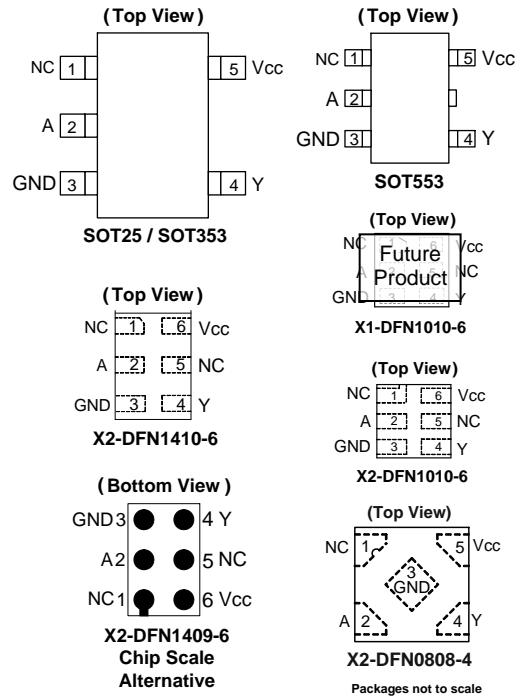


## Description

The 74LVC1G14 is a single 1-input Schmitt-trigger inverter with a standard push-pull output. 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<sub>OFF</sub>. The I<sub>OFF</sub> circuitry disables the output preventing damaging current backflow when the device is powered down. The gate performs the positive Boolean function:

$$Y = \overline{A}$$

## Pin Assignments



## Features

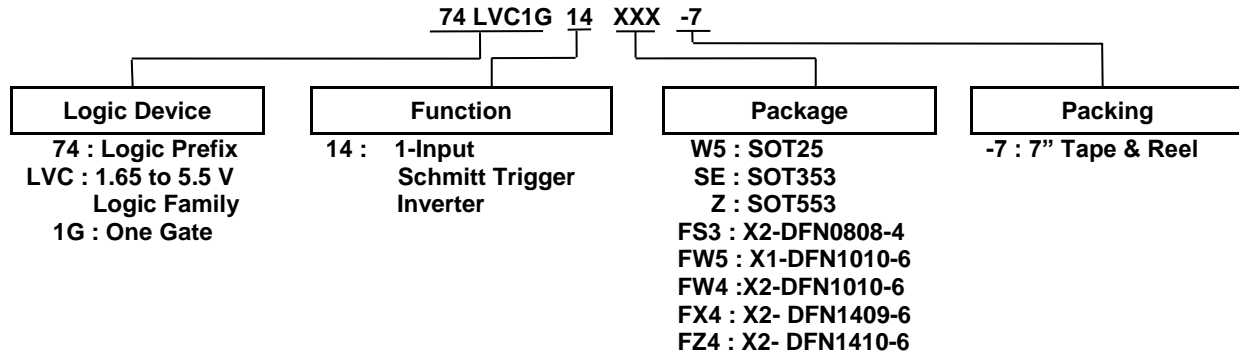
- Wide Supply Voltage Range from 1.65V to 5.5V
- ± 24mA Output Drive at 3.3V
- CMOS low power consumption
- IOFF Supports Partial-Power-Down Mode Operation
- Inputs accept up to 5.5V
- ESD Protection Exceeds JESD 22
  - 200-V Machine Model (A115)
  - 2000-V Human Body Model (A114)
- Latch-Up Exceeds 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)**

## 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 box
  - 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) compliant.  
 2. See <http://www.diodes.com> 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 < 1000 ppm antimony compounds.

## Ordering Information



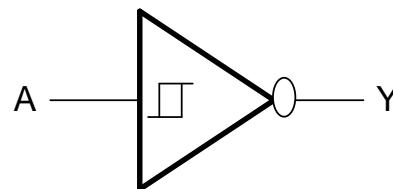
| Device                                    | Package Code | Package (Notes 4 & 5)                           | Package Size   | 7" Tape and Reel  |                    |
|---|--------------|---|--|-------------------|--------------------|
|   |              |   |  | Quantity          | Part Number Suffix |
| 74LVC1G14W5-7                             | W5           | SOT25   | 3.0mm X 2.8mm X 1.2mm<br>0.95mm lead pitch           | 3,000/Tape & Reel | -7                 |
| 74LVC1G14SE-7                             | SE           | SOT353  | 2.0mm X 2.0mm X 1.1mm<br>0.65mm lead pitch           | 3,000/Tape & Reel | -7                 |
| 74LVC1G14Z-7                              | SE           | SOT553  | 1.6mm X 1.6 mm X 0.62mm<br>0.5mm lead pitch          | 4,000/Tape & Reel | -7                 |
| 74LVC1G14FS3-7                            | FS3          | X2-DFN0808-4                                    | 0.9mm X 0.9 mm X 0.35mm<br>0.5mm pad pitch (diamond) | 5,000/Tape & Reel | -7                 |
| 74LVC1G14FW5-7<br><b>(Future Product)</b> | FW5          | X1-DFN1010-6<br><b>(Future Product)</b>         | 1.0mm X 1.0mm X 0.5mm<br>0.35mm pad pitch            | 5,000/Tape & Reel | -7                 |
| 74LVC1G14FW4-7                            | FW4          | X2-DFN1010-6                                    | 1.0mm X 1.0mm X 0.4mm<br>0.35mm pad pitch            | 5,000/Tape & Reel | -7                 |
| 74LVC1G14FX4-7                            | FX4          | X2-DFN1409-6<br><b>(Chip Scale Alternative)</b> | 1.4mm X 0.9mm X 0.4mm<br>0.5mm pad pitch             | 5,000/Tape & Reel | -7                 |
| 74LVC1G14FZ4-7                            | FZ4          | X2-DFN1410-6                                    | 1.4mm X 1.0mm X 0.4mm<br>0.5mm pad pitch             | 5,000/Tape & Reel | -7                 |

Notes: 4. Pad layout as shown on Diodes' suggested pad layout, which can be found on our website at <http://www.diodes.com/package-outlines.html>.  
 5. The taping orientation is located on our website at <https://www.diodes.com/assets/Diodes-Packaging/ap02007.pdf>.

