

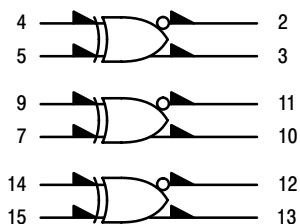
MC10107

Triple 2-Input Exclusive OR/Exclusive NOR Gate

The MC10107 is a triple-2 input exclusive OR/NOR gate.

- $P_D = 40 \text{ mW typ/gate (No Load)}$
- $t_{pd} = 2.8 \text{ ns typ}$
- $t_r, t_f = 2.5 \text{ ns typ (20\%–80\%)}$

LOGIC DIAGRAM



$$3 = (4 \bullet 5) + (\bar{4} \bullet 5)$$

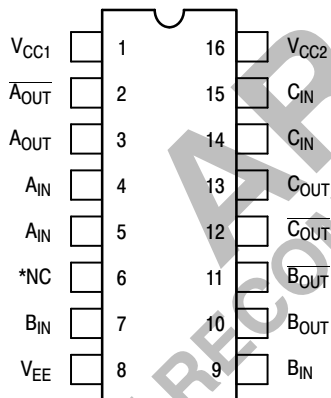
$$2 = (\bar{4} \bullet 5) + (4 \bullet 5)$$

$V_{CC1} = \text{PIN 1}$

$V_{CC2} = \text{PIN 16}$

$V_{EE} = \text{PIN 8}$

DIP PIN ASSIGNMENT



*NC = No Connection

Pin assignment is for Dual-in-Line Package.

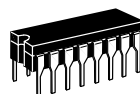
For PLCC pin assignment, see the Pin Conversion Tables on page 18 of the ON Semiconductor MECL Data Book (DL122/D).



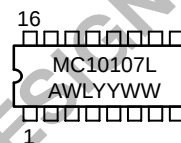
ON Semiconductor

<http://onsemi.com>

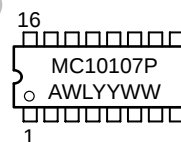
MARKING DIAGRAMS



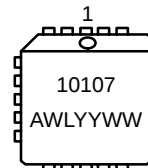
CDIP-16
L SUFFIX
CASE 620



PDIP-16
P SUFFIX
CASE 648



PLCC-20
FN SUFFIX
CASE 775



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

ORDERING INFORMATION

Device	Package	Shipping
MC10107L	CDIP-16	25 Units / Rail
MC10107P	PDIP-16	25 Units / Rail
MC10107FN	PLCC-20	46 Units / Rail

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		31			28		31	mAdc
Input Current	I _{inH}	4, 9, 14 5, 7, 15		425 350			265 220		265 220	μAdc
	I _{inL}	*	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
		2	-1.060	-0.890	-0.960		-0.810	-0.890	-0.700	
		3	-1.060	-0.890	-0.960		-0.810	-0.890	-0.700	
		3	-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
		2	-1.890	-1.675	-1.850		-1.650	-1.825	-1.615	
		3	-1.890	-1.675	-1.850		-1.650	-1.825	-1.615	
		3	-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
		2	-1.080		-0.980			-0.910		
		3	-1.080		-0.980			-0.910		
		3	-1.080		-0.980			-0.910		
Threshold Voltage Logic 0	V _{OLA}	2		-1.655			-1.630		-1.595	Vdc
		2		-1.655			-1.630		-1.595	
		3		-1.655			-1.630		-1.595	
		3		-1.655			-1.630		-1.595	
Switching Times (50Ω Load)					Min	Typ	Max			ns
Propagation Delay	t ₊₊	Inputs	-1.1	3.8	1.1	2.0	3.7	1.1	4.0	
	t ₊₋	4,9 or 14	1.1	3.8	1.1	2.0	3.7	1.1	4.0	
	t ₋₊	to either	1.1	3.8	1.1	2.0	3.7	1.1	4.0	
	t ₋₋	Output	1.1	3.8	1.1	2.0	3.7	1.1	4.0	
	t ₊₊	Inputs	1.1	3.8	1.1	2.8	3.7	1.1	4.0	
	t ₊₋	5,7 or 15	1.1	3.8	1.1	2.8	3.7	1.1	4.0	
	t ₋₊	to either	1.1	3.8	1.1	2.8	3.7	1.1	4.0	
	t ₋₋	Output	1.1	3.8	1.1	2.8	3.7	1.1	4.0	
Rise Time (20 to 80%)	t ₊	**	1.1	3.5	1.1	2.5	3.5	1.1	3.8	
Fall Time (20 to 80%)	t ₋	**	1.1	3.5	1.1	2.5	3.5	1.1	3.8	

* Individually test each input applying V_{IH} or V_{IL} to input under test.

