



5V/3.3V QUAD DIFFERENTIAL RECEIVER

SY100EL17V

FEATURES

- 3.3V and 5V power supply options
- High bandwidth output transitions
- Internal 75K Ω 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 0.01 μ f capacitor.

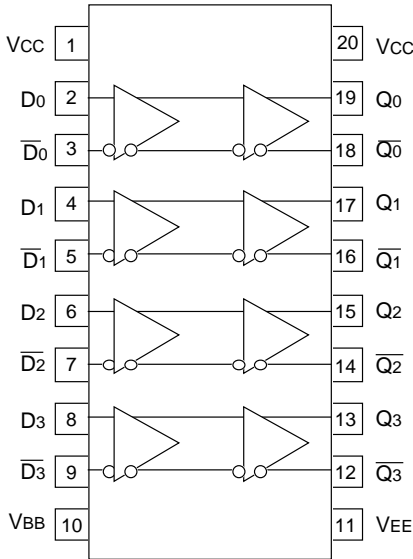
Under open input conditions, the /D input will be biased at $V_{CC}/2$ and the D input will be pulled down to V_{EE} . This operation will force the Q output LOW and ensure stability.

PIN NAMES

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

PACKAGE/ORDERING INFORMATION

Ordering Information⁽¹⁾



20-Pin Wide SOIC (Z20-1)

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 $T_A = 25^\circ\text{C}$, DC Electricals only.
2. Tape and Reel.
3. Pb-Free package is recommended for new designs.

ECL/LVECL DC ELECTRICAL CHARACTERISTICSECL: $V_{EE} = -4.2V$ to $-5.5V$; $V_{CC} = GND$; LVECL: $V_{EE} = -3.0V$ to $-3.8V$; $V_{CC} = GND$

Symbol	Parameter	$T_A = -40^\circ C$			$T_A = 0^\circ C$			$T_A = +25^\circ C$			$T_A = +85^\circ C$			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 /Dn	0.5 -300	— —	— —	0.5 -300	— —	— —	0.5 -300	— —	— —	0.5 -300	— —	— —	μA
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	$T_A = -40^\circ C$			$T_A = 0^\circ C$			$T_A = +25^\circ C$			$T_A = +85^\circ C$			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 Current Dn /Dn	0.5 -300	— —	— —	0.5 -300	— —	— —	0.5 -300	— —	— —	0.5 -300	— —	— —	μA
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

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

Symbol	Parameter	$T_A = -40^\circ\text{C}$			$T_A = 0^\circ\text{C}$			$T_A = +25^\circ\text{C}$			$T_A = +85^\circ\text{C}$			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 /Dn	0.5 -300	— —	— —	0.5 -300	— —	— —	0.5 -300	— —	— —	0.5 -300	— —	— —	μA
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} .

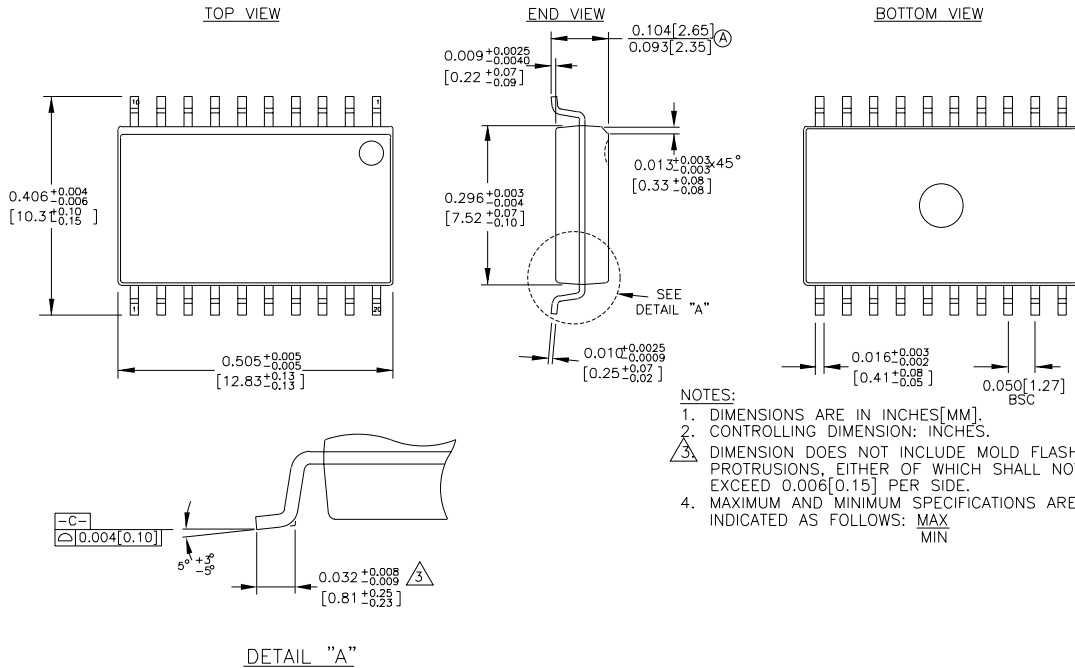
AC ELECTRICAL CHARACTERISTICS⁽¹⁾

Symbol	Parameter	$T_A = -40^\circ\text{C}$			$T_A = 0^\circ\text{C}$			$T_A = +25^\circ\text{C}$			$T_A = +85^\circ\text{C}$			Unit
		Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	
t_{PD}	Propagation Delay D to Q Diff. S.E.	330 280	— —	530 580	340 290	— —	540 590	350 300	— —	550 600	360 310	— —	560 610	ps
t_{skew}	Within-Device Skew Output-to-Output ⁽²⁾ Part-to-Part (Diff.) ⁽²⁾ Duty Cycle (Diff.) ⁽³⁾	— — —	— — —	75 200 25	— — —	— — —	75 200 25	— — —	— — —	75 200 25	— — —	— — —	75 200 25	ps
V_{PP}	Minimum Input Swing ⁽⁴⁾	150	—	—	150	—	—	150	—	—	150	—	—	mV
V_{CMR}	Common Mode Range ⁽⁵⁾ ECL/LVECL $V_{PP} < 500\text{mV}$ $V_{PP} \geq 500\text{mV}$ PECL/LVPECL $V_{PP} < 500\text{mV}$ $V_{PP} \geq 500\text{mV}$	$V_{EE}+1.3$ $V_{EE}+1.5$ 1.3 1.5	— — — —	-0.4 -0.4 $V_{CC}-0.4$ $V_{CC}-0.4$	$V_{EE}+1.2$ $V_{EE}+1.4$ 1.2 1.4	— — — —	-0.4 -0.4 $V_{CC}-0.4$ $V_{CC}-0.4$	$V_{EE}+1.2$ $V_{EE}+1.4$ 1.2 1.4	— — — —	-0.4 -0.4 $V_{CC}-0.4$ $V_{CC}-0.4$	$V_{EE}+1.2$ $V_{EE}+1.4$ 1.2 1.4	— — — —	-0.4 -0.4 $V_{CC}-0.4$ $V_{CC}-0.4$	V
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" WIDE (Z20-1)



Rev. 03

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