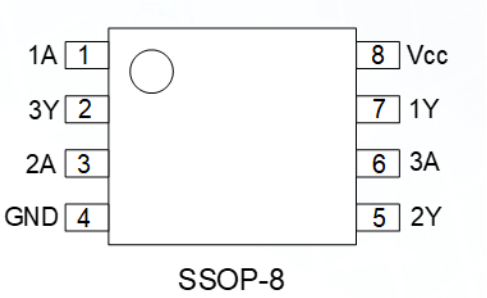
## Description

The 74LVC3G34 is a triple buffer gate with standard push-pull outputs. The device is designed for operation with a power supply range of 1.65V to 5.5V. The inputs are tolerant to 5.5V allowing this device to be used in a mixed voltage environment. The device is fully specified for partial power down applications using $I_{OFF}$. The $I_{OFF}$ circuitry disables the output preventing damaging current backflow when the device is powered down.

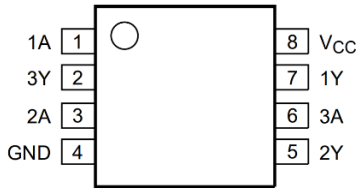
Each of the buffers performs the positive Boolean function:

$Y = A$

## Pin Assignments




SSOP-8




VSSOP-8

## Features

- Wide Supply Voltage Range from 1.65V to 5.5V
- ±24mA Output Drive at 3.3V
- CMOS Low-Power Consumption
- $I_{OFF}$ Supports Partial Power Down Mode Operation
- Inputs Accept up to 5.5V
- ESD Protection Tested per JESD 22
  Exceeds 2000V Human Body Model (A114)
  Exceeds 1000V Charged Device Model (C101)
- Latch-Up Exceeds 100mA per JESD 78, Class I
- Range of Package Options
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/104/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please contact us or your local Diodes representative.**
  **https://www.diodes.com/quality/product-definitions/**

## Applications

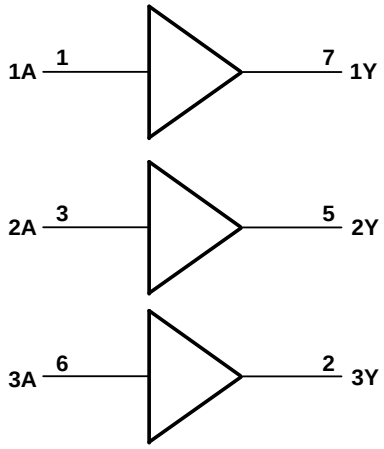
- Voltage-level shifting
- General-purpose logic
- Power down signal isolation
- Wide array of products such as:
  - PCs, networking, notebooks, netbooks, PDAs
  - Computer peripherals, hard drives, CD/DVD ROM
  - TV, DVD, DVR, set top boxes
  - Cell phones, personal navigation/GPS
  - MP3 players, cameras, video recorders

Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
2. See https://www.diodes.com/quality/lead-free/ for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

## Pin Descriptions

| Pin Name | Pin NO. | Description |
|---|---|---|
| 1A | 1 | Data Input |
| 3Y | 2 | Data Output |
| 2A | 3 | Data Input |
| GND | 4 | Ground |
| 2Y | 5 | Data Output |
| 3A | 6 | Data Input |
| 1Y | 7 | Data Output |
| $V_{CC}$ | 8 | Supply Voltage |

## Logic Diagram




## Function Table

| Inputs | Output |
|---|---|
| **A** | **Y** |
| H | H |
| L | L |

## Absolute Maximum Ratings (Notes 4, 5)

| Symbol | Description | Rating | Unit |
|---|---|---|---|
| ESD HBM | Human Body Model ESD Protection | 2 | kV |
| ESD CDM | Charged Device Model ESD Protection | 1 | kV |
| $V_{CC}$ | Supply Voltage Range | -0.5 to 6.5 | V |
| $V_I$ | Input Voltage Range | -0.5 to 6.5 | V |
| $V_O$ | Voltage Applied to Output in High Impedance or $I_{OFF}$ State | -0.5 to 6.5 | V |
| $V_O$ | Voltage Applied to Output in High or Low State | -0.5 to $V_{CC}$ + 0.5 | V |
| $I_{IK}$ | Input Clamp Current $V_I < 0$ | -50 | mA |
| $I_{OK}$ | Output Clamp Current $V_O < 0$ | -50 | mA |
| $I_O$ | Continuous Output Current | ±50 | mA |
| $I_{CC}$, $I_{GND}$ | Continuous Current Through $V_{CC}$ or GND | ±100 | mA |
| $T_J$ | Junction Temperature | +150 | °C |
| $T_{STG}$ | Storage Temperature | -65 to +150 | °C |

