

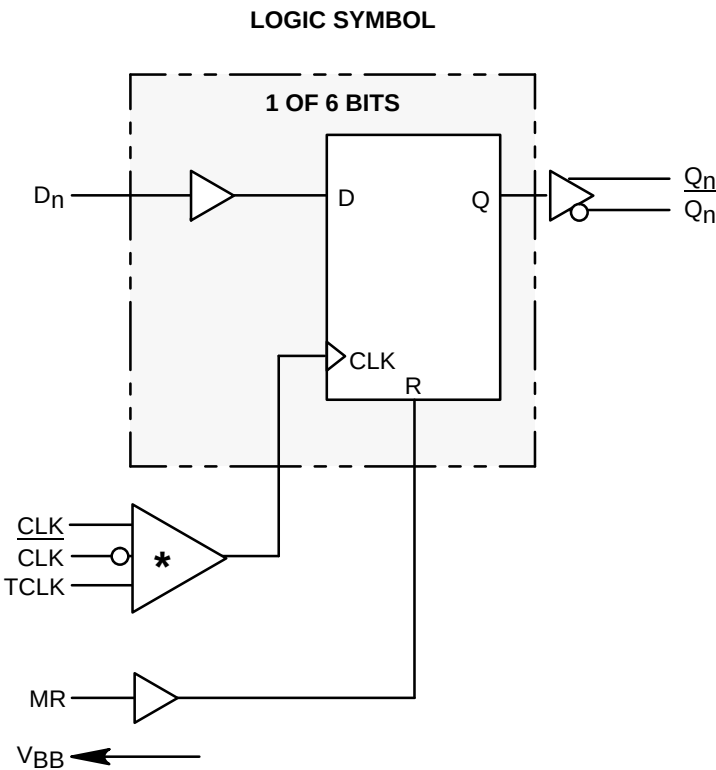
# Registered Hex TTL/PECL Translator

The MC10/100H606 is a 6-bit, registered, single supply TTL to PECL translator. The device features differential PECL outputs as well as a choice between either a differential PECL clock input or a TTL clock input. The asynchronous master reset control is a PECL level input.

With its differential PECL outputs and TTL inputs the H606 device is ideally suited for the transmit function of a HPPI bus type board-to-board interface application. The on chip registers simplify the task of synchronizing the data between the two boards.

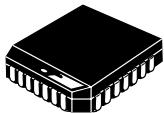
The device is available in either ECL standard: the MECL™ 10H device is compatible with MECL 10KH logic levels, with a V<sub>CC</sub> of +5 volts; while the 100H device is compatible with 100K logic levels, with a V<sub>CC</sub> of +5 volts.

- Differential 50Ω ECL Outputs
- Choice Between Differential PECL or TTL Clock Input
- Single Power Supply
- Multiple Power and Ground Pins to Minimize Noise



- \* 1. When using PECL inputs, TCLK must be tied to ground (0V).  
2. When using only one PECL input, the unused PECL input must be tied to V<sub>BB</sub>, and TCLK must be tied to ground (0V).  
3. When using TCLK, both PECL inputs must be tied to ground (0V).

## MC10H606 MC100H606



**FN SUFFIX**  
PLASTIC PACKAGE  
CASE 776-02

### PIN NAMES

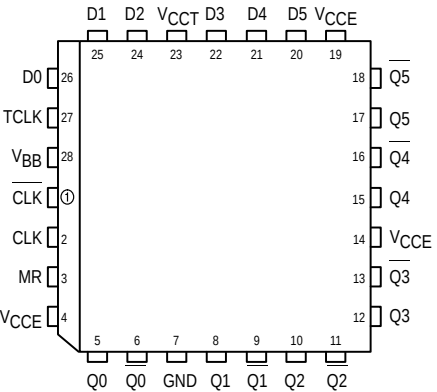
| PIN              | FUNCTION                      |
|------------------|-------------------------------|
| D0-D5            | TTL Data Inputs               |
| CLK, CLK         | Differential PECL Clock Input |
| TCLK             | TTL Clock Input               |
| MR               | PECL Master Reset Input       |
| Q0-Q5            | True PECL Outputs             |
| Q0-Q5            | Inverted PECL Outputs         |
| V <sub>CCE</sub> | PECL V <sub>CC</sub> (+5.0V)  |
| V <sub>CCT</sub> | TTL V <sub>CC</sub> (+5.0V)   |
| GND              | TTL/PECL Ground               |

