

# Quad 2-Input NOR Gate With Strobe

## Description

The MC10H100 is a quad NOR gate. Each gate has 3 inputs, two of which are independent and one of which is tied common to all four gates.

## Features

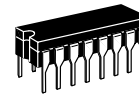
- Propagation Delay, 1.0 ns Typical
- 25 mW Typ/Gate (No Load)
- Improved Noise Margin 150 mV (Over Operating Voltage and Temperature Range)
- Voltage Compensated
- MECL 10K™ Compatible
- Pb-Free Packages are Available\*



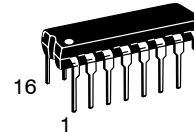
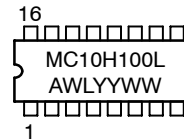
**ON Semiconductor®**

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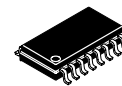
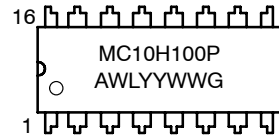
## MARKING DIAGRAMS\*



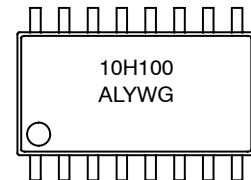
**CDIP-16  
L SUFFIX  
CASE 620**



**PDIP-16  
P SUFFIX  
CASE 648**



**SOEIAJ-16  
CASE 966**



- A = Assembly Location
- WL, L = Wafer Lot
- YY, Y = Year
- WW, W = Work Week
- G = Pb-Free Package

(Note: Microdot may be in either location)

\*For additional marking information, refer to Application Note AND8002/D.

## ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 3 of this data sheet.

\*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

# MC10H100

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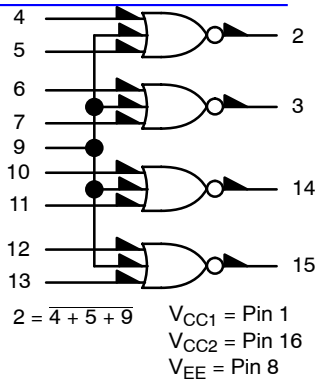
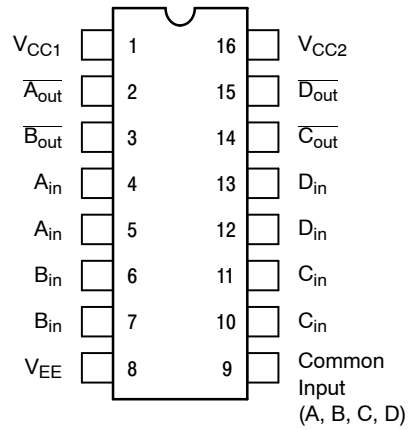


Figure 1. Logic Diagram



Pin assignment is for Dual-in-Line Package.

Figure 2. Pin Assignment

Table 1. MAXIMUM RATINGS

Symbol	Characteristic	Rating	Unit	
$V_{EE}$	Power Supply ( $V_{CC} = 0$ )	-8.0 to 0	Vdc	
$V_I$	Input Voltage ( $V_{CC} = 0$ )	0 to $V_{EE}$	Vdc	
$I_{out}$	Output Current	Continuous Surge	50 100	mA
$T_A$	Operating Temperature Range	0 to +75	°C	
$T_{stg}$	Storage Temperature Range	Plastic Ceramic	-55 to +150 -55 to +165	°C

Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

Table 2. ELECTRICAL CHARACTERISTICS ( $V_{EE} = -5.2 \text{ V} \pm 5\%$ ) (Note 1)

Symbol	Characteristic	0°		25°		75°		Unit	
		Min	Max	Min	Max	Min	Max		
$I_E$	Power Supply Current	-	29	-	26	-	29	mA	
$I_{inH}$	Input Current High	Pin 9	-	900	-	560	-	560	$\mu\text{A}$
		All Other Inputs	-	500	-	310	-	310	
$I_{inL}$	Input Current Low	0.5	-	0.5	-	0.3	-	$\mu\text{A}$	
$V_{OH}$	High Output Voltage	-1.02	-0.84	-0.98	-0.81	-0.92	-0.735	Vdc	
$V_{OL}$	Low Output Voltage	-1.95	-1.63	-1.95	-1.63	-1.95	-1.60	Vdc	
$V_{IH}$	High Input Voltage	-1.17	-0.84	-1.13	-0.81	-1.07	-0.735	Vdc	
$V_{IL}$	Low Input Voltage	-1.95	-1.48	-1.95	-1.48	-1.95	-1.45	Vdc	

- Each MECL 10H™ series circuit has been designed to meet the dc specifications shown in the test table, after thermal equilibrium has been established. The circuit is in a test socket or mounted on a printed circuit board and transverse air flow greater than 500 lfpm is maintained. Outputs are terminated through a 50  $\Omega$  resistor to -2.0 V.

