# Dual 2-Wide 2-3-Input OR-AND/OR-AND Gate

# Description

The MC10H117 dual 2-wide 2-3-input OR-AND/OR-AND-Invertgate is a general purpose logic element designed for use in data control, such as digital multiplexing or data distribution. Pin 9 is common to both gates. This MECL 10H™ part is a functional/pinout duplication of the standard MECL 10K™ family part, with 100% improvement in propagation delay, and no increase in power-supply current.

#### **Features**

- Propagation Delay, 1.0 ns Typical
- Power Dissipation 100 mW/Gate Typical (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\*

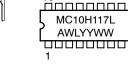


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# **MARKING DIAGRAMS\***





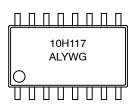
CDIP-16 L SUFFIX CASE 620A



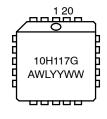
PDIP-16 P SUFFIX CASE 648











PLLC-20 FN SUFFIX CASE 775

A = Assembly Location

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

## **ORDERING INFORMATION**

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

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

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

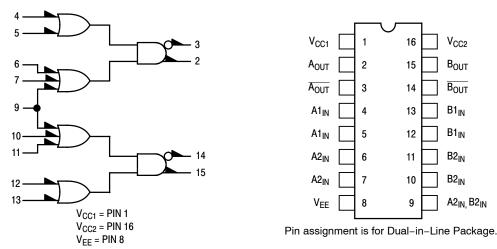


Figure 1. Logic Diagram

Figure 2. Pin Assignment

**Table 1. MAXIMUM RATINGS** 

Symbol	Characteristic	Rating	Unit
V <sub>EE</sub>	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 °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 V  $\pm 5\%$ ) (Note 1)

		C	)°	2	5°	7	75°	
Symbol	Characteristic	Min	Max	Min	Max	Min	Max	Unit
ΙE	Power Supply Current		29		26		29	mA
linH	Input Current High Pins 4, 5, 12, 13 Pins 6, 7, 10, 11 Pin 9		465 545 710		275 320 415		275 320 415	μΑ
I <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
V <sub>IH</sub>	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

<sup>1.</sup> 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.

**Table 3. AC CHARACTERISTICS** 

		0° 25°		<b>75</b> °				
Symbol	Characteristic	Min	Max	Min	Max	Min	Max	Unit
t <sub>pd</sub>	Propagation Delay	0.45	1.35	0.45	1.35	0.5	1.5	ns
t <sub>r</sub>	Rise Time	0.5	1.5	0.5	1.6	0.5	1.7	ns
t <sub>f</sub>	Fall Time	0.5	1.5	0.5	1.6	0.5	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.

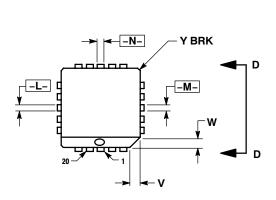
### **ORDERING INFORMATION**

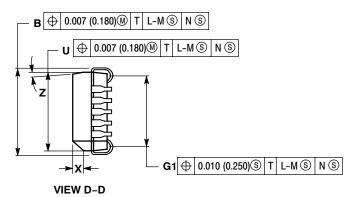
Device	Package	Shipping <sup>†</sup>
MC10H117FN	PLLC-20	46 Units / Rail
MC10H117FNG	PLLC-20 (Pb-Free)	46 Units / Rail
MC10H117FNR2	PLLC-20	500 / Tape & Reel
MC10H117FNR2G	PLLC-20 (Pb-Free)	500 / Tape & Reel
MC10H117L	CDIP-16	25 Unit / Rail
MC10H117M	SOEIAJ-16	50 Unit / Rail
MC10H117MG	SOEIAJ-16 (Pb-Free)	50 Unit / Rail
MC10H117MEL	SOEIAJ-16	2000 / Tape & Reel
MC10H117MELG	SOEIAJ-16 (Pb-Free)	2000 / Tape & Reel
MC10H117P	PDIP-16	25 Unit / Rail
MC10H117PG	PDIP-16 (Pb-Free)	25 Unit / Rail

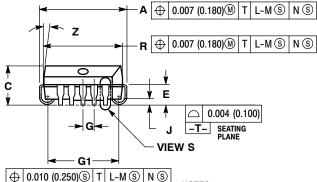
<sup>†</sup>For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

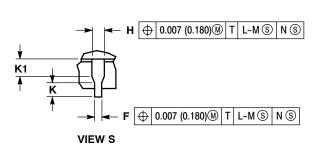
# PACKAGE DIMENSIONS

# **20 LEAD PLLC** CASE 775-02 **ISSUE E**









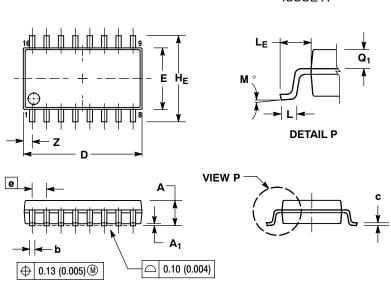
- NOTES:
  1. DIMENSIONS AND TOLERANCING PER ANSI Y14.5M, 1982.
- 2. DIMENSIONS IN INCHES.
  3. DATUMS -L., -M-, AND -N- DETERMINED WHERE TOP OF LEAD SHOULDER EXITS PLASTIC BODY AT MOLD PARTING LINE.

