Registered Hex ECL/TTL Translator

MC10H605
MC100H605

The MC10/100H605 is a 6–bit, registered, dual supply ECL to TTL translator. The device features differential ECL inputs for both data and clock. The TTL outputs feature balanced 24mA sink/source capabilities for driving transmission lines.

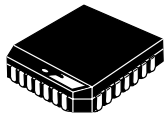
With its differential ECL inputs and TTL outputs the H605 device is ideally suited for the receive function of a HPPI bus type board–to–board interface application. The on chip registers simplify the task of synchronizing the data between the two boards.

A V_{BB} reference voltage is supplied for use with single–ended data or clock. For single–ended applications the V_{BB} output should be connected to the "bar" inputs (Dn or CLK) and bypassed to ground via a 0.01µF capacitor. To minimize the skew of the device differential clocks should be used.

The ECL level Master Reset pin is asynchronous and common to all flip–flops. A "HIGH" on the Master Reset forces the Q outputs "LOW".

The device is available in either ECL standard: the 10H device is compatible with MECL 10H™ logic levels while the 100H device is compatible with 100K logic levels.

- Differential ECL Data and Clock Inputs
- 24mA Sink, 24mA Source TTL Outputs
- Dual Power Supply
- Multiple Power and Ground Pins to Minimize Noise
- 2.0ns Part–to–Part Skew



FN SUFFIX
PLASTIC PACKAGE
CASE 776–02

PIN NAMES

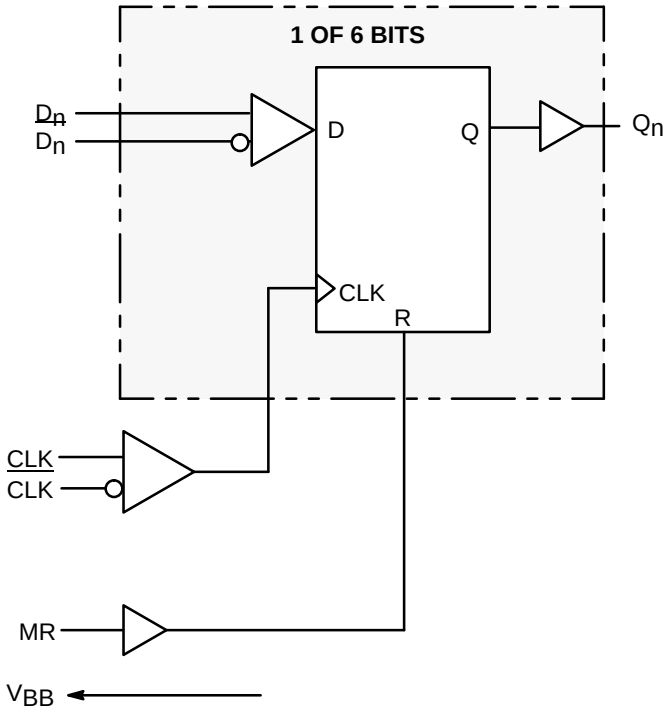
PIN	FUNCTION
D0–D5	True ECL Data Inputs
D0–D5	Inverted ECL Data Inputs
CLK, CLK	Differential ECL Clock Input
MR	ECL Master Reset Input
Q0–Q5	TTL Outputs
V_{CCE}	ECL V_{CC}
V_{CCT}	TTL V_{CC}
GND	TTL Ground
V_{EE}	ECL V_{EE}

TRUTH TABLE

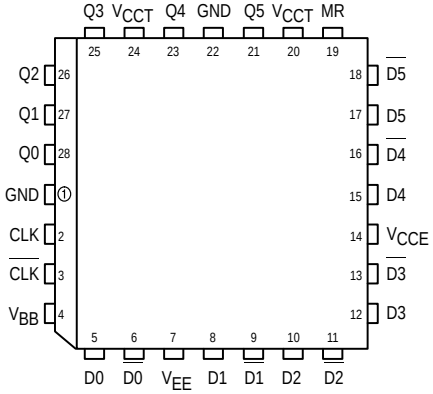
Dn	MR	TCLK/CLK	Qn+1
L	L	Z	L
H	L	Z	H
X	H	X	L

Z = LOW to HIGH Transition

LOGIC SYMBOL



Pinout: 28–Lead PLCC (Top View)



