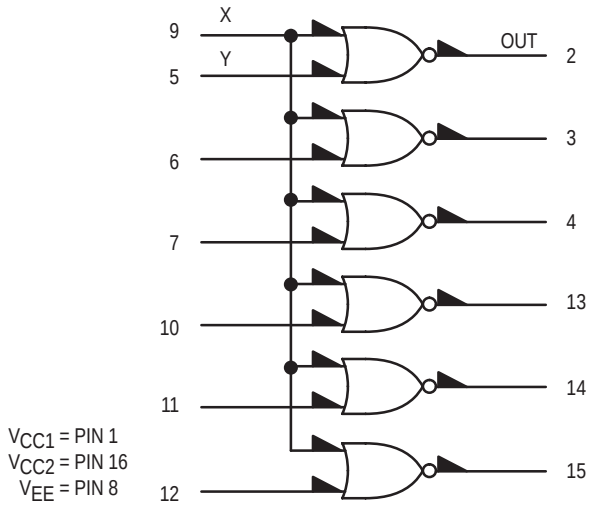
MC10189

Hex Inverter With Enable

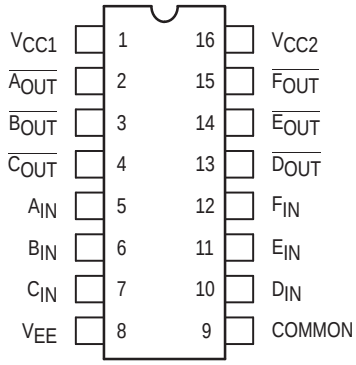
The MC10189 provides a high-speed Hex Inverter with a common Enable input. The hex inverting function is provided when Enable is in the low state. When Enable is in the high state all outputs are low.

- P_D = 200 mW typ/pkg (No Load)
- t_{pd} = 2.0 ns (Y–Q)
  = 2.5 ns (X–Q)

LOGIC DIAGRAM



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).

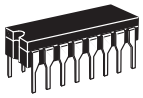
TRUTH TABLE

Inputs		Output
X	Y	OUT
L	L	H
L	H	L
H	L	L
H	H	L

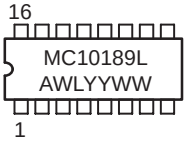
ON Semiconductor

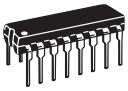
http://onsemi.com

MARKING DIAGRAMS

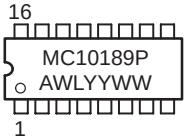


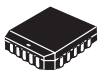
CDIP–16
L SUFFIX
CASE 620



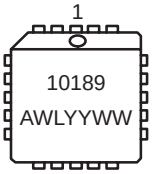


PDIP–16
P SUFFIX
CASE 648





PLCC–20
FN SUFFIX
CASE 775



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

ORDERING INFORMATION

Device	Package	Shipping
MC10189L	CDIP–16	25 Units / Rail
MC10189P	PDIP–16	25 Units / Rail
MC10189FN	PLCC–20	46 Units / Rail

ELECTRICAL CHARACTERISTICS

Characteristic		Symbol	Pin Under Test	Test Limits						Unit
				–30°C		+25°C		+85°C		
				Min	Max	Min	Max	Min	Max	
Power Supply Drain Current		I_E	8		44		40		44	mAdc
Input Current		I_{inH}	5		425		265		265	μAdc
		I_{inL}	9		890		555		555	μAdc
Output Voltage	Logic 1	V_{OH}	2	–1.060	–0.890	–0.960	–0.810	–0.890	–0.700	Vdc
Output Voltage	Logic 0	V_{OL}	2	–1.890	–1.675	–1.850	–1.650	–1.825	–1.615	Vdc
Threshold Voltage	Logic 1	V_{OHA}	2	–1.080		–0.980		–0.910		Vdc
Threshold Voltage	Logic 0	V_{OLA}	2		–1.655		–1.630		–1.595	Vdc
Switching Times	(50Ω Load)									ns
Propagation Delay	Enable	t_{PHL}	2	1.1	3.9	1.1	3.5	1.1	3.9	
	Data	t_{PLH}	2	1.0	3.3	1.0	2.9	1.0	3.3	
Rise/Fall Time	(20 to 80%)	t_{TLH} t_{THL}	2	1.1	3.7	1.1	3.3	1.1	3.7	

ELECTRICAL CHARACTERISTICS (continued)

