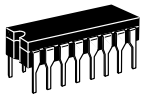
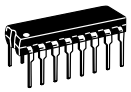
PECL* to TTL Translator
(+5 Vdc Power Supply Only)

MC10H350



L SUFFIX
CERAMIC PACKAGE
CASE 620–10



P SUFFIX
PLASTIC PACKAGE
CASE 648–08

FN SUFFIX
PLCC
CASE 775–02

The MC10H350 is a member of Motorola's 10H family of high performance ECL logic. It consists of 4 translators with differential inputs and TTL outputs. The 3–state outputs can be disabled by applying a HIGH TTL logic level on the common OE input.

The MC10H350 is designed to be used primarily in systems incorporating both ECL and TTL logic operating off a common power supply. The separate V_{CC} power pins are not connected internally and thus isolate the noisy TTL V_{CC} runs from the relatively quiet ECL V_{CC} runs on the printed circuit board. The differential inputs allow the H350 to be used as an inverting or noninverting translator, or a differential line receiver. The H350 can also drive CMOS with the addition of a pullup resistor.

- Propagation Delay, 3.5 ns Typical
- MECL 10K–Compatible

MAXIMUM RATINGS

Characteristic	Symbol	Rating	Unit
Power Supply (V_{EE} = Gnd)	V_{CC}	7.0	Vdc
Operating Temperature Range	T_A	0 to +75	°C
Storage Temperature Range — Plastic — Ceramic	T_{stg}	–55 to +150 –55 to +165	°C °C

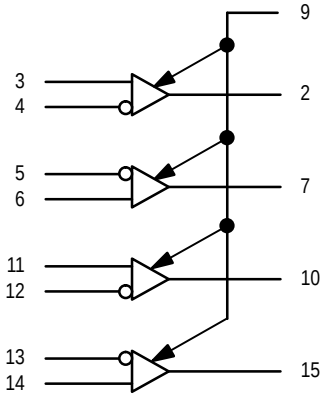
ELECTRICAL CHARACTERISTICS (V_{CC} = 5.0 V ±5%) (See Note 1)

Characteristic		Symbol	T_A = 0°C to 75°C Min	T_A = 0°C to 75°C Max	Unit
Power Supply Current	TTL ECL	I_{CC}	— —	20 12	mA
Input Current High	Pin 9 Others	I_{IH} I_{INH}	— —	20 50	µA
Input Current Low	Pin 9 Others	I_{IL} I_{INL}	— —	–0.6 50	mA µA
Input Voltage High	Pin 9	V_{IH}	2.0	—	Vdc
Input Voltage Low	Pin 9	V_{IL}	—	0.8	Vdc
Differential Input Voltage (1) Pins 3–6, 11–14 (1)		V_{DIFF}	350	—	mV
Voltage Common Mode Pins 3–6, 11–14		V_{CM}	2.8	V_{CC}	Vdc
Output Voltage High I_{OH} = 3.0 mA		V_{OH}	2.7	—	Vdc
Output Voltage Low I_{OL} = 20 mA		V_{OL}	—	0.5	Vdc
Short Circuit Current V_{OUT} = 0 V		I_{OS}	–60	–150	mA
Output Disable Current High V_{OUT} = 2.7 V		I_{OZH}	—	50	µA
Output Disable Current Low V_{OUT} = 0.5 V		I_{OZL}	—	–50	µA

(1) Common mode input voltage to pins 3–4, 5–6, 11–12, 13–14 must be between the values of 2.8 V and 5.0 V. This common mode input voltage range includes the differential input swing.
(2) For single ended use, apply 3.75 V (V_{BB}) to either input depending on output polarity required. Signal level range to other input is 3.3 V to 4.2 V.
(3) Any unused gates should have the inverting inputs tied to V_{CC} and the non–inverting inputs tied to ground to prevent output glitching.
(4) 1.0 V to 2.0 V w/50 pF into 500 ohms.

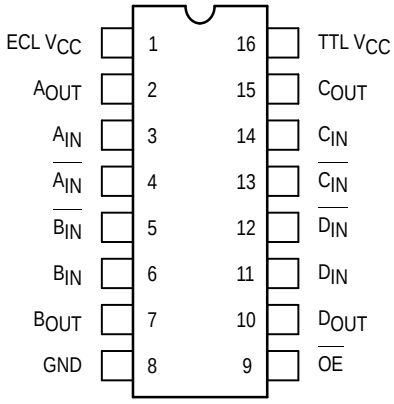
*Positive Emitter Coupled Logic

LOGIC DIAGRAM



V_{CC} (+5.0 VDC) = PINS 1 AND 16
GND = PIN 8

DIP PIN ASSIGNMENT



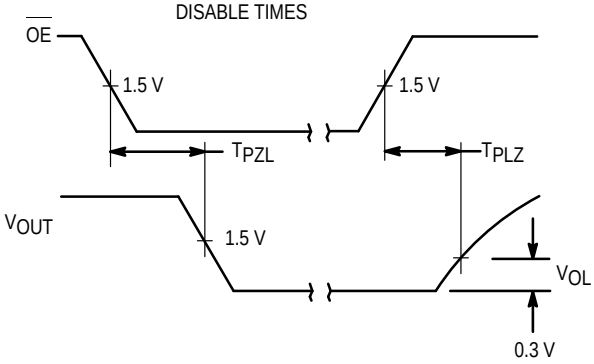
Pin assignment is for Dual–in–Line Package.
For PLCC pin assignment, see the Pin Conversion Tables on page 6–11 of the Motorola MECL Data Book (DL122/D).

