

# MC10H604, MC100H604

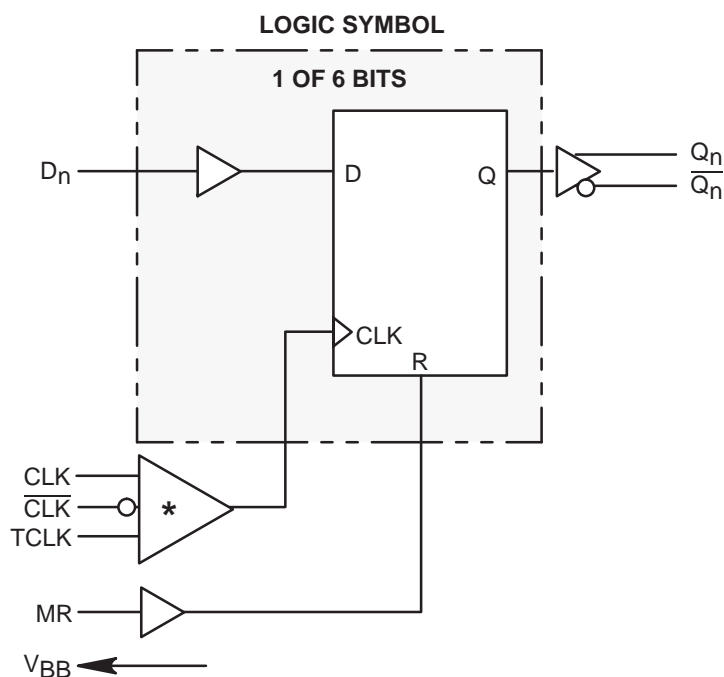
## Registered Hex TTL to ECL Translator

The MC10H/100H604 is a 6-bit, registered, dual supply TTL to ECL translator. The device features differential ECL outputs as well as a choice between either a differential ECL clock input or a TTL clock input. The asynchronous master reset control is an ECL level input..

With its differential ECL outputs and TTL inputs the H604 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 10H device is compatible with MECL 10KH logic levels while the 100H device is compatible with 100K logic levels.

- Differential 50Ω ECL Outputs
- Choice Between Differential ECL or TTL Clock Input
- Dual Power Supply
- Multiple Power and Ground Pins to Minimize Noise
- Specified Within-Device Skew



- \* 1. When using MECL inputs, TCLK must be tied to ground (0V).  
 2. When using only one MECL input, the unused MECL input must be tied to VBB, and TCLK must be tied to ground (0V).  
 3. When using TCLK, both MECL inputs must be tied to VEE (-5.2V).

**TRUTH TABLE**

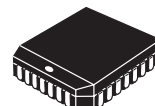
Dn	MR	TCLK/CLK	Qn+1
L	L	Z	L
H	L	Z	H
X	H	X	L

Z = LOW to HIGH Transition



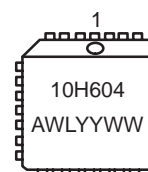
**ON Semiconductor**

<http://onsemi.com>



**PLCC-28  
FN SUFFIX  
CASE 776**

**MARKING  
DIAGRAM**

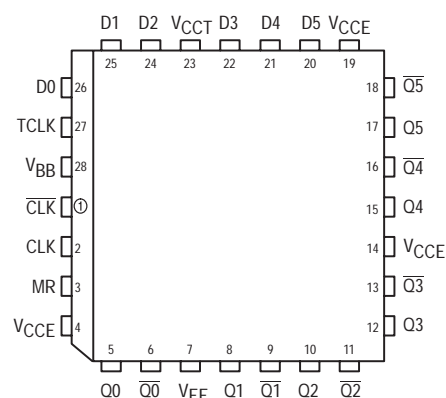


A = Assembly Location  
 WL = Wafer Lot  
 YY = Year  
 WW = Work Week

**PIN NAMES**

PIN	FUNCTION
D0–D5	TTL Data Inputs
CLK, $\overline{\text{CLK}}$	Differential ECL Clock Input
TCLK	TTL Clock Input
MR	ECL Master Reset Input
Q0–Q5	True ECL Outputs
$\overline{\text{Q0}}\text{--}\overline{\text{Q5}}$	Inverted ECL Outputs
V <sub>CCE</sub>	ECL V <sub>CC</sub> (0V)
V <sub>CCT</sub>	TTL V <sub>CC</sub> (+5.0V)
V <sub>EE</sub>	ECL V <sub>EE</sub> (-5.2V)

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



**ORDERING INFORMATION**

Device	Package	Shipping
MC10H604FN	PLCC-28	37 Units/Rail
MC100H604FN	PLCC-28	37 Units/Rail

# MC10H604, MC100H604

**DC CHARACTERISTICS:**  $V_{EE} = V_{EE}(\text{Min})$  to  $V_{EE}(\text{Max})$ ;  $V_{CC} = \text{GND}$ ;  $V_{CC} = 5.0\text{V} \pm 10\%$