Notes: 4. Stresses beyond the absolute maximum can result in immediate failure or reduced reliability. These are stress values and device operation should be within recommended values.
5. Forcing the maximum allowed voltage could cause a condition exceeding the maximum current or conversely forcing the maximum current could cause a condition exceeding the maximum voltage. The ratings of both current and voltage must be maintained within the controlled range.

## Recommended Operating Conditions (Note 6)

| Symbol | Parameter | Conditions | Min | Max | Unit |
|---|---|---|---|---|---|
| $V_{CC}$ | Operating Voltage | Operating | 1.65 | 5.5 | V |
| | | Data Retention Only | 1.5 | — | V |
| $V_{IH}$ | High-Level Input Voltage | $V_{CC}$ = 1.65V to 1.95V | 0.65 X $V_{CC}$ | — | V |
| | | $V_{CC}$ = 2.3V to 2.7V | 1.7 | — | |
| | | $V_{CC}$ = 3V to 3.6V | 2 | — | |
| | | $V_{CC}$ = 4.5V to 5.5V | 0.7 X $V_{CC}$ | — | |
| $V_{IL}$ | Low-Level Input Voltage | $V_{CC}$ = 1.65V to 1.95V | — | 0.35 X $V_{CC}$ | V |
| | | $V_{CC}$ = 2.3V to 2.7V | — | 0.7 | |
| | | $V_{CC}$ = 3V to 3.6V | — | 0.8 | |
| | | $V_{CC}$ = 4.5V to 5.5V | — | 0.3 X $V_{CC}$ | |
| $V_I$ | Input Voltage | — | 0 | 5.5 | V |
| $V_O$ | Output Voltage | — | 0 | $V_{CC}$ | V |
| $I_{OH}$ | High-Level Output Current | $V_{CC}$ = 1.65V | — | -4 | mA |
| | | $V_{CC}$ = 2.3V | — | -8 | |
| | | $V_{CC}$ = 3V | — | -16 | |
| | | | — | -24 | |
| | | $V_{CC}$ = 4.5V | — | -32 | |
| $I_{OL}$ | Low-Level Output Current | $V_{CC}$ = 1.65V | — | 4 | mA |
| | | $V_{CC}$ = 2.3V | — | 8 | |
| | | $V_{CC}$ = 3V | — | 16 | |
| | | | — | 24 | |
| | | $V_{CC}$ = 4.5V | — | 32 | |
| Δt/ΔV | Input Transition Rise or Fall Rate | $V_{CC}$ = 1.8V ± 0.15V, 2.5V ± 0.2V | — | 20 | ns/V |
| | | $V_{CC}$ = 1.65V to 2.7V | — | 10 | |
| | | $V_{CC}$ = 2.7V to 5V | — | 5 | |
| $T_A$ | Operating Free-Air Temperature | — | -40 | +125 | °C |

Note: 6. Unused inputs should be held at $V_{CC}$ or Ground for device proper operation.