### TRUTH TABLE

| Dn | MR | TCLK/CLK | Qn+1 |
|----|----|----------|------|
| L  | L  | Z        | L    |
| H  | L  | Z        | H    |
| X  | H  | X        | L    |

Z = LOW to HIGH Transition

### Pinout: 28-Lead PLCC (Top View)



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**DC CHARACTERISTICS** ( $V_{CCT} = V_{CCE} = 5.0V \pm 5\%$ )

| Symbol     | Characteristic | $T_A = 0^\circ C$ |     |     | $T_A = +25^\circ C$ |     |     | $T_A = +85^\circ C$ |     |     | Unit | Condition    |
|------------|----------------|-------------------|-----|-----|---------------------|-----|-----|---------------------|-----|-----|------|--------------|
|            |                | Min               | Typ | Max | Min                 | Typ | Max | Min                 | Typ | Max |      |              |
| $I_{CCTL}$ | Supply Current |                   | 18  | 30  |                     | 18  | 30  |                     | 18  | 30  | mA   | Outputs LOW  |
| $I_{CCTH}$ | Supply Current |                   | 13  | 25  |                     | 13  | 25  |                     | 13  | 25  | mA   | Outputs HIGH |
| $I_{GND}$  | Supply Current |                   | 75  | 90  |                     | 75  | 90  |                     | 75  | 95  | mA   |              |

**TTL DC CHARACTERISTICS** ( $V_{CCT} = V_{CCE} = 5.0V \pm 5\%$ )

| Symbol   | Characteristic      | $T_A = 0^\circ C$ |           | $T_A = 25^\circ C$ |           | $T_A = 85^\circ C$ |           | Unit | Condition                          |
|----------|---------------------|-------------------|-----------|--------------------|-----------|--------------------|-----------|------|------------------------------------|
|          |                     | Min               | Max       | Min                | Max       | Min                | Max       |      |                                    |
| $V_{IH}$ | Input HIGH Voltage  | 2.0               |           | 2.0                |           | 2.0                |           | V    |                                    |
| $V_{IL}$ | Input LOW Voltage   |                   | 0.8       |                    | 0.8       |                    | 0.8       | V    |                                    |
| $V_{IK}$ | Input Clamp Voltage |                   | -1.2      |                    | -1.2      |                    | -1.2      | V    | $I_{IN} = -18mA$                   |
| $I_{IH}$ | Input HIGH Current  |                   | 20<br>100 |                    | 20<br>100 |                    | 20<br>100 | V    | $V_{IN} = 2.7V$<br>$V_{IN} = 7.0V$ |
| $I_{IL}$ | Input LOW Current   |                   | -0.6      |                    | -0.6      |                    | -0.6      | mA   | $V_{IN} = 0.5V$                    |

**10H PECL DC CHARACTERISTICS** ( $V_{CCT} = V_{CCE} = 5.0V \pm 5\%$ )

| Symbol    | Characteristic                | $T_A = 0^\circ C$ |      | $T_A = 25^\circ C$ |      | $T_A = 85^\circ C$ |      | Unit    | Condition        |
|-----------|-------------------------------|-------------------|------|--------------------|------|--------------------|------|---------|------------------|
|           |                               | Min               | Max  | Min                | Max  | Min                | Max  |         |                  |
| $I_{INH}$ | Input HIGH Current            |                   | 255  |                    | 145  |                    | 145  | $\mu A$ |                  |
| $I_{INL}$ | Input LOW Current             |                   | 0.5  |                    | 0.5  |                    | 0.5  | $\mu A$ |                  |
| $V_{IH}$  | Input HIGH Voltage (Note 1.)  | 3830              | 4160 | 3870               | 4190 | 3930               | 4280 | mV      | $V_{CCT} = 5.0V$ |
| $V_{IL}$  | Input LOW Voltage (Note 1.)   | 3050              | 3520 | 3050               | 3520 | 3050               | 3555 | mV      | $V_{CCT} = 5.0V$ |
| $V_{OH}$  | Output HIGH Voltage (Note 1.) | 3980              | 4160 | 4020               | 4190 | 4080               | 4270 | mV      | $V_{CCT} = 5.0V$ |
| $V_{OL}$  | Output LOW Voltage (Note 1.)  | 3050              | 3370 | 3050               | 3370 | 3050               | 3400 | mV      | $V_{CCT} = 5.0V$ |
| $V_{BB}$  | Output Bias Voltage (Note 1.) | 3600              | 3710 | 3630               | 3730 | 3670               | 3790 | mV      | $V_{CCT} = 5.0V$ |

1. PECL  $V_{IL}$ ,  $V_{IH}$ ,  $V_{OL}$ ,  $V_{OH}$   $V_{BB}$  are given for  $V_{CCT} = V_{CCE} = 5.0V$  and will vary 1:1 with the power supply.

