

**MNMM54C02-X REV 1A0**

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**QUAD 2-INPUT NOR GATE**

**General Description**

These logic gates employ complementary MOS (CMOS) to achieve wide power supply operating range, low power consumption, high noise immunity and symmetric controlled rise and fall times. With features such as this the 54C logic family is close to ideal for use in digital systems. Function and pin out compatibility with series 54 devices minimizes design time for those designers already familiar with the standard 54 logic family.

All inputs are protected from damage due to static discharge by diode clamps to Vcc and Gnd.

**Industry Part Number**

MM54C02

**NS Part Numbers**

MM54C02J/883  
 MM54C02W/883

**Prime Die**

MM54C02

**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**

- Wide supply voltage range 3V to 15V
- Guaranteed noise margin 1V
- High noise immunity 0.45 Vcc (typ.)
- Low power consumption 10nW/package (typ.)
- Low power Fan out of 2
- TTL compatibility driving 74L

**(Absolute Maximum Ratings)**

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
Operating Vcc Range	3.0V to 15V
Maximum Vcc Voltage	18V
Power Dissipation (Pd)	
Dual-In-Line	700mW
Small Outline	500mW
Lead Temperature (Soldering, 10 seconds)	300 C

## 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 (CMOS to LP)			2.4		V	1, 2, 3
		Vcc = 4.5V, Iout = -10uA (LP to CMOS)			4.4		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 (CMOS to LP)				0.4	V	1, 2, 3
		Vcc = 4.5V, Iout = 10uA (LP to CMOS)				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
Isource	Output Source Current	Vcc = 5V, Vin = 0V, Vout = 0V			-1.75		mA	1
		Vcc = 10V, Vin = 0V, Vout = 0V			-8		mA	1
Isink	Output Sink Current	Vcc = 5V, Vin = 5V, Vout = Vcc			1.75		mA	1
		Vcc = 10V, Vin = 10V, Vout = Vcc			8		mA	1
Icc	Power Supply Current	Vcc = 15V			0.15		uA	1, 3
					15		uA	2
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
		Vcc = 4.5V (CMOS to LP)	1		4		V	1, 2, 3

## Electrical Characteristics

### DC PARAMETERS (Continued)

SYMBOL	PARAMETER	CONDITIONS	NOTES	PIN-NAME	MIN	MAX	UNIT	SUB-GROUPS
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
		Vcc = 4.5V (CMOS to LP)	1			1	V	1, 2, 3

### AC PARAMETERS: PROPAGATION DELAY TIME:

(The following conditions apply to all the following parameters, unless otherwise specified.)

AC: Cl = 50pF

tPHL		Vcc = 5V	3			90	nS	9
			3			125	nS	10
			3			70	nS	11
		Vcc = 10V	2			60	nS	9
			2			85	nS	10
			2			50	nS	11
tPLH		Vcc = 5V	3			90	nS	9
			3			125	nS	10
			3			70	nS	11
		Vcc = 10V	2			60	nS	9
			2			85	nS	10
			2			50	nS	11

Note 1: Parameter tested go-no-go only.

Note 2: Guaranteed parameter not tested.

Note 3: Tested at 25 C; guaranteed but not tested at +125 C and -55 C.

This datasheet has been download from:

[www.datasheetcatalog.com](http://www.datasheetcatalog.com)

Datasheets for electronics components.

# National Semiconductor was acquired by Texas Instruments.

[http://www.ti.com/corp/docs/investor\\_relations/pr\\_09\\_23\\_2011\\_national\\_semiconductor.html](http://www.ti.com/corp/docs/investor_relations/pr_09_23_2011_national_semiconductor.html)

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