## Electrical Characteristics

| Symbol | Parameter | Test Conditions | $V_{CC}$ | -40°C to +85°C | | -40°C to +125°C | | Unit |
|---|---|---|---|---|---|---|---|---|
| | | | | Min | Max | Min | Max | |
| $V_{OH}$ | High-Level Output Voltage | $I_{OH}$ = -100µA | 1.65V to 5.5V | $V_{CC}$ – 0.1 | — | $V_{CC}$ – 0.1 | — | V |
| | | $I_{OH}$ = -4mA | 1.65V | 1.2 | — | 1.2 | — | |
| | | $I_{OH}$ = -8mA | 2.3V | 1.9 | — | 1.9 | — | |
| | | $I_{OH}$ = -16mA | 3V | 2.4 | — | 2.4 | — | |
| | | $I_{OH}$ = -24mA | | 2.3 | — | 2.3 | — | |
| | | $I_{OH}$ = -32mA | 4.5V | 3.8 | — | 3.8 | — | |
| $V_{OL}$ | Low-Level Output Voltage | $I_{OL}$ = 100µA | 1.65V to 5.5V | — | 0.1 | — | 0.1 | V |
| | | $I_{OL}$ = 4mA | 1.65V | — | 0.45 | — | 0.45 | |
| | | $I_{OL}$ = 8mA | 2.3V | — | 0.3 | — | 0.3 | |
| | | $I_{OL}$ = 16mA | 3V | — | 0.4 | — | 0.4 | |
| | | $I_{OL}$ = 24mA | | — | 0.55 | — | 0.75 | |
| | | $I_{OL}$ = 32mA | 4.5V | — | 0.55 | — | 0.75 | |
| $I_I$ | Input Current | $V_I$ = 5.5V or GND | 0 to 5.5V | — | ±5 | — | ±5 | µA |
| $I_{OFF}$ | Power Down Leakage Current | $V_I$ or $V_O$ = 5.5V | 0 | — | ±10 | — | ±10 | µA |
| $I_{CC}$ | Supply Current | $V_I$ = 5.5V or GND, $I_O$ = 0 | 1.65V to 5.5V | — | 10 | — | 10 | µA |
| $\Delta I_{CC}$ | Additional Supply Current | Input at $V_{CC}$ – 0.6V | 3V to 5.5V | — | 500 | — | 500 | µA |
| $C_I$ | Input Capacitance | $V_I$ = $V_{CC}$ or GND | 3.3V | — | 3.5 (Typ) | — | — | pF |

## Package Characteristics

| Symbol | Parameter | Package | Test Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|---|
| $\Theta_{JA}$ | Thermal Resistance Junction-to-Ambient | SSOP-8 | Note 7 | — | 130 | — | °C/W |
| | | VSSOP-8 | Note 7 | — | 155 | — | °C/W |
| $\Theta_{JC}$ | Thermal Resistance Junction-to-Case | SSOP-8 | Note 7 | — | 36 | — | °C/W |
| | | VSSOP-8 | Note 7 | — | 38 | — | °C/W |

Note: 7. Test condition: Device mounted on JEDEC 2s2p High-K board, FR-4 substrate PCB, 2oz copper with minimum recommended pad layout.

## Operating Characteristics ($T_A$ = +25°C, $V_{CC}$ = 3.3V)

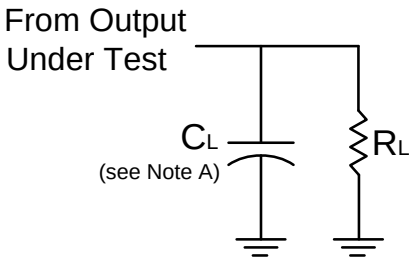
| Symbol | Parameter | Test Conditions | $V_{CC}$ = 1.8V | $V_{CC}$ = 2.5V | $V_{CC}$ = 3.3V | $V_{CC}$ = 5V | Unit |
|---|---|---|---|---|---|---|---|
| | | | Typ | Typ | Typ | Typ | |
| $C_{PD}$ | Power Dissipation Capacitance | f = 10MHz, 1 Input Switching | 19 | 19 | 19 | 21 | pF |

## Switching Characteristics

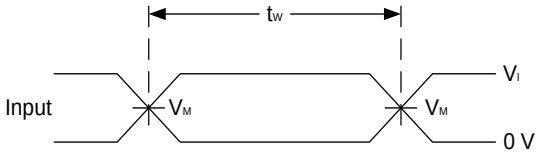
Figure 1

| Parameter | From Input | To Output | $V_{CC}$ | $T_A$ = -40°C to +85°C | | $T_A$ = -40°C to +125°C | | Unit |
|---|---|---|---|---|---|---|---|---|
| | | | | Min | Max | Min | Max | |
| $t_{PD}$ | A | Y | 1.8V ± 0.15V | 3.2 | 7.9 | 3.2 | 8.9 | ns |
| | | | 2.5V ± 0.2V | 1.5 | 4.4 | 1.5 | 5.4 | |
| | | | 3.3V ± 0.3V | 1.4 | 4.1 | 1.4 | 5.1 | |
| | | | 5.0V ± 0.5V | 1.1 | 3.2 | 1.1 | 3.8 | |