**100H PECL DC CHARACTERISTICS** ( $V_{CCT} = V_{CCE} = 5.0V \pm 5\%$ )

| Symbol    | Characteristic                | $T_A = 0^\circ C$ |      | $T_A = 25^\circ C$ |      | $T_A = 85^\circ C$ |      | Unit    | Condition        |
|-----------|-------------------------------|-------------------|------|--------------------|------|--------------------|------|---------|------------------|
|           |                               | Min               | Max  | Min                | Max  | Min                | Max  |         |                  |
| $I_{INH}$ | Input HIGH Current            |                   | 255  |                    | 145  |                    | 145  | $\mu A$ |                  |
| $I_{INL}$ | Input LOW Current             |                   | 0.5  |                    | 0.5  |                    | 0.5  | $\mu A$ |                  |
| $V_{IH}$  | Input HIGH Voltage (Note 1.)  | 3835              | 4120 | 3835               | 4120 | 3835               | 4120 | mV      | $V_{CCT} = 5.0V$ |
| $V_{IL}$  | Input LOW Voltage (Note 1.)   | 3190              | 3525 | 3190               | 3525 | 3190               | 3525 | mV      | $V_{CCT} = 5.0V$ |
| $V_{OH}$  | Output HIGH Voltage (Note 1.) | 3975              | 4120 | 3975               | 4120 | 3975               | 4120 | mV      | $V_{CCT} = 5.0V$ |
| $V_{OL}$  | Output LOW Voltage (Note 1.)  | 3190              | 3380 | 3190               | 3380 | 3190               | 3380 | mV      | $V_{CCT} = 5.0V$ |
| $V_{BB}$  | Output Bias Voltage (Note 1.) | 3600              | 3720 | 3600               | 3720 | 3600               | 3720 | mV      | $V_{CCT} = 5.0V$ |

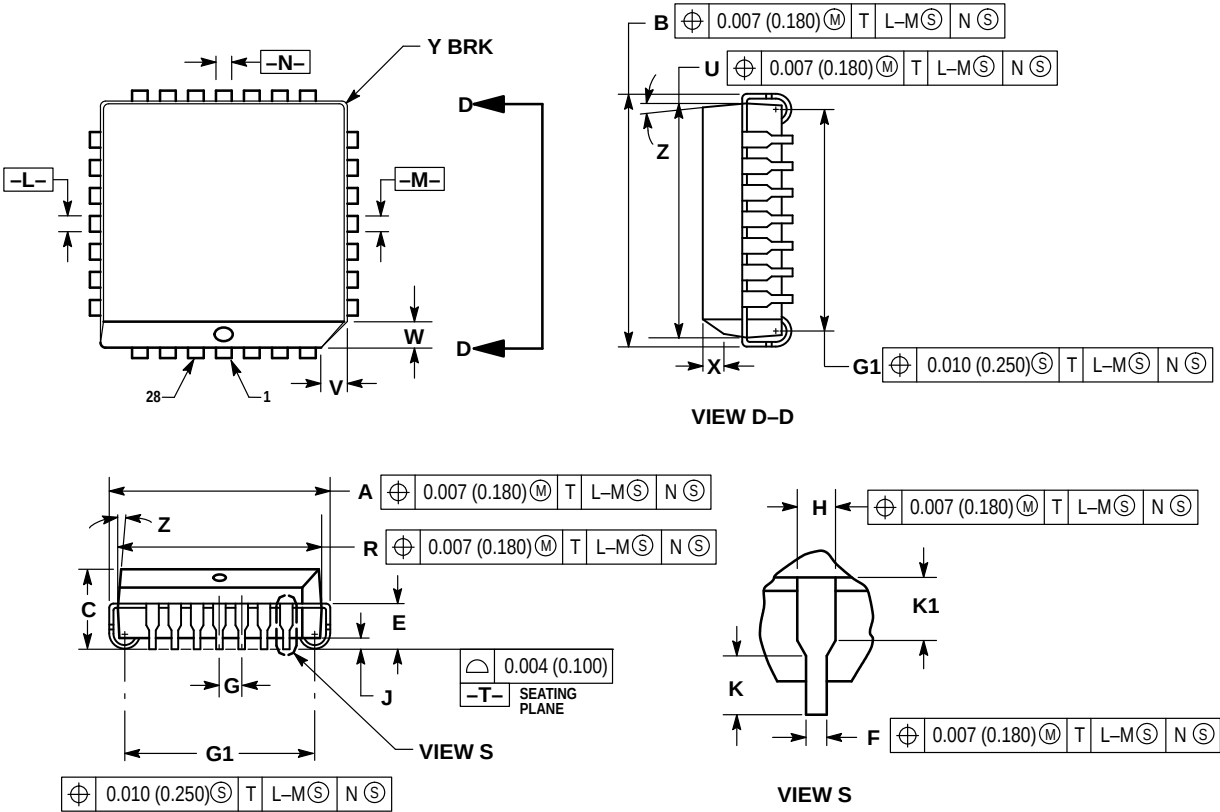
1. PECL  $V_{IL}$ ,  $V_{IH}$ ,  $V_{OL}$ ,  $V_{OH}$   $V_{BB}$  are given for  $V_{CCT} = V_{CCE} = 5.0V$  and will vary 1:1 with the power supply.

