

TEST AND MEASUREMENT PRODUCTS

Description

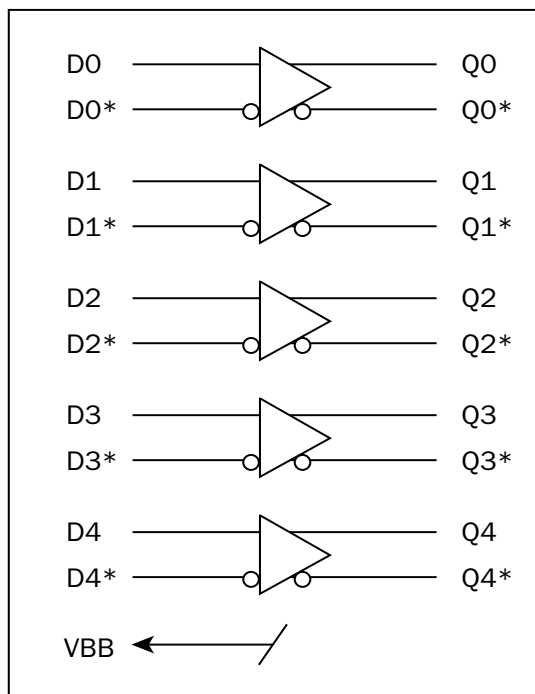
The SK10/100E116 is a quint differential line receiver designed for use in new, high-performance ECL systems.

The receiver design features clamp circuitry to cause a defined output state if both the inverting and non-inverting inputs are left open; in this case the Q output goes low, while the Q* output goes high. This feature makes the device ideal for twisted pair applications.

If both inverting and non-inverting inputs are at an equal potential of $>-2.9V$, the receiver does *not* go to a defined state, but rather shares current in normal differential amplifier fashion, producing output voltage levels midway between high and low. This may even cause the device to oscillate.

The SK10/100E116 provides VBB output for either single-ended use or as a DC bias for AC coupling to the device. The VBB output pin should be used only as a DC bias for the E116 as its current sink/source capability is limited. Whenever used, the VBB pin should be bypassed to VCC via a 0.01 μF capacitor.