ELECTRICAL CHARACTERISTICS (V_{CC} = 5.0 V ±5%) (See Notes 1 & 4)

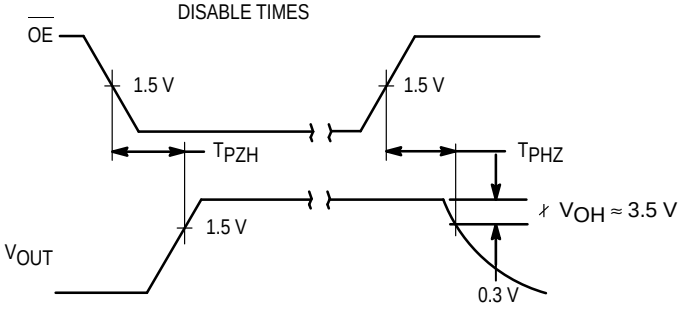
Characteristic	Symbol	T_A = 0°C to 75°C Min	T_A = 0°C to 75°C Max	Unit
AC PARAMETERS (C_L = 50 pF) (V_{CC} = 5.0 ± 5%) (T_A = 0°C to 75°C)				
Propagation Delay Data	t_{pd}	1.5	5.0	ns
Rise Time	t_r	0.3	1.6	ns
Fall Time	t_f	0.3	1.6	ns
Output Disable Time	t_{pdLZ} t_{pdHZ}	2.0 2.0	6.0 6.0	ns
Output Enable Time	t_{pdZL} t_{pdZH}	2.0 2.0	8.0 8.0	ns

