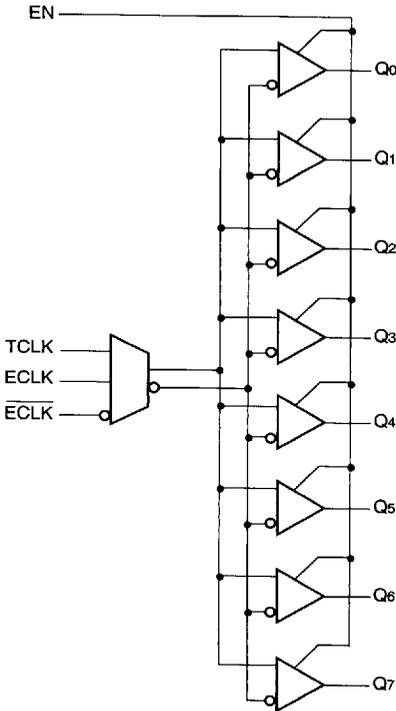


FEATURES

- 3.3V power supply
- PECL/TTL-to-TTL version of popular ECLinPS E111
- Guaranteed low skew specification
- Three-state enable
- Differential internal design
- VBB output for single-ended operation
- Single +3V supply
- Extra TTL and ECL power/ground pins
- Choice of ECL compatibility: 10H or 100K
- Matched high and low output impedance
- ESD protection of 2000V

BLOCK DIAGRAM



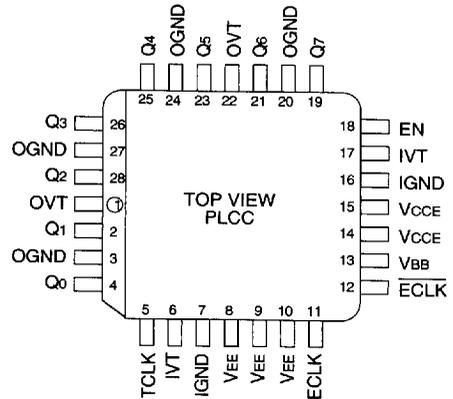
DESCRIPTION

The SY10/100H646L are single supply, low skew translating 1:8 clock drivers. Devices in the Synergy H600 translator series utilize the 28-lead PLCC for optimal power pinning, signal flow-through and electrical performance. The single supply H646 is similar to the H643 which is a dual supply 1:8 version of the same function.

The devices feature a 24mA TTL output stage, with AC performance specified into a 50pF load capacitance.

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

PIN CONFIGURATION



7

PIN NAMES

Pin	Function
OGND	TTL Output Ground (0V)
OVT	TTL Output Vcc (+3.0V)
IGND	Internal TTL GND (0V)
IVT	Internal TTL Vcc (+3.0V)
VEE	ECL VEE (0V)
VCC	ECL Ground (+3.0V)
ECLK, ECLK	Differential Signal Input (PECL)
VBB	VBB Reference Output
Q0-Q7	Signal Outputs (TTL)
EN	Three-State Enable Input (TTL)
TCLK	Signal Input (TTL)

TTL DC ELECTRICAL CHARACTERISTICS

$V_T = V_E = +3.0V$ to $+3.8V$

Symbol	Parameter	TA = 0°C		TA = +25°C		TA = +85°C		Unit	Condition
		Min.	Max.	Min.	Max.	Min.	Max.		
V _{IH}	Input HIGH Voltage	2.0	—	2.0	—	2.0	—	V	
V _{IL}	Input LOW Voltage	—	0.8	—	0.8	—	0.8	V	
I _{IH}	Input HIGH Current	—	20 100	—	20 100	—	20 100	μA	V _{IN} = 2.7 V V _{IN} = V _{max}
I _{IL}	Input LOW Current	—	-0.4	—	-0.4	—	-0.4	mA	V _{IN} = 0.5 V
V _{OH}	Output HIGH Voltage	2.0	—	2.0	—	2.0	—	V	I _{OH} = -3.0 mA
V _{OL}	Output LOW Voltage	—	0.5	—	0.5	—	0.5	V	I _{OL} = 24 mA
V _{IK}	Input Clamp Voltage	—	-1.2	—	-1.2	—	-1.2	V	I _{IN} = -18mA
I _{OS}	Output Short Circuit Current	-100	-225	-100	-225	-100	-225	mA	

10H ECL DC ELECTRICAL CHARACTERISTICS

$V_T = V_E = +3.0V$ to $+3.8V$

Symbol	Parameter	TA = 0°C		TA = +25°C		TA = +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_{CC} and will vary 1:1 with the power supply. The levels shown are for V_{CC} = +3.3V.

100H ECL DC ELECTRICAL CHARACTERISTICS

$V_T = V_E = +3.0V$ to $+3.8V$

Symbol	Parameter	TA = 0°C		TA = +25°C		TA = +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_{CC} and will vary 1:1 with the power supply. The levels shown are for V_{CC} = +3.3V.

