

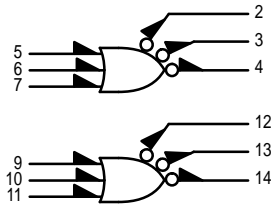
Dual 3-Input/3-Output NOR Gate

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.

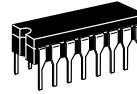
$P_D = 80 \text{ mW typ/gate (No Load)}$
 $t_{pd} = 2.4 \text{ ns typ (All Outputs Loaded)}$
 $t_r, t_f = 2.2 \text{ ns typ (20\%–80\%)}$

LOGIC DIAGRAM

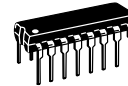


V_{CC1} = PIN 1,15
 V_{CC2} = PIN 16
 V_{EE} = PIN 8

MC10111

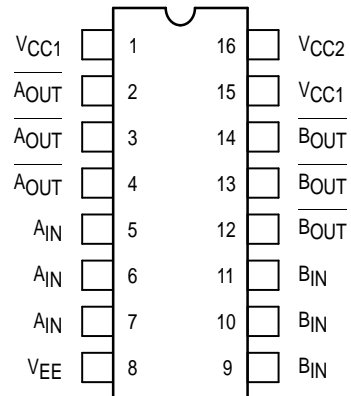


L SUFFIX
CERAMIC PACKAGE
CASE 620-10



P SUFFIX
PLASTIC PACKAGE
CASE 648-08

DIP PIN ASSIGNMENT



Pin assignment is for Dual-in-Line Package.
 For PLCC pin assignment, see the Pin Conversion
 Tables on page 6-11 of the Motorola MECL Data
 Book (DL122/D).



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	μ Adc	
	I_{inL}	5, 6, 7	0.5		0.5			0.3		μ Adc	
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 (50 Ω 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)

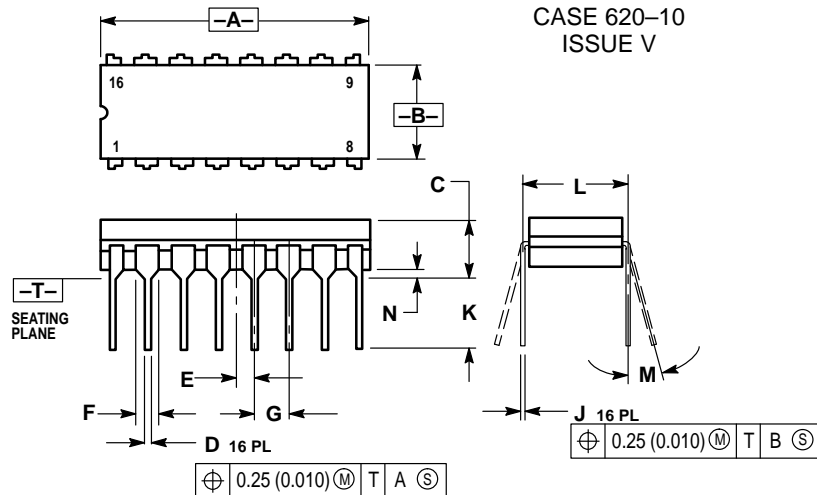
			TEST VOLTAGE VALUES (Volts)					(V _{CC}) Gnd	
			V _{IHmax}	V _{ILmin}	V _{IHAmin}	V _{ILAmax}	V _{EE}		
@ Test Temperature									
-30°C			-0.890	-1.890	-1.205	-1.500	-5.2		
+25°C			-0.810	-1.850	-1.105	-1.475	-5.2		
+85°C			-0.700	-1.825	-1.035	-1.440	-5.2		
Characteristic	Symbol	Pin Under Test	TEST VOLTAGE APPLIED TO PINS LISTED BELOW						
			V _{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₋ t ₅₋₂₊ t ₅₊₃₋ t ₅₋₃₊ t ₅₊₄₋ t ₅₋₄₊	2				5	2	8	1, 15, 16
		2				5	2	8	1, 15, 16
		3				5	3	8	1, 15, 16
		3				5	3	8	1, 15, 16
		4				5	4	8	1, 15, 16
		4				5	4	8	1, 15, 16
Rise Time (20 to 80%)	t ₂₊ t ₃₊ t ₄₊	2				5	2	8	1, 15, 16
		3				5	3	8	1, 15, 16
		4				5	4	8	1, 15, 16
Fall Time (20 to 80%)	t ₂₋ t ₃₋ t ₄₋	2				5	2	8	1, 15, 16
		3				5	3	8	1, 15, 16
		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.

OUTLINE DIMENSIONS

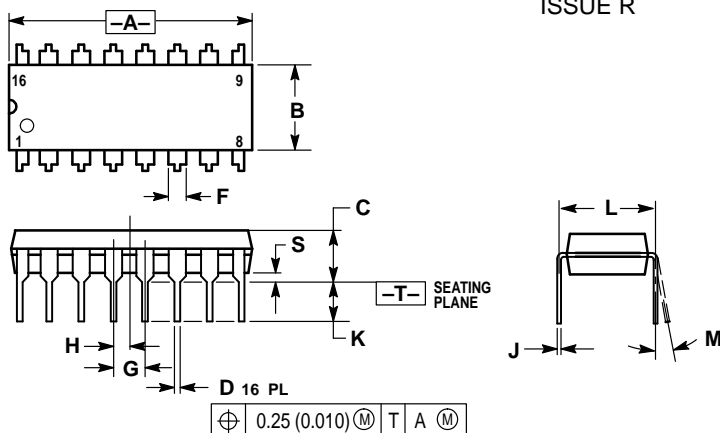
L SUFFIX
CERAMIC DIP PACKAGE
 CASE 620-10
 ISSUE V



- 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

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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