3–STATE SWITCHING WAVEFORMS

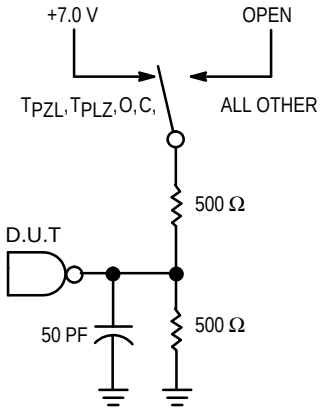
3–STATE OUTPUT LOW ENABLE AND DISABLE TIMES



3–STATE OUTPUT HIGH ENABLE AND DISABLE TIMES



TEST LOAD

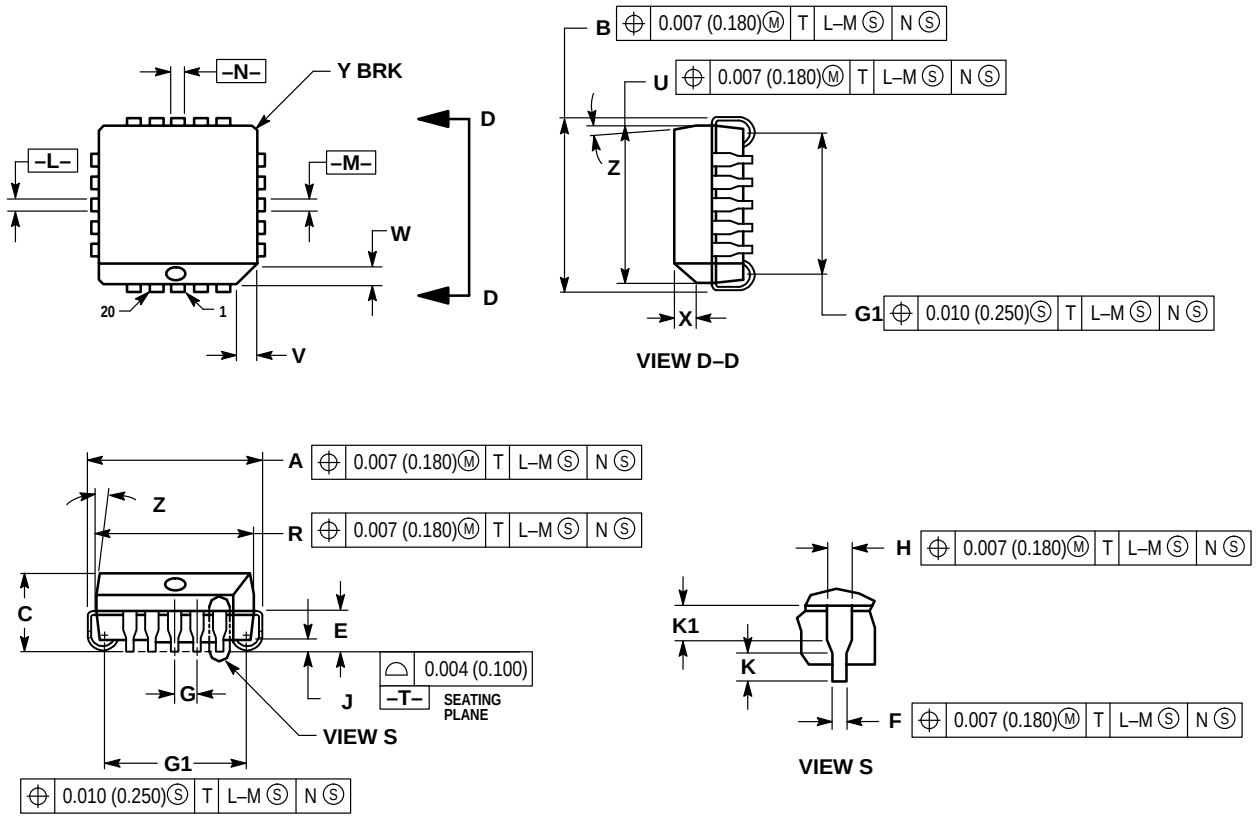


*INCLUDES JIG AND PROBE CAPACITANCE

Application Note: Pin 9 is an $\overline{OE}$ and the 10H350 is disabled when $\overline{OE}$ is at V_{IH} or higher.

OUTLINE DIMENSIONS

FN SUFFIX
PLASTIC PLCC PACKAGE
CASE 775–02
ISSUE C

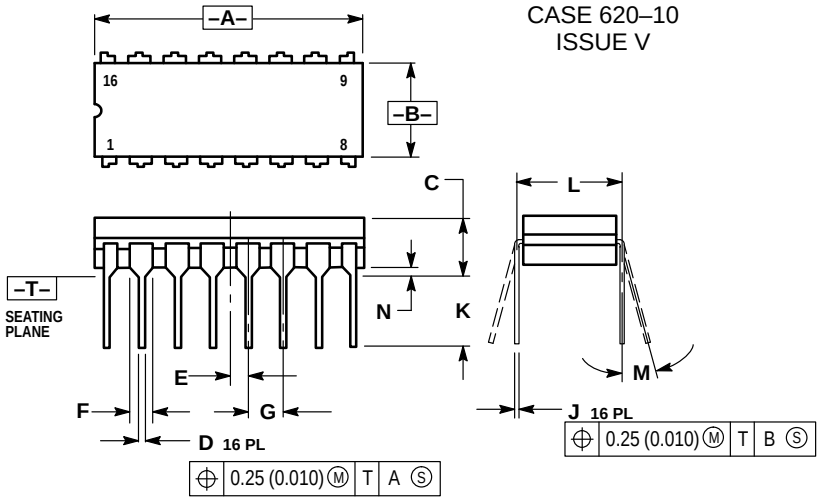


NOTES:
1. DATUMS –L–, –M–, AND –N– DETERMINED WHERE TOP OF LEAD SHOULDER EXITS PLASTIC BODY AT MOLD PARTING LINE.
2. DIMENSION G1, TRUE POSITION TO BE MEASURED AT DATUM –T–, SEATING PLANE.
3. DIMENSIONS R AND U DO NOT INCLUDE MOLD FLASH. ALLOWABLE MOLD FLASH IS 0.010 (0.250) PER SIDE.
4. DIMENSIONING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

OUTLINE DIMENSIONS

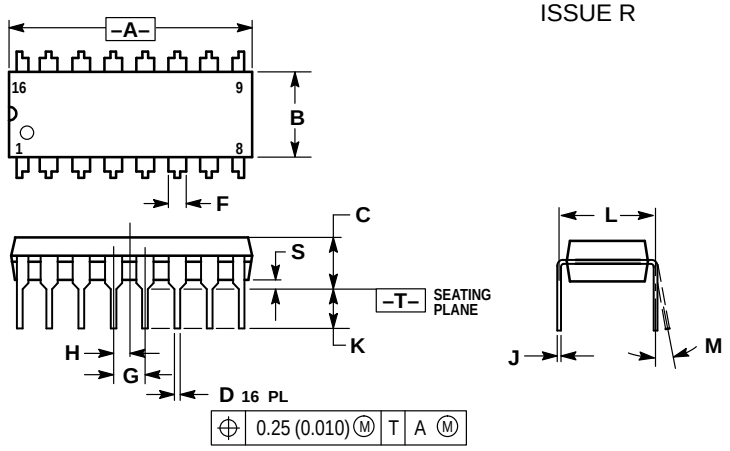
L SUFFIX
CERAMIC DIP PACKAGE
CASE 620–10
ISSUE V



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.

	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

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

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