# MC10H100

Table 8. AC CHARACTERISTICS  
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Symbol	Characteristic	0°		25°		75°		Unit
		Min	Max	Min	Max	Min	Max	
t <sub>pd</sub>	Propagation Delay Pin 9 Only Exclude Pin 9	0.65 0.4	1.6 1.3	0.7 0.45	1.7 1.35	0.7 0.5	1.8 1.5	ns
t <sub>r</sub>	Rise Time	0.5	2.0	0.5	2.1	0.5	2.2	ns
t <sub>f</sub>	Fall Time	0.5	2.0	0.5	2.1	0.5	2.2	ns

NOTE: Device will meet the specifications after thermal equilibrium has been established when mounted in a test socket or printed circuit board with maintained transverse airflow greater than 500 lpm. Electrical parameters are guaranteed only over the declared operating temperature range. Functional operation of the device exceeding these conditions is not implied. Device specification limit values are applied individually under normal operating conditions and not valid simultaneously.

## ORDERING INFORMATION

Device	Package	Shipping†
MC10H100M	SOEIAJ-16	50 Unit / Rail
MC10H100MG	SOEIAJ-16 (Pb-Free)	50 Unit / Rail
MC10H100MEL	SOEIAJ-16	2000 / Tape & Reel
MC10H100MELG	SOEIAJ-16 (Pb-Free)	2000 / Tape & Reel
MC10H100L	CDIP-16	25 Unit / Rail
MC10H100P	PDIP-16	25 Unit / Rail
MC10H100PG	PDIP-16 (Pb-Free)	25 Unit / Rail

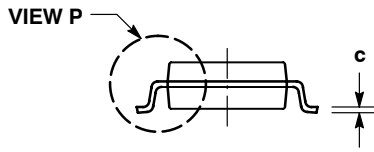
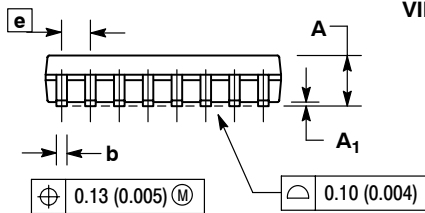
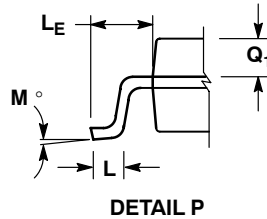
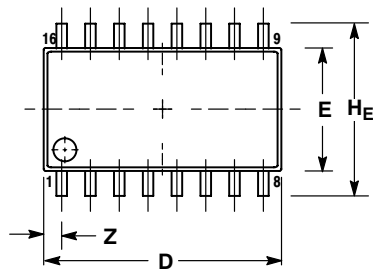
†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

# MC10H100

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## PACKAGE DIMENSIONS

### SOEIAJ-16 CASE 966-01 ISSUE A

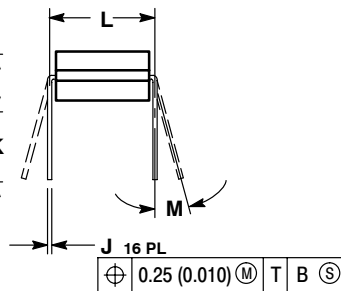
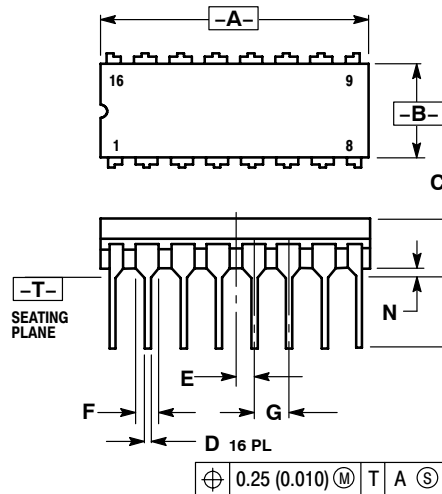


NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETER.
3. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH OR PROTRUSIONS AND ARE MEASURED AT THE PARTING LINE. MOLD FLASH OR PROTRUSIONS SHALL NOT EXCEED 0.15 (0.006) PER SIDE.
4. TERMINAL NUMBERS ARE SHOWN FOR REFERENCE ONLY.
5. THE LEAD WIDTH DIMENSION (b) DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE DAMBAR PROTRUSION SHALL BE 0.08 (0.003) TOTAL IN EXCESS OF THE LEAD WIDTH DIMENSION AT MAXIMUM MATERIAL CONDITION. DAMBAR CANNOT BE LOCATED ON THE LOWER RADIUS OR THE FOOT. MINIMUM SPACE BETWEEN PROTRUSIONS AND ADJACENT LEAD TO BE 0.46 (0.018).

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	---	2.05	---	0.081
A <sub>1</sub>	0.05	0.20	0.002	0.008
b	0.35	0.50	0.014	0.020
c	0.10	0.20	0.007	0.011
D	9.90	10.50	0.390	0.413
E	5.10	5.45	0.201	0.215
e	1.27 BSC		0.050 BSC	
HE	7.40	8.20	0.291	0.323
L	0.50	0.85	0.020	0.033
LE	1.10	1.50	0.043	0.059
M	0°	10°	0°	10°
Q <sub>1</sub>	0.70	0.90	0.028	0.035
Z	---	0.78	---	0.031

### CDIP-16 L SUFFIX CERAMIC DIP PACKAGE CASE 620-10 ISSUE T



NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. DIMENSION L TO CENTER OF LEAD WHEN FORMED PARALLEL.
4. DIMENSION F MAY NARROW TO 0.76 (0.030) WHERE THE LEAD ENTERS THE CERAMIC BODY.

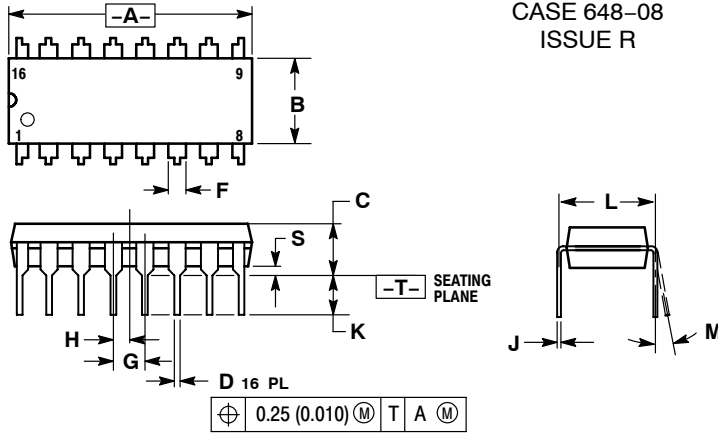
DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.750	0.785	19.05	19.93
B	0.240	0.295	6.10	7.49
C	---	0.200	---	5.08
D	0.015	0.020	0.39	0.50
E	0.050 BSC		1.27 BSC	
F	0.055	0.065	1.40	1.65
G	0.100 BSC		2.54 BSC	
H	0.008	0.015	0.21	0.38
K	0.125	0.170	3.18	4.31
L	0.300 BSC		7.62 BSC	
M	0°	15°	0°	15°
N	0.020	0.040	0.51	1.01

# MC10H100

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## PACKAGE DIMENSIONS

PDIP-16  
P SUFFIX  
PLASTIC DIP PACKAGE  
CASE 648-08  
ISSUE R




### NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. DIMENSION L TO CENTER OF LEADS WHEN FORMED PARALLEL.
4. DIMENSION B DOES NOT INCLUDE MOLD FLASH.
5. ROUNDED CORNERS OPTIONAL.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.740	0.770	18.80	19.55
B	0.250	0.270	6.35	6.85
C	0.145	0.175	3.69	4.44
D	0.015	0.021	0.39	0.53
F	0.040	0.70	1.02	1.77
G	0.100 BSC		2.54 BSC	
H	0.050 BSC		1.27 BSC	
J	0.008	0.015	0.21	0.38
K	0.110	0.130	2.80	3.30
L	0.295	0.305	7.50	7.74
M	0°	10°	0°	10°
S	0.020	0.040	0.51	1.01

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