FEATURES

- **ECL/TTL version of popular ECLinPS™ E111**
- **400ps within device skew**
- **800ps part-to-part skew**
- **Latch**
- **Differential internal design**
- **VBB output**
- **Dual supply**
- **Reset/Enable**
- **Multiple TTL and ECL power/ground pins**
- **Fully compatible with MC100H643**
- **Higher performance than H643 versions**
- **Industrial temperature availability**
- **Available in 28-pin PLCC package**



Precision Edge®

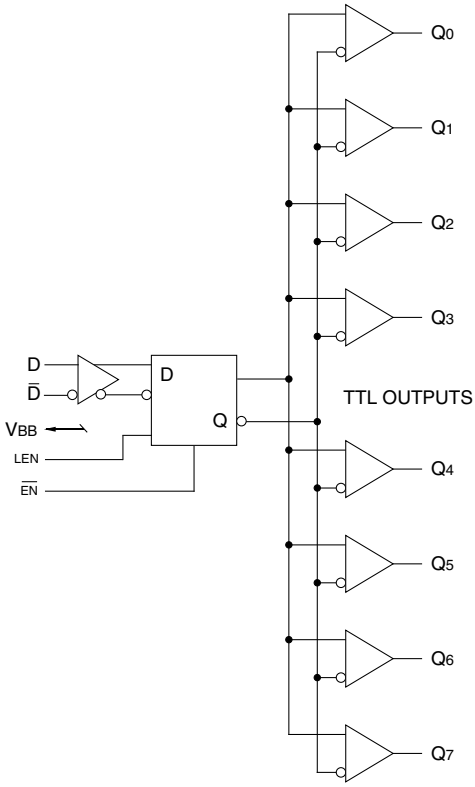
DESCRIPTION

The SY100HA643 is an enhanced dual supply, low skew translating 1:8 clock driver. Devices in the Micrel H600 translators series utilize the 28-lead PLCC for optimal power pinning, signal flow through and electrical performance. The dual-supply HA643 is similar to the H641, which is a single-supply 1:9 version of the same function, with higher performance than the H643 versions.

The device features a 48mA 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 pulldowns) the latch is transparent. A HIGH on the enable pin ($\overline{EN}$) forces all outputs LOW.

The 100HA643 is compatible with 100K ECL logic levels.

BLOCK DIAGRAM

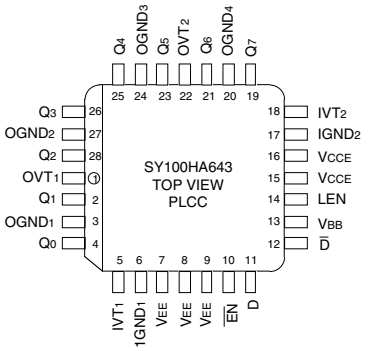


PIN NAMES

Pin	Function
OGND	TTL Output Ground (0V)
OVTTTL	Output VCC (+5.0V)
IGND	Internal TTL GND (0V)
IVT	Internal TTL VCC (+5.0V)
VEE	ECL VEE (-5.2/-4.5V)
VCCE	ECL Ground (0V)
D, $\overline{D}$	Signal Input (ECL)
VBB	VBB Reference Output
Q0 - Q7	Signal Outputs (TTL)
$\overline{EN}$	Enable Input (ECL)
LEN	Latch Enable Input (ECL)

Precision Edge is a registered trademark of Micrel, Inc.

PACKAGE/ORDERING INFORMATION



28-Pin PLCC (J28-1)

Ordering Information[1]

Part Number	Package Type	Operating Range	Package Marking	Lead Finish
SY100HA643JC	J28-1	Commercial	SY100HA643JC	Sn-Pb
SY100HA643JCTR[2]	J28-1	Commercial	SY100HA643JC	Sn-Pb
SY100HA643JI	J28-1	Industrial	SY100HA643JI	Sn-Pb
SY100HA643JITR[2]	J28-1	Industrial	SY100HA643JI	Sn-Pb
SY100HA643JY[3]	J28-1	Industrial	SY100HA643JY with Pb-Free bar-line indicator	Matte-Sn
SY100HA643JYTR[2, 3]	J28-1	Industrial	SY100HA643JY with Pb-Free bar-line indicator	Matte-Sn

Notes:

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

TRUTH TABLE

D	LEN	$\overline{EN}$	Q
L	L	L	L
H	L	L	H
X	X	H	L

DC CHARACTERISTICS

IVT = OVT = 5.0V ±5%; V_{EE} = –4.2V to –5.5V; V_{CCE} = GND

Symbol	Parameter	T_A = –40°C		T_A = 0°C		T_A = +25°C		T_A = +85°C		Unit	Condition
		Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.		
I_{EE}	ECL	—	58	—	58	—	58	—	58	mA	V_{EE} Pins
I_{CCL}	Power Supply TTL	—	83	—	83	—	83	—	83	mA	Total all OVT
I_{CCH}		—	73	—	73	—	73	—	73	mA	and IVT pins
V_{OH}	TTL Output HIGH Voltage	2.5 2.0	— —	2.5 2.0	— —	2.5 2.0	— —	2.5 2.0	— —	V	I_{OH} = –3.0mA I_{OH} = –15mA
V_{OL}	TTL Output LOW Voltage	—	0.5	—	0.5	—	0.5	—	0.5	V	I_{OL} = 48mA
I_{OS}	TTL Output Short Circuit Current	–80	–200	–80	–200	–80	–200	–80	–200	mA	V_{OUT} = 0V
I_{IH}	ECL Input HIGH Current	—	225	—	225	—	175	—	175	µA	
I_{IL}	ECL Input LOW Current	0.5	—	0.5	—	0.5	—	0.5	—	µA	
V_{IH}	ECL Input HIGH Voltage	—	—	–1165	–880	–1165	–880	–1165	–880	mV	
V_{IL}	ECL Input LOW Voltage	—	—	–1810	–1475	–1810	–1475	–1810	–1475	mV	
V_{BB}	ECL Output Reference Voltage	–1380	–1260	–1380	–1260	–1380	–1260	–1380	–1260	mV	

AC CHARACTERISTICS

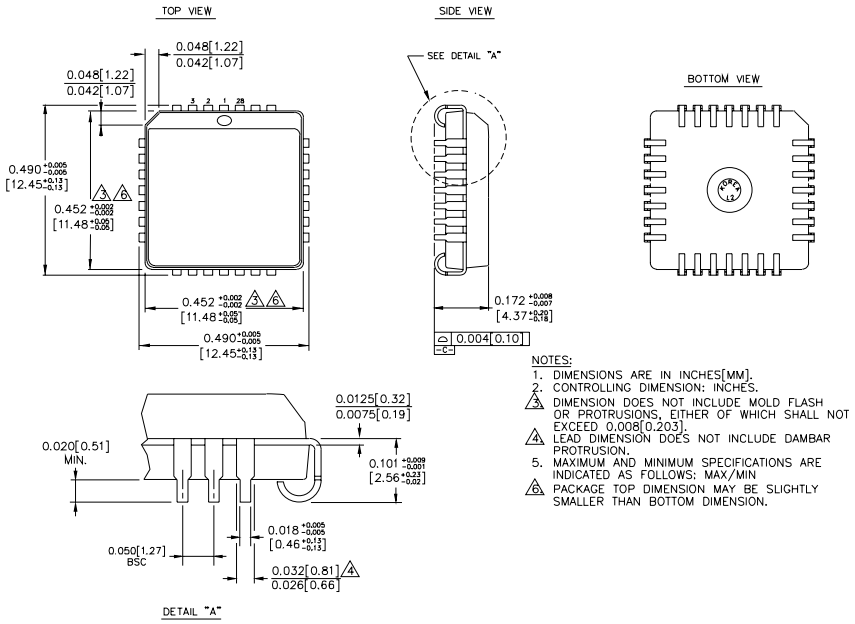
IVT = OVT = 5.0V ±5%; V_{EE} = –4.2V to –5.5V ; V_{CCE} = GND

Symbol	Parameter	T_A = –40°C		T_A = 0°C		T_A = +25°C		T_A = +85°C		Unit	Condition
		Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.		
t_{IH}	Propagation Delay D to Output LEN $\overline{EN}$	2.3	3.1	2.3	3.1	2.3	3.1	2.3	3.1	ns	C_L = 20pF
t_{skew}	Within-Device Skew(1)	—	0.4	—	0.4	—	0.4	—	0.4	ns	
t_{PW}	Pulse Width Out(2) HIGH or LOW @ FOUT = 100MHz	4.5	5.5	4.5	5.5	4.5	5.5	4.5	5.5	ns	C_L = 20pF
t_S	Setup Time D	0.75	—	0.75	—	0.75	—	0.75	—	ns	
t_H	Hold Time D	0.75	—	0.75	—	0.75	—	0.75	—	ns	
t_{RR}	Recovery TimeLEN $\overline{EN}$	1.25 1.25	— —	1.25 1.25	— —	1.25 1.25	— —	1.25 1.25	— —	ns ns	
t_{PW}	Minimum PulseLEN Width $\overline{EN}$	1.5 1.5	— —	1.5 1.5	— —	1.5 1.5	— —	1.5 1.5	— —	ns ns	
tr tf	Rise / Fall times 0.8V — 2.0V	—	1.5	—	1.5	—	1.5	—	1.5	ns	C_L = 20pF
f_{MAX}	Max. Input Frequency(3,4)	160	—	160	—	160	—	160	—	MHz	C_L = 20pF

Notes:

1. Within-Device skew defined as identical transitions on similar paths through a device.
2. Pulse width is defined relative to 1.5V measurement points on the output waveform.
3. Frequency at which output levels will meet a 0.8V to 2.0V minimum swing.
4. The f_{MAX} value is specified as the minimum guaranteed maximum frequency. Actual operational maximum frequency may be greater.

28-PIN PLCC (J28-1)



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