

MC10111

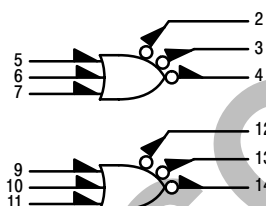
Dual 3-Input/3-Output NOR Gate

The MC10111 is designed to drive up to three transmission lines simultaneously. The multiple outputs of this device also allow the wire "OR"-ing of several levels of gating for minimization of gate and package count.

The ability to control three parallel lines from a single point makes the MC10111 particularly useful in clock distribution applications where minimum clock skew is desired. Three V_{CC} pins are provided and each one should be used.

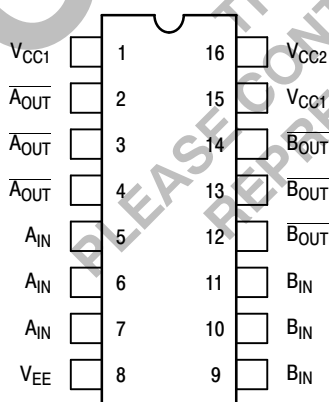
- $P_D = 80 \text{ mW typ/gate (No Load)}$
- $t_{pd} = 2.4 \text{ ns typ (All Outputs Loaded)}$
- $t_r, t_f = 2.2 \text{ ns typ (20\%–80\%)}$

LOGIC DIAGRAM



$V_{CC1} = \text{PIN } 1, 15$
 $V_{CC2} = \text{PIN } 16$
 $V_{EE} = \text{PIN } 8$

DIP PIN ASSIGNMENT



Pin assignment is for Dual-in-Line Package.

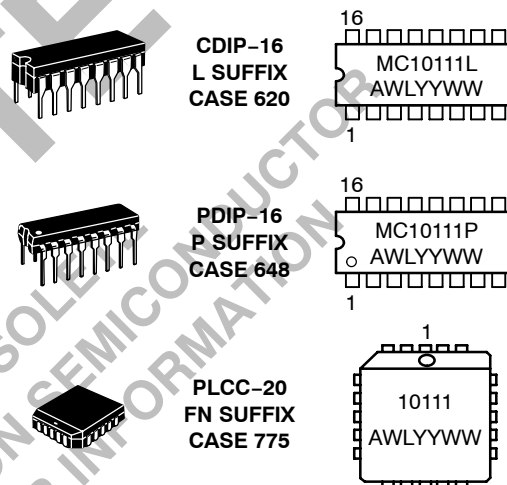
For PLCC pin assignment, see the Pin Conversion Tables on page 18 of the ON Semiconductor MECL Data Book (DL122/D).



ON Semiconductor

<http://onsemi.com>

MARKING DIAGRAMS



A = Assembly Location
 WL = Wafer Lot
 YY = Year
 WW = Work Week

ORDERING INFORMATION

Device	Package	Shipping
MC10111L	CDIP-16	25 Units / Rail
MC10111P	PDIP-16	25 Units / Rail
MC10111FN	PLCC-20	46 Units / Rail

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ELECTRICAL CHARACTERISTICS

Characteristic	Symbol	Pin Under Test	Test Limits							Unit
			-30°C		+25°C			+85°C		
			Min	Max	Min	Typ	Max	Min	Max	
Power Supply Drain Current	I _E	8		42		30	38		42	mAdc
Input Current	I _{inH}	5, 6, 7		680			425		425	μAdc
	I _{inL}	5, 6, 7	0.5		0.5			0.3		μAdc
Output Voltage Logic 1	V _{OH}	2	-1.060	-0.890	-0.960		-0.810	-0.890	-0.700	Vdc
		3	-1.060	-0.890	-0.960		-0.810	-0.890	-0.700	
		4	-1.060	-0.890	-0.960		-0.810	-0.890	-0.700	
Output Voltage Logic 0	V _{OL}	2	-1.890	-1.675	-1.850		-1.650	-1.825	-1.615	Vdc
		3	-1.890	-1.675	-1.850		-1.650	-1.825	-1.615	
		4	-1.890	-1.675	-1.850		-1.650	-1.825	-1.615	
Threshold Voltage Logic 1	V _{OHA}	2	-1.080		-0.980			-0.910		Vdc
		3	-1.080		-0.980			-0.910		
		4	-1.080		-0.980			-0.910		
Threshold Voltage Logic 0	V _{OLA}	2		-1.655			-1.630		-1.595	Vdc
		3		-1.655			-1.630		-1.595	
		4		-1.655			-1.630		-1.595	
Switching Times (50Ω Load)										ns
Propagation Delay	t ₅₊₂₋	2	1.4	3.5	1.4	2.4	3.5	1.5	3.8	
	t ₅₋₂₊	2	1.4	3.5	1.4	2.4	3.5	1.5	3.8	
	t ₅₊₃₋	3	1.4	3.5	1.4	2.4	3.5	1.5	3.8	
	t ₅₋₃₊	3	1.4	3.5	1.4	2.4	3.5	1.5	3.8	
	t ₅₊₄₋	4	1.4	3.5	1.4	2.4	3.5	1.5	3.8	
	t ₅₋₄₊	4	1.4	3.5	1.4	2.4	3.5	1.5	3.8	
Rise Time (20 to 80%)	t ₂₊	2	1.0	3.5	1.1	2.2	3.5	1.2	3.8	
	t ₃₊	3	1.0	3.5	1.1	2.2	3.5	1.2	3.8	
	t ₄₊	4	1.0	3.5	1.1	2.2	3.5	1.2	3.8	
Fall Time (20 to 80%)	t ₂₋	2	1.0	3.5	1.1	2.2	3.5	1.2	3.8	
	t ₃₋	3	1.0	3.5	1.1	2.2	3.5	1.2	3.8	
	t ₄₋	4	1.0	3.5	1.1	2.2	3.5	1.2	3.8	

