

FEATURES

- 3.3V power supply
- PECL-to-TTL version of popular ECLinPS E111
- Guaranteed low skew specification
- Latched input
- Differential ECL internal design
- V_{BB} output for single-ended operation
- Reset/enable
- Extra TTL and ECL power/ground pins
- Choice of ECL compatibility: MECL 10KH (10Hxxx) or 100K (100Hxxx)
- Available in 28-pin PLCC package



Precision Edge®

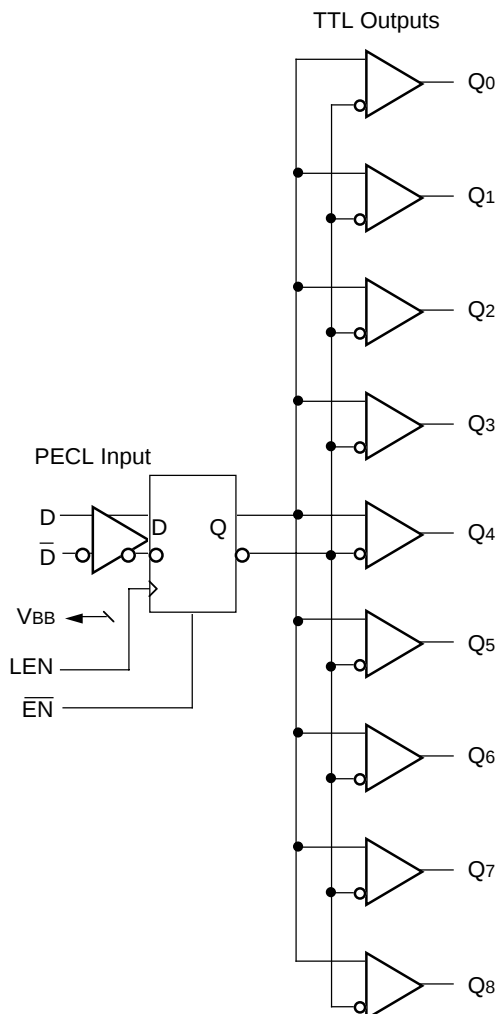
DESCRIPTION

The SY10/100H641L are single supply, low skew translating 1:9 clock drivers. Devices in the Micrel H600 translator series utilize the 28-lead PLCC for optimal power pinning, signal flow-through and electrical performance.

The devices feature a 24mA TTL output stage with AC performance specified into a 20pF load capacitance. A latch is provided on-chip. When LEN is LOW (or left open, in which case it is pulled LOW by the internal pull-downs), the latch is transparent. A HIGH on the enable pin (/EN) forces all outputs LOW.

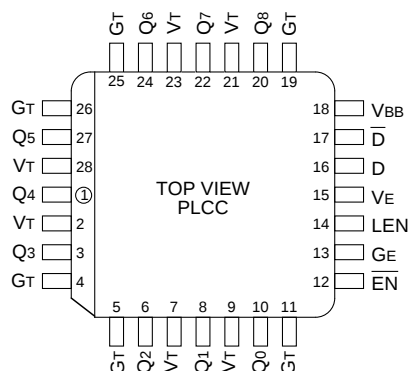
The 10H version is compatible with MECL 10KH ECL logic levels. The 100H version is compatible with 100K levels.

BLOCK DIAGRAM



PIN NAMES

Pin	Function
G _T	TTL Ground (0V)
V _T	TTL V _{CC} (+3.0V)
V _E	ECL V _{CC} (+3.0V)
G _E	ECL Ground (0V)
D, /D	Signal Input (PECL)
V _{BB}	V _{BB} Reference Output (PECL)
Q ₀ – Q ₈	Signal Outputs (TTL)
/EN	Enable Input (PECL)
LEN	Latch Enable Input (PECL)

PACKAGE/ORDERING INFORMATION**28-Pin PLCC (J28-1)****Ordering Information⁽¹⁾**

Part Number	Package Type	Operating Range	Package Marking	Lead Finish
SY10H641LJC	J28-1	Commercial	SY10H641LJC	Sn-Pb
SY10H641LJCTR ⁽²⁾	J28-1	Commercial	SY10H641LJC	Sn-Pb
SY100H641LJC	J28-1	Commercial	SY100H641LJC	Sn-Pb
SY100H641LJCTR ⁽²⁾	J28-1	Commercial	SY100H641LJC	Sn-Pb
SY10H641LJZ ⁽³⁾	J28-1	Commercial	SY10H641LJZ with Pb-Free bar-line indicator	Matte-Sn
SY10H641LJZTR ^(2, 3)	J28-1	Commercial	SY10H641LJZ with Pb-Free bar-line indicator	Matte-Sn
SY100H641LJZ ⁽³⁾	J28-1	Commercial	SY100H641LJZ with Pb-Free bar-line indicator	Matte-Sn
SY100H641LJZTR ^(2, 3)	J28-1	Commercial	SY100H641LJZ with Pb-Free bar-line indicator	Matte-Sn

