MC10H352

Quad CMOS to PECL* Translator

ON Semiconductor®

http://onsemi.com

Description

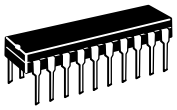
The MC10H352 is a quad translator for interfacing data between a CMOS logic section and the PECL section of digital systems when only a +5.0 Vdc power supply is available. The MC10H352 has CMOS compatible inputs and PECL complementary open−emitter outputs that allow use as an inverting/non−inverting translator or as a differential line driver. When the common strobe input is at a low logic level, it forces all true outputs to the PECL low logic state (≈ +3.2 V) and all inverting outputs to the PECL high logic state (≈ +4.1 V).

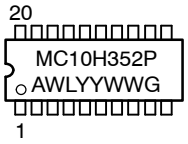
The MC10H352 can also be used with the MC10H350 to transmit and receive CMOS information differentially via balanced twisted pair lines.

Features

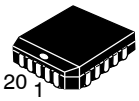
- Single +5.0 V Power Supply
- All V_{CC} Pins Isolated On Chip
- Differentially Drive Balanced Lines
- t_{pd} = 1.3 nsec Typical
- Pb−Free Packages are Available*

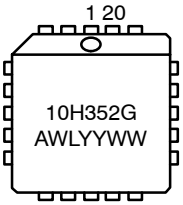
MARKING DIAGRAMS*





PDIP−20
P SUFFIX
CASE 738





PLCC−20
FN SUFFIX
CASE 775

A	= Assembly Location
WL	= Wafer Lot
YY	= Year
WW	= Work Week
G	= Pb−Free Package

*For additional marking information, refer to Application Note AND8002/D.

ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 3 of this data sheet.

*For additional information on our Pb−Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

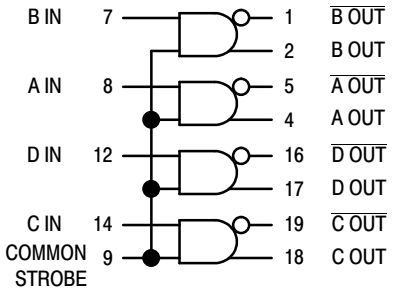


Figure 1. Logic Diagram

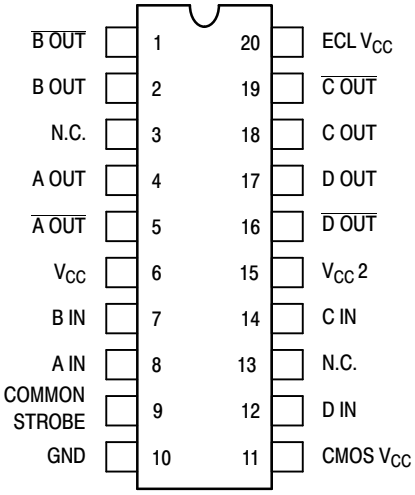


Figure 2. Pin Assignment

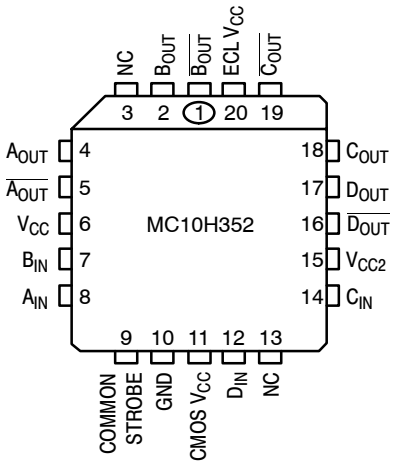


Figure 3. PLCC−20 Pin Assignment

Table 1. MAXIMUM RATINGS

Symbol	Characteristic	Rating	Unit
V_{CC}	Power Supply	0 to +7.0	Vdc
V_I	Input Voltage (V_{CC} = 5.0 V)	0 to V_{CC}	Vdc
I_{out}	Output Current Continuous Surge	50 100	mA
T_A	Operating Temperature Range	0 to +75	°C
T_{stg}	Storage Temperature Range Plastic	−55 to +150	°C

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

Table 2. ELECTRICAL CHARACTERISTICS (V_{CC} = V_{CC1} = V_{CC2} = 5.0 V ± 5.0%) (Note 1)

