**3.3V and 5V power supply options**

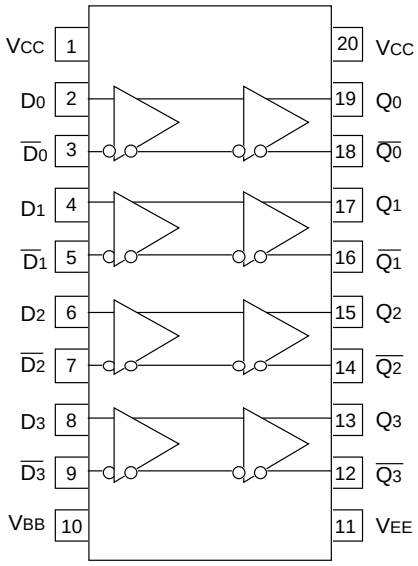
- **High bandwidth output transitions**
- **Internal 75KΩ input pull down resistors**
- **Available in 20-pin SOIC package**

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 | Function |
|---|---|
| $D_n$ | Data Inputs |
| $Q_n$ | Data Outputs |
| $V_{BB}$ | Reference Voltage Output |




**20-Pin Wide SOIC (Z20-1)**

**(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: $V_{EE}$ = –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 |

$V_{CC}$ = +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 Current Dn | 0.5 | — | — | 0.5 | — | — | 0.5 | — | — | 0.5 | — | — | µA |
| | /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 $V_{CC}$.

## 3.3V POWER SUPPLY 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 |

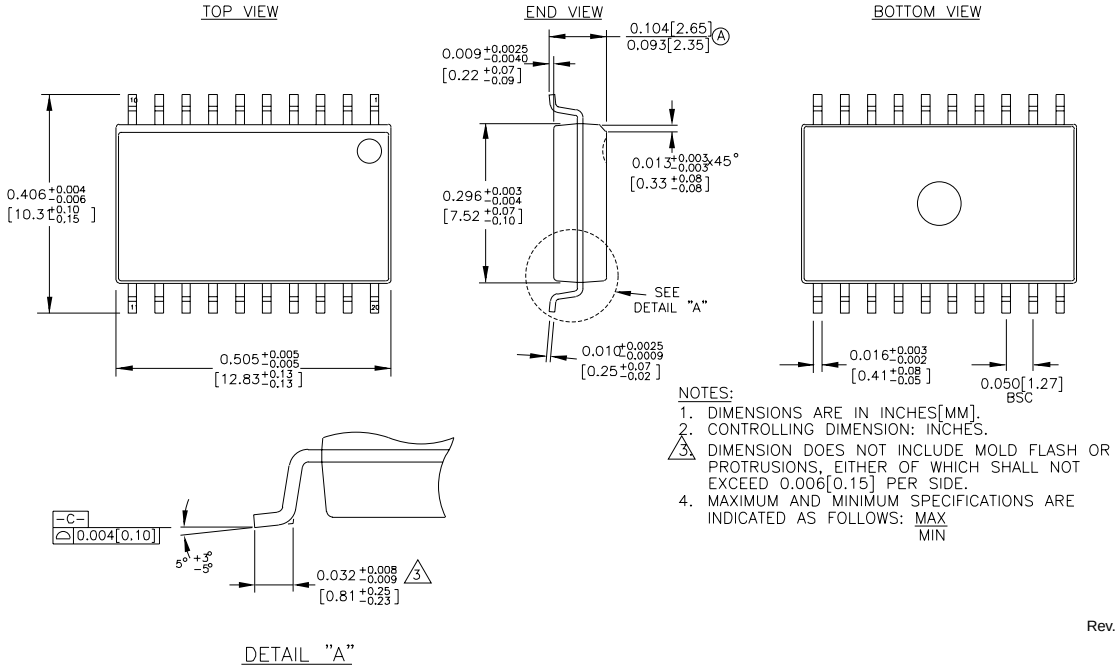
**Note:**

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

## AC ELECTRICAL CHARACTERISTICS

| 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 |

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.




Rev. 03

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