



DUAL SUPPLY OCTAL ECL-TO-TTL

Precision Edge®
SY100HA643

FEATURES

- ECL/TTL version of popular ECLinPS™ E111
- 400ps within device skew
- 800ps part-to-part skew
- Latch
- Differential internal design
- V_{BB} 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®

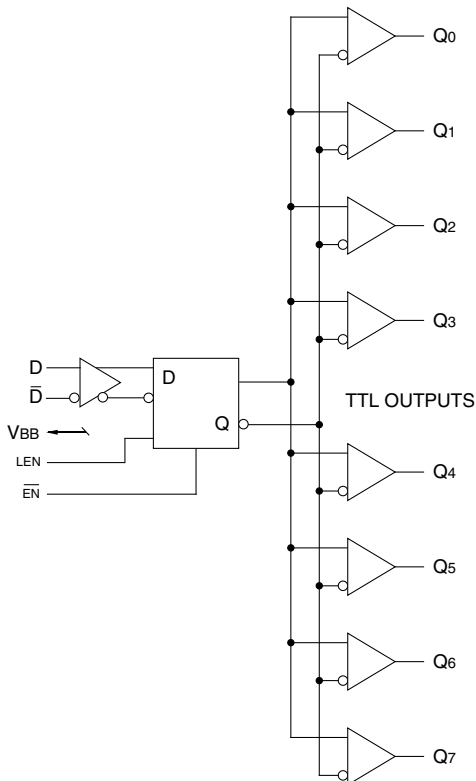
DESCRIPTION

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

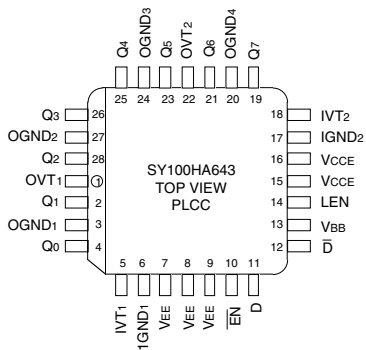


PIN NAMES

Pin	Function
OGND	TTL Output Ground (0V)
OVTTL	Output V _{cc} (+5.0V)
IGND	Internal TTL GND (0V)
IVT	Internal TTL V _{cc} (+5.0V)
V _{EE}	ECL V _{EE} (-5.2/-4.5V)
V _{CCE}	ECL Ground (0V)
D, \overline{D}	Signal Input (ECL)
V _{BB}	V _{BB} Reference Output
Q0 - Q7	Signal Outputs (TTL)
\overline{EN}	Enable Input (ECL)
LEN	Latch Enable Input (ECL)

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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%; VEE = -4.2V to -5.5V; VCC = GND

Symbol	Parameter	TA = -40°C		TA = 0°C		TA = +25°C		TA = +85°C		Unit	Condition
		Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.		
I _{EE}	Power Supply	—	58	—	58	—	58	—	58	mA	VEE Pins Total all OVT and IVT pins
I _{CCCL}		—	83	—	83	—	83	—	83	mA	
I _{CCCH}		—	73	—	73	—	73	—	73	mA	
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

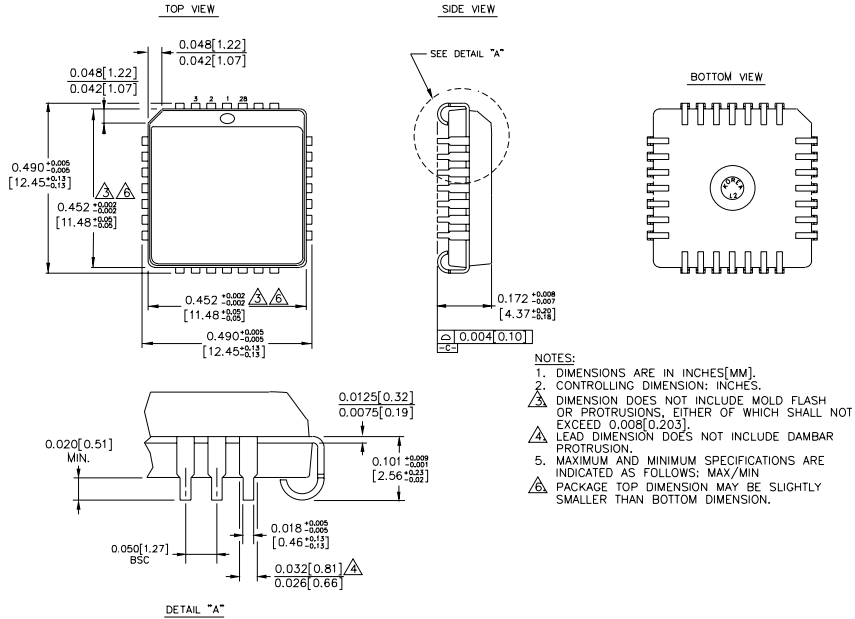
IVT = OVT = 5.0V ±5%; VEE = -4.2V to -5.5V ; VCCE = GND

Symbol	Parameter	TA = -40°C		TA = 0°C		TA = +25°C		TA = +85°C		Unit	Condition
		Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.		
t _{IH}	Propagation Delay to Output D LEN EN	2.3	3.1	2.3	3.1	2.3	3.1	2.3	3.1	ns	CL = 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	CL = 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 Time LEN EN	1.25 1.25	— —	1.25 1.25	— —	1.25 1.25	— —	1.25 1.25	— —	ns ns	
t _{PW}	Minimum Pulse Width LEN EN	1.5 1.5	— —	1.5 1.5	— —	1.5 1.5	— —	1.5 1.5	— —	ns ns	
t _r t _f	Rise / Fall times 0.8V — 2.0V	—	1.5	—	1.5	—	1.5	—	1.5	ns	CL = 20pF
f _{MAX}	Max. Input Frequency ^(3,4)	160	—	160	—	160	—	160	—	MHz	CL = 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)



Rev. 03

MICREL, INC. 2180 FORTUNE DRIVE SAN JOSE, CA 95131 USA

TEL + 1 (408) 944-0800 FAX + 1 (408) 474-1000 WEB <http://www.micrel.com>

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