**AC CHARACTERISTICS** ( $V_{CC} = V_{CE} = 5.0V \pm 5\%$ )

| Symbol        | Characteristic                               | $T_A = 0^\circ C$ |     |            | $T_A = +25^\circ C$ |            |            | $T_A = +85^\circ C$ |     |            | Unit | Condition |
|---------------|----------------------------------------------|-------------------|-----|------------|---------------------|------------|------------|---------------------|-----|------------|------|-----------|
|               |                                              | Min               | Typ | Max        | Min                 | Typ        | Max        | Min                 | Typ | Max        |      |           |
| $t_{PD}$      | Propagation Delay<br>TCLK++                  | 1.75              |     | 3.75       | 1.75                | 3.00       | 3.75       | 1.75                |     | 3.75       | ns   | CL = 50pF |
| $t_{PD}$      | Propagation Delay<br>TCLK+–                  | 1.75              |     | 3.75       | 1.75                | 3.00       | 3.75       | 1.75                |     | 3.75       | ns   | CL = 50pF |
| $t_{PD}$      | Propagation Delay<br>CLK++                   | 1.50              |     | 3.50       | 1.50                | 2.50       | 3.50       | 1.50                |     | 3.50       | ns   | CL = 50pF |
| $t_{PD}$      | Propagation Delay<br>CLK+–                   | 1.50              |     | 3.50       | 1.50                | 2.50       | 3.50       | 1.50                |     | 3.50       | ns   | CL = 50pF |
| $t_{PD}$      | Propagation Delay<br>MR+–                    | 1.50              |     | 3.50       | 1.50                | 2.50       | 3.50       | 1.75                |     | 3.75       | ns   | CL = 50pF |
| $t_{SKEW}$    | Device Skew<br>Part-to-Part<br>Within Device |                   |     | 2.0<br>0.5 |                     | 1.0<br>0.3 | 2.0<br>0.5 |                     |     | 2.0<br>0.5 | ns   | CL = 50pF |
| $t_S$         | Setup Time                                   | 1.5               | 0.5 |            | 1.5                 | 0.5        |            | 1.5                 | 0.5 |            | ns   | CL = 50pF |
| $t_H$         | Hold Time                                    | 1.5               | 0.5 |            | 1.5                 | 0.5        |            | 1.5                 | 0.5 |            | ns   | CL = 50pF |
| $t_{PW}$      | Minimum Pulse Width<br>CLK                   | 1.5               |     |            | 1.5                 | 1.0        |            | 1.5                 |     |            | ns   | CL = 50pF |
| $t_{PW}$      | Minimum Pulse Width<br>MR                    | 1.5               |     |            | 1.5                 |            |            | 1.5                 |     |            | ns   | CL = 50pF |
| $t_r$         | Rise Time                                    |                   |     | 2.0        |                     | 1.0        | 2.0        |                     |     | 2.0        | ns   | CL = 50pF |
| $t_f$         | Fall Time                                    |                   |     | 2.0        |                     | 1.0        | 2.0        |                     |     | 2.0        | ns   | CL = 50pF |
| $t_{RES/REC}$ | Reset/Recovery Time                          | 2.5               | 2.0 |            | 2.5                 | 2.0        |            | 2.5                 | 2.0 |            | ns   | CL = 50pF |

OUTLINE DIMENSIONS

FN SUFFIX  
PLASTIC PLCC PACKAGE  
CASE 776-02  
ISSUE D



- 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).

| 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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