



**REGISTERED HEX  
TTL-TO-PECL**

**SY10H606  
SY100H606**

**FEATURES**

- Differential 50Ω ECL outputs
- Choice between differential PECL or TTL clock input
- Single +5V power supply
- VBB output for single-ended use
- Multiple power and ground pins to minimize noise
- Specified within-device skew
- Fully compatible with MC10H/100H606
- Available in 28-pin PLCC package

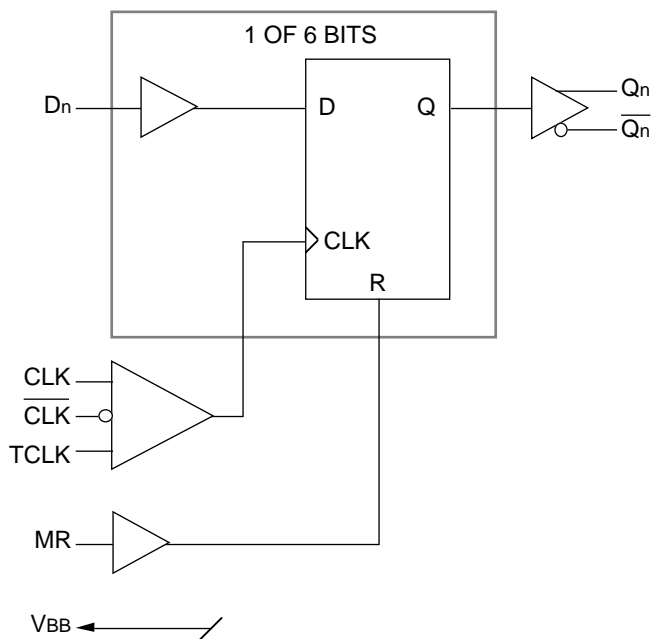
**DESCRIPTION**

The SY10/100H606 are 6-bit, registered, single supply TTL-to-PECL translators. The devices feature 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 ECL 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 10H device is compatible with 10K logic levels, while the 100H device is compatible with 100K logic levels.

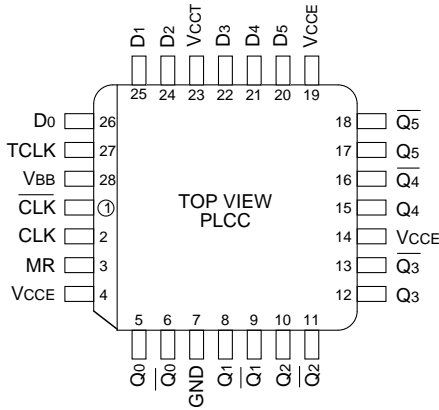
**BLOCK DIAGRAM**



**PIN NAMES**

Pin	Function
D <sub>0</sub> – D <sub>5</sub>	TTL Data Inputs
CLK, $\overline{\text{CLK}}$	Differential PECL Clock Inputs
TCLK	TTL Clock Input
MR	PECL Master Reset Input
Q <sub>0</sub> – Q <sub>5</sub>	True PECL Outputs
$\overline{Q}_0$ – $\overline{Q}_5$	Inverted PECL Outputs
V <sub>CCE</sub>	PECL Vcc (5.0V)
V <sub>CCT</sub>	TTL Vcc (5.0V)
GND	TTL/PECL Ground
V <sub>BB</sub>	VBB Reference Output (PECL)

**PACKAGE/ORDERING INFORMATION**



**28-Pin PLCC (J28-1)**

**Ordering Information<sup>(1)</sup>**

Part Number	Package Type	Operating Range	Package Marking	Lead Finish
SY10H606JC	J28-1	Commercial	SY10H606JC	Sn-Pb
SY10H606JCTR <sup>(2)</sup>	J28-1	Commercial	SY10H606JC	Sn-Pb
SY100H606JC	J28-1	Commercial	SY100H606JC	Sn-Pb
SY100H606JCTR <sup>(2)</sup>	J28-1	Commercial	SY100H606JC	Sn-Pb
SY10H606JZ <sup>(3)</sup>	J28-1	Commercial	SY10H606JZ with Pb-Free bar-line indicator	Matte-Sn
SY10H606JZTR <sup>(2, 3)</sup>	J28-1	Commercial	SY10H606JZ with Pb-Free bar-line indicator	Matte-Sn
SY100H606JZ <sup>(3)</sup>	J28-1	Commercial	SY100H606JZ with Pb-Free bar-line indicator	Matte-Sn
SY100H606JZTR <sup>(2, 3)</sup>	J28-1	Commercial	SY100H606JZ with Pb-Free bar-line indicator	Matte-Sn

**Notes:**

1. Contact factory for die availability. Dice are guaranteed at T<sub>A</sub> = 25°C, DC Electricals only.
2. Tape and Reel.
3. Pb-Free package is recommended for new designs.