ELECTRICAL CHARACTERISTICS (continued)

@ Test Temperature			TEST VOLTAGE VALUES (Volts)					(V _{CC}) Gnd
			V _{IHmax}	V _{ILmin}	V _{IHAmin}	V _{ILAmax}	V _{EE}	
			-30°C	-0.890	-1.890	-1.205	-1.500	-5.2
			+25°C	-0.810	-1.850	-1.105	-1.475	-5.2
			+85°C	-0.700	-1.825	-1.035	-1.440	-5.2
Characteristic	Symbol	Pin Under Test	TEST VOLTAGE APPLIED TO PINS LISTED BELOW					(V _{CC}) Gnd
			V _{IHmax}	V _{ILmin}	V _{IHAmin}	V _{ILAmax}	V _{EE}	
Power Supply Drain Current	I _E	8					8	1, 15, 16
Input Current	I _{inH}	5, 6, 7	*				8	1, 15, 16
	I _{inL}	5, 6, 7		*			8	1, 15, 16
Output Voltage Logic 1	V _{OH}	2					8	1, 15, 16
		3					8	1, 15, 16
		4					8	1, 15, 16
Output Voltage Logic 0	V _{OL}	2	5				8	1, 15, 16
		3	6				8	1, 15, 16
		4	7				8	1, 15, 16
Threshold Voltage Logic 1	V _{OHA}	2				5	8	1, 15, 16
		3				6	8	1, 15, 16
		4				7	8	1, 15, 16
Threshold Voltage Logic 0	V _{OLA}	2			5		8	1, 15, 16
		3			6		8	1, 15, 16
		4			7		8	1, 15, 16
Switching Times (50Ω Load)					Pulse In	Pulse Out	-3.2 V	+2.0 V
Propagation Delay	t ₅₊₂₋	2			5	2	8	1, 15, 16
	t ₅₋₂₊	2			5	2	8	1, 15, 16
	t ₅₊₃₋	3			5	3	8	1, 15, 16
	t ₅₋₃₊	3			5	3	8	1, 15, 16
	t ₅₊₄₋	4			5	4	8	1, 15, 16
	t ₅₋₄₊	4			5	4	8	1, 15, 16
Rise Time (20 to 80%)	t ₂₊	2			5	2	8	1, 15, 16
	t ₃₊	3			5	3	8	1, 15, 16
	t ₄₊	4			5	4	8	1, 15, 16
Fall Time (20 to 80%)	t ₂₋	2			5	2	8	1, 15, 16
	t ₃₋	3			5	3	8	1, 15, 16
	t ₄₋	4			5	4	8	1, 15, 16

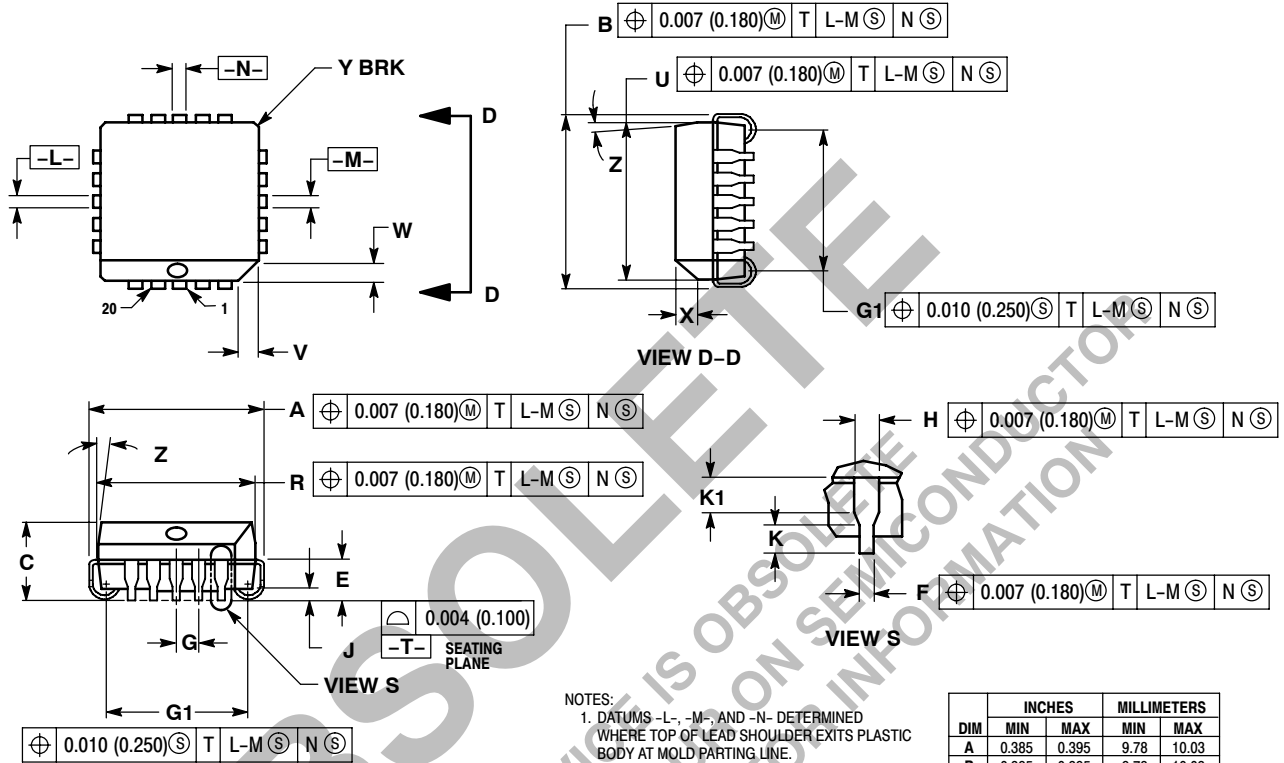
* Individually test each input using the pin connections shown.