Symbol	Parameter	0°C		25°C		85°C		Unit	Condition
		Min	Max	Min	Max	Min	Max		
$I_{EE}$	ECL Power Supply Current 10H 100H		130 130		130 140		130 150	mA	
$I_{CCH}$ $I_{CCL}$	TTL Power Supply Current		35 45		35 45		35 45	mA	

**10H ECL DC CHARACTERISTICS:**  $V_{CC} = +5.0\text{V} \pm 10\%$ ;  $V_{EE} = -5.20\text{V} \pm 5\%$

Symbol	Parameter	0°C		25°C		85°C		Unit	Condition
		Min	Max	Min	Max	Min	Max		
$I_{INH}$ $I_{INL}$	Input HIGH Current Input LOW Current		225		145		145	$\mu\text{A}$ $\mu\text{A}$	
$V_{IH}$ $V_{IL}$	Input HIGH Voltage Input LOW Voltage	-1170 -1950	-840 -1480	-1130 -1950	-810 -1480	-1060 -1950	-720 -1480	mV	
$V_{BB}$	Output Bias Voltage	-1400	-1290	-1370	-1270	-1330	-1210	mV	
$V_{OH}$ $V_{OL}$	Output HIGH Voltage Output LOW Voltage	-1020 -1950	-840 -1630	-980 -1950	-810 -1630	-910 -1950	-720 -1595	mV	50 $\Omega$ to -2.0 V

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

Symbol	Parameter	0°C		25°C		85°C		Unit	Condition
		Min	Max	Min	Max	Min	Max		
$I_{INH}$ $I_{INL}$	Input HIGH Current Input LOW Current		225		145		145	$\mu\text{A}$ $\mu\text{A}$	
$V_{IH}$ $V_{IL}$	Input HIGH Voltage Input LOW Voltage	-1165 -1810	-880 -1475	-1165 -1810	-880 -1475	-1165 -1810	-880 -1475	mV	
$V_{BB}$	Output Bias Voltage	-1400	-1280	-1400	-1280	-1400	-1280	mV	
$V_{OH}$ $V_{OL}$	Output HIGH Voltage Output LOW Voltage	-1025 -1810	-880 -1620	-1025 -1810	-880 -1620	-1025 -1810	-880 -1620	mV	50 $\Omega$ to -2.0 V

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

Symbol	Parameter	0°C		25°C		85°C		Unit	Condition
		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		20 100		20 100		20 100	$\mu\text{A}$	$V_{IN} = 2.7\text{V}$ $V_{IN} = 7.0\text{V}$
$I_{IL}$	Input LOW Current		-0.6		-0.6		-0.6	mA	$V_{IN} = 0.5\text{V}$
$V_{IK}$	Input Clamp Voltage		-1.2		-1.2		-1.2	V	$I_{IN} = -18\text{mA}$

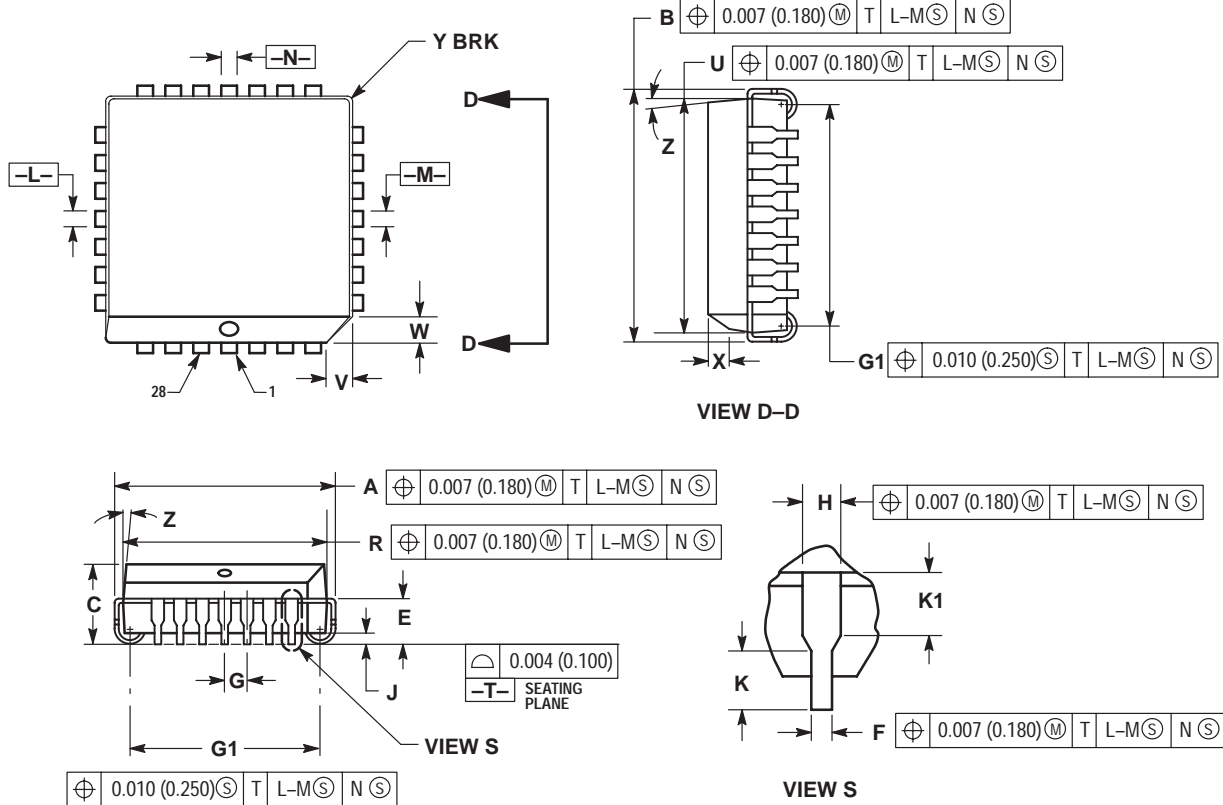
**AC CHARACTERISTICS:**  $V_{CC} = 5.0\text{V} \pm 10\%$ ;  $V_{EE} = -5.2\text{V} \pm 5\%$  (10H version);  $V_{EE} = -4.2\text{V}$  to  $-5.5\text{V}$  (100H version)