**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.

**DC ELECTRICAL CHARACTERISTICS**VCCT = VCCE = 5.0V  $\pm$ 5%

Symbol	Parameter	TA= 0°C			TA= +25°C			TA= +85°C			Unit	Condition
		Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.		
ICCTL	Supply Current	—	18	30	—	18	30	—	18	30	mA	Outputs LOW
ICCTH	Supply Current	—	13	25	—	13	25	—	13	25	mA	Outputs HIGH
IGND	Supply Current	—	75	90	—	75	90	—	75	95	mA	

**TTL DC ELECTRICAL CHARACTERISTICS**VCCT = VCCE = 5.0V  $\pm$ 5%

Symbol	Parameter	TA= 0°C		TA= +25°C		TA= +85°C		Unit	Condition
		Min.	Max.	Min.	Max.	Min.	Max.		
VIH	Input HIGH Voltage	2.0	—	2.0	—	2.0	—	V	
VIL	Input LOW Voltage	—	0.8	—	0.8	—	0.8	V	
VIK	Input Clamp Voltage	—	-1.2	—	-1.2	—	-1.2	V	IIN = -18mA
IiH	Input HIGH Current	—	20	—	20	—	20	$\mu$ A	VIN = 2.7V VIN = 7.0V
IiL	Input LOW Current	—	-0.6	—	-0.6	—	-0.6	mA	VIN = 0.5V

**10H PECL DC ELECTRICAL CHARACTERISTICS<sup>(1)</sup>**VCCT = VCCE = 5.0V  $\pm$ 5%

Symbol	Parameter	TA= 0°C		TA= +25°C		TA= +85°C		Unit	Condition
		Min.	Max.	Min.	Max.	Min.	Max.		
IiH	Input HIGH Current	—	225	—	145	—	145	$\mu$ A	
IiL	Input LOW Current	0.5	—	0.5	—	0.5	—	$\mu$ A	
VIH	Input HIGH Voltage	3830	4160	3870	4190	3930	4280	mV	VCCT = 5.0V
VIL	Input LOW Voltage	3050	3520	3050	3520	3050	3555	mV	VCCT = 5.0V
VOH	Output HIGH Voltage	3980	4160	4020	4190	4080	4270	mV	VCCT = 5.0V
VOL	Output LOW Voltage	3050	3370	3050	3370	3050	3400	mV	VCCT = 5.0V
VBB	Output Bias Voltage	3620	3730	3650	3750	3690	3810	mV	VCCT = 5.0V

**Note:**

1. PECL VIL, VIH, VOL, VOH, VBB are given for VCCT = VCCE = 5.0V and will vary 1:1 with power supply.

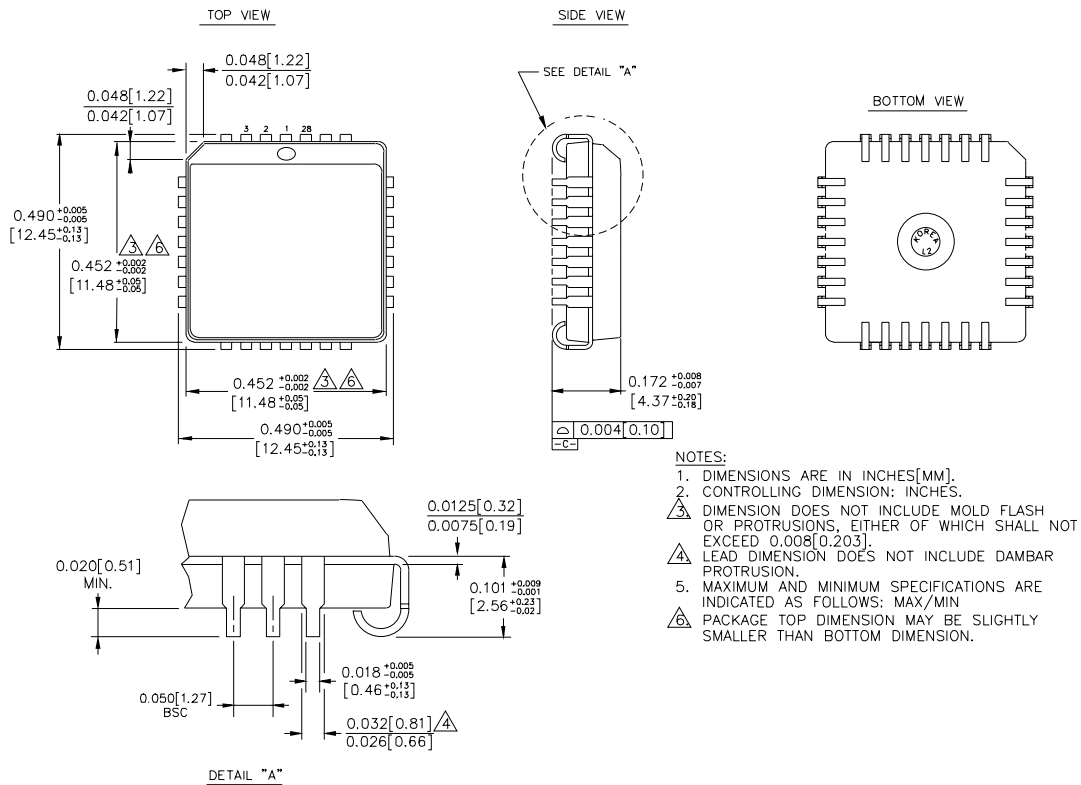
**100H PECL DC ELECTRICAL CHARACTERISTICS<sup>(1)</sup>**V<sub>CCT</sub> = V<sub>EEC</sub> = 5.0V ±5%

