

## FEATURES

- 3.3V and 5V power supply options
- Maximum frequency > 3.0GHz
- Internal 75K $\Omega$  input pull-down resistors
- Faster version of SY100EL16V
- 100K ECL compatible I/O
- Improved output waveform characteristics
- Available in 8-pin (3mm) MSOP and SOIC package

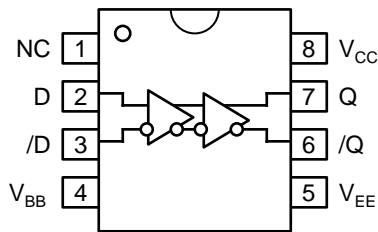
## DESCRIPTION

The SY88927V is a 2.5Gbps high-speed differential receiver. The device is functionally equivalent to the EL16V devices, with higher performance capabilities. With output transition times significantly faster than the EL16V, the SY88927V is ideally suited for interfacing with high-frequency sources.

The SY88927V 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 SY88927V as its current sink/source capability is limited. Whenever used, the  $V_{BB}$  pin should be bypassed to ground via a 0.01 $\mu$ F capacitor.

Under open input conditions (pulled to  $V_{EE}$ ), internal input clamps will force the Q output LOW.

## PIN CONFIGURATION/BLOCK DIAGRAM



(Available in MSOP or SOIC packages)

## PIN NAMES

Pin	Function
D	Data Inputs
Q	Data Outputs
$V_{BB}$	Reference Voltage Output

**ABSOLUTE MAXIMUM RATINGS<sup>(1)</sup>**

Symbol	Rating	Value	Unit
$V_{EE}$	Power Supply Voltage	-8.0 to 0	V
$V_I$	Input Voltage	0 to -6.0	V
$I_{OUT}$	Output Current -Continuous -Surge	50 100	mA
$T_A$	Operating Temperature Range	-40 to +85	°C
$T_{store}$	Storage Temperature Range	-65 to +150	°C

**NOTE:**

1. Permanent device damage may occur if ABSOLUTE MAXIMUM RATINGS are exceeded. This is a stress rating only and functional operation is not implied at conditions other than those detailed in the operational sections of this data sheet. Exposure to ABSOLUTE MAXIMUM RATING conditions for extended periods may affect device reliability.

**DC ELECTRICAL CHARACTERISTICS**

$V_{EE} = -3.0V$  to  $-5.5V$ ;  $V_{CC} = GND$

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.	
$I_{EE}$	Power Supply Current	—	—	40	—	—	40	—	35	42	—	—	48	mA
$V_{BB}$	Output Reference Voltage	-1.38	-1.30	-1.26	-1.38	-1.31	-1.26	-1.38	-1.32	-1.26	-1.38	-1.33	-1.26	V
$I_{IH}$	Input HIGH Current	—	—	150	—	—	150	—	—	150	—	—	150	$\mu A$

**100K SERIES DC ELECTRICAL CHARACTERISTICS<sup>(1)</sup>**

$V_{EE} = -3.0V$  to  $-5.5V$ ;  $V_{CC} = GND$

Symbol	Parameter	T <sub>A</sub> = −40°C			T <sub>A</sub> = 0°C to +85°C			Unit	Conditions	
		Min.	Typ.	Max.	Min.	Typ.	Max.			
V <sub>OH</sub> V <sub>OL</sub>	Output HIGH Voltage Output LOW Voltage	−1085 −1830	−1005 −1695	−880 −1555	−1025 −1810	−955 −1705	−880 −1620	mV	V <sub>IN</sub> = V <sub>IH</sub> (Max) or V <sub>IL</sub> (Min)	Loading with 50Ω to −2.0V
V <sub>OHA</sub> V <sub>OLA</sub>	Output HIGH Voltage Output LOW Voltage	−1095 —	— —	— −1555	−1035 —	— —	— −1610	mV	V <sub>IN</sub> = V <sub>IH</sub> (Min) or V <sub>IL</sub> (Max)	
V <sub>IH</sub>	Input HIGH Voltage <sup>(2)</sup>	−1165	—	−880	−1165	—	−880	mV		
V <sub>IL</sub>	Input LOW Voltage <sup>(3)</sup>	−1810	—	−1475	−1810	—	−1475	mV		
I <sub>IL</sub>	Input LOW Current	0.5	—	—	0.5	—	—	μA	V <sub>IN</sub> = V <sub>IL</sub> (Min)	

