

# MC10H350

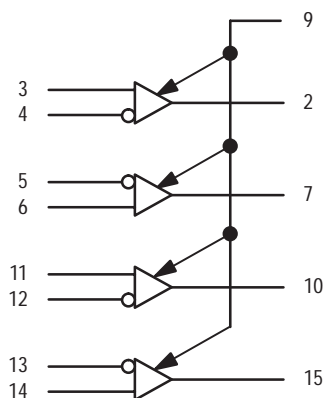
## PECL\* to TTL Translator (+5 Vdc Power Supply Only)

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<sub>CC</sub> power pins are not connected internally and thus isolate the noisy TTL V<sub>CC</sub> runs from the relatively quiet ECL V<sub>CC</sub> 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.

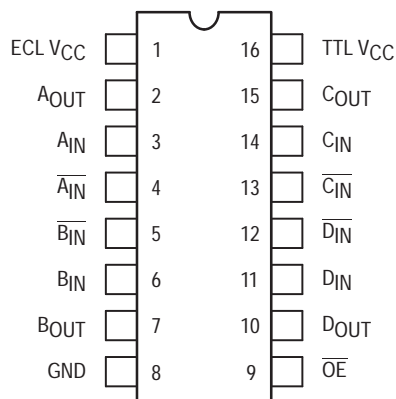
- Propagation Delay, 3.5 ns Typical
- MECL 10K-Compatible

### LOGIC DIAGRAM



V<sub>CC</sub> (+5.0 VDC) = PINS 1 AND 16  
GND = PIN 8

### DIP PIN ASSIGNMENT



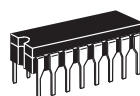
Pin assignment is for Dual-in-Line Package.  
For PLCC pin assignment, see the Pin Conversion Tables on page 18 of the ON Semiconductor MECL Data Book (DL122/D).



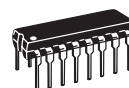
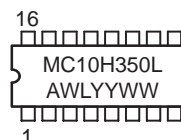
ON Semiconductor

<http://onsemi.com>

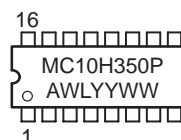
### MARKING DIAGRAMS



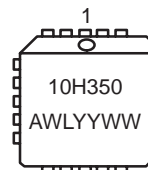
CDIP-16  
L SUFFIX  
CASE 620



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
MC10H350L	CDIP-16	25 Units/Rail
MC10H350P	PDIP-16	25 Units/Rail
MC10H350FN	PLCC-20	46 Units/Rail

# MC10H350

## MAXIMUM RATINGS

Symbol	Characteristic	Rating	Unit
V <sub>CC</sub>	Power Supply (V <sub>EE</sub> = Gnd)	7.0	Vdc
T <sub>A</sub>	Operating Temperature Range	0 to +75	°C
T <sub>stg</sub>	Storage Temperature Range – Plastic – Ceramic	–55 to +150 –55 to +165	°C °C