DC ELECTRICAL CHARACTERISTICS

$I_{VT} = O_{VT} = V_{CC} = +5.0V \pm 5\%$

Symbol	Parameter	TA = 0°C			TA = +25°C			TA = +85°C			Unit	Condition
		Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.		
I _{CC}	Power Supply Current	—	—	120	—	—	120	—	—	120	mA	Total all OVT, IVT, and VCC pins
I _{CC}		—	—	120	—	—	120	—	—	120		

ABSOLUTE MAXIMUM RATINGS⁽¹⁾

Rating	Symbol	Value	Unit
Power Supply Voltage	V _E (ECL)	-0.5 to +7.0	V
	V _T (TTL)	-0.5 to +7.0	
Input Voltage	V _I (ECL)	0.0 to V _{EE}	V
	V _I (TTL)	-0.5 to +7.0	
Disabled 3-State Output	V _{OUT} (TTL)	0.0 to V _{CC}	V
Output Source Current Continuous	I _{OUT} (ECL)	50	mA
Output Source Current Surge	I _{OUT} (ECL)	100	mA
Storage Temperature	T _{store}	-65 to +150	°C
Operating Temperature	T _{amb}	0.0 to +85	°C

NOTE:

1. Do not exceed.

TRUTH TABLE

TCLK	ECLK	ECLK	EN	Q
GND	L	H	H	L
GND	H	L	H	H
H	GND	GND	H	H
L	GND	GND	H	L
X	X	X	L	Z

NOTE:

X = Don't Care

L = Low Voltage Level

H = High Voltage Level

Z = Three-State

AC ELECTRICAL CHARACTERISTICS

$$I_{VT} = O_{VT} = V_{CC} = 5.0V \pm 5\%$$

Symbol	Parameter	T _A = 0°C			T _A = +25°C			T _A = +85°C			Unit	Condition
		Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.		
t _{PLH}	Propagation Delay ECLK to Q TCLK to Q	2.4	—	3.4	2.4	—	3.4	2.4	—	3.4	ns	C _L = 20pF
t _{PLH}		2.8	—	3.8	2.8	—	3.8	2.8	—	3.8		
t _{skpp}	Part-to-Part Skew ^(1,4)	—	—	0.5	—	—	0.5	—	—	0.5	ns	C _L = 20pF
t _{skew++}	Within-Device Skew ^(2,4)	—	—	0.3	—	—	0.3	—	—	0.3	ns	C _L = 20pF
t _{skew--}	Within-Device Skew ^(3,4)	—	—	0.3	—	—	0.3	—	—	0.3	ns	C _L = 20pF
t _r	Rise/Fall Time (1.0V to 2.0V)	0.3	—	1.5	0.3	—	1.5	0.3	—	1.5	ns	C _L = 20pF
t _f												
t _{PW}	Output Pulse Width	5.5	—	—	5.5	—	—	5.5	—	—	ns	C _L = 20pF
	66MHz @ 2.0V											
	66MHz @ 0.8V											
	60MHz @ 2.0V											
	60MHz @ 0.8V											
t _{Stability}	Clock Stability ⁽⁷⁾	—	—	±75	—	—	±75	—	—	±75	ps	C _L = 20pF
f _{MAX}	Maximum Input Frequency ^(5,6)	160	—	—	160	—	—	160	—	—	MHz	C _L = 20pF

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. Clock stability is the period variation between two successive rising edges.

7

ADDITIONAL INFORMATION

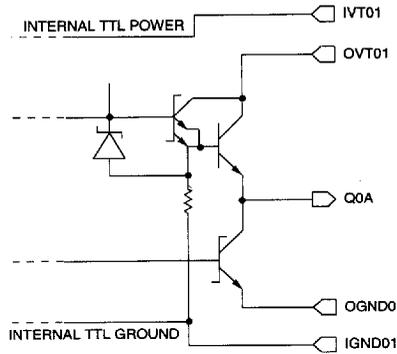


Figure 1. Output Structure

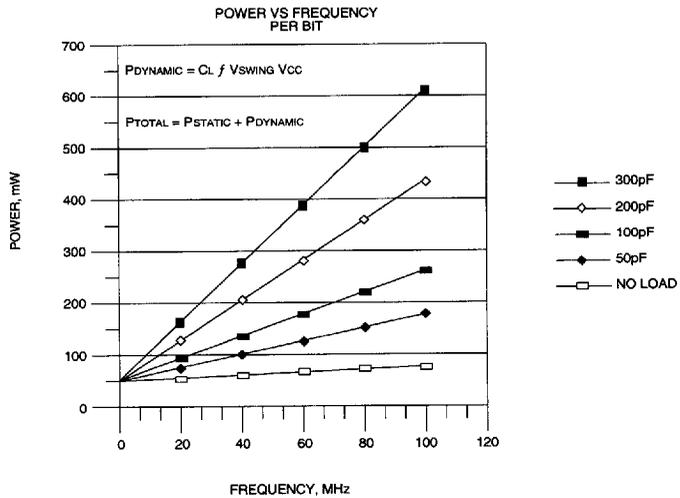


Figure 2. Power Versus Frequency (Typical)

PRODUCT ORDERING CODE

Ordering Code	Package Type	Operating Range
SY10H646LJC	J28-1	Commercial
SY10H646LJCTR	J28-1	Commercial
SY100H646LJC	J28-1	Commercial
SY100H646LJCTR	J28-1	Commercial