### Pin Descriptions

| Pin Name        | Description    |
|-----------------|----------------|
| A               | Data Input     |
| GND             | Ground         |
| Y               | Data Output    |
| V <sub>CC</sub> | Supply Voltage |

### Logic Diagram



### Function Table

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

**Absolute Maximum Ratings** (Notes 6, 7)

| Symbol                             | Description   | Rating                       | Unit |
|------------------------------------|---|------------------------------|------|
| ESD HBM                            | Human Body Model ESD Protection                                       | 2                            | kV   |
| ESD MM                             | Machine Model ESD Protection  | 200                          | V    |
| V <sub>CC</sub>                    | Supply Voltage Range  | -0.5 to 6.5                  | V    |
| V <sub>I</sub>                     | Input Voltage Range   | -0.5 to 6.5                  | V    |
| V <sub>O</sub>                     | Voltage Applied to Output in High Impedance or I <sub>OFF</sub> State | -0.5 to 6.5                  | V    |
| V <sub>O</sub>                     | Voltage Applied to Output in High or Low State                        | -0.5 to V <sub>CC</sub> +0.5 | V    |
| I <sub>IK</sub>                    | Input Clamp Current V <sub>I</sub> < 0                                | -50                          | mA   |
| I <sub>OK</sub>                    | Output Clamp Current  | -50                          | mA   |
| I <sub>O</sub>                     | Continuous Output Current   | ±50                          | mA   |
| I <sub>CC</sub> , I <sub>GND</sub> | Continuous Current Through V <sub>CC</sub> or GND                     | ±100                         | mA   |
| T <sub>J</sub>                     | Operating Junction Temperature  | -40 to 150                   | °C   |
| T <sub>STG</sub>                   | Storage Temperature   | -65 to 150                   | °C   |

- Notes:
- Stresses beyond the absolute maximum may result in immediate failure or reduced reliability. These are stress values and device operation should be within recommend values.
  - 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 8)

| Symbol          | Parameter                      | Min                     | Max             | Unit |    |
|-----------------|--------------------------------|-------------------------|-----------------|------|----|
| V <sub>CC</sub> | Operating Voltage              | 1.65                    | 5.5             | V    |    |
|                 | Data retention only            | 1.5                     | —               | V    |    |
| V <sub>I</sub>  | Input Voltage                  | 0                       | 5.5             | V    |    |
| V <sub>O</sub>  | Output Voltage                 | 0                       | V <sub>CC</sub> | V    |    |
| I <sub>OH</sub> | High-Level Output Current      | V <sub>CC</sub> = 1.65V | —               | -4   | mA |
|                 |                                | V <sub>CC</sub> = 2.3V  | —               | -8   |    |
|                 |                                | V <sub>CC</sub> = 2.7V  | —               | -12  |    |
|                 |                                | V <sub>CC</sub> = 3V    | —               | -16  |    |
|                 |                                | V <sub>CC</sub> = 4.5V  | —               | -32  |    |
| I <sub>OL</sub> | Low-Level Output Current       | V <sub>CC</sub> = 1.65V | —               | 4    | mA |
|                 |                                | V <sub>CC</sub> = 2.3V  | —               | 8    |    |
|                 |                                | V <sub>CC</sub> = 2.7V  | —               | 12   |    |
|                 |                                | V <sub>CC</sub> = 3V    | —               | 16   |    |
|                 |                                | V <sub>CC</sub> = 4.5V  | —               | 32   |    |
| T <sub>A</sub>  | Operating Free-Air Temperature | —                       | -40             | +125 | °C |

- Note: 8. Unused inputs should be held at V<sub>CC</sub> or Ground.

**Electrical Characteristics** (@ $T_A = -40^\circ\text{C}$  to  $+85^\circ\text{C}$ . All typical values are at  $V_{CC} = 3.3\text{V}$ ,  $T_A = +25^\circ\text{C}$ )

| Symbol          | Parameter                               | Test Conditions                         | $V_{CC}$      | Min            | Typ. | Max      | Unit          |
|-----------------|---|---|---------------|----------------|------|----------|---------------|
| $V_{T+}$        | Positive-Going Input Threshold Voltage  | —                                       | 1.65V         | 0.70           | —    | 1.20     | —             |
|                 |   | —                                       | 2.3V          | 1.11           | —    | 1.60     | —             |
|                 |   | —                                       | 3V            | 1.50           | —    | 2.00     | —             |
|                 |   | —                                       | 4.5V          | 2.16           | —    | 2.74     | —             |
|                 |   | —                                       | 5.5V          | 2.61           | —    | 3.33     | —             |
| $V_{T-}$        | Negative- Going Input Threshold Voltage | —                                       | 1.65V         | 0.30           | —    | 0.72     | —             |
|                 |   | —                                       | 2.3V          | 0.58           | —    | 1.00     | —             |
|                 |   | —                                       | 3V            | 0.80           | —    | 1.30     | —             |
|                 |   | —                                       | 4.5V          | 1.21           | —    | 1.95     | —             |
|                 |   | —                                       | 5.5V          | 1.45           | —    | 2.35     | —             |
| $\Delta V_T$    | Hysteresis ( $V_{T+} - V_{T-}$ )        | —                                       | 1.65V         | 0.30           | —    | 0.62     | —             |
|                 |   | —                                       | 2.3V          | 0.40           | —    | 0.80     | —             |
|                 |   | —                                       | 3V            | 0.35           | —    | 1.00     | —             |
|                 |   | —                                       | 4.5V          | 0.55           | —    | 1.10     | —             |
|                 |   | —                                       | 5.5V          | 0.60           | —    | 1.20     | —             |
| $V_{OH}$        | High Level Output Voltage               | $I_{OH} = -100\mu\text{A}$              | 1.65V to 5.5V | $V_{CC} - 0.1$ | —    | —        | V             |
|                 |   | $I_{OH} = -4\text{mA}$                  | 1.65V         | 1.2            | —    | —        |               |
|                 |   | $I_{OH} = -8\text{mA}$                  | 2.3V          | 1.9            | —    | —        |               |
|                 |   | $I_{OH} = -12\text{mA}$                 | 2.7V          | 2.2            | —    | —        |               |
|                 |   | $I_{OH} = -16\text{mA}$                 | 3V            | 2.4            | —    | —        |               |
|                 |   | $I_{OH} = -24\text{mA}$                 |               | 2.3            | —    | —        |               |
|                 |   | $I_{OH} = -32\text{mA}$                 | 4.5V          | 3.8            | —    | —        |               |
| $V_{OL}$        | Low-Level Output Voltage                | $I_{OL} = 100\mu\text{A}$               | 1.65V to 5.5V | —              | —    | 0.1      | V             |
|                 |   | $I_{OL} = 4\text{mA}$                   | 1.65V         | —              | —    | 0.45     |               |
|                 |   | $I_{OL} = 8\text{mA}$                   | 2.3V          | —              | —    | 0.3      |               |
|                 |   | $I_{OL} = 12\text{mA}$                  | 2.7V          | —              | —    | 0.4      |               |
|                 |   | $I_{OL} = 16\text{mA}$                  | 3V            | —              | —    | 0.4      |               |
|                 |   | $I_{OL} = 24\text{mA}$                  |               | —              | —    | 0.55     |               |
|                 |   | $I_{OL} = 32\text{mA}$                  | 4.5           | —              | —    | 0.55     |               |
| $I_I$           | Input Current                           | $V_I = 5.5\text{V}$ or GND              | 0 to 5.5V     | —              | —    | $\pm 5$  | $\mu\text{A}$ |
| $I_{OFF}$       | Power Down Leakage Current              | $V_I$ or $V_O = 5.5\text{V}$            | 0             | —              | —    | $\pm 10$ | $\mu\text{A}$ |
| $I_{CC}$        | Supply Current                          | $V_I = 5.5\text{V}$ of GND<br>$I_O = 0$ | 1.65V to 5.5V | —              | —    | 10       | $\mu\text{A}$ |
| $\Delta I_{CC}$ | Additional Supply Current               | Input at $V_{CC} - 0.6\text{V}$         | 3V to 5.5V    | —              | —    | 500      | $\mu\text{A}$ |