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10H ECL DC CHARACTERISTICS (V_{CCT} = +5.0V ±5%; V_{EE} = –5.20V ±5%)

Symbol	Characteristic	0°C			25°C			85°C			Unit	Condition
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max		
I_{EE}	Supply Current		63	75		63	75		61	75	mA	
I_{IH}	Input HIgh Current			225			145			145	µA	
I_{IL}	Input Low Current	0.5			0.5			0.5			µA	
V_{IH}	Input High Voltage	–1170		–840	–1130		–810	–1060		–720	mV	
V_{IL}	Input Low Voltage	–1950		–1480	–1950		–1480	–1950		–1480	mV	
V_{BB}	Output Bias Voltage	–1400		–1280	–1370		–1270	–1330		–1210	mV	
V_{Diff}	Input Differential Voltage	150			150			150			mV	
V_{max} CMRR	Input Common Mode Reject Range			0			0			0	mV	
V_{min} CMRR	Input Common Mode Reject Range	–2800 –3000 –3300			–2800 –3000 –3300			–2800 –3000 –3300			mV	V_{EE} = –4.94 V_{EE} = –5.20 V_{EE} = –5.46

100H ECL DC CHARACTERISTICS (V_{CCT} = +5.0V ±5%; V_{EE} = –4.5V ±0.3V)

Symbol	Characteristic	0°C			25°C			85°C			Unit	Condition
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max		
I_{EE}	Supply Current		65	75		65	75		70	85	mA	
I_{IH}	Input HIgh Current			225			145			145	µA	
I_{IL}	Input Low Current	0.5			0.5			0.5			µA	
V_{IH}	Input High Voltage	–1165		–880	–1165		–880	–1165		–880	mV	
V_{IL}	Input Low Voltage	–1810		–1475	–1810		–1475	–1810		–1475	mV	
V_{BB}	Output Bias Voltage	–1400		–1280	–1400		–1280	–1400		–1200	mV	
V_{Diff}	Input Differential Voltage	150			150			150			mV	
V_{max} CMRR	Input Common Mode Reject Range			0			0			0	mV	
V_{min} CMRR	Input Common Mode Reject Range	–2000 –2200 –2400			–2000 –2200 –2400			–2000 –2200 –2400			mV	V_{EE} = –4.20 V_{EE} = –4.50 V_{EE} = –4.80

* NOTE: DO NOT short the ECL inputs to the TTL V_{CC}.

TTL DC CHARACTERISTICS (V_{CCT} = +5.0V ±5%; V_{EE} = –5.2V ±5% (10H); V_{EE} = –4.5V ±0.3V (100H))

