

MC10H600, MC100H600

9-Bit TTL to ECL Translator

Description

The MC10H/100H600 is a 9-bit, dual supply TTL to ECL translator. Devices in the ON Semiconductor 9-bit translator series utilize the PLCC-28 for optimal power pinning, signal flow-through and electrical performance.

The H600 features both ECL and TTL logic enable controls for maximum flexibility.

The 10H version is compatible with MECL 10H ECL logic levels. The 100H version is compatible with 100K levels.

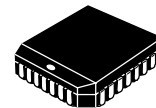
Features

- 9-Bit Ideal for Byte-Parity Applications
- Flow-Through Configuration
- Extra TTL and ECL Power/Ground Pins to Minimize Switching Noise
- ECL and TTL Enable Inputs
- Dual Supply
- 3.5 ns Max D to Q
- PNP TTL Inputs for Low Loading
- Choice of ECL Compatibility:
MECL 10H (10Hxxx) or 100K (100Hxxx)
- Pb-Free Packages are Available*



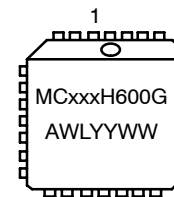
ON Semiconductor®

<http://onsemi.com>



PLCC-28
FN SUFFIX
CASE 776

MARKING DIAGRAM*



xxx = 10 or 100
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 4 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.

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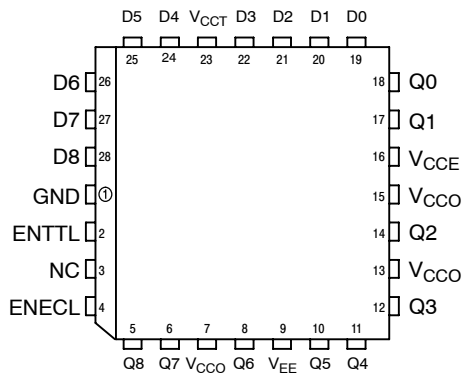


Figure 1. Pinout: PLCC-28 (Top View)

Table 1. PIN NAMES

| PIN | FUNCTION |
|------------------|-------------------------------------|
| GND | TTL Ground (0 V) |
| V _{CCE} | ECL V _{CC} (0 V) |
| V _{CCO} | ECL V _{CC} (0 V) – Outputs |
| V _{CCT} | TTL Supply (+5.0 V) |
| V _{EE} | ECL Supply (-5.2/-4.5 V) |
| D0–D8 | Data Inputs (TTL) |
| Q0–Q8 | Data Outputs (ECL) |
| ENECL | Enable Control (ECL) |
| ENTTL | Enable Control (TTL) |

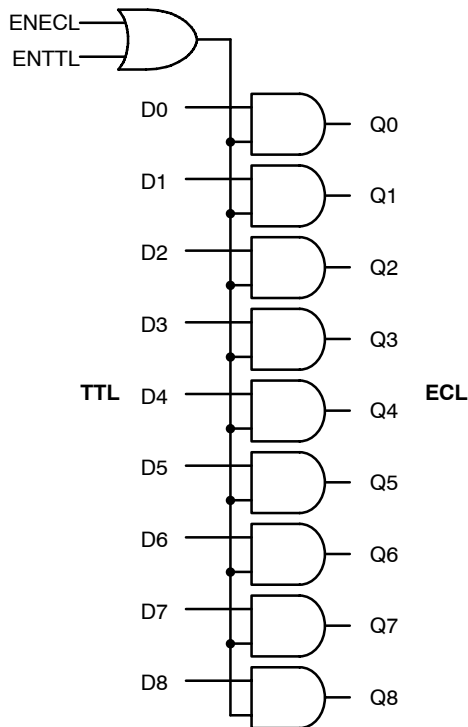


Figure 2. Logic Symbol

Table 2. TRUTH TABLE

| ENECL | ENTTL | D | Q |
|-------|-------|---|---|
| H | X | H | H |
| H | X | L | L |
| X | H | H | H |
| X | H | L | L |
| L | L | X | L |

Table 3. DC CHARACTERISTICS: V_{CCT} = 5.0 V ± 10%; V_{EE} = -5.2 V ± 5% (10H version); V_{EE} = -4.2 V to -5.5 V (100H)

| Symbol | Parameter | 0°C | | 25°C | | 75°C | | Unit |
|-----------------------------|-----------|------|------|------|------|------|------|------|
| | | Min | Max | Min | Max | Min | Max | |
| Power Supply Current | | | | | | | | |
| I _{EE} | ECL | | | | | | | |
| | | 10H | -125 | | -125 | | -125 | mA |
| | | 100H | -122 | | -123 | | -132 | |
| I _{CCH} | TTL | | 48 | | 48 | | 48 | mA |
| I _{CCL} | | | 50 | | 50 | | 50 | |

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 lfm. 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.