**Electrical Characteristics** (Continued) (@ $T_A = -40^\circ\text{C}$  to  $+85^\circ\text{C}$ . All typical values are at  $V_{CC} = 3.3\text{V}$ ,  $T_A = +25^\circ\text{C}$ )

| Symbol          | Parameter                               | Test Conditions                         | $V_{CC}$      | Min            | Typ. | Max       | Unit          |
|-----------------|---|---|---------------|----------------|------|-----------|---------------|
| $V_{T+}$        | Positive- Going Input Threshold Voltage | —                                       | 1.65V         | 0.70           | —    | 1.20      | —             |
|                 |   | —                                       | 2.3V          | 1.11           | —    | 1.60      | —             |
|                 |   | —                                       | 3V            | 1.50           | —    | 2.00      | —             |
|                 |   | —                                       | 4.5V          | 2.16           | —    | 2.74      | —             |
|                 |   | —                                       | 5.5V          | 2.61           | —    | 3.33      | —             |
| $V_{T-}$        | Negative- Going Input Threshold Voltage | —                                       | 1.65V         | 0.30           | —    | 0.75      | —             |
|                 |   | —                                       | 2.3V          | 0.58           | —    | 1.03      | —             |
|                 |   | —                                       | 3V            | 0.80           | —    | 1.33      | —             |
|                 |   | —                                       | 4.5V          | 1.21           | —    | 1.95      | —             |
|                 |   | —                                       | 5.5V          | 1.45           | —    | 2.35      | —             |
| $\Delta V_T$    | Hysteresis ( $V_{T+} - V_{T-}$ )        | —                                       | 1.65V         | 0.30           | —    | 0.62      | —             |
|                 |   | —                                       | 2.3V          | 0.37           | —    | 0.80      | —             |
|                 |   | —                                       | 3V            | 0.32           | —    | 1.00      | —             |
|                 |   | —                                       | 4.5V          | 0.50           | —    | 1.20      | —             |
|                 |   | —                                       | 5.5V          | 0.55           | —    | 1.40      | —             |
| $V_{OH}$        | High Level Output Voltage               | $I_{OH} = -100\mu\text{A}$              | 1.65V to 5.5V | $V_{CC} - 0.1$ | —    | —         | V             |
|                 |   | $I_{OH} = -4\text{mA}$                  | 1.65V         | 0.95           | —    | —         |               |
|                 |   | $I_{OH} = -8\text{mA}$                  | 2.3V          | 1.7            | —    | —         |               |
|                 |   | $I_{OH} = -12\text{mA}$                 | 2.7V          | 1.9            | —    | —         |               |
|                 |   | $I_{OH} = -16\text{mA}$                 | 3V            | 1.9            | —    | —         |               |
|                 |   | $I_{OH} = -24\text{mA}$                 |               | 2.0            | —    | —         |               |
|                 |   | $I_{OH} = -32\text{mA}$                 | 4.5V          | 3.4            | —    | —         |               |
| $V_{OL}$        | Low-Level Output Voltage                | $I_{OL} = 100\mu\text{A}$               | 1.65V to 5.5V | —              | —    | 0.1       | V             |
|                 |   | $I_{OL} = 4\text{mA}$                   | 1.65V         | —              | —    | 0.7       |               |
|                 |   | $I_{OL} = 8\text{mA}$                   | 2.3V          | —              | —    | 0.45      |               |
|                 |   | $I_{OL} = 12\text{mA}$                  | 2.7V          | —              | —    | 0.6       |               |
|                 |   | $I_{OL} = 16\text{mA}$                  | 3V            | —              | —    | 0.6       |               |
|                 |   | $I_{OL} = 24\text{mA}$                  |               | —              | —    | 0.8       |               |
|                 |   | $I_{OL} = 32\text{mA}$                  | 4.5V          | —              | —    | 0.8       |               |
| $I_I$           | Input Current                           | $V_I = 5.5\text{V}$ or GND              | 0 to 5.5V     | —              | —    | $\pm 100$ | $\mu\text{A}$ |
| $I_{OFF}$       | Power Down Leakage Current              | $V_I$ or $V_O = 5.5\text{V}$            | 0             | —              | —    | $\pm 200$ | $\mu\text{A}$ |
| $I_{CC}$        | Supply Current                          | $V_I = 5.5\text{V}$ of GND<br>$I_O = 0$ | 1.65V to 5.5V | —              | —    | 200       | $\mu\text{A}$ |
| $\Delta I_{CC}$ | Additional Supply Current               | Input at $V_{CC} - 0.6\text{V}$         | 3V to 5.5V    | —              | —    | 5,000     | $\mu\text{A}$ |

**Package Characteristics** (All typical values are at  $V_{CC} = 3.3V$ ,  $T_A = +25^\circ C$ )

| Symbol        | Parameter                                 | Test Conditions | $V_{CC}$ | Min | Typ. | Max | Unit         |
|---------------|---|-----------------|----------|-----|------|-----|--------------|
| $\theta_{JA}$ | Thermal Resistance<br>Junction-to-Ambient | SOT25           | (Note 9) | —   | 204  | —   | $^\circ C/W$ |
|               |   | SOT353          |          | —   | 371  | —   |              |
|               |   | SOT553          |          | —   | 231  | —   |              |
|               |   | X2-DFN0808-4    |          | —   | 400  | —   |              |
|               |   | X1-DFN1010-6    |          | —   | 435  | —   |              |
|               |   | X2-DFN1010-6    |          | —   | 445  | —   |              |
|               |   | X2-DFN1409-6    |          | —   | 470  | —   |              |
|               |   | X2-DFN1410-6    |          | —   | 460  | —   |              |
| $\theta_{JC}$ | Thermal Resistance<br>Junction-to-Case    | SOT25           | (Note 9) | —   | 52   | —   | $^\circ C/W$ |
|               |   | SOT353          |          | —   | 143  | —   |              |
|               |   | SOT553          |          | —   | 105  | —   |              |
|               |   | X2-DFN0808-4    |          | —   | 225  | —   |              |
|               |   | X1-DFN1010-6    |          | —   | 250  | —   |              |
|               |   | X2-DFN1010-6    |          | —   | 250  | —   |              |
|               |   | X2-DFN1409-6    |          | —   | 275  | —   |              |
|               |   | X2-DFN1410-6    |          | —   | 265  | —   |              |

Note: 9. Test condition for each of the 8 package types: Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.