**NOTES:**

1. This table replaces the three tables traditionally seen in ECL 100K data books. Outputs are terminated through a 50 $\Omega$  resistor to -2.0V except where otherwise specified on the individual data sheets.
2. Guaranteed HIGH Signal for all inputs.
3. Guaranteed LOW Signal for all inputs.

## AC ELECTRICAL CHARACTERISTICS

$V_{EE} = -3.0V$  to  $-5.5V$ ;  $V_{CC} = GND$

Symbol	Parameter	$T_A = -40^\circ C$		$T_A = 0^\circ C$		$T_A = +25^\circ C$			$T_A = +85^\circ C$		Unit
		Min.	Max.	Min.	Max.	Min.	Typ.	Max.	Min.	Max.	
$t_{PLH}$ $t_{PHL}$	Propagation Delay to Output D (Diff) D (SE)	150 —	240 —	150 —	240 —	150 —	190 —	240 —	150 —	280 —	ps
$t_{skew}$	Duty Cycle Skew <sup>(1)</sup> (Diff)	—	—	—	20	—	5	20	—	20	ps
$V_{CMR}$	Common Mode Range <sup>(2)</sup>	$V_{EE}+2$	$V_{CC}-0.4$	$V_{EE}+2$	$V_{CC}-0.4$	$V_{EE}+2$	—	$V_{CC}-0.4$	$V_{EE}+2$	$V_{CC}-0.4$	V
$V_{PP}$	Input Voltage Range (Diff)	150	1200	150	1200	150	800	1200	150	1200	mV
$t_r$ $t_f$	Output Rise/Fall Times Q <sup>(3)</sup> (20% to 80%)	—	175	—	175	—	105	175	—	175	ps

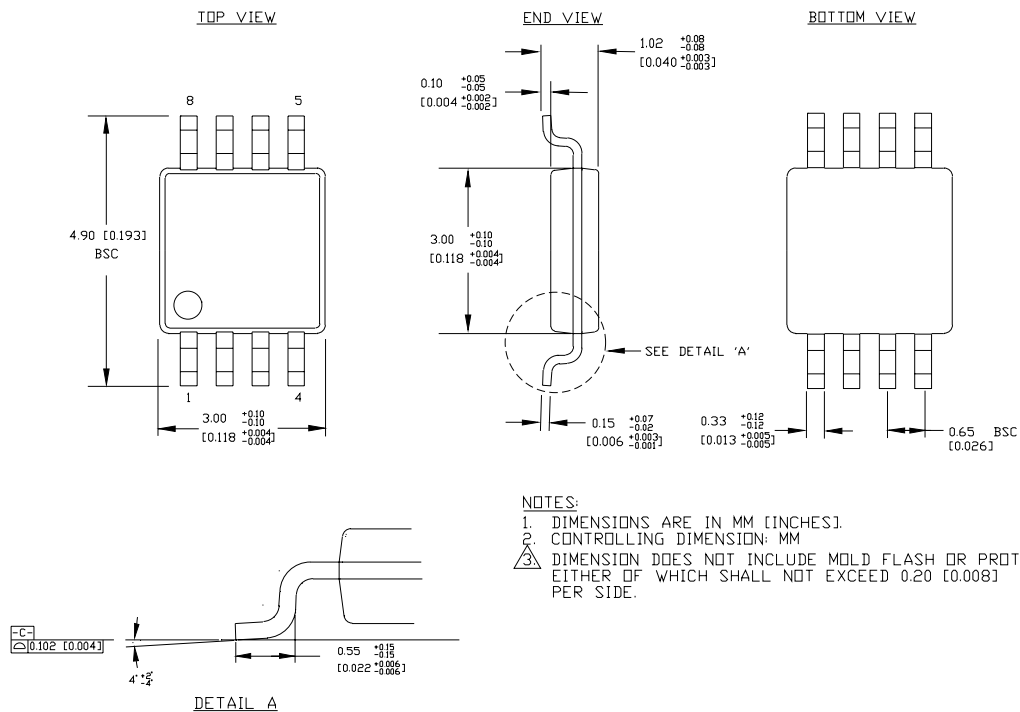
### NOTES:

1. Duty cycle skew is the difference between a  $t_{PLH}$  and  $t_{PHL}$  propagation delay through a device.
2. 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  $V_{EE}$ .
3.  $V_{ID} > 150mV$ .

## PRODUCT ORDERING CODE

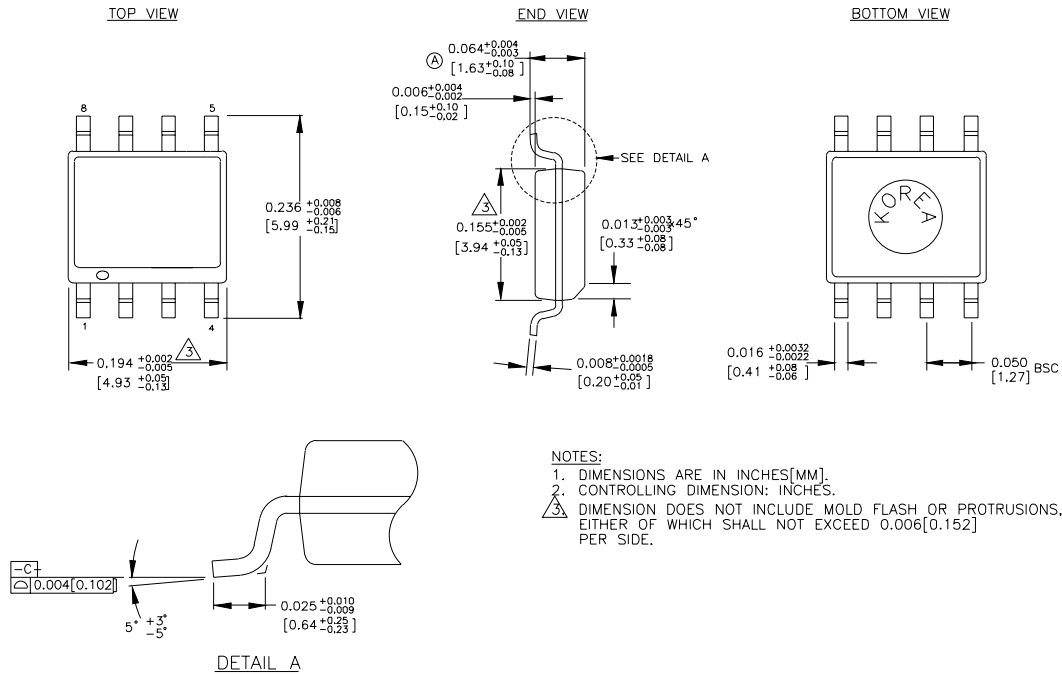
Ordering Code	Package Type	Operating Range	$V_{EE}$ Range (V)
SY88927VKC	K8-1	Commercial	-3.0 to -5.5
SY88927VKCTR	K8-1	Commercial	-3.0 to -5.5
SY88927VZC	Z8-1	Commercial	-3.0 to -5.5
SY88927VZCTR	Z8-1	Commercial	-3.0 to -5.5

# 8 LEAD MSOP (K8-1)



Rev. 01

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



Rev. 03

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