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Table 4. 10H ECL DC CHARACTERISTICS: $V_{CCT} = 5.0\text{ V} \pm 10\%$; $V_{EE} = -5.2\text{ V} \pm 5\%$

| Symbol | Parameter | Condition | 0°C | | 25°C | | 75°C | | Unit |
|-----------------------|---|-----------------------|----------------|---------------|----------------|---------------|----------------|---------------|--------------------------------|
| | | | Min | Max | Min | Max | Min | Max | |
| I_{INH} I_{IL} | Input HIGH Current Input LOW Current | | 0.5 | 225 | 0.5 | 175 | 0.5 | 175 | μA μA |
| V_{IH} V_{IL} | Input HIGH Voltage Input LOW Voltage | | -1170 -1950 | -840 -1480 | -1130 -1950 | -810 -1480 | -1070 -1950 | -735 -1450 | mV |
| V_{OH} V_{OL} | Output HIGH Voltage Output LOW Voltage | 50 Ω to -2.0 V | -1020 -1950 | -840 -1630 | -980 -1950 | -810 -1630 | -920 -1950 | -735 -1600 | mV |

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 lfm. 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.

Table 5. 100H ECL DC CHARACTERISTICS: $V_{CCT} = 5.0\text{ V} \pm 10\%$; $V_{EE} = -4.2\text{ V}$ to -5.5 V

| Symbol | Parameter | Condition | 0°C | | 25°C | | 75°C | | Unit |
|-----------------------|---|-----------------------|----------------|---------------|----------------|---------------|----------------|---------------|--------------------------------|
| | | | Min | Max | Min | Max | Min | Max | |
| I_{INH} I_{IL} | Input HIGH Current Input LOW Current | | 0.5 | 255 | 0.5 | 175 | 0.5 | 175 | μA μA |
| V_{IH} V_{IL} | Input HIGH Voltage Input LOW Voltage | | -1165 -1810 | -880 -1475 | -1165 -1810 | -880 -1475 | -1165 -1810 | -880 -1475 | mV |
| V_{OH} V_{OL} | Output HIGH Voltage Output LOW Voltage | 50 Ω to -2.0 V | -1025 -1810 | -880 -1620 | -1025 -1810 | -880 -1620 | -1025 -1810 | -880 -1620 | mV |

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 lfm. 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.

Table 6. TTL DC CHARACTERISTICS: $V_{CCT} = 5.0\text{ V} \pm 10\%$; $V_{EE} = -5.2\text{ V} \pm 5\%$ (10H); $V_{EE} = -4.2\text{ V}$ to -5.5 V (100H)

| Symbol | Parameter | Condition | 0°C | | 25°C | | 75°C | | Unit |
|----------------------|---|--|-----|-----------|------|-----------|------|-----------|---------------|
| | | | Min | Max | Min | Max | Min | Max | |
| V_{IH} V_{IL} | Input HIGH Voltage Input LOW Voltage | | 2.0 | 0.8 | 2.0 | 0.8 | 2.0 | 0.8 | V V |
| I_{IH} | Input HIGH Current | $V_{IN} = 2.7\text{ V}$ $V_{IN} = 7.0\text{ V}$ | | 20 100 | | 20 100 | | 20 100 | μA |
| I_{IL} | Input LOW Current | $V_{IN} = 0.5\text{ V}$ | | -0.6 | | -0.6 | | -0.6 | mA |
| V_{IK} | Input Clamp Voltage | $I_{IN} = -18\text{ mA}$ | | -1.2 | | -1.2 | | -1.2 | V |

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 lfm. 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.

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Table 7. AC CHARACTERISTICS: $V_{CCT} = 5.0\text{ V} \pm 10\%$; $V_{EE} = -5.2\text{ V} \pm 5\%$ (10H); $V_{EE} = -4.2\text{ V}$ to -5.5 V (100H)

| Symbol | Parameter | | Condition | 0°C | | 25°C | | 75°C | | Unit |
|------------------------|------------------------------------|-----------------|-----------------------|-----|-----|------|-----|------|-----|------|
| | | | | Min | Max | Min | Max | Min | Max | |
| t_{PLH} t_{PHL} | Propagation Delay to Output | D | 50 Ω to -2.0 V | 1.4 | 3.0 | 1.5 | 3.2 | 1.7 | 3.5 | ns |
| | | ENECL/ ENTTL | | 1.8 | 3.7 | 1.9 | 3.9 | 2.0 | 4.1 | ns |
| t_R t_F | Output Rise/Fall Time 20% - 80% | | | 0.5 | 1.5 | 0.5 | 1.5 | 0.5 | 1.5 | ns |

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 lfm. 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.

ORDERING INFORMATION

| Device | Package | Shipping [†] |
|----------------|----------------------|-----------------------|
| MC10H600FN | PLCC-28 | 37 Units / Rail |
| MC10H600FNG | PLCC-28 (Pb-Free) | 37 Units / Rail |
| MC10H600FNR2 | PLCC-28 | 500 / Tape & Reel |
| MC10H600FNR2G | PLCC-28 (Pb-Free) | 500 / Tape & Reel |
| MC100H600FN | PLCC-28 | 37 Units / Rail |
| MC100H600FNG | PLCC-28 (Pb-Free) | 37 Units / Rail |
| MC100H600FNR2 | PLCC-28 | 500 / Tape & Reel |
| MC100H600FNR2G | PLCC-28 (Pb-Free) | 500 / Tape & Reel |

[†]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.