Each MECL 10,000 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-ohm resistor to -2.0 volts. Test procedures are shown for only one gate. The other gates are tested in the same manner.

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PACKAGE DIMENSIONS

PLCC-20
FN SUFFIX
PLASTIC PLCC PACKAGE
CASE 775-02
ISSUE C

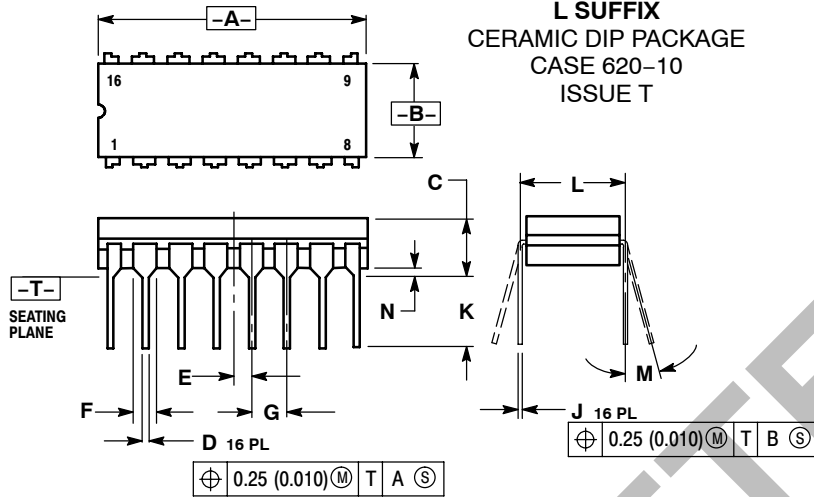


DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.385	0.395	9.78	10.03
B	0.385	0.395	9.78	10.03
C	0.165	0.180	4.20	4.57
E	0.090	0.110	2.29	2.79
F	0.013	0.019	0.33	0.48
G	0.050 BSC		1.27 BSC	
H	0.026	0.032	0.66	0.81
J	0.020	---	0.51	---
K	0.025	---	0.64	---
R	0.350	0.356	8.89	9.04
U	0.350	0.356	8.89	9.04
V	0.042	0.048	1.07	1.21
W	0.042	0.048	1.07	1.21
X	0.042	0.056	1.07	1.42
Y	---	0.020	---	0.50
Z	2°	10°	2°	10°
G1	0.310	0.330	7.88	8.38
K1	0.040	---	1.02	---

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PACKAGE DIMENSIONS

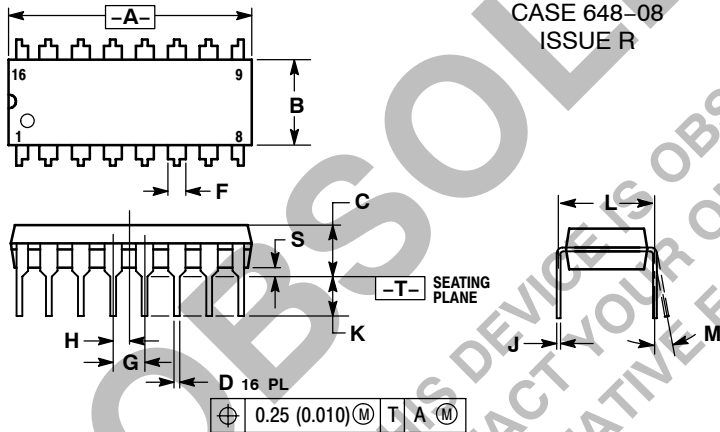
CDIP-16 L SUFFIX CERAMIC DIP PACKAGE CASE 620-10 ISSUE T



- 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

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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