Notes:

1. Contact factory for die availability. Dice are guaranteed at $T_A = 25^\circ\text{C}$, DC Electricals only.
2. Tape and Reel.
3. Pb-Free package is recommended for new designs.

ABSOLUTE MAXIMUM RATINGS⁽¹⁾

Symbol	Rating	Value	Unit
V _E (ECL) V _T (TTL)	Power Supply Voltage	−0.5 to +7.0 −0.5 to +7.0	V
V _I (ECL)	Input Voltage	0.0 to V _E	V
V _{OUT} (TTL)	Disabled 3-State Output	0.0 to V _T	V
I _{OUT} (ECL)	Output Current - Continuous - Surge	50 100	mA
T _{LEAD}	Lead Temperature Range (soldering, 20sec)	+260	°C
T _{store}	Storage Temperature	−65 to +150	°C
T _A	Operating Temperature	0 to +85	°C

Note:

1. Do not exceed.

TRUTH TABLE

D	LEN	/EN	Q
L	L	L	L
H	L	L	H
X	H	L	Q ₀
X	X	H	L

DC ELECTRICAL CHARACTERISTICSV_T = V_E = +3.0V to +3.6V

Symbol	Parameter		T _A = 0°C		T _A = +25°C		T _A = +85°C		Unit	Condition
			Min.	Max.	Min.	Max.	Min.	Max.		
I _{EE}	Power Supply Current	ECL	—	30	—	30	—	30	mA	V _E Pin
I _{CC}		TTL	—	30	—	30	—	30		Total all V _T pins
I _{CC}			—	35	—	35	—	35		

TTL DC ELECTRICAL CHARACTERISTICSV_T = V_E = +3.0V to +3.6V

Symbol	Parameter	T _A = 0°C		T _A = +25°C		T _A = +85°C		Unit	Condition
		Min.	Max.	Min.	Max.	Min.	Max.		
V _{OH}	Output HIGH Voltage	2.0	—	2.0	—	2.0	—	V	I _{OH} = −3.0mA
V _{OL}	Output LOW Voltage	—	0.5	—	0.5	—	0.5	V	I _{OL} = 24mA
I _{OS}	Output Short Circuit Current	−100	—	−100	—	−100	—	mA	V _{OUT} = 0V

10H ECL DC ELECTRICAL CHARACTERISTICSV_T = V_E = +3.0V to +3.6V

Symbol	Parameter	T _A = 0°C		T _A = +25°C		T _A = +85°C		Unit	Condition
		Min.	Max.	Min.	Max.	Min.	Max.		
I _{IH}	Input HIGH Current	—	225	—	175	—	175	μA	—
I _{IL}	Input LOW Current	0.5	—	0.5	—	0.5	—	μA	—
V _{IH}	Input HIGH Voltage ⁽¹⁾	2.130	2.460	2.170	2.490	2.240	2.580	V	V _E = 3.3V
V _{IL}	Input LOW Voltage ⁽¹⁾	1.350	1.820	1.350	1.820	1.350	1.855	V	V _E = 3.3V
V _{BB}	Output Reference Voltage ⁽¹⁾	1.920	2.030	1.950	2.050	1.990	2.110	V	V _E = 3.3V

Note:

1. V_{IH}, V_{IL} and V_{BB} are referenced to V_E and will vary 1:1 with the power supply. The levels shown are for V_E = +3.3V.