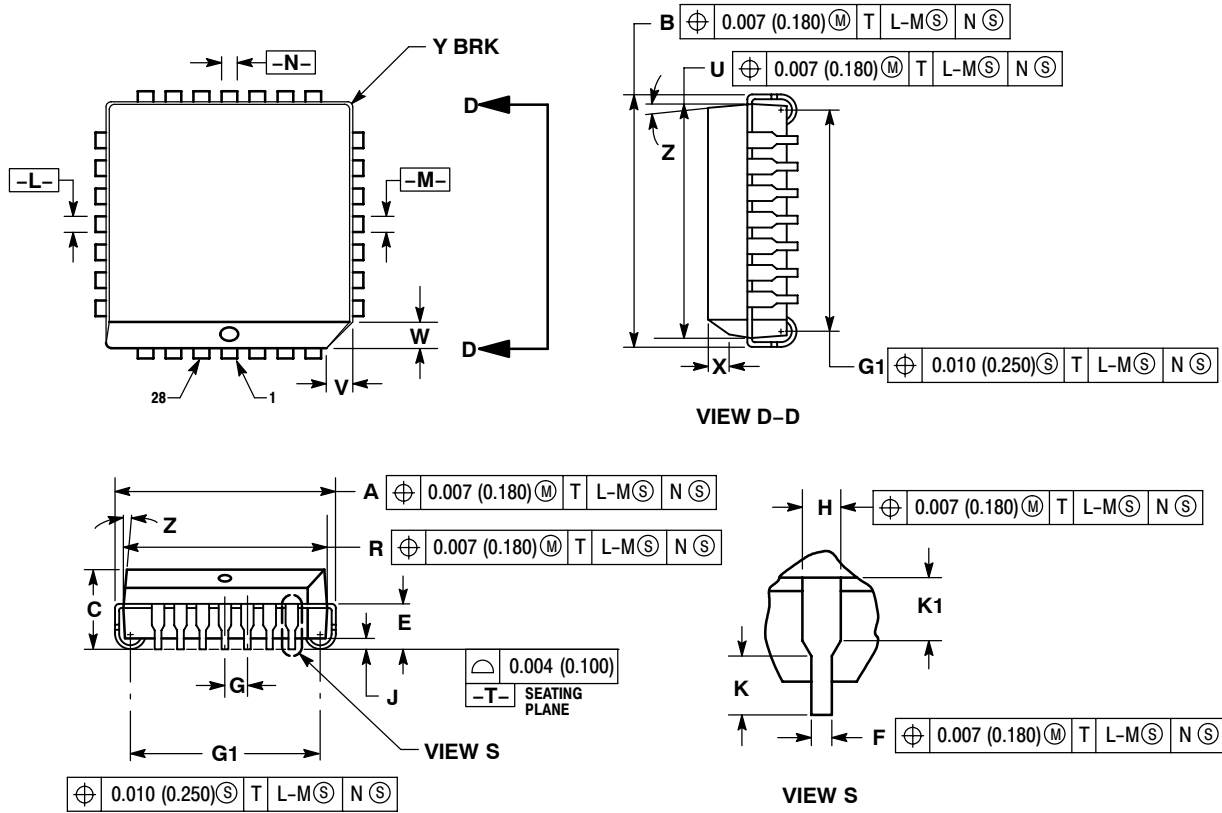
Resource Reference of Application Notes

- AN1405/D** - ECL Clock Distribution Techniques
- AN1406/D** - Designing with PECL (ECL at +5.0 V)
- AN1503/D** - ECLinPS™ I/O SPICE Modeling Kit
- AN1504/D** - Metastability and the ECLinPS Family
- AN1568/D** - Interfacing Between LVDS and ECL
- AN1672/D** - The ECL Translator Guide
- AND8001/D** - Odd Number Counters Design
- AND8002/D** - Marking and Date Codes
- AND8020/D** - Termination of ECL Logic Devices
- AND8066/D** - Interfacing with ECLinPS
- AND8090/D** - AC Characteristics of ECL Devices

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PACKAGE DIMENSIONS

PLCC-28
FN SUFFIX
PLASTIC PLCC PACKAGE
CASE 776-02
ISSUE E



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 BOTTOM MAY BE SMALLER THAN THE PACKAGE TOP 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 | 0.485 | 0.495 | 12.32 | 12.57 |
| B | 0.485 | 0.495 | 12.32 | 12.57 |
| 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 | 0.450 | 0.456 | 11.43 | 11.58 |
| U | 0.450 | 0.456 | 11.43 | 11.58 |
| 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 | 0.410 | 0.430 | 10.42 | 10.92 |
| K1 | 0.040 | --- | 1.02 | --- |

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