

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 10 kH logic levels while the 100H device is compatible with 100 k logic levels.

- Differential 50 Ω 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

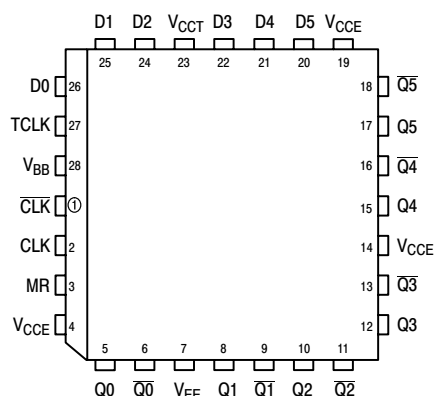


Figure 1. PLCC-28 Pinout (Top View)

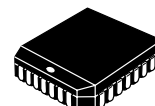
PIN NAMES

PIN	FUNCTION
D0-D5	TTL Data Inputs
CLK, CLK	Differential ECL Clock Input
TCLK	TTL Clock Input
MR	ECL Master Reset Input
Q0-Q5	True ECL Outputs
Q0-Q5	Inverted ECL Outputs
V _{CC}	ECL V _{CC} (0V)
V _{CC}	TTL V _{CC} (+5.0 V)
V _{EE}	ECL V _{EE} (-5.2 V)



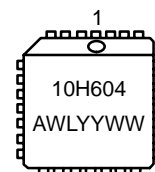
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PLCC-28
FN SUFFIX
CASE 776

MARKING DIAGRAM

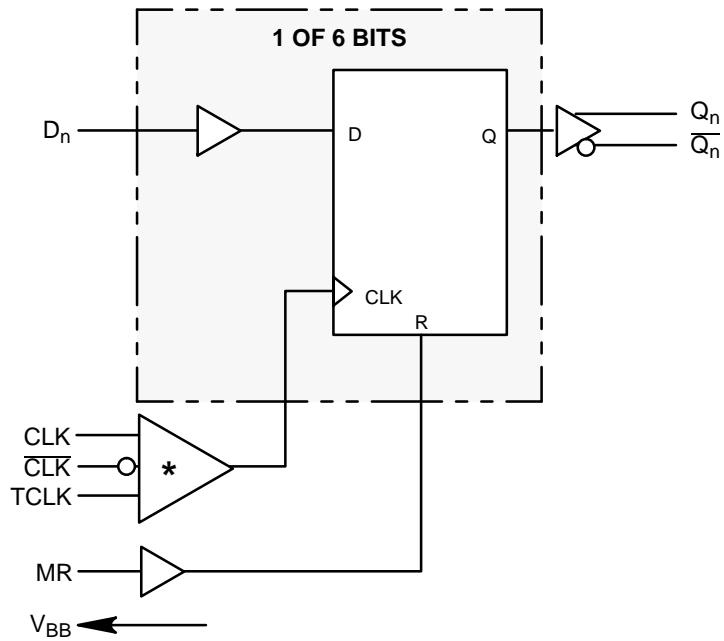


A = Assembly Location
WL = Wafer Lot
YY = Year
WW = Work Week

ORDERING INFORMATION

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

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- * 1. When using MECL inputs, TCLK must be tied to ground (0 V).
- 2. When using only one MECL input, the unused MECL input must be tied to V_{BB} , and TCLK must be tied to ground (0 V).
- 3. When using TCLK, both MECL inputs must be tied to V_{EE} (-5.2 V).

Figure 2. Logic Symbol

TRUTH TABLE

D _n	MR	TCLK/CLK	Q _{n+1}
L	L	Z	L
H	L	Z	H
X	H	X	L

Z = LOW to HIGH Transition

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

Symbol	Parameter	0°C		25°C		85°C		Unit
		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

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.

