HQS=TI-null-null-dscatalog-df-pf-null-wwe