# **Quad 2-Input OR Gate**

#### Description

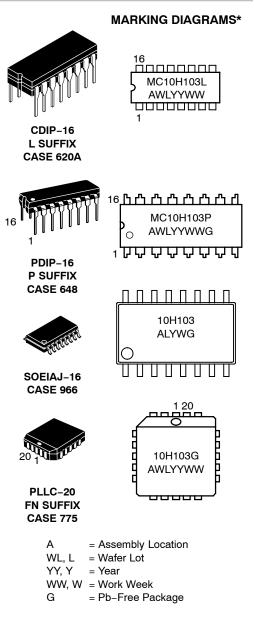
The MC10H103 is a quad 2-input OR gate. The MC10H103 provides one gate with OR/NOR outputs. This MECL  $10H^{TM}$  part is a functional/pinout duplication of the standard MECL  $10K^{TM}$  family part, with 100% improvement in propagation delay, and no increases in power- supply current.

## Features

- Propagation Delay, 1.0 ns Typical
- Power Dissipation 25 mW/Gate (same as MECL 10K)
- Improved Noise Margin 150 mV (Over Operating Voltage and Temperature Range)
- Voltage Compensated
- MECL 10K Compatible
- Pb-Free Packages are Available\*



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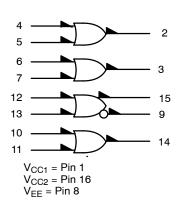


\*For additional marking information, refer to Application Note AND8002/D.

#### **ORDERING INFORMATION**

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

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



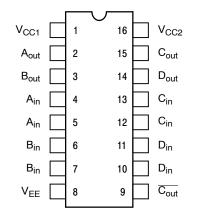


Figure 1. Logic Diagram

Pin assignment is for Dual-in-Line Package. Figure 2. Pin Assignment

## Table 1. MAXIMUM RATINGS

Symbol	Characteristic		Rating	Unit
$V_{\text{EE}}$	Power Supply (V <sub>CC</sub> = 0)		-8.0 to 0	Vdc
VI	Input Voltage (V <sub>CC</sub> = 0)		0 to V <sub>EE</sub>	Vdc
l <sub>out</sub>	Output Current	Continuous Surge	50 100	mA
T <sub>A</sub>	Operating Temperature Range		0 to +75	°C
T <sub>stg</sub>	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<sub>EE</sub> = $-5.2 \text{ V} \pm 5\%$ ) (Note 1)

		<b>0</b> °		<b>25</b> °		<b>75</b> °		
Symbol	Characteristic	Min	Max	Min	Max	Min	Max	Unit
Ι <sub>Ε</sub>	Power Supply Current	-	29	-	26	_	29	mA
I <sub>inH</sub>	Input Current High	-	425	-	265	-	265	μΑ
l <sub>inL</sub>	Input Current Low	0.5	-	0.5	-	0.3	-	μΑ
V <sub>OH</sub>	High Output Voltage	-1.02	-0.84	-0.98	-0.81	-0.92	-0.735	Vdc
V <sub>OL</sub>	Low Output Voltage	-1.95	-1.63	-1.95	-1.63	-1.95	-1.60	Vdc
VIH	High Input Voltage	-1.17	-0.84	-1.13	-0.81	-1.07	-0.735	Vdc
VIL	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 Ω resistor to -2.0 V.

#### Table 3. AC CHARACTERISTICS

		<b>0</b> °		<b>25</b> °		<b>75</b> °		
Symbol	Characteristic	Min	Max	Min	Max	Min	Max	Unit
t <sub>pd</sub>	Propagation Delay	0.4	1.3	0.4	1.3	0.45	1.45	ns
t <sub>r</sub>	Rise Time	0.5	1.7	0.5	1.8	0.5	1.9	ns
t <sub>f</sub>	Fall Time	0.5	1.7	0.5	1.8	0.5	1.9	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 lfpm. 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**

