- **3.3V and 5V power supply options**
- **High bandwidth output transitions**
- **Internal 75KΩ input pull down resistors**
- **Available in 20-pin SOIC package**

DESCRIPTION

The SY100EL17V is a quad differential receiver. The device is functionally equivalent to the E116 device with the capability of operation from either a ECL supply voltage (–3.3V or –5V) or PECL supply voltage (+3.3V or +5V).

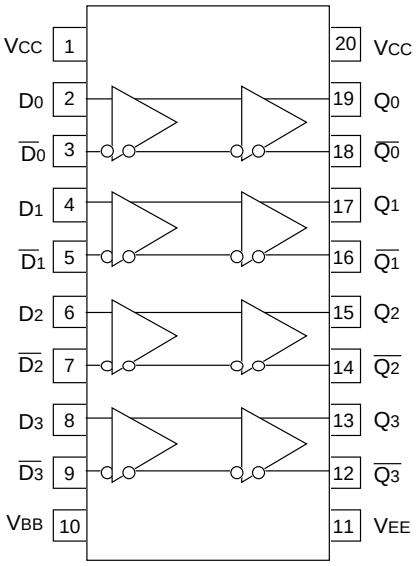
The EL17V provides a V_{BB} output for either single-ended use or as a DC bias for AC coupling to the device. The V_{BB} pin should be used only as a bias for the EL17V as its current sink/source capability is limited. Whenever used, the V_{BB} pin should be bypassed to ground via a 0.01µf capacitor.

Under open input conditions, the /D input will be biased at $V_{CC}/2$ and the D input will be pulled down to V_{EE}. This operation will force the Q output LOW and ensure stability.

PIN NAMES

Pin	Function
D_n	Data Inputs
Q_n	Data Outputs
V_{BB}	Reference Voltage Output

PACKAGE/ORDERING INFORMATION



20-Pin Wide SOIC (Z20-1)

Ordering Information[1]

Part Number	Package Type	Operating Range	Package Marking	Lead Finish
SY100EL17VZC	Z20-1	Commercial	SY100EL17VZC	Sn-Pb
SY100EL17VZCTR[2]	Z20-1	Commercial	SY100EL17VZC	Sn-Pb
SY100EL17VZI	Z20-1	Industrial	SY100EL17VZI	Sn-Pb
SY100EL17VZITR[2]	Z20-1	Industrial	SY100EL17VZI	Sn-Pb
SY100EL17VZG[3]	Z20-1	Industrial	SY100EL17VZG with Pb-Free bar-line indicator	Pb-Free NiPdAu
SY100EL17VZGTR[2, 3]	Z20-1	Industrial	SY100EL17VZG with Pb-Free bar-line indicator	Pb-Free NiPdAu

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.

ECL/LVECL DC ELECTRICAL CHARACTERISTICS

ECL: V_{EE} = –4.2V to –5.5V; V_{CC} = GND; LVECL: V_{EE} = –3.0V to –3.8V; V_{CC} = GND

Symbol	Parameter	T_A = –40°C			T_A = 0°C			T_A = +25°C			T_A = +85°C			Unit
		Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	
V_{IH}	Input HIGH Voltage	–1165	—	–880	–1165	—	–880	–1165	—	–880	–1165	—	–880	mV
V_{IL}	Input LOW Voltage	–1810	—	–1475	–1810	—	–1475	–1810	—	–1475	–1810	—	–1475	mV
I_{EE}	Power Supply Current	—	26	31	—	26	31	—	26	31	—	27	33	mA
I_{IH}	Input HIGH Current	—	—	150	—	—	150	—	—	150	—	—	150	µA
I_{IL}	Input LOW Current Dn	0.5	—	—	0.5	—	—	0.5	—	—	0.5	—	—	µA
	/Dn	–300	—	—	–300	—	—	–300	—	—	–300	—	—	
V_{BB}	Output Reference Voltage	–1.38	—	–1.26	–1.38	—	–1.26	–1.38	—	–1.26	–1.38	—	–1.26	V
V_{OH}	Output HIGH Voltage	–1085	–1005	–880	–1025	—	–880	–1025	–955	–880	–1025	—	–880	mV
V_{OL}	Output LOW Voltage	–1830	–1695	–1555	–1810	—	–1620	–1810	–1705	–1620	–1810	—	–1620	mV

