



5V/3.3V VARIABLE OUTPUT SWING DIFFERENTIAL RECEIVER

SY100EL16VS

FEATURES

- 3.3V and 5V power supply options
- High bandwidth output transitions
- Internal 75K Ω pull-down resistors on inputs
- Functionally equivalent to SY100EL16V with variable output swing
- Improved output waveform characteristics
- Available in 8-pin SOIC and 8-pin (3mm) MSOP

DESCRIPTION

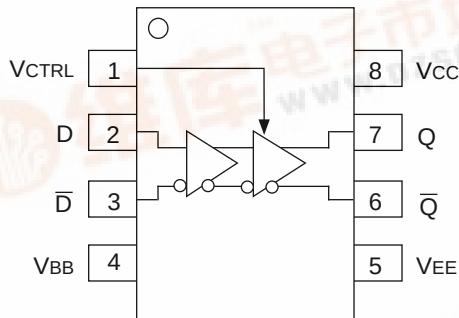
The SY100EL16VS are differential receivers with variable output swing. The devices are functionally equivalent to the EL16V devices with an input that control the amplitude of the outputs.

The operational range of the EL16VS control input is from VBB (max. swing) to VCC (min. swing). Simple control of the output swing can be obtained by a variable resistor between the VBB pin and VCC with the wiper driving VCTRL.

The EL16VS provides a VBB output for either single-ended use or as a DC bias for AC coupling to the device. The VBB pin should be used only as a bias for the EL16VS as its current sink/source capability is limited. Whenever used, the VBB pin should be bypassed to ground via a 0.01 μ F capacitor.

Under open input conditions (pulled to VEE), internal input clamps will force the Q output LOW.

PIN CONFIGURATION/BLOCK DIAGRAM



PIN NAMES

Pin	Function
D	Data Inputs
Q	Data Outputs
VBB	Reference Voltage Output
VCTRL	Output Swing Control

TYPICAL VOLTAGE OUTPUT SWING

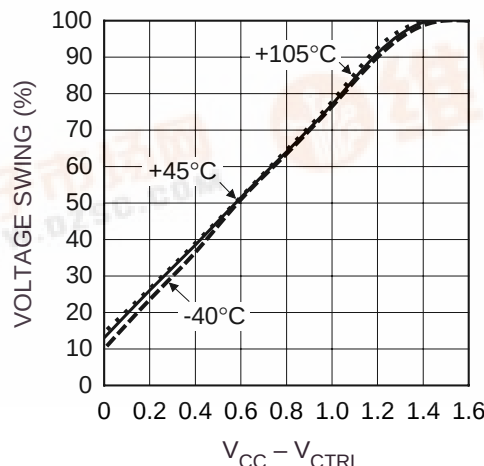


Figure 1. Typical Voltage Output Swing
 $V_{CC} = 3.3V$ or $5V$



DC ELECTRICAL CHARACTERISTICS⁽¹⁾V_{EE} = V_{EE} (Min.) to V_{EE} (Max.); 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.	
I _{EE}	Power Supply Current	—	18	22	9	18	22	9	18	22	9	21	26	mA
V _{BB}	Output Reference Voltage	-1.38	—	-1.26	-1.38	—	-1.26	-1.38	—	-1.26	-1.38	—	-1.26	V
I _{IH}	Input HIGH Current -D, $\bar{D}$ -V _{CTRL}	—	—	150 40	—	—	150 40	—	—	150 40	—	—	150 40	μA
V _{OL}	Output LOW Voltage ⁽²⁾ V _{CTRL} = V _{BB}	-1890	—	-1620	-1870	—	-1680	-1870	-1775	-1680	-1870	—	-1680	mV
V _{OL}	Output LOW Voltage ⁽²⁾ V _{CTRL} = V _{CC}	-1180	—	-975	-1135	—	-990	-1135	-1065	-990	-1135	—	-990	mV
V _{OH}	Output HIGH Voltage ⁽³⁾	-1085	—	-880	-1025	—	-880	-1025	-955	-880	-1025	—	-880	mV

NOTES:

1. Parametric values specified at: 100EL16VS Series: -3.0V to -5.5V.
2. If V_{CTRL} is an open circuit, use the V_{OH} (max. & min.) and V_{OL} (V_{CTRL} = V_{BB}: max only) limits.
3. V_{CC} ≤ V_{CTRL} ≤ V_{EE}.