**Switching Characteristics**

$T_A = -40^\circ C$  to  $+85^\circ C$ ,  $C_L = 15pF$  as noted (see Figure 1)

| Parameter | From Input | To Output | $V_{CC} = 1.8V \pm 0.15V$ |     | $V_{CC} = 2.5V \pm 0.2V$ |     | $V_{CC} = 3.3V \pm 0.3V$ |     | $V_{CC} = 5V \pm 0.5V$ |     | Unit |
|-----------|------------|-----------|---------------------------|-----|--------------------------|-----|--------------------------|-----|------------------------|-----|------|
|           |            |           | Min                       | Max | Min                      | Max | Min                      | Max | Min                    | Max |      |
| $t_{pd}$  | A          | Y         | 1.0                       | 9.9 | 0.7                      | 5.5 | 0.7                      | 4.6 | 0.7                    | 4.4 | ns   |

$T_A = -40^\circ C$  to  $+85^\circ C$ ,  $C_L = 30$  or  $50pF$  as noted (See Figure 2)

| Parameter | From Input | To Output | $V_{CC} = 1.8V \pm 0.15V$ |     | $V_{CC} = 2.5V \pm 0.2V$ |     | $V_{CC} = 3.3V \pm 0.3V$ |     | $V_{CC} = 5V \pm 0.5V$ |     | Unit |
|-----------|------------|-----------|---------------------------|-----|--------------------------|-----|--------------------------|-----|------------------------|-----|------|
|           |            |           | Min                       | Max | Min                      | Max | Min                      | Max | Min                    | Max |      |
| $t_{pd}$  | A          | Y         | 1.0                       | 11  | 0.7                      | 6.5 | 0.7                      | 5.5 | 0.7                    | 5   | ns   |

$T_A = -40^\circ C$  to  $+125^\circ C$ ,  $C_L = 15pF$  as noted (See Figure 1)

| Parameter | From Input | To Output | $V_{CC} = 1.8V \pm 0.15V$ |      | $V_{CC} = 2.5V \pm 0.2V$ |     | $V_{CC} = 3.3V \pm 0.3V$ |     | $V_{CC} = 5V \pm 0.5V$ |     | Unit |
|-----------|------------|-----------|---------------------------|------|--------------------------|-----|--------------------------|-----|------------------------|-----|------|
|           |            |           | Min                       | Max  | Min                      | Max | Min                      | Max | Min                    | Max |      |
| $t_{pd}$  | A          | Y         | 1.0                       | 12.5 | 0.7                      | 7.5 | 0.7                      | 6.5 | 0.7                    | 5.5 | ns   |

$T_A = -40^\circ C$  to  $+125^\circ C$ ,  $C_L = 30$  or  $50pF$  as noted (See Figure 2)

| Parameter | From Input | To Output | $V_{CC} = 1.8V \pm 0.15V$ |      | $V_{CC} = 2.5V \pm 0.2V$ |     | $V_{CC} = 3.3V \pm 0.3V$ |     | $V_{CC} = 5V \pm 0.5V$ |     | Unit |
|-----------|------------|-----------|---------------------------|------|--------------------------|-----|--------------------------|-----|------------------------|-----|------|
|           |            |           | Min                       | Max  | Min                      | Max | Min                      | Max | Min                    | Max |      |
| $t_{pd}$  | A          | Y         | 1.0                       | 14.0 | 0.7                      | 8.5 | 0.7                      | 7.0 | 0.7                    | 6.5 | ns   |

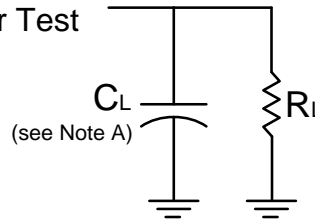
**Operating Characteristics**

T<sub>A</sub> = +25°C

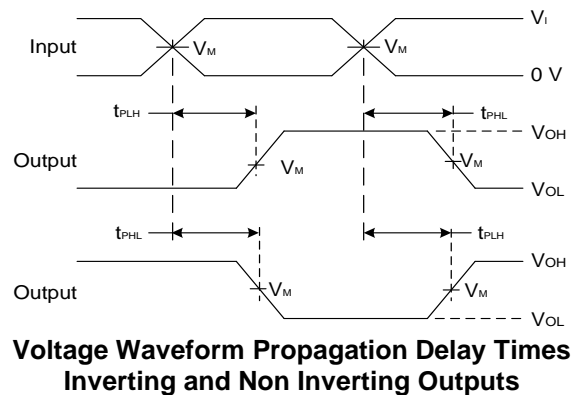
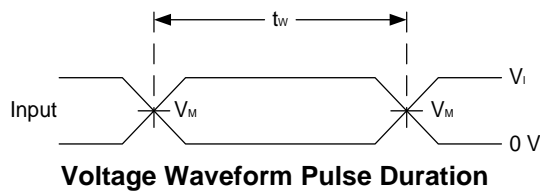
| Parameter       |                               | Test Conditions | V <sub>CC</sub> = 1.8V | V <sub>CC</sub> = 2.5V | V <sub>CC</sub> = 3.3V | V <sub>CC</sub> = 5V | Unit |
|-----------------|-------------------------------|-----------------|------------------------|------------------------|------------------------|----------------------|------|
|                 |                               |                 | Typ.                   | Typ.                   | Typ.                   | Typ.                 |      |
| C <sub>pd</sub> | Power Dissipation Capacitance | f = 10 MHz      | 20                     | 21                     | 22                     | 25                   | pF   |