** Any Output.

ELECTRICAL CHARACTERISTICS (continued)

@ Test Temperature			TEST VOLTAGE VALUES (Volts)					(V _{CC}) Gnd
			V _{IHmax}	V _{ILmin}	V _{IHAmin}	V _{ILAmx}	V _{EE}	
			–30°C	–1.890	–1.205	–1.500	–5.2	
			+25°C	–0.810	–1.850	–1.105	–1.475	
			+85°C	–0.700	–1.825	–1.035	–1.440	
Characteristic	Symbol	Pin Under Test	TEST VOLTAGE APPLIED TO PINS LISTED BELOW					(V _{CC}) Gnd
			V _{IHmax}	V _{ILmin}	V _{IHAmin}	V _{ILAmx}	V _{EE}	
Power Supply Drain Current	I _E	8	5, 7, 15				8	1, 16
Input Current	I _{inH}	4, 9, 14	*				8	1, 16
	I _{inL}	5, 7, 15	*				8	1, 16
Output Voltage Logic 1	V _{OH}	*		*			8	1, 16
		2	4, 5				8	1, 16
		2					8	1, 16
		3	4				8	1, 16
Output Voltage Logic 0	V _{OL}	3	5				8	1, 16
		2	4				8	1, 16
		2	5				8	1, 16
		3	4, 5				8	1, 16
Threshold Voltage Logic 1	V _{OHA}	3					8	1, 16
		2	5		4	4	8	1, 16
		2			4		8	1, 16
		3			5		8	1, 16
Threshold Voltage Logic 0	V _{OLA}	3			4		8	1, 16
		2			5		8	1, 16
		2	5		4		8	1, 16
		3				4	8	1, 16
Switching Times (50Ω Load)			+1.1V		Pulse In	Pulse Out	–3.2 V	+2.0 V
Propagation Delay	t ₊₊	Inputs	5, 7, 15		Input 4, 9 or 14	Corresponding XOR/XNOR Outputs	8	1, 16
	t ₊₋	4, 9 or 14	5, 7, 15				8	1, 16
	t ₋₊	to either	5, 7, 15				8	1, 16
	t ₋₋	Output	5, 7, 15				8	1, 16
	t ₊₊	Inputs	4, 9, 14		Input 5, 7 or 15	Corresponding XOR/XNOR Outputs	8	1, 16
	t ₊₋	5, 7 or 15	4, 9, 14				8	1, 16
	t ₋₊	to either	4, 9, 14				8	1, 16
	t ₋₋	Output	4, 9, 14				8	1, 16
Rise Time (20 to 80%)	t ₊	**	4, 9, 14		Any Input	Corresponding XOR/XNOR Outputs	8	1, 16
Fall Time (20 to 80%)	t ₋	**	4, 9, 14		Any Input	Corresponding XOR/XNOR Outputs	8	1, 16

* Individually test each input applying V_{IH} or V_{IL} to input under test.

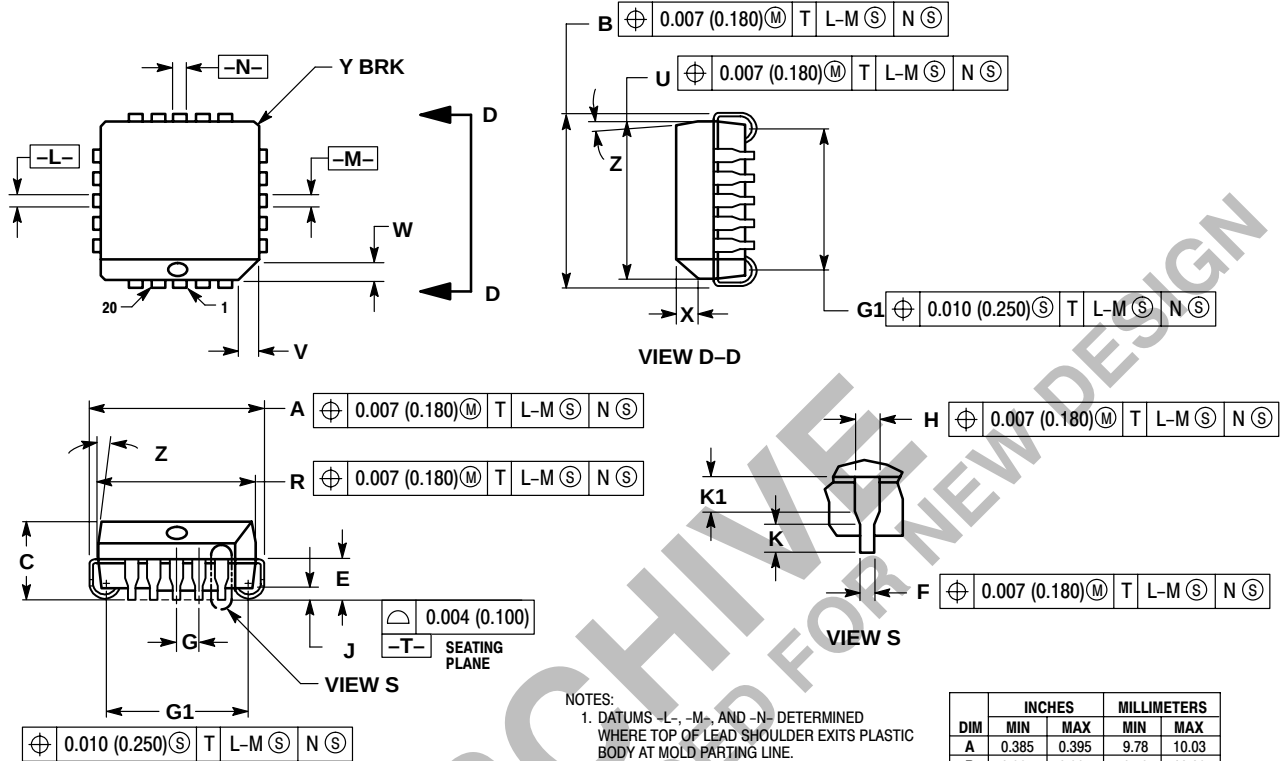
** Any Output.