100H ECL DC ELECTRICAL CHARACTERISTICSV_T = V_E = +3.0V to +3.6V

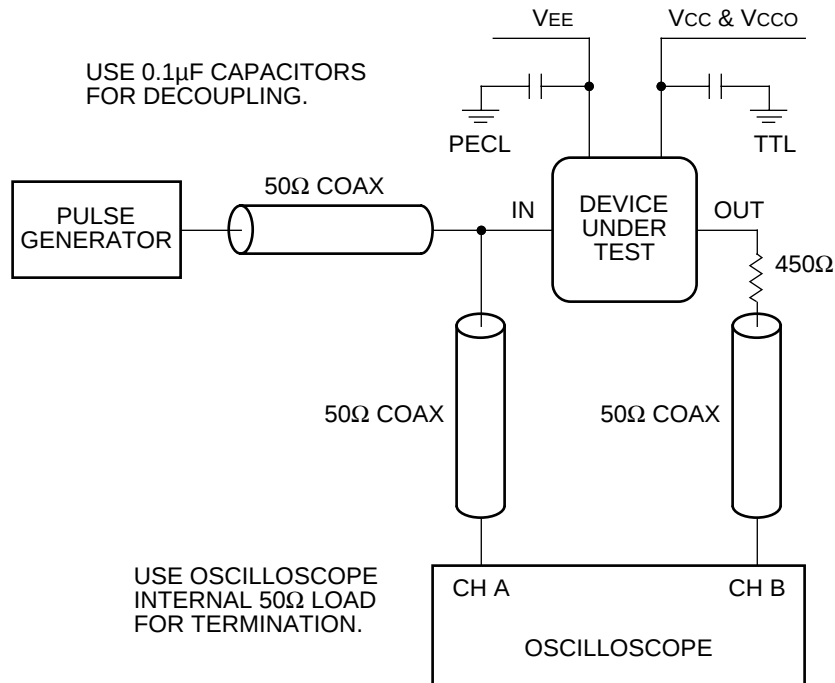
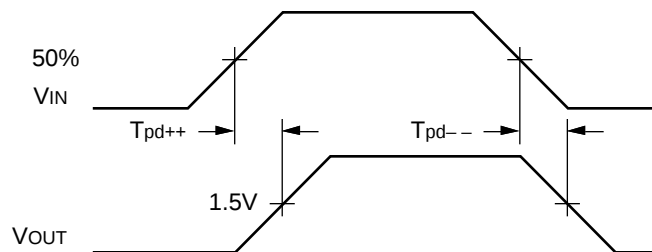
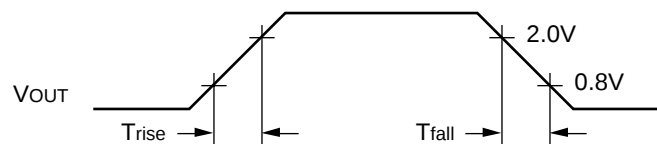
Symbol	Parameter	T _A = 0°C		T _A = +25°C		T _A = +85°C		Unit	Condition
		Min.	Max.	Min.	Max.	Min.	Max.		
I _{IH}	Input HIGH Current	—	225	—	175	—	175	μA	—
I _{IL}	Input LOW Current	0.5	—	0.5	—	0.5	—	μA	—
V _{IH}	Input HIGH Voltage ⁽¹⁾	2.135	2.420	2.135	2.420	2.135	2.420	V	V _E = 3.3V
V _{IL}	Input LOW Voltage ⁽¹⁾	1.490	1.825	1.490	1.825	1.490	1.825	V	V _E = 3.3V
V _{BB}	Output Reference Voltage ⁽¹⁾	1.920	2.040	1.920	2.040	1.920	2.040	V	V _E = 3.3V