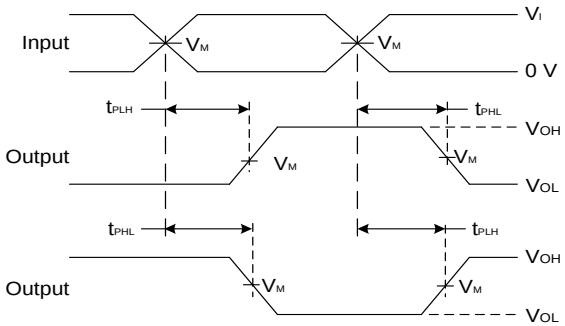
## Parameter Measurement Information (Notes B, C, D)




| $V_{CC}$ | Inputs | | $V_M$ | $C_L$ | $R_L$ |
|---|---|---|---|---|---|
| | $V_I$ | $t_r/t_f$ | | | |
| 1.8V ± 0.15V | $V_{CC}$ | ≤2ns | $V_{CC}$ / 2 | 30pF | 1kΩ |
| 2.5V ± 0.2V | $V_{CC}$ | ≤2ns | $V_{CC}$ / 2 | 30pF | 500Ω |
| 3.3V ± 0.3V | 3V | ≤2.5ns | 1.5V | 50pF | 500Ω |
| 5.0V ± 0.5V | $V_{CC}$ | ≤2.5ns | $V_{CC}$ / 2 | 50pF | 500Ω |




**Voltage Waveform Pulse Duration**

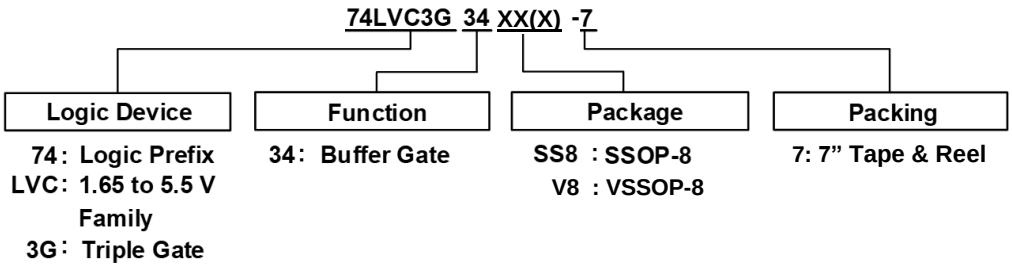



**Voltage Waveform Propagation Delay Time**
**Inverting and Noninverting Outputs**

**Figure 1. Load Circuit and Voltage Waveforms**

Notes:
A. Includes test lead and test apparatus capacitance.
B. All pulses are supplied at pulse repetition rate ≤ 10MHz.
C. Inputs are measured separately one transition per measurement.
D. $t_{PLH}$ and $t_{PHL}$ are the same as $t_{PD}$.

## Ordering Information



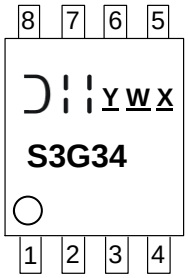

| Part Number | Package Code | Package | Packing | |
|---|---|---|---|---|
| | | | Qty. | Carrier |
| 74LVC3G34SS8-7 | SS8 | SSOP-8 | 3000 | 7" Tape and Reel (Note 8) |
| 74LVC3G34V8-7 | V8 | VSSOP-8 | 3000 | 7" Tape and Reel (Note 8) |

Note: 8. The taping orientation is located on our website at http://www.diodes.com/package-outlines.html.

## Marking Information

**SSOP-8**

**(Top View)**




Y : Year : 0 to 9
W : Week : A to Z : 1 to 26 week;
a to z : 27 to 52 week; z represents 52 and 53 week
X : Internal Code

| Part Number | Package | Identification Code |
|---|---|---|
| 74LVC3G34SS8-7 | SSOP-8 | S3G34 |