**Parameter Measurement Information**

From Output Under Test



| V <sub>CC</sub> | Inputs          |                                | V <sub>M</sub>     | C <sub>L</sub> | R <sub>L</sub> |
|-----------------|-----------------|--------------------------------|--------------------|----------------|----------------|
|                 | V <sub>I</sub>  | t <sub>r</sub> /t <sub>f</sub> |                    |                |                |
| 1.8V±0.15V      | V <sub>CC</sub> | ≤2ns                           | V <sub>CC</sub> /2 | 15pF           | 1MΩ            |
| 2.5V±0.2V       | V <sub>CC</sub> | ≤2ns                           | V <sub>CC</sub> /2 | 15pF           | 1MΩ            |
| 3.3V±0.3V       | 3V              | ≤2.5ns                         | 1.5V               | 15pF           | 1MΩ            |
| 5V±0.5V         | V <sub>CC</sub> | ≤2.5ns                         | V <sub>CC</sub> /2 | 15pF           | 1MΩ            |

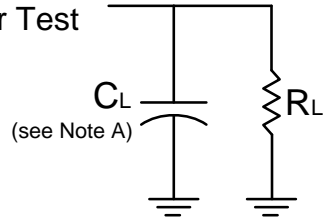


**Figure 1. Load Circuit and Voltage Waveforms**

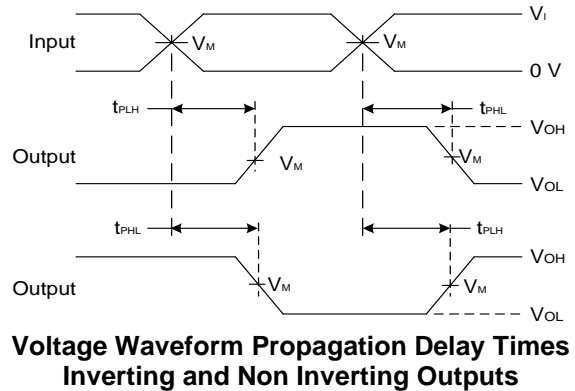
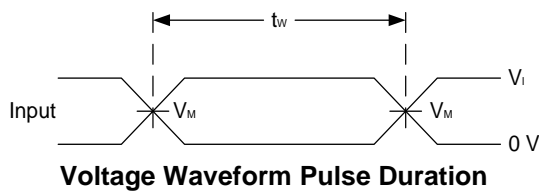
- Notes:
- A. Includes test lead and test apparatus capacitance.
  - B. All pulses are supplied at pulse repetition rate ≤ 10MHz.
  - C. Inputs are measured separately one transition per measurement.
  - D. t<sub>PLH</sub> and t<sub>PHL</sub> are the same as t<sub>PD</sub>.

**Parameter Measurement Information** (Continued)

From Output  
Under Test



| V <sub>CC</sub> | Inputs          |                                | V <sub>M</sub>     | C <sub>L</sub> | R <sub>L</sub> |
|-----------------|-----------------|--------------------------------|--------------------|----------------|----------------|
|                 | V <sub>I</sub>  | t <sub>r</sub> /t <sub>f</sub> |                    |                |                |
| 1.8V±0.15V      | V <sub>CC</sub> | ≤2ns                           | V <sub>CC</sub> /2 | 30pF           | 1kΩ            |
| 2.5V±0.2V       | V <sub>CC</sub> | ≤2ns                           | V <sub>CC</sub> /2 | 30pF           | 500Ω           |
| 3.3V±0.3V       | 3V              | ≤2.5ns                         | 1.5V               | 50pF           | 500Ω           |
| 5V±0.5V         | V <sub>CC</sub> | ≤2.5ns                         | V <sub>CC</sub> /2 | 50pF           | 500Ω           |



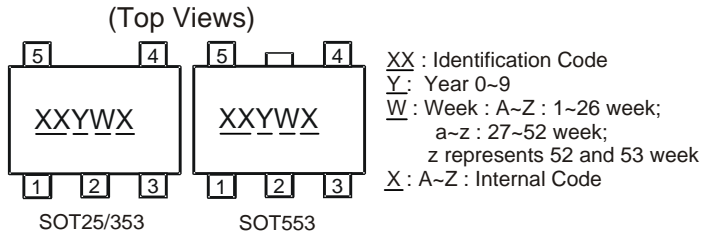
**Figure 2. Load Circuit and Voltage Waveforms**

- 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<sub>PLH</sub> and t<sub>PHL</sub> are the same as t<sub>PD</sub>.



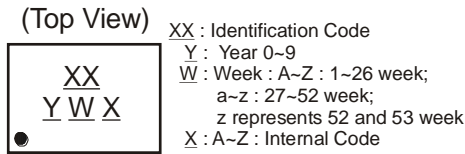
## Marking Information

(1) SOT25, SOT353 and SOT553



| Part Number   | Package | Identification Code |
|---------------|---------|---------------------|
| 74LVC1G14W5-7 | SOT25   | UP                  |
| 74LVC1G14SE-7 | SOT353  | UP                  |
| 74LVC1G14Z-7  | SOT553  | UP                  |

(2) DFN packages

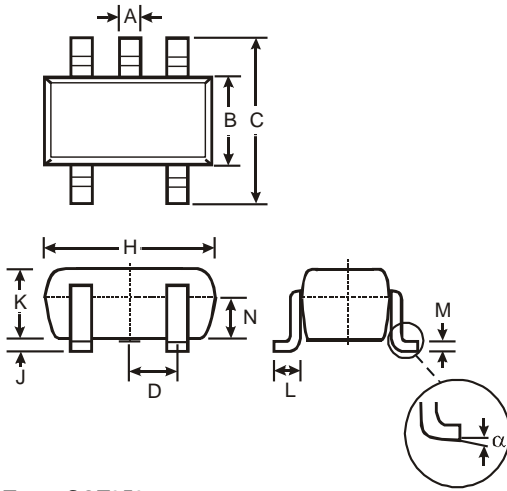


| Part Number    | Package      | Identification Code |
|----------------|--------------|---------------------|
| 74LVC1G14FS3-7 | X2-DFN0808-4 | WP                  |
| 74LVC1G14FW5-7 | X1-DFN1010-6 | V8                  |
| 74LVC1G14FW4-7 | X2-DFN1010-6 | UP                  |
| 74LVC1G14FX4-7 | X2-DFN1409-6 | MG                  |
| 74LVC1G14FZ4-7 | X2-DFN1410-6 | UP                  |

**Package Outline Dimensions**

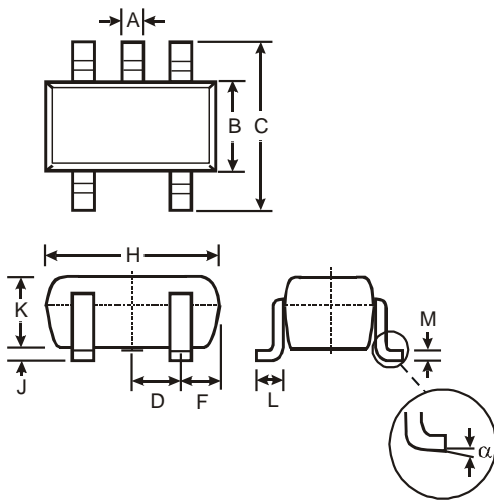
Please see <http://www.diodes.com/package-outlines.html> for the latest version.