Symbol	Parameter	TA= 0°C		TA= +25°C		TA= + 85°C		Unit	Condition
		Min.	Max.	Min.	Max.	Min.	Max.		
I <sub>IH</sub>	Input HIGH Current	—	225	—	145	—	145	μA	
I <sub>IL</sub>	Input LOW Current	0.5	—	0.5	—	0.5	—	μA	
V <sub>IH</sub>	Input HIGH Voltage	3835	4120	3835	4120	3835	4120	mV	V <sub>CCT</sub> = 5.0V
V <sub>IL</sub>	Input LOW Voltage	3190	3525	3190	3525	3190	3525	mV	V <sub>CCT</sub> = 5.0V
V <sub>OH</sub>	Output HIGH Voltage	3975	4120	3975	4120	3975	4120	mV	V <sub>CCT</sub> = 5.0V
V <sub>OL</sub>	Output LOW Voltage	3190	3380	3190	3380	3190	3380	mV	V <sub>CCT</sub> = 5.0V
V <sub>BB</sub>	Output Bias Voltage	3620	3740	3620	3740	3620	3740	mV	V <sub>CCT</sub> = 5.0V

**Note:**1. PECL V<sub>IL</sub>, V<sub>IH</sub>, V<sub>OL</sub>, V<sub>OH</sub>, V<sub>BB</sub> are given for V<sub>CCT</sub> = V<sub>CE</sub> = 5.0V and will vary 1:1 with power supply.**AC ELECTRICAL CHARACTERISTICS**V<sub>CCT</sub> = V<sub>CE</sub> = 5.0V ±5%

Symbol	Parameter	TA= 0°C			TA= +25°C			TA= + 85°C			Unit	Condition
		Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.		
t <sub>PD</sub>	Propagation Delay TCLK+ +	0.800	—	2.800	0.800	—	2.800	0.800	—	2.800	ns	
t <sub>PD</sub>	Propagation Delay TCLK+ -	0.800	—	2.800	0.800	—	2.800	0.800	—	2.800	ns	
t <sub>PD</sub>	Propagation Delay CLK+ +	0.800	—	2.800	0.800	—	2.800	0.800	—	2.800	ns	
t <sub>PD</sub>	Propagation Delay CLK+ -	0.800	—	2.800	0.800	—	2.800	0.800	—	2.800	ns	
t <sub>PD</sub>	Propagation Delay MR+ -	0.800	—	2.800	0.800	—	2.800	0.800	—	2.800	ns	
t <sub>S</sub>	Set-up Time	1.5	0.5	—	1.5	0.5	—	1.5	0.5	—	ns	
t <sub>H</sub>	Hold Time 1.5	0.5	—	1.5	0.5	—	1.5	0.5	—	ns		
t <sub>PW</sub>	Minimum Pulse Width CLK	1.5	—	—	1.5	1.0	—	1.5	—	—	ns	
t <sub>PW</sub>	Minimum Pulse Width MR	1.5	—	—	1.5	—	—	1.5	—	—	ns	
t <sub>r</sub> t <sub>f</sub>	Rise/Fall Time	—	—	2.0	—	1.0	2.0	—	—	2.0	ns	
t <sub>RES/REC</sub>	Reset/Recovery Time	2.5	2.0	—	2.5	2.0	—	2.5	2.0	—	ns	

**28-PIN PLCC (J28-1)**



Rev. 03

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