Functional Block Diagram

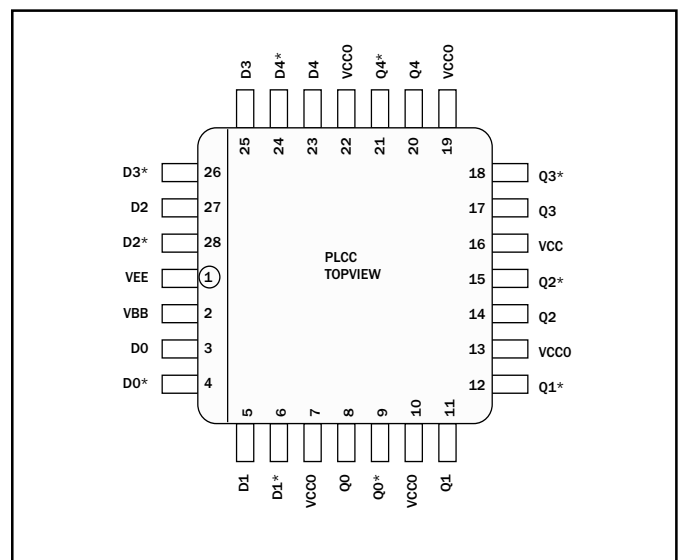


Features

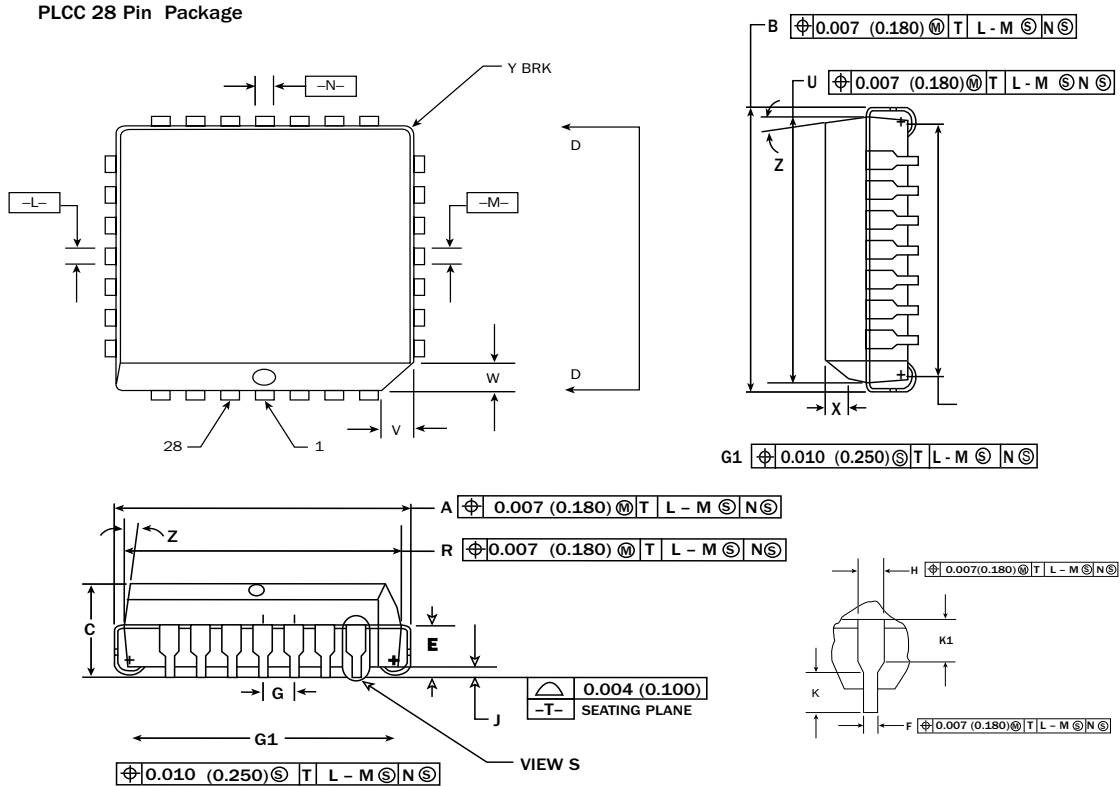
- Extended 100E VEE Range of $-4.2V$ to $-5.5V$
- 400 ps Maximum Propagation Delay
- Extended VEE Range of $-4.2V$ to $-5.5V$
- VBB Output for Single-Ended Reception
- Internal 75K Ω Input Pulldown Resistors
- ESD Protection of $>4000V$
- Fully Compatible with MC10E/100E116
- Specified Over Industrial Temperature Range: $-40^{\circ}C$ to $+85^{\circ}C$
- Available in 28-Pin PLCC Package

Pin Description

Pin	Function
D0, D0*-D4, D4*	Differential Input Pairs
Q0, Q0*-Q4, Q4*	Differential Output Pairs
VBB	Reference Voltage Output
VCC0	VCC to Output
VCC	Positive Supply
VEE	Negative Supply



28-Pin PLCC Package



NOTES:

- Datums -L-, -M-, and -N- determined where top of lead shoulder exits plastic body at mold parting line.
- DIM G1, true position to be measured at Datum -T-, Seating Plane.
- DIM R and U do not include mold flash. Allowable mold flash is 0.010 (0.250) per side.
- Dimensioning and tolerancing per ANSI Y14.5M, 1982.
- Controlling Dimension: Inch.
- The package top may be smaller than the package bottom by up to 0.012 (0.300). Dimensions R and U are determined at the outermost extremes of the plastic body exclusive of mold flash, tie bar burrs, gate burrs and interlead flash, but including any mismatch between the top and bottom of the plastic body.
- Dimension H does not include Dambar protrusion or intrusion. The Dambar protrusion(s) shall not cause the H dimension to be greater than 0.037 (0.940). The Dambar intrusion(s) shall not cause the H dimension to be smaller than 0.025 (0.635).