PECL DC ELECTRICAL CHARACTERISTICS

V_{CC} = +4.2V to +5.5V; V_{EE} = GND

Symbol	Parameter	T_A = –40°C			T_A = 0°C			T_A = +25°C			T_A = +85°C			Unit
		Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	
V_{IH}	Input HIGH Voltage(1)	3835	—	4120	3835	—	4120	3835	—	4120	3835	—	4120	mV
V_{IL}	Input LOW Voltage(1)	3190	—	3525	3190	—	3525	3190	—	3525	3190	—	3525	mV
I_{CC}	Power Supply Current	—	26	31	—	26	31	—	26	31	—	27	33	mA
I_{IH}	Input HIGH Current	—	—	150	—	—	150	—	—	150	—	—	150	µA
I_{IL}	Input LOW Dn	0.5	—	—	0.5	—	—	0.5	—	—	0.5	—	—	µA
	Current /Dn	–300	—	—	–300	—	—	–300	—	—	–300	—	—	
V_{BB}	Output Reference(1) Voltage	3.62	—	3.74	3.62	—	3.74	3.62	—	3.74	3.62	—	3.74	V
V_{OH}	Output HIGH Voltage(1)	3915	—	4120	3975	—	4120	3975	4050	4120	3975	—	4120	mV
V_{OL}	Output LOW Voltage(1)	3170	—	3445	3190	—	3380	3190	3300	3380	3190	—	3380	mV

Note:

1. These levels are for V_{CC} = 5.0V. Level specifications will vary 1:1 with V_{CC}.

LVPECL DC ELECTRICAL CHARACTERISTICS

V_{CC} = +3.0V to +3.8V; V_{EE} = GND

Symbol	Parameter	T_A = –40°C			T_A = 0°C			T_A = +25°C			T_A = +85°C			Unit
		Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	
V_{IH}	Input HIGH Voltage(1)	2135	—	2420	2135	—	2420	2135	2350	2420	2135	—	2420	mV
V_{IL}	Input LOW Voltage(1)	1490	—	1825	1490	—	1825	1490	—	1825	1490	—	1825	mV
I_{CC}	Power Supply Current	—	26	31	—	26	31	—	26	31	—	27	33	mA
I_{IH}	Input HIGH Current	—	—	150	—	—	150	—	—	150	—	—	150	µA
I_{IL}	Input LOW Current Dn	0.5	—	—	0.5	—	—	0.5	—	—	0.5	—	—	µA
	/Dn	–300	—	—	–300	—	—	–300	—	—	–300	—	—	
V_{BB}	Output Reference(1) Voltage	1.92	—	2.04	1.92	—	2.04	1.92	—	2.04	1.92	—	2.04	V
V_{OH}	Output HIGH Voltage(1)	2215	—	2420	2275	—	2420	2275	2350	2420	2275	—	2420	mV
V_{OL}	Output LOW Voltage(1)	1470	—	1745	1490	—	1680	1490	1600	1680	1490	—	1680	mV

Note:

1. These levels are for V_{CC} = 3.3V. Level specifications will vary 1:1 with V_{CC}.

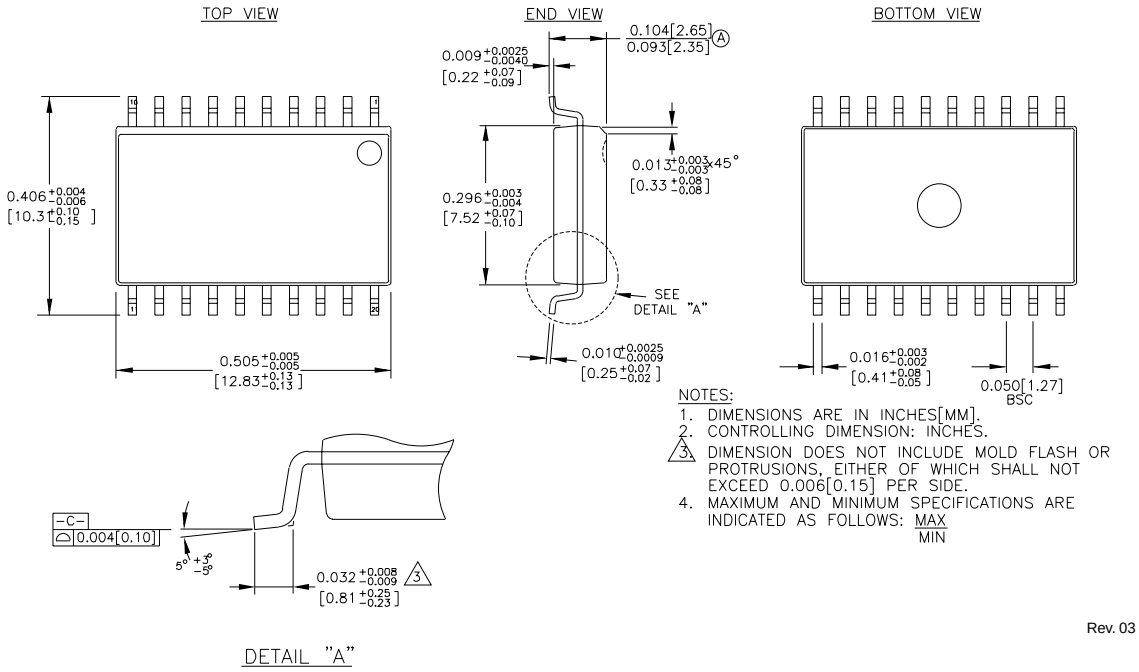
AC ELECTRICAL CHARACTERISTICS(1)