- PARTING LINE.
  4. DIMENSION G1, TRUE POSITION TO BE MEASURED AT DATUM —T-, SEATING PLANE.
  5. DIMENSIONS R AND U DO NOT INCLUDE MOLD FLASH. ALLOWABLE MOLD FLASH IS 0.010 (0.250) PER SIDE.
  6. DIMENSIONS IN THE PACKAGE TOP MAY BE SMALLER THAN THE PACKAGE BOTTOM BY UP TO 0.012 (0.300). DIMENSIONS R AND U ARE DETERMINED AT THE OUTERMOST EXTREMES OF THE PLASTIC BODY EXCLUSIVE OF MOLD FLASH, TIE BAR BURRS, GATE BURRS AND INTERLEAD FLASH, BUT INCLUDING ANY MISMATCH BETWEEN THE TOP AND BOTTOM OF THE PLASTIC BODY.
- PLASTIC BODY.
  7. DIMENSION H DOES NOT INCLUDE DAMBAR DIMIENSION H DUES NOT INCLUDE DAMBAR
  PROTRUSION OR INTRUSION. THE DAMBAR
  PROTRUSION(S) SHALL NOT CAUSE THE H DIMENSION
  TO BE GREATER THAN 0.037 (0.940). THE DAMBAR
  INTRUSION(S) SHALL NOT CAUSE THE H DIMENSION TO
  BE SMALLER THAN 0.025 (0.635).

	INCHES		MILLIN	IETERS
DIM	MIN	MAX	MIN	MAX
Α	0.385	0.395	9.78	10.03
В	0.385	0.395	9.78	10.03
С	0.165	0.180	4.20	4.57
Е	0.090	0.110	2.29	2.79
F	0.013	0.019	0.33	0.48
G	0.050	BSC	1.27	BSC
Н	0.026	0.032	0.66	0.81
J	0.020		0.51	
K	0.025		0.64	
R	0.350	0.356	8.89	9.04
C	0.350	0.356	8.89	9.04
٧	0.042	0.048	1.07	1.21
W	0.042	0.048	1.07	1.21
Х	0.042	0.056	1.07	1.42
Υ		0.020	-	0.50
Z	2°	10°	2°	10 °
G1	0.310	0.330	7.88	8.38
K1	0.040		1.02	

### PACKAGE DIMENSIONS

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



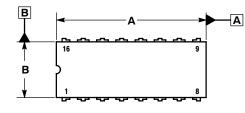
- NOTES:
  1. DIMENSIONING AND TOLERANCING PER ANSI

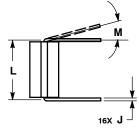
- NOTES:

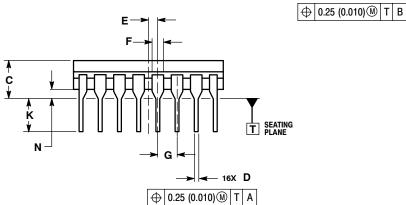
  1 DIMENSIONING AND TOLERANCING PER ANSI
  Y14.5M, 1982.
  2. CONTROLLING DIMENSION: MILLIMETER.
  3. DIMENSIONS DI AND E DO NOT INCLUDE MOLD
  FLASH OR PROTRUSIONS AND ARE MEASURED
  AT THE PARTING LINE. MOLD FLASH OR
  PROTRUSIONS SHALL NOT EXCEED 0.15 (0.006)
  PER SIDE.
  4. TERMINAL NUMBERS ARE SHOWN 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).

	MILLIN	IETERS	INC	HES	
DIM	MIN	MAX	MIN	MAX	
Α		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	
Е	5.10	5.45	0.201	0.215	
е	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°	
Q1	0.70	0.90	0.028	0.035	
Z		0.78		0.031	

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







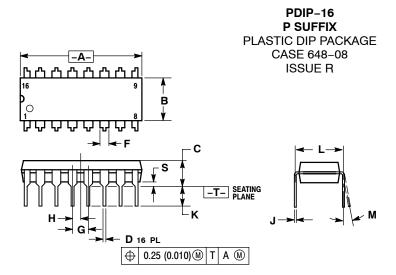
#### NOTES:

- DIMENSIONING AND TOLERANCING PER

- DIMENSIONING AND TOLEHARICING PER ASME Y14.5M, 1994.
  CONTROLLING DIMENSION: INCH.
  DIMENSION L TO CENTER OF LEAD WHEN FORMED PARALLEL.
  DIMENSION F MAY NARROW TO 0.76 (0.030)
  WHERE THE LEAD ENTERS THE CERAMIC
- BODY. THIS DRAWING REPLACES OBSOLETE CASE OUTLINE 620-10.

	INCHES		MILLIN	IETERS	
DIM	MIN	MAX	MIN	MAX	
Α	0.750	0.785	19.05	19.93	
В	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		
Н	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	

# PACKAGE DIMENSIONS



#### NOTES:

- DIMENSIONING AND TOLERANCING PER ANSI Y14 5M 1982
- CONTROLLING DIMENSION: INCH.
- DIMENSION L TO CENTER OF LEADS WHEN FORMED PARALLEL.

  DIMENSION B DOES NOT INCLUDE MOLD FLASH.

  ROUNDED CORNERS OPTIONAL.

	INC	HES	MILLIM	ETERS
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	1.27 BSC	
J	0.008	0.015	0.21	0.38
K	0.110	0.130	2.80	3.30
Ĺ	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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