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.

MC10107

PACKAGE DIMENSIONS

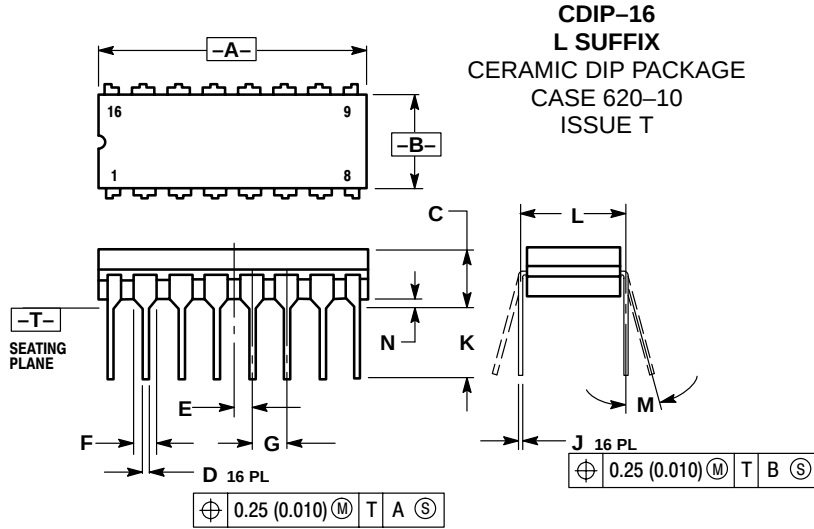
PLCC-20
FN SUFFIX
PLASTIC PLCC PACKAGE
CASE 775-02
ISSUE C



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	---

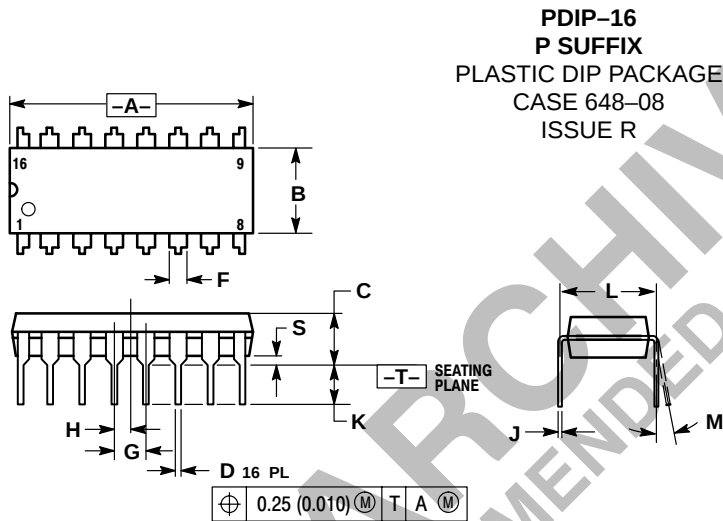
MC10107

PACKAGE DIMENSIONS



- 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
J	0.125	0.170	3.18	4.31
K	0.300 BSC		7.62 BSC	
L	0°	15°	0°	15°
M	0.020	0.040	0.51	1.01
N				



- 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

Notes

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DEVICE NOT RECOMMENDED FOR NEW DESIGN

Notes

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