**VSSOP-8**

**(Top View)**

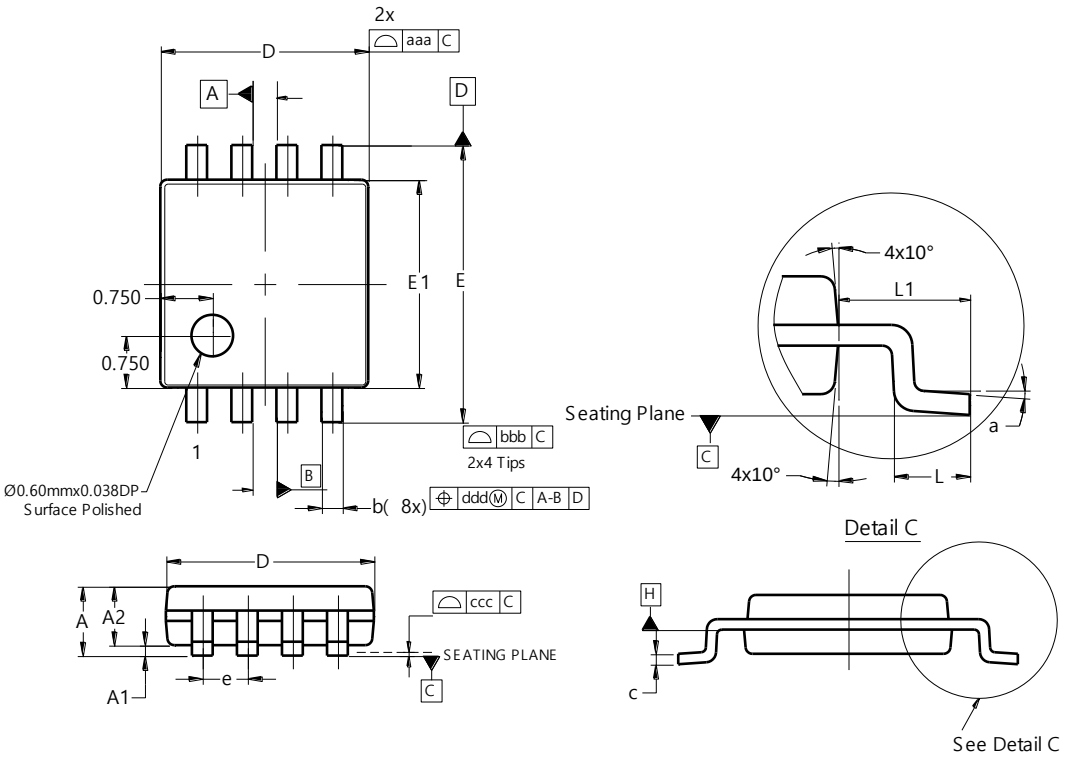

Y : Year : 0 to 9
W : Week : A to Z : 1 to 26 week;
a to z : 27 to 52 week; z represents 52 and 53 week
X : Internal Code

| Part Number | Package | Identification Code |
|---|---|---|
| 74LVC3G34V8-7 | VSSOP-8 | V3G34 |

## Package Outline Dimensions

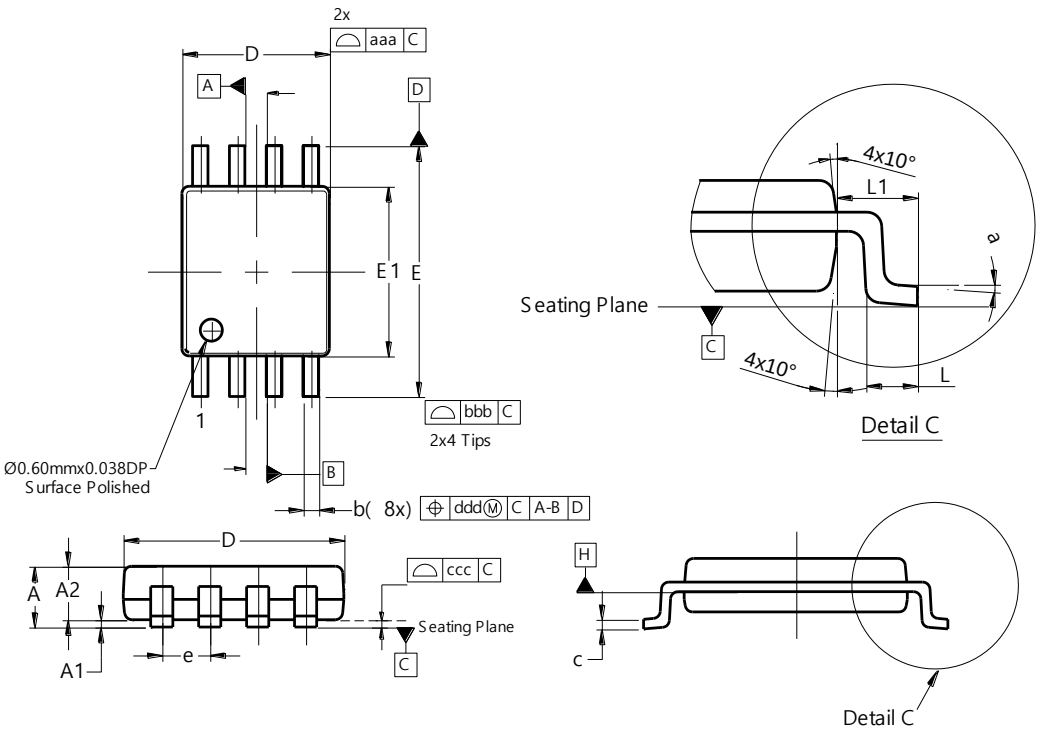
Please see http://www.diodes.com/package-outlines.html for the latest version.