**(1) Package Type: SOT25**



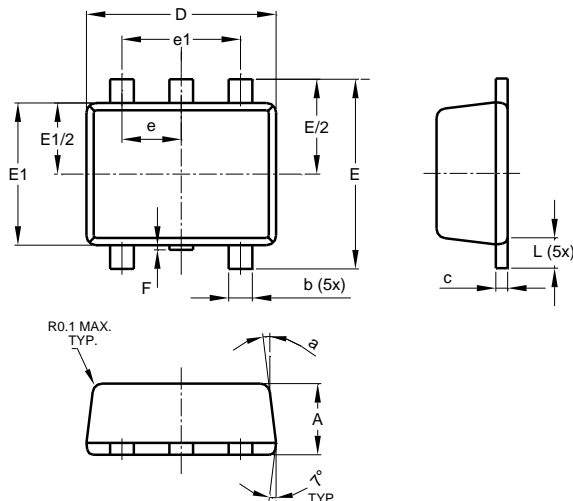
| SOT25                |       |      |      |
|----------------------|-------|------|------|
| Dim                  | Min   | Max  | Typ  |
| A                    | 0.35  | 0.50 | 0.38 |
| B                    | 1.50  | 1.70 | 1.60 |
| C                    | 2.70  | 3.00 | 2.80 |
| D                    | —     | —    | 0.95 |
| H                    | 2.90  | 3.10 | 3.00 |
| J                    | 0.013 | 0.10 | 0.05 |
| K                    | 1.00  | 1.30 | 1.10 |
| L                    | 0.35  | 0.55 | 0.40 |
| M                    | 0.10  | 0.20 | 0.15 |
| N                    | 0.70  | 0.80 | 0.75 |
| α                    | 0°    | 8°   | —    |
| All Dimensions in mm |       |      |      |

**(2) Package Type: SOT353**



| SOT353               |          |      |
|----------------------|----------|------|
| Dim                  | Min      | Max  |
| A                    | 0.10     | 0.30 |
| B                    | 1.15     | 1.35 |
| C                    | 2.00     | 2.20 |
| D                    | 0.65 Typ |      |
| F                    | 0.40     | 0.45 |
| H                    | 1.80     | 2.20 |
| J                    | 0        | 0.10 |
| K                    | 0.90     | 1.00 |
| L                    | 0.25     | 0.40 |
| M                    | 0.10     | 0.22 |
| α                    | 0°       | 8°   |
| All Dimensions in mm |          |      |

**(3) Package Type: SOT553**

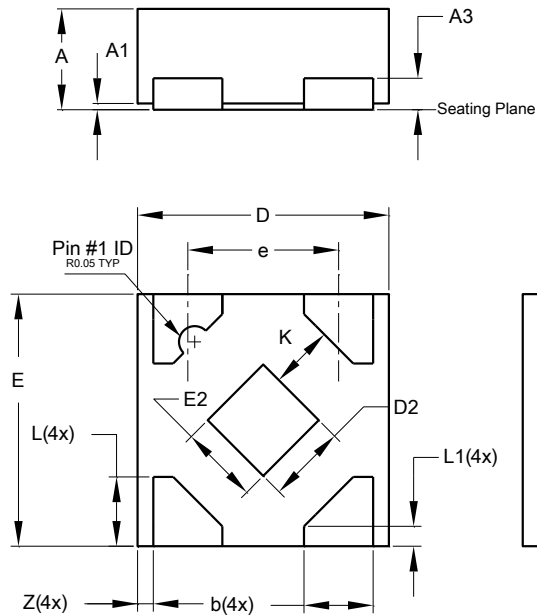


| SOT553               |          |      |      |
|----------------------|----------|------|------|
| Dim                  | Min      | Max  | Typ  |
| A                    | 0.55     | 0.62 | 0.60 |
| b                    | 0.15     | 0.30 | 0.20 |
| c                    | 0.10     | 0.18 | 0.15 |
| D                    | 1.50     | 1.70 | 1.60 |
| E                    | 1.55     | 1.70 | 1.60 |
| E1                   | 1.10     | 1.25 | 1.20 |
| e                    | 0.50 BSC |      |      |
| e1                   | 1.00 BSC |      |      |
| F                    | 0.00     | 0.10 | —    |
| L                    | 0.10     | 0.30 | 0.20 |
| a                    | 6°       | 8°   | 7°   |
| All Dimensions in mm |          |      |      |

**Package Outline Dimensions** (Continued)

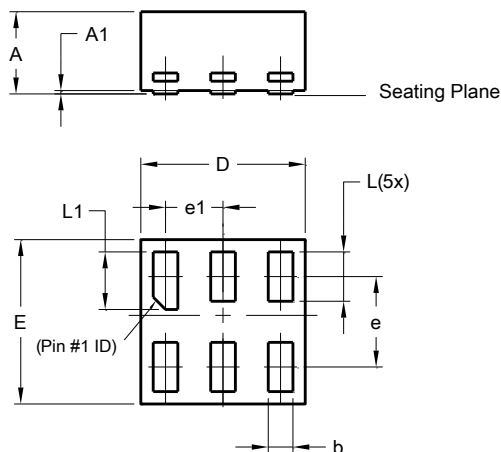
Please see <http://www.diodes.com/package-outlines.html> for the latest version.

**(4) Package Type X2-DFN0808-4**



| X2-DFN0808-4         |      |      |      |
|----------------------|------|------|------|
| Dim                  | Min  | Max  | Typ  |
| A                    | 0.25 | 0.35 | 0.30 |
| A1                   | 0    | 0.04 | 0.02 |
| A3                   | -    | -    | 0.13 |
| b                    | 0.17 | 0.27 | 0.22 |
| D                    | 0.75 | 0.85 | 0.80 |
| D2                   | 0.15 | 0.35 | 0.25 |
| E                    | 0.75 | 0.85 | 0.80 |
| E2                   | 0.15 | 0.35 | 0.25 |
| e                    | -    | -    | 0.48 |
| k                    | 0.20 | -    | -    |
| L                    | 0.17 | 0.27 | 0.22 |
| L1                   | 0.02 | 0.12 | 0.07 |
| z                    | -    | -    | 0.05 |
| All Dimensions in mm |      |      |      |