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.485	0.495	12.32	12.57
B	0.485	0.495	12.32	12.57
C	0.165	0.180	4.20	4.57
E	0.090	0.110	2.29	2.79
F	0.013	0.019	0.33	0.48
G	0.050	BSC	1.27	BSC
H	0.026	0.032	0.66	0.81
J	0.020	-	0.51	-
K	0.025	-	0.64	-
R	0.450	0.456	11.43	11.58
U	0.450	0.456	11.43	11.58
V	0.042	0.048	1.07	1.21
W	0.042	0.048	1.07	1.21
X	0.042	0.056	1.07	1.42
Y	-	0.020	-	0.50
Z	2°	10°	2°	10°
G1	0.410	0.430	10.42	10.92
K1	0.040	-	1.02	-

TEST AND MEASUREMENT PRODUCTS
DC Characteristics
SK10/100E116 DC Electrical Characteristics (Notes 1, 2, 7)
 $(V_{CC} - V_{EE} = 4.2V \text{ to } 5.5V; V_{OUT} \text{ loaded } 50\Omega \text{ to } V_{CC} - 2.0V)$

Symbol	Characteristic	TA = -40°C			TA = 0°C			TA = +25°C			TA = +85°C			Unit
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
VBB	Output Reference Voltage ⁴ 10E 100E	-1.43		-1.30	-1.38		-1.27	-1.35		-1.25	-1.31		-1.19	V
		-1.38		-1.26	-1.38		-1.26	-1.38		-1.26	-1.38		-1.26	V
I _{IN}	Input Current	-200		200	-200		200	-200		200	-200		200	μA
I _{EE}	Power Supply Current 10EL 100EL			35			35			35			35	mA
				35			35			35			40	mA

AC Characteristics
SK10/100E116 AC Electrical Characteristics
 $(V_{CC} - V_{EE} = +4.2V \text{ to } +5.5V; V_{OUT} \text{ loaded } 50\Omega \text{ to } V_{CC} - 2.0V)$

Symbol	Characteristic	TA = -40°C			TA = 0°C			TA = +25°C			TA = +85°C			Unit
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
t _{PLH} t _{PHL}	Propagation Delay to Output Qn, Qn*	250	340	430	260	360	460	260	360	460	280	370	460	ps
t _{skew}	Within-Device Skew ⁵ DN to Qn, Qn*		50			50			50			50		ps
t _{skew}	Duty Cycle Skew ⁶ t _{PLH} - t _{PHL}		±10			±10			±10			±10		ps
V _{PP}	Minimum Input Swing CLK ³	150		1000	150		1000	150		1000	150		1000	mV
V _{IN}	Input Voltage (Dn, Dn*)	V _{CC} - 2.1		V _{CC} - 0.6	V _{CC} - 2.1		V _{CC} - 0.6	V _{CC} - 2.1		V _{CC} - 0.6	V _{CC} - 2.1		V _{CC} - 0.6	V
t _r , t _f	Output Rise/Fall Times (20% to 80%)	150	275	400	160	295	430	160	295	430	160	295	430	ps

TEST AND MEASUREMENT PRODUCTS**AC Characteristics (continued)**

Notes:

1. 10EL circuits are designed to meet the DC specifications shown in the table after thermal equilibrium has been established. The circuit is in a test socket or mounted on a printed circuit board and transverse airflow greater than 500 lfpm is maintained. Outputs are terminated through a 50Ω resistor to VCC-2.0V.
2. 100K circuits are designed to meet the DC specification shown in the table where transverse airflow greater than 500 lfpm is maintained.
3. Minimum input swing for which AC parameters guaranteed.
4. Voltages referenced to VCC = 0V (ECL mode).
5. Within device skew is defined as identical transition on similar path through a device.
6. Duty cycle is defined only for differential operation when the delays are measured from the crosspoint of the inputs to the crosspoints of the outputs.
7. For standard ECL DC Specifications, refer to the ECL Logic Family Standard DC Specifications Data Sheet.
8. For part ordering description, see HPP Part Ordering Information Data Sheet.

Ordering Information

Ordering Code	Package ID
SK10E116PJ	28-PLCC
SK10E116PJT	28-PLCC
SK100E116PJ	28-PLCC
SK100E116PJT	28-PLCC

Application Notes

AN1002 - Interfacing Between ECL / LVECL / PECL / LVPECL - to - TTL / LVTTTL / CMOS / LVCMOS

AN1003 - Termination Techniques for ECL / LVECL / PECL / LVPECL Devices

AN1005 - Using ECL / LVECL Devices as PECL / LVPECL

AN1006 - Designing with 10K and 100K ECL / PECL Devices

Contact Information

Division Headquarters 10021 Willow Creek Road San Diego, CA 92131 Phone: (858) 695-1808 FAX: (858) 695-2633	Semtech Corporation Test and Measurement Division	Marketing Group 1111 Comstock Street Santa Clara, CA 95054 Phone: (408) 566-8776 FAX: (408) 566-8759
---	--	--