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5V/3.3V QUAD DIFFERENTIAL RECEIVER

SY100EL17V

FEATURES

- **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).

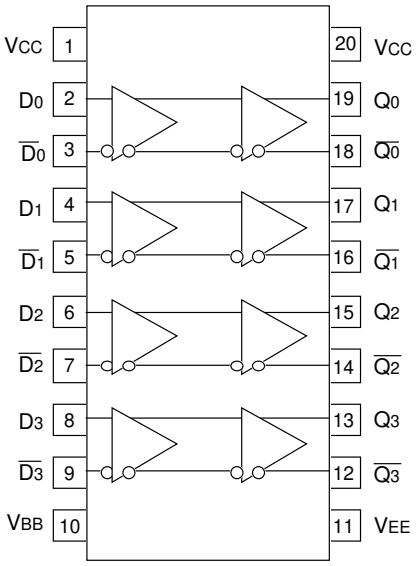
The EL17V provides a V_{BB} output for either single-ended use or as a DC bias for AC coupling to the device. The V_{BB} pin should be used only as a bias for the EL17V as its current sink/source capability is limited. Whenever used, the V_{BB} pin should be bypassed to ground via a 0.01µf capacitor.

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 /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}.

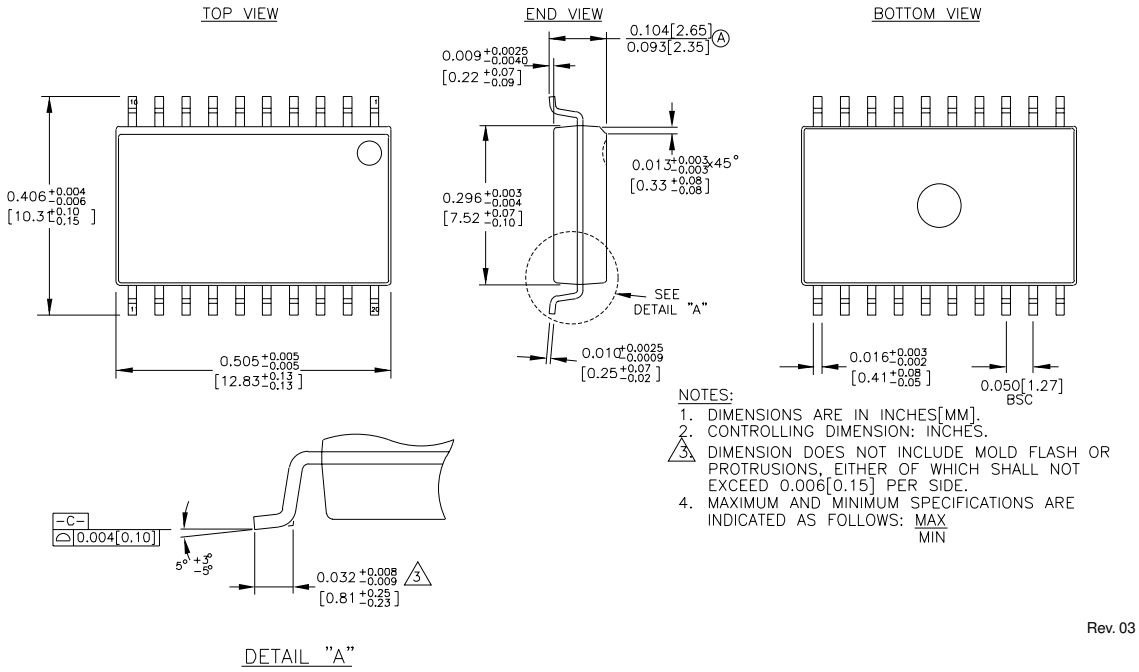
AC ELECTRICAL CHARACTERISTICS(1)

Symbol	Parameter		T_A = –40°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 D to Q	Diff.	330	—	530	340	—	540	350	—	550	360	—	560	ps
		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	—	V_{CC}–0.4	1.2	—	V_{CC}–0.4	1.2	—	V_{CC}–0.4	1.2	—	V_{CC}–0.4	
		V_{PP} ≥ 500mV	1.5	—	V_{CC}–0.4	1.4	—	V_{CC}–0.4	1.4	—	V_{CC}–0.4	1.4	—	V_{CC}–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" WIDE (Z20-1)



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