## ELECTRICAL CHARACTERISTICS (V<sub>CC</sub> = 5.0 V ±5%) (See Note 1.)

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

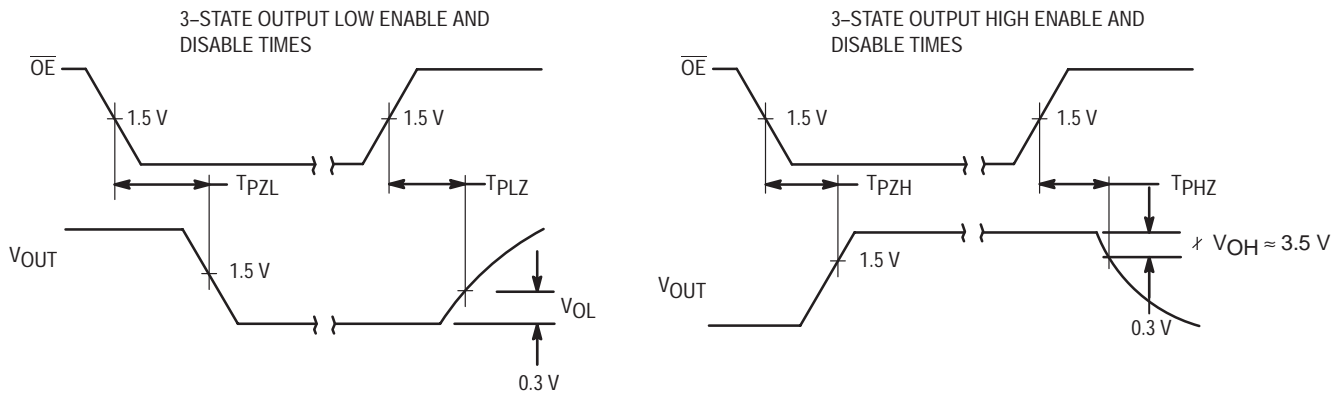
\*Positive Emitter Coupled Logic

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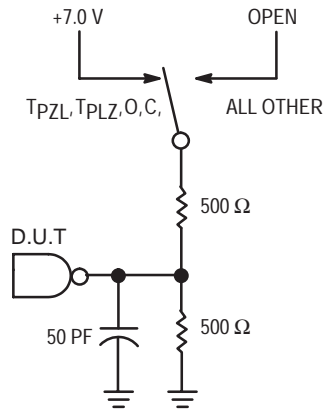
## ELECTRICAL CHARACTERISTICS ( $V_{CC} = 5.0 \text{ V} \pm 5\%$ ) (See Notes 1 & 4)

Symbol	Characteristic	T <sub>A</sub> = 0°C to 75°C		Unit
		Min	Max	
AC PARAMETERS (C <sub>L</sub> = 50 pF) (V <sub>CC</sub> = 5.0 ± 5%) (T <sub>A</sub> = 0°C to 75°C)				
t <sub>pd</sub>	Propagation Delay Data (50% to 1.5V)	1.5	5.0	ns
t <sub>r</sub>	Rise Time (Note 4.)	0.3	1.6	ns
t <sub>f</sub>	Fall Time (Note 4.)	0.3	1.6	ns
t <sub>pdLZ</sub> t <sub>pdHZ</sub>	Output Disable Time	2.0 2.0	6.0 6.0	ns
t <sub>pdZL</sub> t <sub>pdZH</sub>	Output Enable Time	2.0 2.0	8.0 8.0	ns