**(5) Package Type: X1-DFN1010-6**

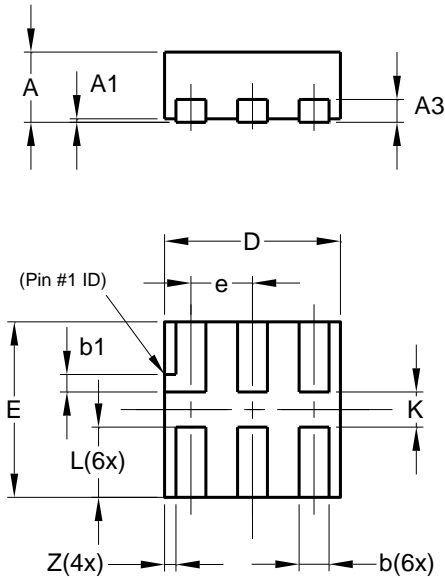


| X1-DFN1010-6         |          |       |      |
|----------------------|----------|-------|------|
| Dim                  | Min      | Max   | Typ  |
| A                    | -        | 0.50  | 0.39 |
| A1                   | -        | 0.04  | -    |
| b                    | 0.12     | 0.20  | 0.15 |
| D                    | 0.95     | 1.050 | 1.00 |
| E                    | 0.95     | 1.050 | 1.00 |
| e                    | 0.55 BSC |       |      |
| e1                   | 0.35 BSC |       |      |
| L                    | 0.27     | 0.35  | 0.30 |
| L1                   | 0.32     | 0.40  | 0.35 |
| All Dimensions in mm |          |       |      |

**Package Outline Dimensions (Cont.)**

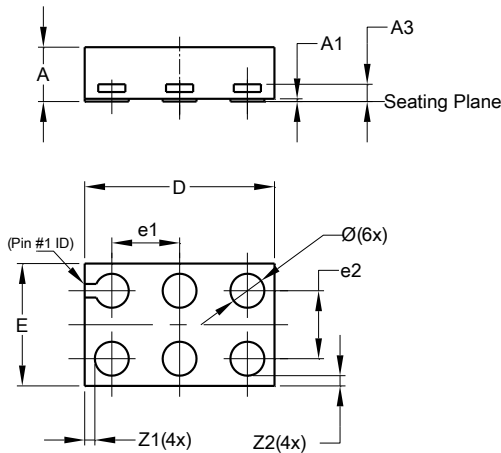
Please see <http://www.diodes.com/package-outlines.html> for the latest version.

**(6) Package Type X2-DFN1010-6**



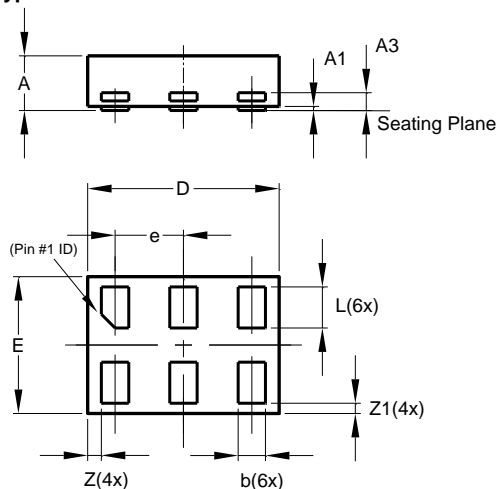
| X2-DFN1010-6         |      |      |       |
|----------------------|------|------|-------|
| Dim                  | Min  | Max  | Typ   |
| A                    | —    | 0.40 | 0.39  |
| A1                   | 0.00 | 0.05 | 0.02  |
| A3                   | —    | —    | 0.13  |
| b                    | 0.14 | 0.20 | 0.17  |
| b1                   | 0.05 | 0.15 | 0.10  |
| D                    | 0.95 | 1.05 | 1.00  |
| E                    | 0.95 | 1.05 | 1.00  |
| e                    | —    | —    | 0.35  |
| L                    | 0.35 | 0.45 | 0.40  |
| K                    | 0.15 | —    | —     |
| Z                    | —    | —    | 0.065 |
| All Dimensions in mm |      |      |       |

**(7) Package Type: X2-DFN1409-6 6 (Chip Scale Alternative)**



| X2-DFN1409-6         |      |      |       |
|----------------------|------|------|-------|
| Dim                  | Min  | Max  | Typ   |
| A                    | -    | 0.40 | 0.39  |
| A1                   | 0    | 0.05 | 0.02  |
| A3                   | -    | -    | 0.13  |
| Ø                    | 0.20 | 0.30 | 0.25  |
| D                    | 1.35 | 1.45 | 1.40  |
| E                    | 0.85 | 0.95 | 0.90  |
| e1                   | -    | -    | 0.50  |
| e2                   | -    | -    | 0.50  |
| Z1                   | -    | -    | 0.075 |
| Z2                   | -    | -    | 0.075 |
| All Dimensions in mm |      |      |       |

**(8) Package Type: X2-DFN1410-6**

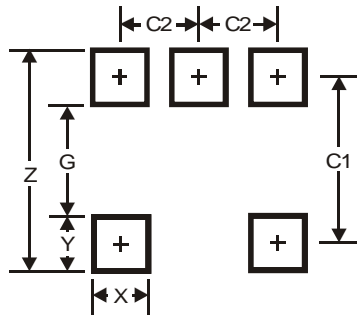


| X2-DFN1410-6         |       |       |       |
|----------------------|-------|-------|-------|
| Dim                  | Min   | Max   | Typ   |
| A                    | —     | 0.40  | 0.39  |
| A1                   | 0.00  | 0.05  | 0.02  |
| A3                   | —     | —     | 0.13  |
| b                    | 0.15  | 0.25  | 0.20  |
| D                    | 1.35  | 1.45  | 1.40  |
| E                    | 0.95  | 1.05  | 1.00  |
| e                    | —     | —     | 0.50  |
| L                    | 0.25  | 0.35  | 0.30  |
| Z                    | —     | —     | 0.10  |
| Z1                   | 0.045 | 0.105 | 0.075 |
| All Dimensions in mm |       |       |       |

**Suggested Pad Layout**

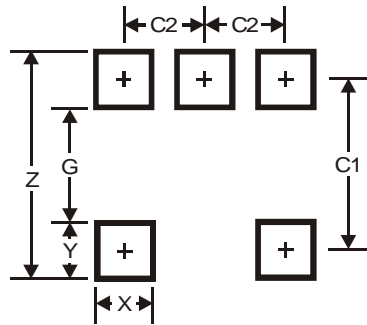
Please see <http://www.diodes.com/package-outlines.html> for the latest version.