Symbol	Characteristic	0°		25°		75°		Unit
		Min	Max	Min	Max	Min	Max	
ECL	Power Supply Current		50		45		50	mA
TTL			20		15		20	mA
I_R	Reverse Current Pins 7, 8, 12, 14 Pin 9		 25 100		 20 80		 25 100	μA
I_F	Forward Current Pins 7, 8, 12, 14 Pin 9		 −0.8 −3.2		 −0.6 −2.4		 −0.8 −3.2	mA
$V_{(BR)in}$	Input Voltage Breakdown	5.5		5.5		5.5		Vdc
V_I	Input Clamp Voltage (I_{in} = −18 mA)		−1.5		−1.5		−1.5	Vdc
V_{OH}	High Output Voltage (Note 2)	3.98	4.16	4.02	4.19	4.08	4.27	Vdc
V_{OL}	Low Output Voltage (Note 2)	3.05	3.37	3.05	3.37	3.05	3.37	Vdc
V_{IH}	High Input Voltage	3.15		3.15		3.15		Vdc
V_{IL}	Low Input Voltage		1.5		1.5		1.5	Vdc

*Positive Emitter Coupled Logic

1. Each MECL 10H™ 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 lfpm is maintained. Outputs are terminated through a 50 Ω resistor to V_{CC} − 2.0 Vdc.
2. With V_{CC} at 5.0 V. V_{OH}/V_{OL} change 1:1 with V_{CC}.

Table 3. AC PARAMETERS

Symbol	Characteristic	0°		25°		75°		Unit
		Min	Max	Min	Max	Min	Max	
t_{pd}	Propagation Delay (Note 3)	0.4	1.9	0.4	2.0	0.4	2.1	ns
t_r	Rise Time (20% to 80%)	0.4	1.9	0.4	2.0	0.4	2.1	ns
t_f	Fall Time (80% to 20%)	0.4	1.9	0.4	2.0	0.4	2.1	ns
f_{max}	Maximum Operating Frequency	150		150		150		MHz

NOTE: Device will meet the specifications after thermal equilibrium has been established when mounted in a test socket or printed circuit board with maintained transverse airflow greater than 500 lfpm. Electrical parameters are guaranteed only over the declared operating temperature range. Functional operation of the device exceeding these conditions is not implied. Device specification limit values are applied individually under normal operating conditions and not valid simultaneously.

3. Propagation delay is measured on this circuit from $V_{CC}/2$ on the input waveform to the 50% point on the output waveform.