## 3-STATE SWITCHING WAVEFORMS



## TEST LOAD



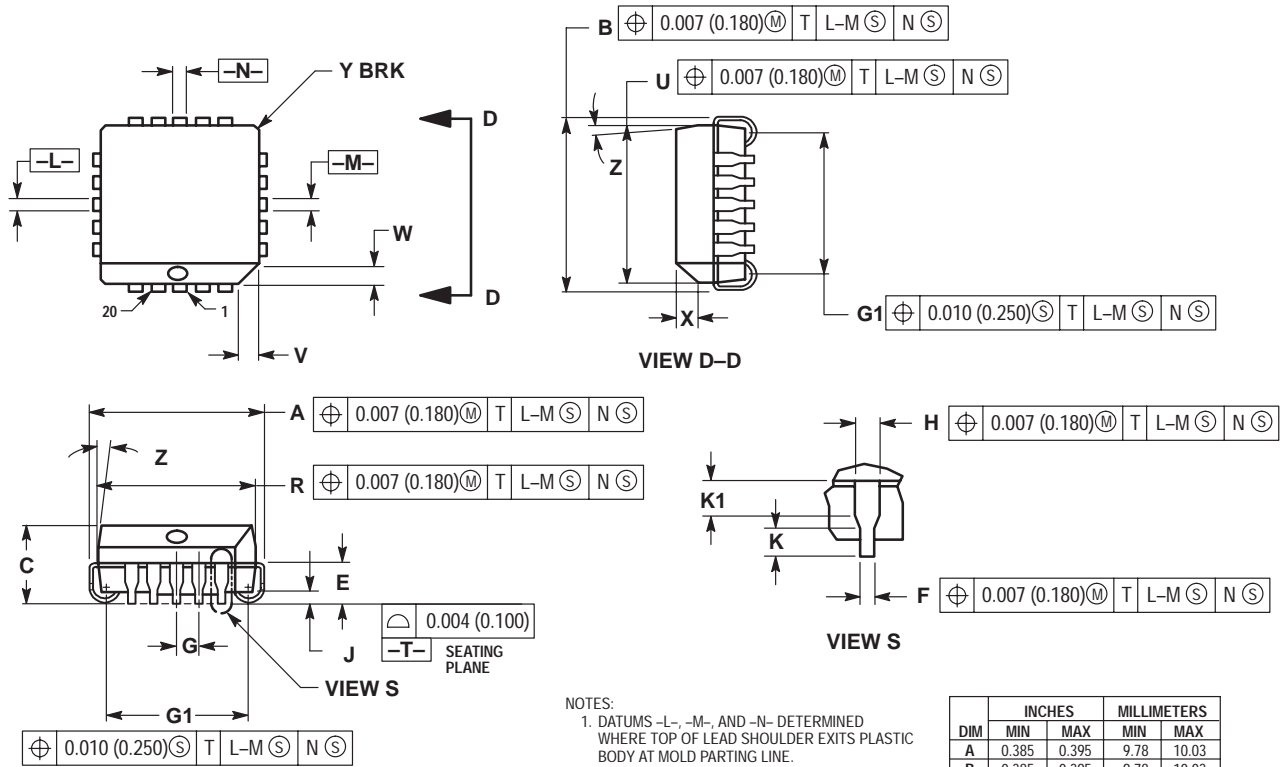
\*INCLUDES JIG AND PROBE CAPACITANCE

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

# MC10H350

## PACKAGE DIMENSIONS

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



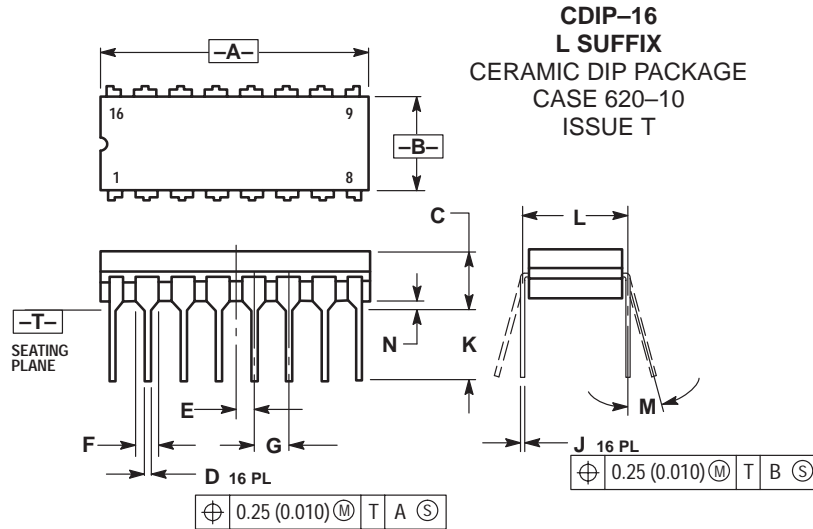
### NOTES:

- DATUMS -L-, -M-, AND -N- DETERMINED WHERE TOP OF LEAD SHOULDER EXITS PLASTIC BODY AT MOLD PARTING LINE.
- DIMENSION G1, TRUE POSITION TO BE MEASURED AT DATUM -T-, SEATING PLANE.
- DIMENSIONS R AND U DO NOT INCLUDE MOLD FLASH. ALLOWABLE MOLD FLASH IS 0.010 (0.250) PER SIDE.
- DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
- CONTROLLING DIMENSION: INCH.
- 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.
- 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).

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	---

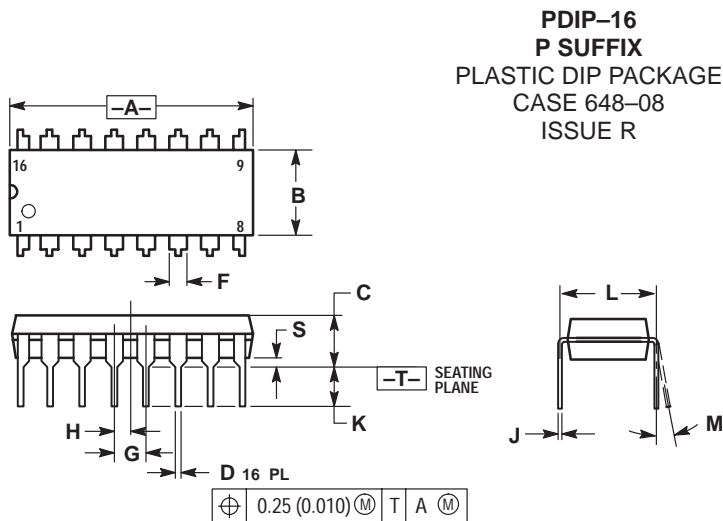
# MC10H350

## 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
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




- 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**

## **Notes**

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