**(1) Package Type: SOT25**



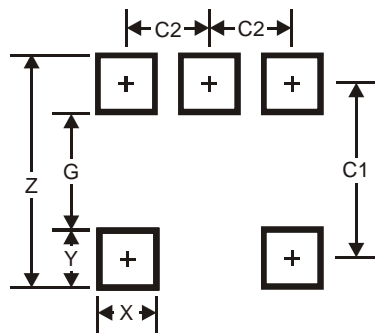
| Dimensions | Value (in mm) |
|------------|---------------|
| Z          | 3.20          |
| G          | 1.60          |
| X          | 0.55          |
| Y          | 0.80          |
| C1         | 2.40          |
| C2         | 0.95          |

**(2) Package Type: SOT353**



| Dimensions | Value (in mm) |
|------------|---------------|
| Z          | 2.5           |
| G          | 1.3           |
| X          | 0.42          |
| Y          | 0.6           |
| C1         | 1.9           |
| C2         | 0.65          |

**(3) Package Type: SOT553**

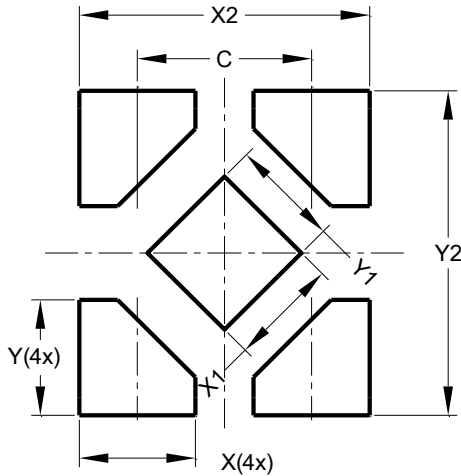


| Dimensions | Value (in mm) |
|------------|---------------|
| Z          | 2.2           |
| G          | 1.2           |
| X          | 0.375         |
| Y          | 0.5           |
| C1         | 1.7           |
| C2         | 0.5           |

**Suggested Pad Layout** (Continued)

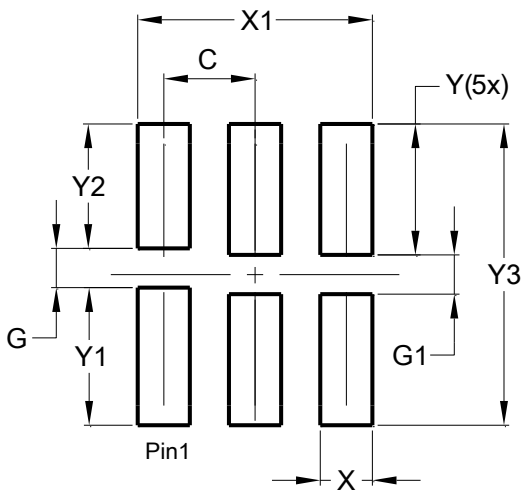
Please see <http://www.diodes.com/package-outlines.html> for the latest version.

(4) Package Type X2-DFN0808-4



| Dimensions | Value (in mm) |
|------------|---------------|
| C          | 0.480         |
| X          | 0.320         |
| X1         | 0.300         |
| X2         | 0.800         |
| Y          | 0.320         |
| Y1         | 0.300         |
| Y2         | 0.900         |

(5) Package Type X1-DFN1010-6

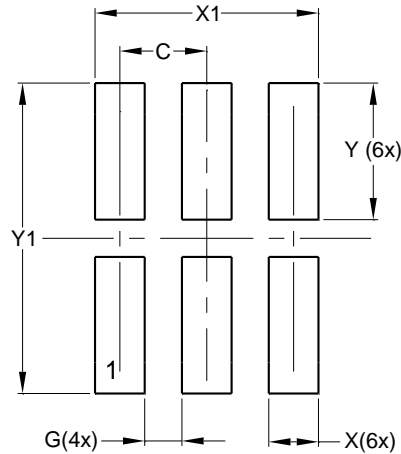


| Dimensions | Value (in mm) |
|------------|---------------|
| C          | 0.350         |
| G          | 0.150         |
| G1         | 0.150         |
| X          | 0.200         |
| X1         | 0.900         |
| Y          | 0.500         |
| Y1         | 0.525         |
| Y2         | 0.475         |
| Y3         | 1.150         |

**Suggested Pad Layout (Cont.)**

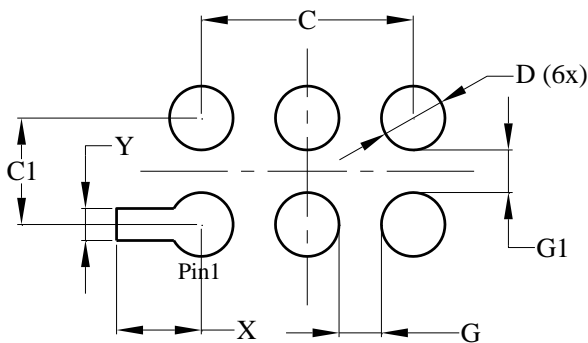
Please see <http://www.diodes.com/package-outlines.html> for the latest version.

**(6) Package Type X2-DFN1010-6**



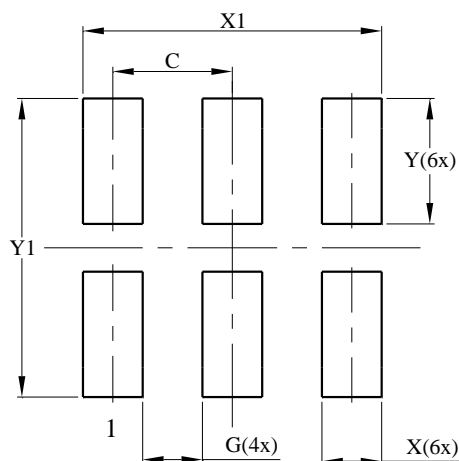
| Dimensions | Value (in mm) |
|------------|---------------|
| C          | 0.350         |
| G          | 0.150         |
| X          | 0.200         |
| X1         | 0.900         |
| Y          | 0.550         |
| Y1         | 1.250         |

**(7) Package Type: X2-DFN1409-6**



| Dimensions | Value (in mm) |
|------------|---------------|
| C          | 1.000         |
| C1         | 0.500         |
| D          | 0.300         |
| G          | 0.200         |
| G1         | 0.200         |
| X          | 0.400         |
| Y          | 0.150         |

**(8) Package Type: X2-DFN1410-6**



| Dimensions | Value (in mm) |
|------------|---------------|
| C          | 0.500         |
| G          | 0.250         |
| X          | 0.250         |
| X1         | 1.250         |
| Y          | 0.525         |
| Y1         | 1.250         |

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