**SSOP-8**




| SSOP-8 | | | |
|---|---|---|---|
| **Dim** | **Min** | **Max** | **Typ** |
| **A** | -- | 1.30 | -- |
| **A1** | 0.05 | 0.15 | -- |
| **A2** | 0.95 | 1.20 | 1.05 |
| **b** | 0.15 | 0.30 | 0.225 |
| **c** | 0.08 | 0.23 | -- |
| **D** | 2.75 | 3.15 | 2.95 |
| **E** | 3.75 | 4.25 | 4.00 |
| **E1** | 2.70 | 2.90 | 2.80 |
| **e** | -- | -- | 0.65 |
| **L** | 0.20 | 0.60 | 0.40 |
| **L1** | 0.525 | 0.675 | 0.60 |
| **a** | 0° | 8° | 4° |
| **aaa** | 0.20 | | |
| **bbb** | 0.25 | | |
| **ccc** | 0.10 | | |
| **ddd** | 0.13 | | |
| **All Dimensions in mm** | | | |

**VSSOP-8**

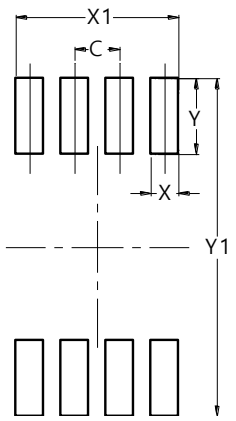



| VSSOP-8 | | | |
|---|---|---|---|
| **Dim** | **Min** | **Max** | **Typ** |
| **A** | 0.60 | 0.90 | -- |
| **A1** | -- | 0.10 | -- |
| **A2** | 0.60 | 0.80 | -- |
| **b** | 0.17 | 0.25 | 0.21 |
| **c** | 0.08 | 0.13 | -- |
| **D** | 1.90 | 2.10 | 2.00 |
| **E** | 3.20 | 3.60 | 3.40 |
| **E1** | 2.20 | 2.40 | 2.30 |
| **e** | -- | -- | 0.50 |
| **L** | 0.30 | 0.40 | 0.35 |
| **L1** | 0.50 | 0.60 | 0.55 |
| **a** | 0° | 6° | 3° |
| **aaa** | 0.20 | | |
| **bbb** | 0.25 | | |
| **ccc** | 0.10 | | |
| **ddd** | 0.13 | | |
| **All Dimensions in mm** | | | |

## Suggested Pad Layout

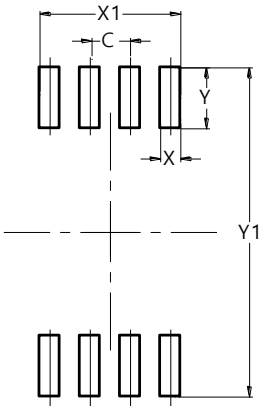
Please see http://www.diodes.com/package-outlines.html for the latest version.

**SSOP-8**




| Dimensions | Value (in mm) |
|---|---|
| C | 0.650 |
| X | 0.400 |
| X1 | 2.350 |
| Y | 1.100 |
| Y1 | 4.900 |

**VSSOP-8**




| Dimensions | Value (in mm) |
|---|---|
| C | 0.500 |
| X | 0.250 |
| X1 | 1.750 |
| Y | 0.750 |
| Y1 | 4.050 |

## Mechanical Data

**SSOP-8**

- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Mate Tin Plated Leads, Solderable per MIL-STD-202, Method 208 e3
- Weight: 0.0169 grams (Approximate)

**VSSOP-8**

- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Mate Tin Plated Leads, Solderable per MIL-STD-202, Method 208 e3
- Weight: 0.011 grams (Approximate)

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