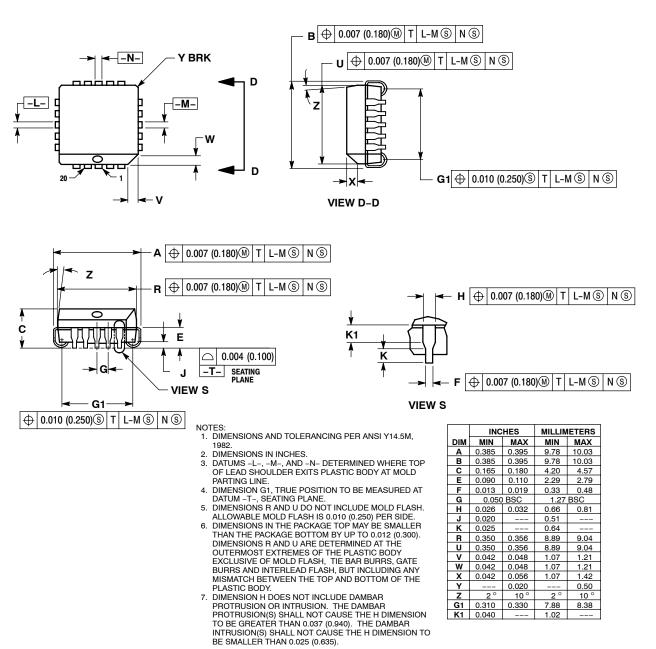
Device	Package	Shipping <sup>†</sup>
MC10H103M	SOEIAJ-16	50 Unit / Rail
MC10H103MG	SOEIAJ-16 50 Unit / Rail (Pb-Free)	
MC10H103MEL	SOEIAJ-16	2000 / Tape & Reel
MC10H103MELG	SOEIAJ-16 (Pb-Free)	2000 / Tape & Reel
MC10H103FN	PLLC-20	46 Units / Rail
MC10H103FNG	PLLC-20 (Pb-Free)	46 Units / Rail
MC10H103FNR2	PLLC-20	500 / Tape & Reel
MC10H103FNR2G	PLLC-20 (Pb-Free)	500 / Tape & Reel
MC10H103L	0H103L CDIP-16 25 Unit	
MC10H103P	PDIP-16	25 Unit / Rail
MC10H103PG	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.

#### PACKAGE DIMENSIONS

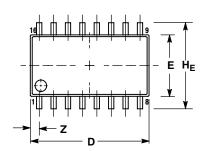


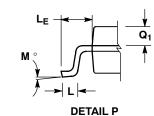
ISSUE E

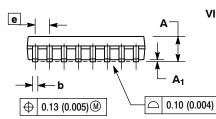


#### PACKAGE DIMENSIONS

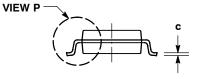
#### SOEIAJ-16 CASE 966-01 **ISSUE A**







Ν

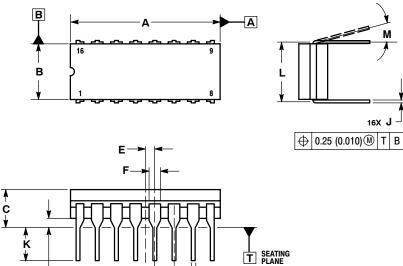


- NOTES: 1. DIMENSIONING AND TOLERANCING PER ANSI

- 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). TO BE 0.46 ( 0.018).

	MILLIN	IETERS	INCHES		
DIM	MIN MAX		MIN	MAX	
Α		2.05		0.081	
A <sub>1</sub>	0.05	0.20	0.002	0.008	
q	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	
Е	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	
Μ	0 °	10 °	0 °	10 °	
Q1	0.70	0.90	0.028	0.035	
Ζ		0.78		0.031	

CDIP-16 L SUFFIX CERAMIC DIP PACKAGE CASE 620A-01 **ISSUE O** 



G

– 16X D

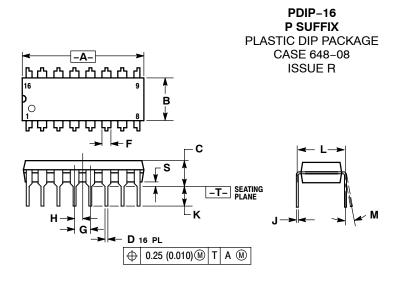
⊕ 0.25 (0.010) M T A

NOTES:

- NOTES: 1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994. 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 PODY
- BODY. THIS DRAWING REPLACES OBSOLETE CASE OUTLINE 620-10. 5

	INC	HES	MILLIMETERS				
DIM	MIN	MAX	MIN	MAX			
Α	0.750	0.785	19.05	19.93			
В	0.240	0.295	6.10	7.49			
С		0.200		5.08			
D	0.015	0.020	0.39	0.50			
Е	0.050	BSC	1.27 BSC				
F	0.055	0.065	1.40	1.65			
G	0.100	BSC	2.54	BSC			
Η	0.008	0.015	0.21	0.38			
Κ	0.125	0.170	3.18	4.31			
L	0.300	BSC	7.62 BSC				
Μ	0 °	15 °	0 °	15°			
Ν	0.020	0.040	0.51	1.01			

#### PACKAGE DIMENSIONS



NOTES:

DIMENSIONING AND TOLERANCING PER ANSI Y14.5M. 1982.

CONTROLLING DIMENSION: INCH.

DIMENSION L TO CENTER OF LEADS WHEN 3

FORMED PARALLEL DIMENSION B DOES NOT INCLUDE MOLD FLASH. ROUNDED CORNERS OPTIONAL. 5.

	INC	HES	MILLIMETERS		
DIM	MIN MAX		MIN	MAX	
Α	0.740	0.770	18.80	19.55	
В	0.250	0.270	6.35	6.85	
С	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		
Н	0.050	BSC	SC 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	
М	0°	10 °	0 °	10 °	
S	0.020	0.040	0.51	1.01	

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