

FEATURES

- 3.3V and 5V power supply options
- Maximum frequency > 3.0GHz
- Internal 75KΩ 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

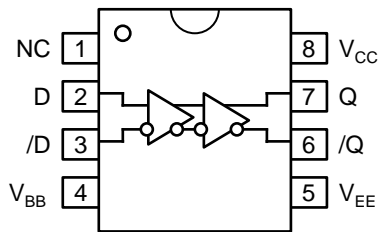
DESCRIPTION

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 0.01μF 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⁽¹⁾

| 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 | μA |

100K SERIES DC ELECTRICAL CHARACTERISTICS⁽¹⁾
 $V_{EE} = -3.0V$ to $-5.5V$; $V_{CC} = GND$

| Symbol | Parameter | $T_A = -40^\circ C$ | | | $T_A = 0^\circ C$ to $+85^\circ C$ | | | Unit | Conditions | |
|------------------------|---|---------------------|----------------|---------------|------------------------------------|---------------|---------------|---------|--|--------------------------------------|
| | | Min. | Typ. | Max. | Min. | Typ. | Max. | | | |
| V_{OH} V_{OL} | Output HIGH Voltage Output LOW Voltage | -1085 -1830 | -1005 -1695 | -880 -1555 | -1025 -1810 | -955 -1705 | -880 -1620 | mV | $V_{IN} = V_{IH}(\text{Max})$ or $V_{IL}(\text{Min})$ | Loading with 50 Ω to -2.0V |
| V_{OHA} V_{OLA} | Output HIGH Voltage Output LOW Voltage | -1095 — | — — | — -1555 | -1035 — | — — | — -1610 | mV | $V_{IN} = V_{IH}(\text{Min})$ or $V_{IL}(\text{Max})$ | |
| V_{IH} | Input HIGH Voltage ⁽²⁾ | -1165 | — | -880 | -1165 | — | -880 | mV | | |
| V_{IL} | Input LOW Voltage ⁽³⁾ | -1810 | — | -1475 | -1810 | — | -1475 | mV | | |
| I_{IL} | Input LOW Current | 0.5 | — | — | 0.5 | — | — | μA | $V_{IN} = V_{IL}(\text{Min})$ | |

NOTES:

1. This table replaces the three tables traditionally seen in ECL 100K data books. Outputs are terminated through a 50 Ω 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 ⁽¹⁾ (Diff) | — | — | — | 20 | — | 5 | 20 | — | 20 | ps |
| V_{CMR} | Common Mode Range ⁽²⁾ | $V_{EE}+2$ | $V_{CC}-0.4$ | $V_{EE}+2$ | $V_{CC}-0.4$ | $V_{EE}+2$ | — | $V_{CC}-0.4$ | $V_{EE}+2$ | $V_{CC}-0.4$ | 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 ⁽³⁾ (20% to 80%) | — | 175 | — | 175 | — | 105 | 175 | — | 175 | ps |

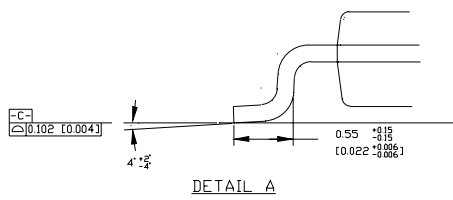
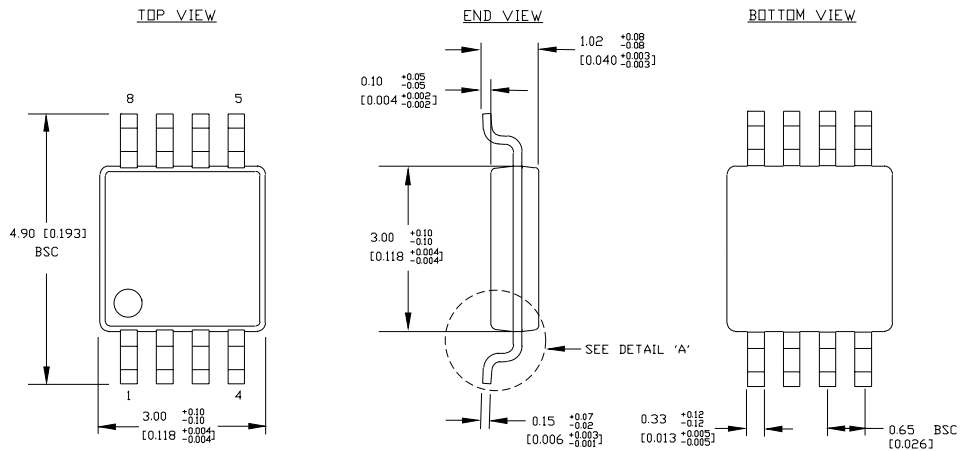
NOTES:

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

PRODUCT ORDERING CODE

| Ordering Code | Package Type | Operating Range | VEE 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 |

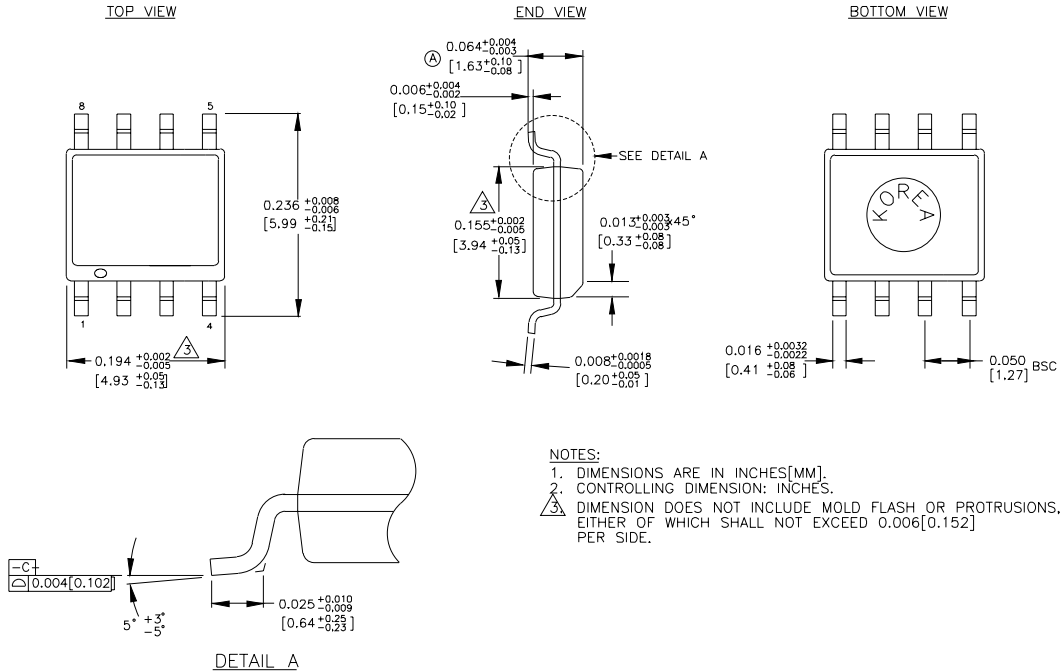
8 LEAD MSOP (K8-1)



- NOTES:**
1. DIMENSIONS ARE IN MM [INCHES].
 2. CONTROLLING DIMENSION: MM
 3. DIMENSION DOES NOT INCLUDE MOLD FLASH OR PROTRUSIONS, EITHER OF WHICH SHALL NOT EXCEED 0.20 [0.008] PER SIDE.

Rev. 01

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



Rev. 03

MICREL-SYNERGY 3250 SCOTT BOULEVARD SANTA CLARA CA 95054 USA

TEL + 1 (408) 980-9191 FAX + 1 (408) 914-7878 WEB <http://www.synergyssemi.com> <http://www.micrel.com>

This information is believed to be accurate and reliable, however no responsibility is assumed by Micrel for its use nor for any infringement of patents or other rights of third parties resulting from its use. No license is granted by implication or otherwise under any patent or patent right of Micrel Inc.

© 2000 Micrel Incorporated