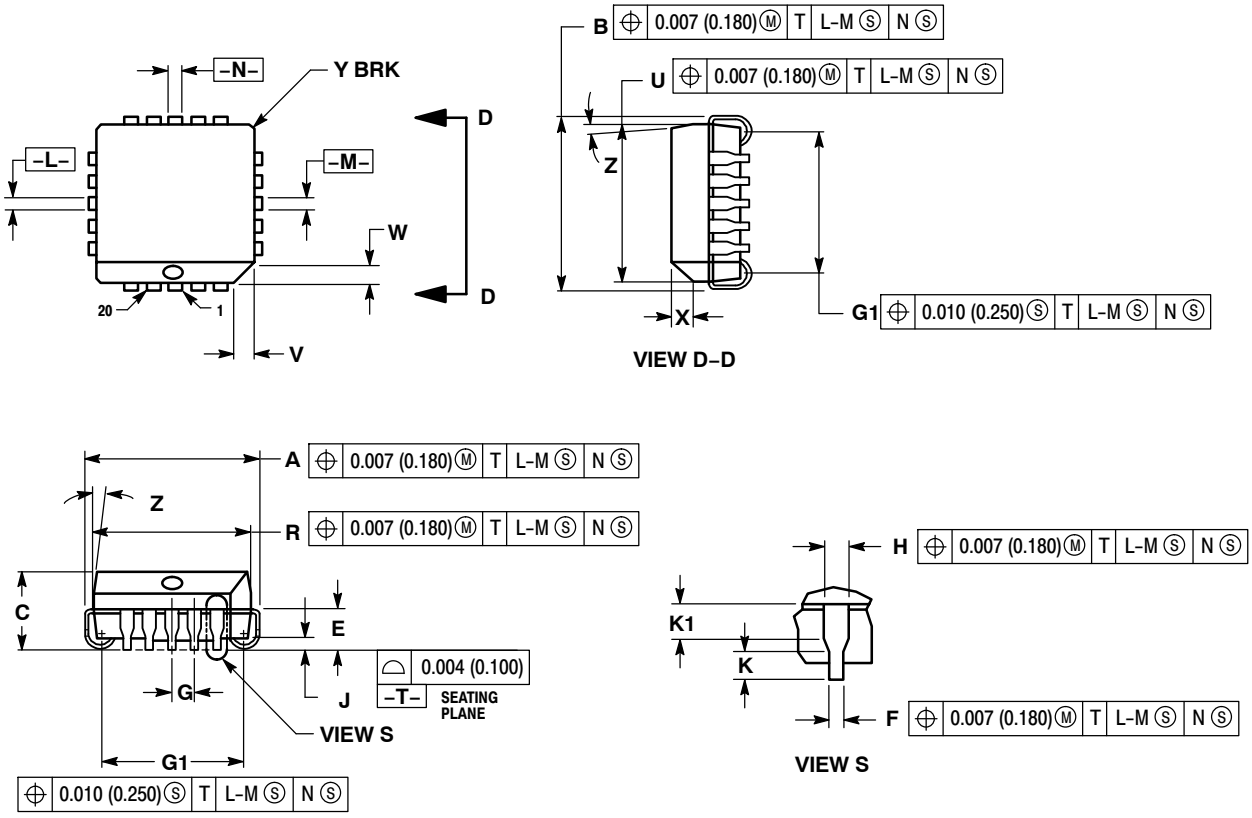
ORDERING INFORMATION

Device	Package	Shipping†
MC10H352FNG	PLCC−20 (Pb−Free)	46 Units / Rail
MC10H352FNR2G	PLCC−20 (Pb−Free)	500 / Tape & Reel
MC10H352P	PDIP−20	18 Unit / Rail
MC10H352PG	PDIP−20 (Pb−Free)	18 Unit / Rail

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

PACKAGE DIMENSIONS

20 LEAD PLCC
CASE 775−02
ISSUE F

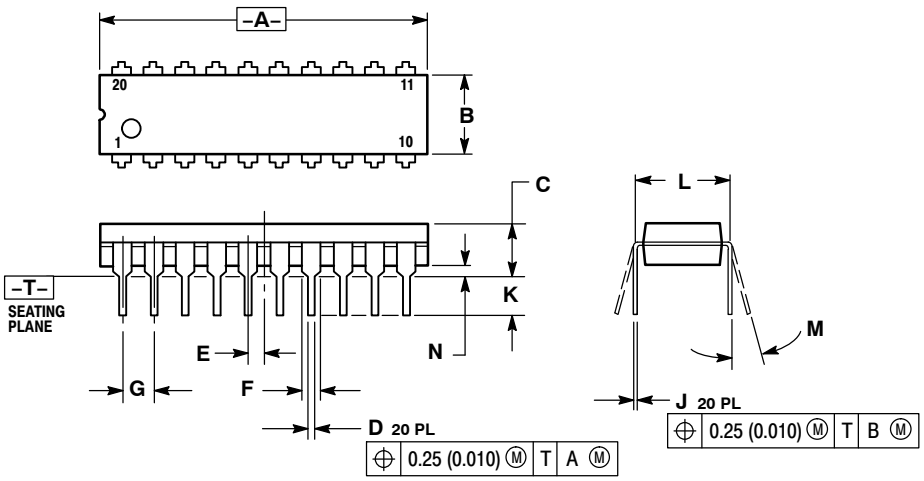


NOTES:
1. DIMENSIONS AND TOLERANCING PER ANSI Y14.5M, 1982.
2. DIMENSIONS IN INCHES.
3. DATUMS −L−, −M−, AND −N− DETERMINED WHERE TOP OF LEAD SHOULDER EXITS PLASTIC BODY AT MOLD PARTING LINE.
4. DIMENSION G1, TRUE POSITION TO BE MEASURED AT DATUM −T−, SEATING PLANE.
5. DIMENSIONS R AND U DO NOT INCLUDE MOLD FLASH. ALLOWABLE MOLD FLASH IS 0.010 (0.250) PER SIDE.
6. DIMENSIONS IN 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	0.021	0.33	0.53
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	−−−

PACKAGE DIMENSIONS

PDIP−20
P SUFFIX
CASE 738−03
ISSUE E



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 B DOES NOT INCLUDE MOLD FLASH.

	INCHES		MILLIMETERS	
DIM	MIN	MAX	MIN	MAX
A	1.010	1.070	25.66	27.17
B	0.240	0.260	6.10	6.60
C	0.150	0.180	3.81	4.57
D	0.015	0.022	0.39	0.55
E	0.050 BSC		1.27 BSC	
F	0.050	0.070	1.27	1.77
G	0.100 BSC		2.54 BSC	
J	0.008	0.015	0.21	0.38
K	0.110	0.140	2.80	3.55
L	0.300 BSC		7.62 BSC	
M	0°	15°	0°	15°
N	0.020	0.040	0.51	1.01

MECL 10K is a trademark of Motorola, Inc.

PUBLICATION ORDERING INFORMATION

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: orderlit@onsemi.com

N. American Technical Support: 800−282−9855 Toll Free USA/Canada
Europe, Middle East and Africa Technical Support:
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ON Semiconductor Website: **www.onsemi.com**

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For additional information, please contact your local Sales Representative

MC10H352/D