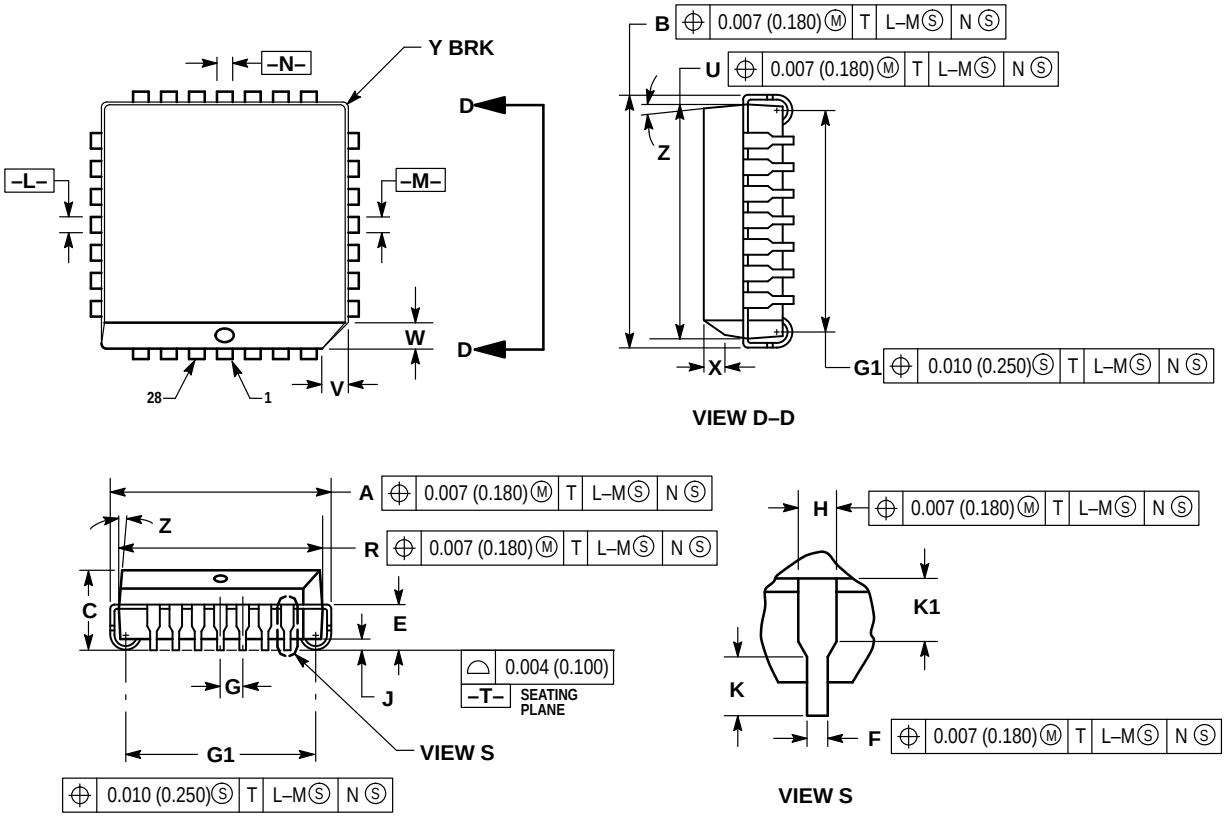
Symbol	Characteristic	0°C			25°C			85°C			Unit	Condition
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max		
I_{CCL}	Supply Current		65	75		65	75		65	75	mA	Outputs Low
I_{CCH}	Supply Current		65	75		65	75		65	75	mA	Outputs High
V_{OL}	Output Low Voltage			0.5			0.5			0.5	mV	I_{OL} = 24mA
V_{OH}	Output High Voltage	2.5			2.5			2.5			mV	I_{OH} = 24mA
I_{OS}	Output Short Circuit Current	100		225	100		225	100		225	mA	V_{OUT} = 0V

AC TEST LIMITS (V_{CCT} = +5.0V ±5%; V_{EE} = –5.2V ±5% (10H); V_{EE} = –4.5V ±0.3V (100H))

Symbol	Characteristic	0°C			25°C			85°C			Unit	Condition
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max		
t_{PLH}	Propagation Delay CLK to Q (Diff) CLK to Q (SE)	 4.5 4.3	 5.3 5.3	 6.5 6.7	 4.5 4.3	 5.4 5.4	 6.5 6.7	 4.5 4.3	 5.6 5.6	 6.5 6.7	ns	Across P.S. and Temp C_L = 50pF
t_{PHL}	Propagation Delay CLK to Q (Diff) CLK to Q (SE)	 4.0 3.8	 5.0 5.0	 6.0 6.2	 4.0 3.8	 5.1 5.1	 6.0 6.2	 4.0 3.8	 5.5 5.5	 6.0 6.2	ns	Across P.S. and Temp C_L = 50pF
t_{PHL}	Propagation Delay MR to Q	2.5	4.9	7.0	2.5	5.2	7.0	3.0	5.8	7.5	ns	Across P.S. and Temp C_L = 50pF
t_{SKEW}	Device Skew Part–to–Part (Diff) Within–Device		 1.0 0.3	 2.0 0.7		 1.0 0.3	 2.0 0.7		 1.0 0.3	 2.0 0.7	ns	C_L = 50pF
t_S	Setup Time	1.5			1.5			1.5			ns	
t_H	Hold Time	1.5			1.5			1.5			ns	
t_{PW}	Minimum Pulse Width CLK	1.0			1.0			1.0			ns	
t_{PW}	Minimum Pulse Width MR	1.0			1.0			1.0			ns	
V_{PP}	Minimum Input Swing	150			150			150			mV	Peak–to–Peak
t_r	Rise Time	0.7	1.0	1.5	0.7	1.0	1.5	0.7	1.0	1.5	ns	1V to 2V
t_f	Fall Time	0.5	0.7	1.2	0.5	0.7	1.2	0.5	0.7	1.2	ns	1V to 2V
t_{RR}	Reset/Recovery Time	2.5			2.5			2.5			ns	

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).

	INCHES		MILLIMETERS	
DIM	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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