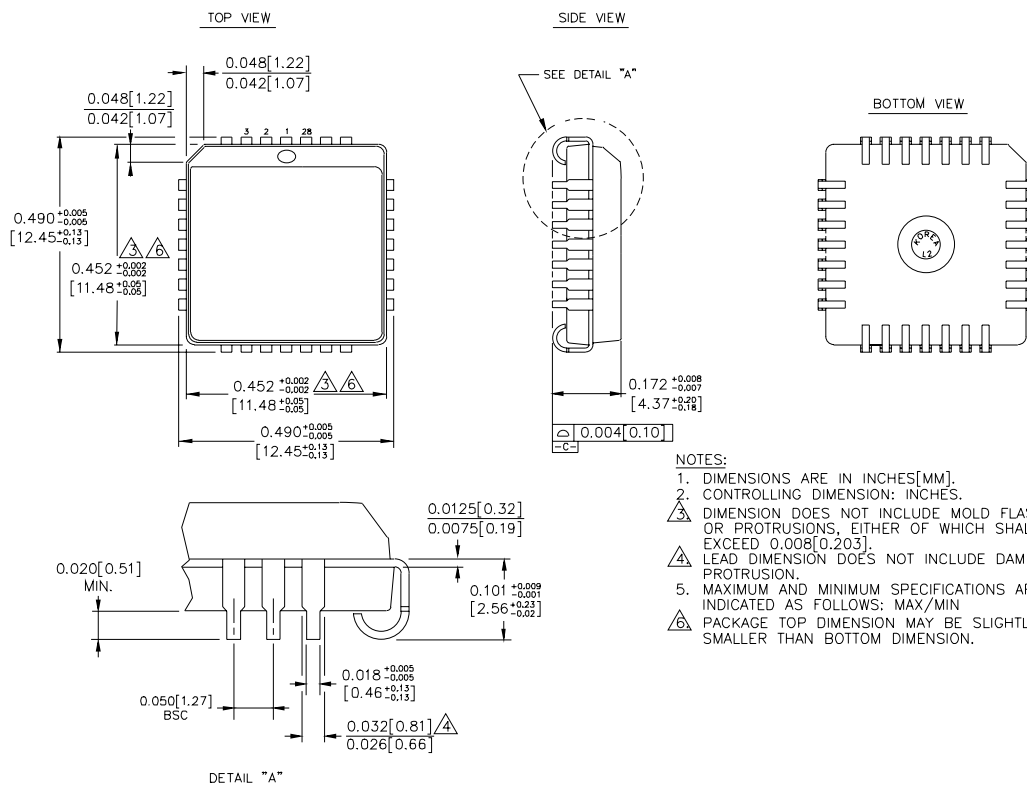
Note:1. V_{IH}, V_{IL} and V_{BB} are referenced to V_E and will vary 1:1 with the power supply. The levels shown are for V_E = +3.3V.**AC ELECTRICAL CHARACTERISTICS**V_T = V_E = +3.0V to +3.6V

Symbol	Parameter	T _A = 0°C		T _A = +25°C		T _A = +85°C		Unit	Condition
		Min.	Max.	Min.	Max.	Min.	Max.		
t _{PLH} t _{PHL}	Propagation Delay D to Output	2.0 2.5	3.0 3.5	2.0 2.5	3.0 3.5	2.0 2.5	3.0 3.5	ns	C _L = 20pF
t _{skpp}	Part-to-Part Skew ^(1,4)	—	0.5	—	0.5	—	0.5	ns	C _L = 20pF
t _{skew++} t _{skew--}	Within-Device Skew ^(2,3,4)	— —	0.3 ⁽⁷⁾ 0.35 ⁽⁸⁾	— —	0.3 ⁽⁷⁾ 0.35 ⁽⁸⁾	— —	0.3 ⁽⁷⁾ 0.35 ⁽⁸⁾	ns ns	C _L = 20pF C _L = 20pF
t _{PLH} t _{PHL}	Propagation Delay LEN to Output	2.0	3.5	2.0	3.5	2.0	3.5	ns	C _L = 20pF
t _{PLH} t _{PHL}	Propagation Delay /EN to Output	2.0	3.5	2.0	3.5	2.0	3.5	ns	C _L = 20pF
t _r t _f	Output Rise/Fall Time 1.0V to 2.0V	— —	1.7 1.6	— —	1.7 1.6	— —	1.7 1.6	ns	C _L = 20pF
f _{MAX}	Maximum Input Frequency ^(5,6)	135	—	135	—	135	—	MHz	
—	Pulse Width	1.5	—	1.5	—	1.5	—	ns	—
—	Recovery Time	1.25	—	1.25	—	1.25	—	ns	—
t _s	Set-up Time	0.5 (typ.)		0.5 (typ.)		0.5 (typ.)		ns	—
t _h	Hold Time	0.5 (typ.)		0.5 (typ.)		0.5 (typ.)		ns	—

Notes:

1. Device-to-Device Skew considering HIGH-to-HIGH transitions at common V_{CC} level.
2. Within-Device Skew considering HIGH-to-HIGH transitions at common V_{CC} level.
3. Within-Device Skew considering LOW-to-LOW transitions at common V_{CC} level.
4. All skew parameters are guaranteed but not tested.
5. Frequency at which output levels will meet a 0.8V to 2.0V minimum swing.
6. The f_{MAX} value is specified as the minimum guaranteed maximum frequency. Actual operational maximum frequency may be greater.
7. V_T = V_E = +3.15V to +3.45V, (i.e. V_E ± 5%).
8. V_T = V_E = +3.0V to +3.6V, (i.e. V_E ± 10%).

TTL SWITCHING CIRCUIT**ECL/TTL PROPAGATION DELAY — SINGLE ENDED****ECL/TTL WAVEFORMS: RISE AND FALL TIMES**

28-PIN PLCC (J28-1)

Rev. 03

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