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

Symbol	Parameter	Condition	0°C		25°C		85°C		Unit
			Min	Max	Min	Max	Min	Max	
I_{INH} I_{INL}	Input HIGH Current Input LOW Current			255		175		175	μA μA
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	50 Ω to -2.0 V	-1020 -1950	-840 -1630	-980 -1950	-810 -1630	-910 -1950	-720 -1595	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.

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		85°C		Unit
			Min	Max	Min	Max	Min	Max	
I_{INH} I_{INL}	Input HIGH Current Input LOW Current			255		175		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_{BB}	Output Bias Voltage		-1400	-1280	-1400	-1280	-1400	-1280	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.

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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		85°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.

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)

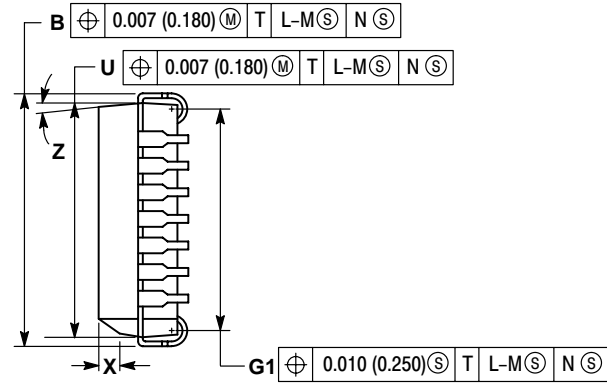
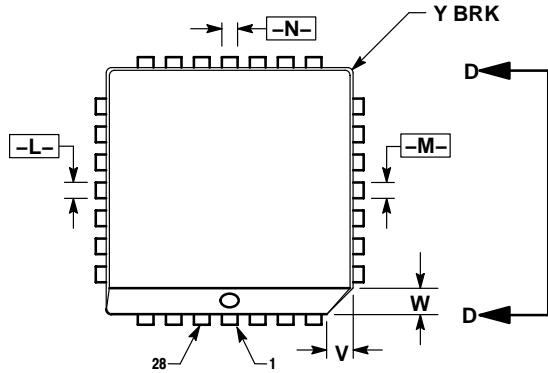
Symbol	Parameter	Condition	0°C			25°C			85°C			Unit
			Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
t_{PLH} t_{PHL}	Propagation Delay CLK to Q to Output TCLK to Q MR to Q	50 Ω to -2.0 V	1.5 2.0 1.5		3.5 4.0 4.0	1.5 2.0 1.5		3.5 4.0 4.0	1.5 2.0 1.5		3.5 4.0 4.0	ns
t_s	Setup Time	50 Ω to -2.0 V	1.5	0.5		1.5	0.5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

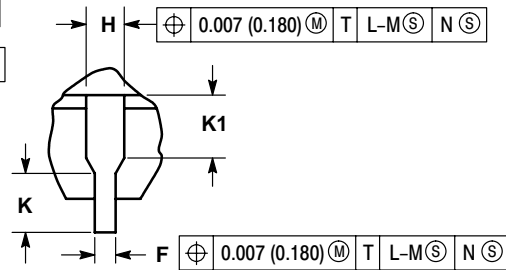
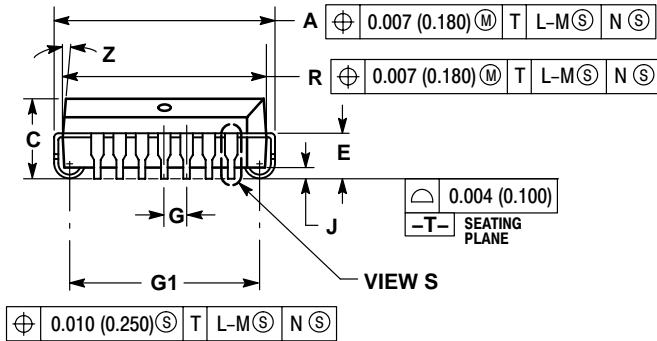
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PACKAGE DIMENSIONS

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



VIEW D-D




VIEW S

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	---

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