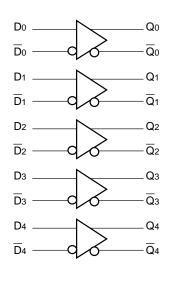


## FEATURES

- 450ps max. Propagation Delay
- Extended 100E VEE range of -4.2V to -5.5V
- VBB output for single-ended reception
- Fully compatible with industry standard 10KH, 100K I/O levels
- Internal 75KΩ input pulldown resistors
- Fully compatible with Motorola MC10E/100E116
- Available in 28-pin PLCC package

## **BLOCK DIAGRAM**





## DESCRIPTION

The SY10/100E116 are quint differential line receivers designed for use in new, high-performance ECL systems. These devices have emitter-follower outputs and an internally generated reference supply (VBB) for single-ended reception.

Active current sources combined with Micrel-Synergy's ASSET<sup>™</sup> technology provide the receivers with excellent common mode noise rejection.

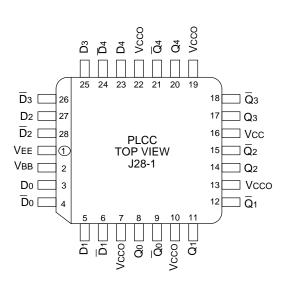
The receiver design features clamp circuitry to cause a defined output state if both the inverting and non-inverting inputs are left open; in this case the Q output goes LOW, while the  $\overline{Q}$  output goes HIGH.

If both inverting and non-inverting inputs are at equal potential, 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.

The VBB output is intended for use as a reference voltage for single-ended reception of ECL signals to that device only. When using VBB for this purpose, it is recommended that VBB is decoupled to VCC via a 0.01  $\mu F$  capacitor.

For higher bandwidth, please refer to the SY10/100E416 device.

## PIN CONFIGURATION



### **PIN NAMES**

Pin	Function
D0, $\overline{D}$ 0-D4, $\overline{D}$ 4	Differential Input Pairs
Q0, $\overline{Q}$ 0-Q4, $\overline{Q}$ 4	Differential Output Pairs
Vвв	Reference Voltage Output
Vcco	Vcc to Output

# LOGIC EQUATION

Qn = Dn

# DC ELECTRICAL CHARACTERISTICS

#### VEE = VEE(Min.) to VEE(Max.); VCC = VCCO = GND

		TA = −40°C		TA = 0°C			TA = +25°C			TA = +85°C				
Symbol	Parameter	Min.	Тур.	Max.	Unit									
Vbb	Output Reference Voltage 10E 100E	-1.43 -1.43		-1.30 -1.26	-1.38 -1.38	_	-1.27 -1.26	-1.35 -1.38		-1.25 -1.26	-1.31 -1.38	_	-1.19 -1.26	V
Ін	Input HIGH Current	_		200	—	_	200	_	_	200	_	_	200	μA
IEE	Power Supply Current 10E 100E		29 29	35 35		29 29	35 35		29 29	35 35		29 33	35 40	mA
VPP (DC)	Input Sensitivity <sup>(1)</sup>	150	_	—	150	_	_	150	_	—	150	_	_	mV
VCMR	Common Mode Range <sup>(2)</sup>	-2.0	_	-0.6	-2.0	—	-0.6	-2.0	_	-0.6	-2.0	—	-0.6	V

#### NOTES:

1. VPP is the minimum differential input voltage required to assure full ECL levels are present at the outputs.

2. VCMR is referenced to the most positive side of the differential input signal. Normal operation is obtained when the "HIGH" input is within the VCMR range and the input swing is greater than VPP (min.) and <1V.

# AC ELECTRICAL CHARACTERISTICS

VEE = VEE(Min.) to VEE(Max.); VCC = VCCO = GND

	TA = −40°C		TA = 0°C			TA = +25°C			TA = +85°C					
Symbol	Parameter	Min.	Тур.	Max.	Unit									
tplh tphl	Propagation Delay to Output D D (S.E.)	150 150	300 300	500 550	200 150	300 300	450 500	200 150	300 300	450 500	200 150	300 300	450 500	ps
VPP (DC)	Input Sensitivity <sup>(1)</sup>	150	—	150	150	_	—	150	-	—	150	_	_	mV
tskew	Within-Device Skew <sup>(2)</sup> Dn to Qn, $\overline{Q}n$	—	50	—	—	50	_	—	50	—	—	50	—	ps
tskew	Duty Cycle Skew <sup>(3)</sup> tPLH – tPHL	—	±10	_	_	±10	_	—	±10	—	—	±10	_	ps
tr tf	Rise/Fall Time 20% to 80%	250	375	625	275	375	575	275	375	575	275	375	575	ps

#### NOTES:

1. Minimum input swing for which AC parameters are guaranteed.

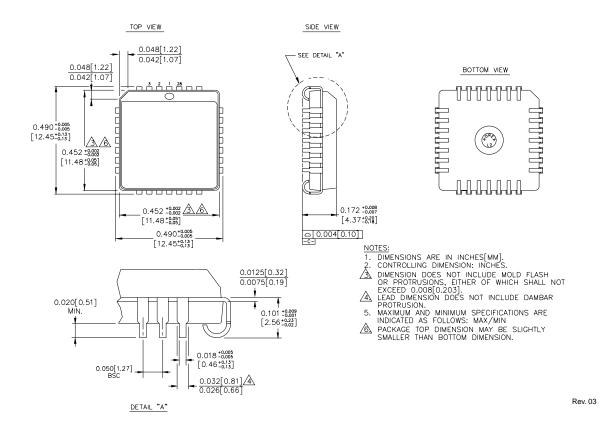
2. Within-device skew is defined as identical transitions on similar paths through a device.

3. Duty cycle skew is defined only for differential operation when the delays are measured from the cross point of the inputs to the cross point of the outputs.

## PRODUCT ORDERING CODE

Ordering Code	Package Type	Operating Range	Ordering Code	Package Type	Operating Range
SY10E116JC	J28-1	Commercial	SY10E116JI	J28-1	Industrial
SY10E116JCTR	J28-1	Commercial	SY10E116JITR	J28-1	Industrial
SY100E116JC	J28-1	Commercial	SY100E116JI	J28-1	Industrial
SY100E116JCTR	J28-1	Commercial	SY100E116JITR	J28-1	Industrial

# 28 LEAD PLCC (J28-1)



3

MICREL-SYNERGY 3250 SCOTT BOULEVARD SANTA CLARA CA 95054 USA TEL + 1 (408) 980-9191 FAX + 1 (408) 914-7878 WEB http://www.micrel.com

This information is believed to be accurate and reliable, however no responsibility is assumed by Micrel for its use nor for any infringement of patents or other rights of third parties resulting from its use. No license is granted by implication or otherwise under any patent or patent right of Micrel Inc. © 2000 Micrel Incorporated