Symbol	Parameter	T_A = –40°C			T_A = 0°C			T_A = +25°C			T_A = +85°C			Unit
		Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	
t_{PD}	Propagation Delay Diff.	330	—	530	340	—	540	350	—	550	360	—	560	ps
	D to Q S.E.	280	—	580	290	—	590	300	—	600	310	—	610	
t_{skew}	Within-Device Skew													ps
	Output-to-Output(2)	—	—	75	—	—	75	—	—	75	—	—	75	
	Part-to-Part (Diff.)(2)	—	—	200	—	—	200	—	—	200	—	—	200	
	Duty Cycle (Diff.)(3)	—	—	25	—	—	25	—	—	25	—	—	25	
V_{PP}	Minimum Input Swing(4)	150	—	—	150	—	—	150	—	—	150	—	—	mV
V_{CMR}	Common Mode Range(5)													V
	ECL/LVECL V_{PP} < 500mV	V_{EE}+1.3	—	–0.4	V_{EE}+1.2	—	–0.4	V_{EE}+1.2	—	–0.4	V_{EE}+1.2	—	–0.4	
	V_{PP} ≥ 500mV	V_{EE}+1.5	—	–0.4	V_{EE}+1.4	—	–0.4	V_{EE}+1.4	—	–0.4	V_{EE}+1.4	—	–0.4	
	PECL/LVPECL V_{PP} < 500mV	1.3	—	Vcc–0.4	1.2	—	Vcc–0.4	1.2	—	Vcc–0.4	1.2	—	Vcc–0.4	
	V_{PP} ≥ 500mV	1.5	—	Vcc–0.4	1.4	—	Vcc–0.4	1.4	—	Vcc–0.4	1.4	—	Vcc–0.4	
t_r t_f	Output Rise/Fall Times (20% to 80%)	220	—	420	220	—	420	220	—	420	220	—	420	ps

Notes:

1. Power supply requirement applies as indicated in the DC electrical characteristics tables.
2. Skews are valid across specified voltage range.
3. Duty cycle skew is the difference between a t_{PLH} and t_{PHL} propagation delay through a device.
4. Minimum input swing for which AC parameters are guaranteed. The device has a DC gain of ~40.
5. The V_{CMR} is referenced to the most positive side of the differential input signal. Normal operation is obtained if the HIGH levels falls within the specified range and the peak-to-peak voltage lies between V_{PP} min and 1V.

20-PIN SOIC (300 MIL WIDE) (20-L)



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

The information furnished by Micrel in this datasheet is believed to be accurate and reliable. However, no responsibility is assumed by Micrel for its use. Micrel reserves the right to change circuitry and specifications at any time without notification to the customer.

Micrel Products are not designed or authorized for use as components in life support appliances, devices or systems where malfunction of a product can reasonably be expected to result in personal injury. Life support devices or systems are devices or systems that (a) are intended for surgical implant into the body or (b) support or sustain life, and whose failure to perform can be reasonably expected to result in a significant injury to the user. A Purchaser's use or sale of Micrel Products for use in life support appliances, devices or systems is at Purchaser's own risk and Purchaser agrees to fully indemnify Micrel for any damages resulting from such use or sale.

© 2006 Micrel, Incorporated.