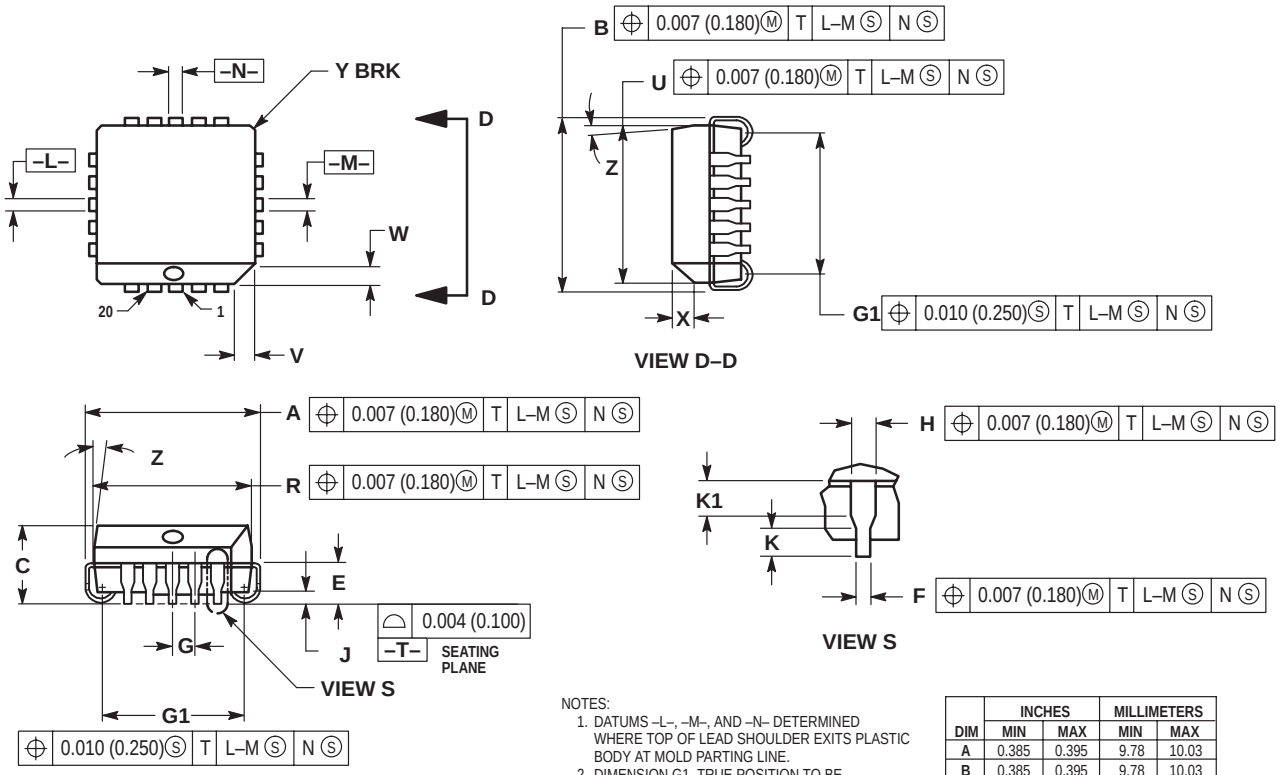
@ Test Temperature	TEST VOLTAGE VALUES (Volts)					
	V_{IHmax}	V_{ILmin}	V_{IHAmin}	V_{ILAmax}	V_{EE}	
–30°C	–0.890	–1.890	–1.205	–1.500	–5.2	
+25°C	–0.810	–1.850	–1.105	–1.475	–5.2	
+85°C	–0.700	–1.825	–1.035	–1.440	–5.2	

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, 16
Input Current		I_{inH}	5	5				8	1, 16
		I_{inL}	9	9				8	1, 16
Output Voltage	Logic 1	V_{OH}	2		5			8	1, 16
Output Voltage	Logic 0	V_{OL}	2	9				8	1, 16
Threshold Voltage	Logic 1	V_{OHA}	2				5	8	1, 16
Threshold Voltage	Logic 0	V_{OLA}	2			5		8	1, 16
Switching Times	(50Ω Load)					**Pulse In**	**Pulse Out**	**–3.2 V**	**+2.0 V**
Propagation Delay	Enable	t_{PHL}	2			9	2	8	1, 16
	Data	t_{PLH}	2			5	2	8	1, 16
Rise/Fall Time	(20 to 80%)	t_{TLH} t_{THL}	2			5	2	8	1, 16

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.

