

MC10H102

Quad 2-Input NOR Gate

Description

The MC10H102 is a quad 2-input NOR gate. The MC10H102 provides one gate with OR/NOR outputs. This MECL 10H™ part is a functional/pinout duplication of the standard MECL 10K™ family part, with 100% improvement in propagation delay, and no increases in power– supply current.

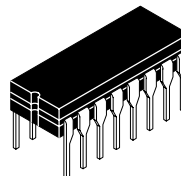
Features

- 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*

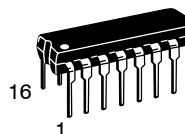
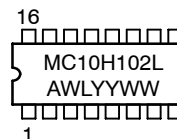


ON Semiconductor®

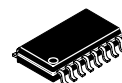
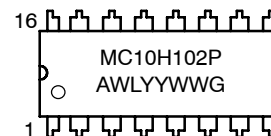
MARKING DIAGRAMS*



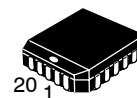
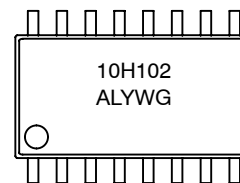
CDIP-16
L SUFFIX
CASE 620A



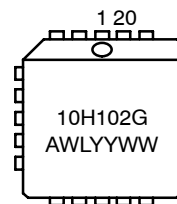
PDIP-16
P SUFFIX
CASE 648



SOEIAJ-16
CASE 966



PLLC-20
FN SUFFIX
CASE 775



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

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

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

ORDERING INFORMATION

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

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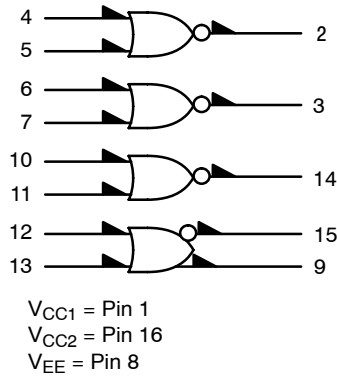
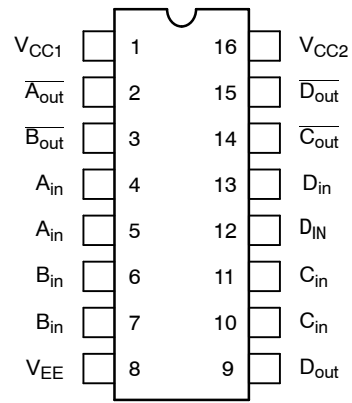


Figure 1. Logic Diagram



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	50 100	mA
	Continuous Surge		
T_A	Operating Temperature Range	0 to +75	°C
T_{stg}	Storage Temperature Range	-55 to +150 -55 to +165	°C °C
	Plastic Ceramic		

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	-	425	-	265	-	265	μA
I_{inL}	Input Current Low	0.5	-	0.5	-	0.3	-	μA
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

1. 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 linear fpm is maintained. Outputs are terminated through a 50 Ω resistor to -2.0 V.

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Table 3. AC CHARACTERISTICS

Symbol	Characteristic	0°		25°		75°		Unit
		Min	Max	Min	Max	Min	Max	
t _{pd}	Propagation Delay	0.4	1.25	0.4	1.25	0.4	1.4	ns
t _r	Rise Time	0.5	1.5	0.5	1.6	0.55	1.7	ns
t _f	Fall Time	0.5	1.5	0.5	1.6	0.55	1.7	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

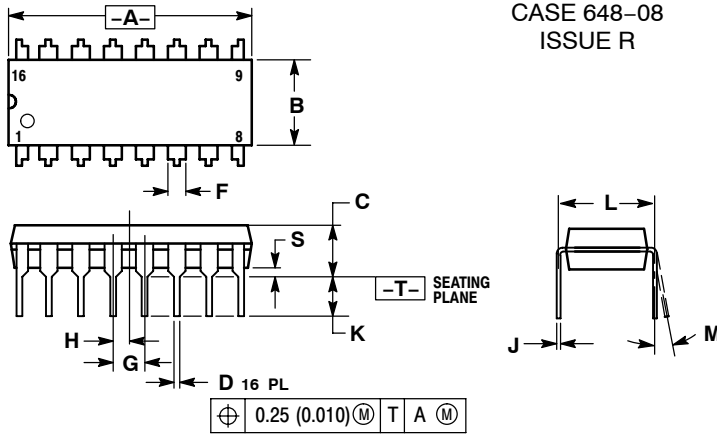
Device	Package	Shipping [†]
MC10H102M	SOEIAJ-16	50 Unit / Rail
MC10H102MG	SOEIAJ-16 (Pb-Free)	50 Unit / Rail
MC10H102MEL	SOEIAJ-16	2000 / Tape & Reel
MC10H102MELG	SOEIAJ-16 (Pb-Free)	2000 / Tape & Reel
MC10H102FN	PLLC-20	46 Units / Rail
MC10H102FNG	PLLC-20 (Pb-Free)	46 Units / Rail
MC10H102FNR2	PLLC-20	500 / Tape & Reel
MC10H102FNR2G	PLLC-20 (Pb-Free)	500 / Tape & Reel
MC10H102L	CDIP-16	25 Unit / Rail
MC10H102P	PDIP-16	25 Unit / Rail
MC10H102PG	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.

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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