Symbol	Parameter	0°C			25°C			85°C			Unit	Condition
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max		
$t_{PLH}$ $t_{PHL}$	Propagation Delay CLK to Q to Output TCLK to Q MR to Q	1.5 2.0 1.5		3.5 4.0 4.0	1.5 2.0 1.5		3.5 4.0 4.0	1.5 2.0 1.5		3.5 4.0 4.0	ns	50 $\Omega$ to -2.0V
$t_s$	Setup Time	1.5	0.5		1.5	0.5		1.5	0.5		ns	50 $\Omega$ to -2.0V
$t_H$	Hold Time	1.5	0.5		1.5	0.5		1.5	0.5		ns	50 $\Omega$ to -2.0V
$t_{PW}$	Minimum Pulse Width CLK, MR		1.0			1.0			1.0		ns	50 $\Omega$ to -2.0V
$V_{PP}$	Minimum Input Swing					150					mV	
$t_r$ $t_f$	Rise/Fall Times	0.3	1.0	2.0	0.3	1.0	2.0	0.3	1.0	2.0	ns	20% - 80%

# MC10H604, MC100H604

## PACKAGE DIMENSIONS


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



### 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	0.485	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	---

**ON Semiconductor** and  are trademarks of Semiconductor Components Industries, LLC (SCILLC). SCILLC reserves the right to make changes without further notice to any products herein. SCILLC makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does SCILLC assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. "Typical" parameters which may be provided in SCILLC data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. SCILLC does not convey any license under its patent rights nor the rights of others. SCILLC products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the SCILLC product could create a situation where personal injury or death may occur. Should Buyer purchase or use SCILLC products for any such unintended or unauthorized application, Buyer shall indemnify and hold SCILLC and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that SCILLC was negligent regarding the design or manufacture of the part. SCILLC is an Equal Opportunity/Affirmative Action Employer.

## PUBLICATION ORDERING INFORMATION

### North America 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:** ONlit@hibbertco.com

**N. American Technical Support:** 800-282-9855 Toll Free USA/Canada

### EUROPE: LDC for ON Semiconductor – European Support

**German Phone:** (+1) 303-308-7140 (M–F 2:30pm to 5:00pm Munich Time)  
**Email:** ONlit-german@hibbertco.com  
**French Phone:** (+1) 303-308-7141 (M–F 2:30pm to 5:00pm Toulouse Time)  
**Email:** ONlit-french@hibbertco.com  
**English Phone:** (+1) 303-308-7142 (M–F 1:30pm to 5:00pm UK Time)  
**Email:** ONlit@hibbertco.com

### ASIA/PACIFIC: LDC for ON Semiconductor – Asia Support

**Phone:** 303-675-2121 (Tue–Fri 9:00am to 1:00pm, Hong Kong Time)  
Toll Free from Hong Kong 800-4422-3781  
**Email:** ONlit-asia@hibbertco.com

### JAPAN: ON Semiconductor, Japan Customer Focus Center

4-32-1 Nishi-Gotanda, Shinagawa-ku, Tokyo, Japan 141-8549  
**Phone:** 81-3-5740-2745  
**Email:** r14525@onsemi.com

**Fax Response Line:** 303-675-2167  
800-344-3810 Toll Free USA/Canada

**ON Semiconductor Website:** <http://onsemi.com>

For additional information, please contact your local Sales Representative.