PACKAGE DIMENSIONS

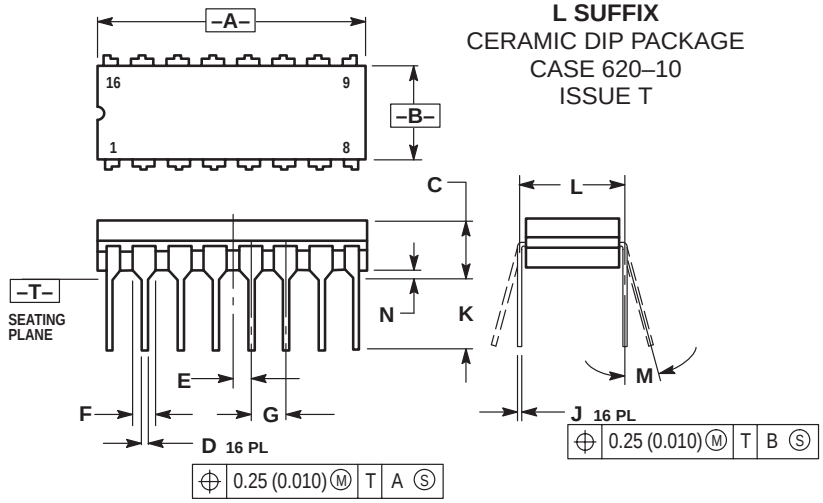
PLCC–20
FN SUFFIX
PLASTIC PLCC PACKAGE
CASE 775–02
ISSUE C



NOTES:
1. DATUMS –L–, –M–, AND –N– DETERMINED WHERE TOP OF LEAD SHOULDER EXITS PLASTIC BODY AT MOLD PARTING LINE.
2. DIMENSION G1, TRUE POSITION TO BE MEASURED AT DATUM –T–, SEATING PLANE.
3. DIMENSIONS R AND U DO NOT INCLUDE MOLD FLASH. ALLOWABLE MOLD FLASH IS 0.010 (0.250) PER SIDE.
4. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
5. CONTROLLING DIMENSION: INCH.
6. 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.
7. DIMENSION H DOES 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		MILLIMETERS	
DIM	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	—

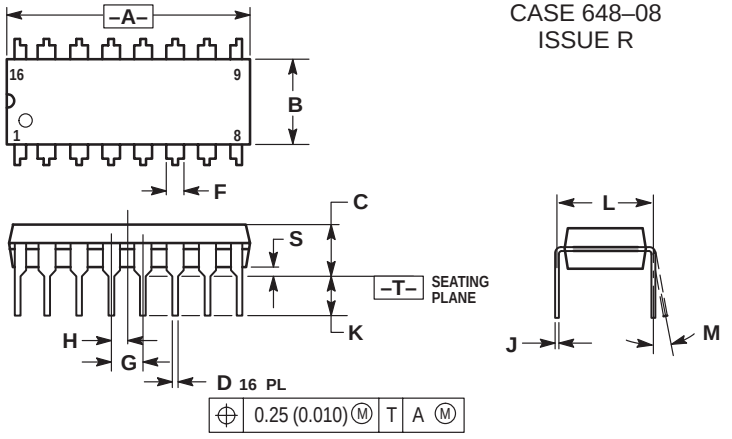
CDIP–16
L SUFFIX
CERAMIC DIP PACKAGE
CASE 620–10
ISSUE T



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.

	INCHES		MILLIMETERS	
DIM	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.

	INCHES		MILLIMETERS	
DIM	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

PUBLICATION ORDERING INFORMATION

North America Literature Fulfillment:
Literature Distribution Center for ON Semiconductor
P.O. Box 5163, Denver, Colorado 80217 USA
Phone: 303–675–2175 or 800–344–3860 Toll Free USA/Canada
Fax: 303–675–2176 or 800–344–3867 Toll Free USA/Canada
Email: ONlit@hibbertco.com

N. American Technical Support: 800–282–9855 Toll Free USA/Canada

EUROPE: LDC for ON Semiconductor – European Support
German Phone: (+1) 303–308–7140 (M–F 2:30pm to 5:00pm Munich Time)
Email: ONlit–german@hibbertco.com
French Phone: (+1) 303–308–7141 (M–F 2:30pm to 5:00pm Toulouse Time)
Email: ONlit–french@hibbertco.com
English Phone: (+1) 303–308–7142 (M–F 1:30pm to 5:00pm UK Time)
Email: ONlit@hibbertco.com

ASIA/PACIFIC: LDC for ON Semiconductor – Asia Support
Phone: 303–675–2121 (Tue–Fri 9:00am to 1:00pm, Hong Kong Time)
Toll Free from Hong Kong 800–4422–3781
Email: ONlit–asia@hibbertco.com

JAPAN: ON Semiconductor, Japan Customer Focus Center
4–32–1 Nishi–Gotanda, Shinagawa–ku, Tokyo, Japan 141–8549
Phone: 81–3–5740–2745
Email: r14525@onsemi.com

Fax Response Line: 303–675–2167
800–344–3810 Toll Free USA/Canada

ON Semiconductor Website: http://onsemi.com

For additional information, please contact your local
Sales Representative.