AC ELECTRICAL CHARACTERISTICS⁽¹⁾V_{EE} = V_{EE} (Min.) to V_{EE} (Max.); V_{CC} = GND

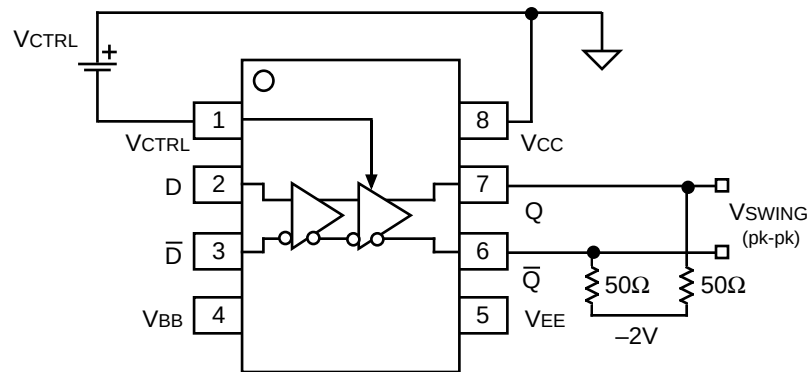
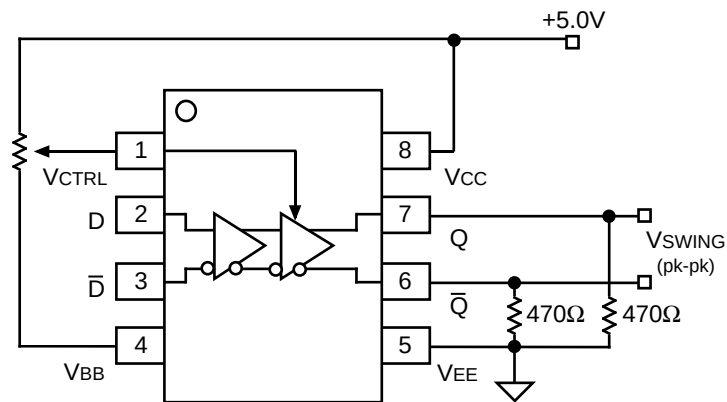
Symbol	Parameter	T _A = -40°C			T _A = 0°C			T _A = +25°C			T _A = +85°C			Unit
		Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	
t _{PLH}	Propagation Delay to Output D (Diff)	175	—	325	175	—	325	175	—	325	205	—	355	ps
t _{PHL}	Delay to Output D (SE)	125	250	425	125	250	375	125	250	375	155	280	405	ps
t _{skew}	Duty Cycle Skew ⁽²⁾ (Diff)	—	5	—	—	5	20	—	5	20	—	5	20	ps
V _{PP}	Minimum Input Swing ⁽³⁾	150	—	—	150	—	—	150	—	—	150	—	—	mV
V _{CMR}	Common Mode Range ⁽⁴⁾	-1.3	—	-0.4	-1.4	—	-0.4	-1.4	—	-0.4	-1.4	—	-0.4	V
t _r t _f	Output Rise/Fall Times Q (20% to 80%)	—	160	260	—	160	260	—	160	260	—	160	260	ps

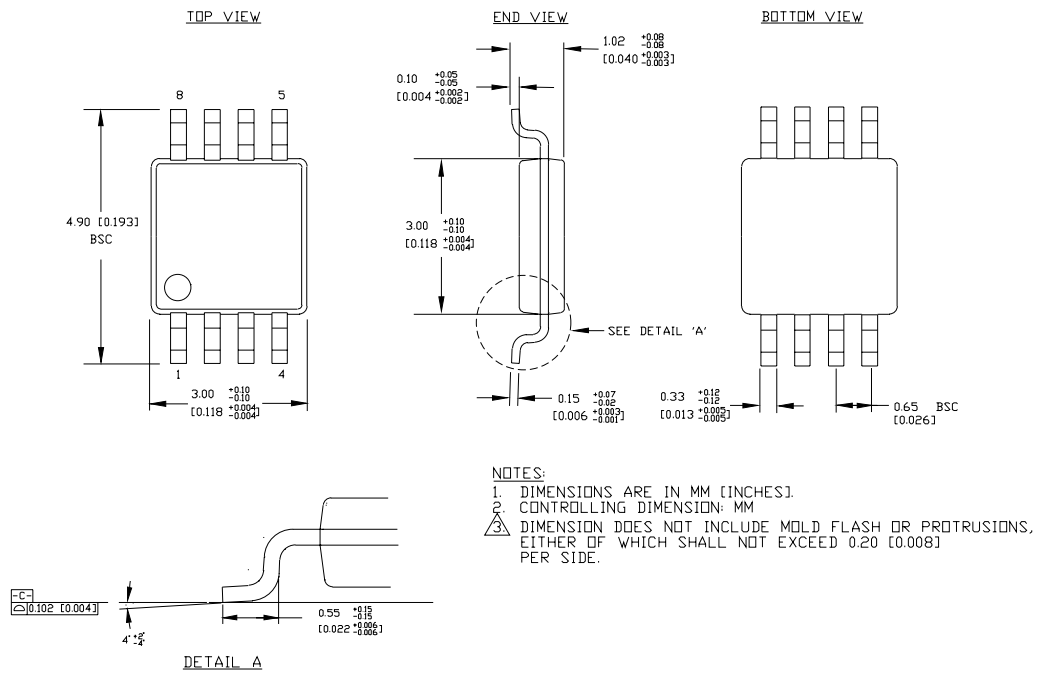
NOTES:

1. Parametric values specified at: 100EL16VS Series: -3.0V to -5.5V.
2. Duty cycle skew is the difference between a t_{PLH} and t_{PHL} propagation delay through a device.
3. Minimum input swing for which AC parameters are guaranteed. The device has a DC gain of ≈40 when output has a full swing.
4. The CMR range is referenced to the most positive side of the differential input signal. Normal operation is obtained if the HIGH level falls within the specified range and the peak-to-peak voltage lies between V_{PP} min. and 1V. The lower end of the CMR range varies 1:1 with V_{EE}. The numbers in the spec table assume a nominal V_{EE} = -3.3V. Note for PECL operation, the V_{CMR} (min) will be fixed at 3.3V - |V_{CMR} (min)|.

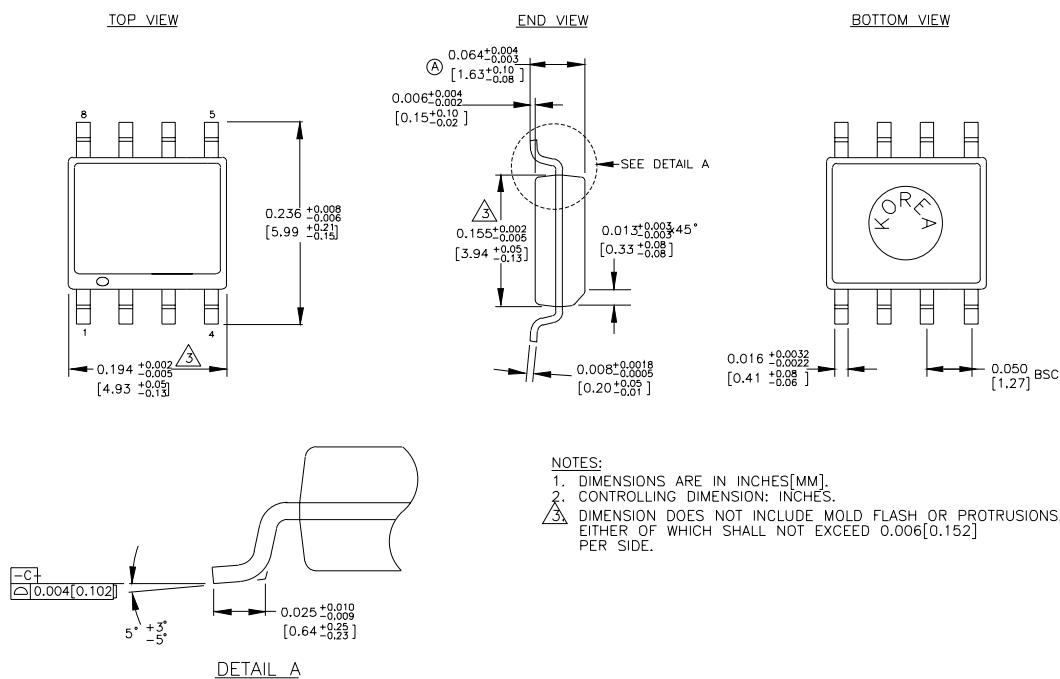
PRODUCT ORDERING CODE

Ordering Code	Package Type	Operating Range	V _{EE} Range (V)
SY100EL16VSKC	K8-1	Commercial	-3.0 to -5.5
SY100EL16VSZC	Z8-1	Commercial	-3.0 to -5.5

APPLICATION IMPLEMENTATION**Figure 2. Voltage Source Implementation****Figure 3. Alternative Implementation**

8 LEAD MSOP (K8-1)

8 LEAD SOIC .150" WIDE (Z8-1)



Rev. 03