# 74LVC1G125

## Bus buffer/line driver; 3-state

Rev. 17.1 — 3 September 2024 Product data sheet

## 1. General description

The 74LVC1G125 is a single buffer/line driver with 3-state output. Inputs can be driven from either 3.3 V or 5 V devices. This feature allows the use of these devices as translators in mixed 3.3 V and 5 V environments.

Schmitt-trigger action at all inputs makes the circuit tolerant of slower input rise and fall times.

This device is fully specified for partial power down applications using $I_{OFF}$. The $I_{OFF}$ circuitry disables the output, preventing the potentially damaging backflow current through the device when it is powered down.

## 2. Features and benefits

- Wide supply voltage range from 1.65 V to 5.5 V
- Overvoltage tolerant inputs to 5.5 V
- High noise immunity
- CMOS low power consumption
- $I_{OFF}$ circuitry provides partial Power-down mode operation
- ±24 mA output drive ($V_{CC}$ = 3.0 V)
- Latch-up performance exceeds 250 mA
- Direct interface with TTL levels
- Complies with JEDEC standards:
  - JESD8-7 (1.65 V to 1.95 V)
  - JESD8-5 (2.3 V to 2.7 V)
  - JESD8C (2.7 V to 3.6 V)
  - JESD36 (4.5 V to 5.5 V)
- ESD protection:
  - HBM: ANSI/ESDA/JEDEC JS-001 class 2 exceeds 2000 V
  - CDM: ANSI/ESDA/JEDEC JS-002 class C3 exceeds 1000 V
- Multiple package options
- Specified from -40 °C to +85 °C and -40 °C to +125 °C

# 3. Ordering information

**Table 1. Ordering information**

| Type number | Package | | | |
|---|---|---|---|---|
| | Temperature range | Name | Description | Version |
| 74LVC1G125GW | -40 °C to +125 °C | TSSOP5 | plastic thin shrink small outline package; 5 leads; body width 1.25 mm | SOT353-1 |
| 74LVC1G125GV | -40 °C to +125 °C | SC-74A | plastic surface-mounted package; 5 leads | SOT753 |
| 74LVC1G125GM | -40 °C to +125 °C | XSON6 | plastic extremely thin small outline package; no leads; 6 terminals; body 1 × 1.45 × 0.5 mm | SOT886 |
| 74LVC1G125GN | -40 °C to +125 °C | XSON6 | extremely thin small outline package; no leads; 6 terminals; body 0.9 × 1.0 × 0.35 mm | SOT1115 |
| 74LVC1G125GS | -40 °C to +125 °C | XSON6 | extremely thin small outline package; no leads; 6 terminals; body 1.0 × 1.0 × 0.35 mm | SOT1202 |
| 74LVC1G125GX | -40 °C to +125 °C | X2SON5 | plastic thermal enhanced extremely thin small outline package; no leads; 5 terminals; body 0.8 × 0.8 × 0.32 mm | SOT1226-3 |
| 74LVC1G125GZ | -40 °C to +125 °C | XSON5 | plastic thermal enhanced extremely thin small outline package with side-wettable flanks (SWF); no leads; 5 terminals; body 1.1 × 0.85 × 0.5 mm | SOT8065-1 |

# 4. Marking

**Table 2. Marking**

| Type number | Marking code[1] |
|---|---|
| 74LVC1G125GW | VM |
| 74LVC1G125GV | V25 |
| 74LVC1G125GM | VM |
| 74LVC1G125GN | VM |
| 74LVC1G125GS | VM |
| 74LVC1G125GX | VM |
| 74LVC1G125GZ | VM |

[1] The pin 1 indicator is located on the lower left corner of the device, below the marking code.

# 5. Functional diagram

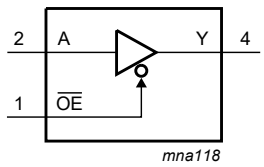



**Fig. 1. Logic symbol**

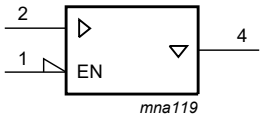



**Fig. 2. IEC logic symbol**

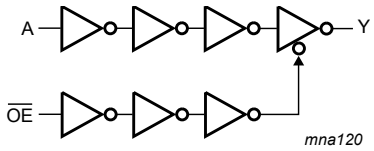
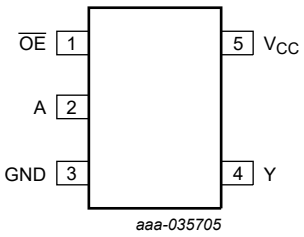



**Fig. 3. Logic diagram**

# 6. Pinning information

## 6.1. Pinning

**GW package**
**SOT353-1 (TSSOP5)**

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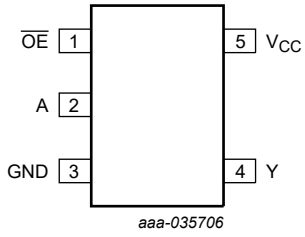
**GV package**
**SOT753 (SC-74A)**

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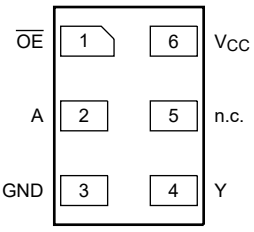
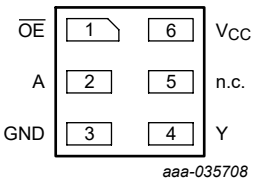
**GM package**
**SOT886 (XSON6)**




aaa-035707

Transparent top view

**GN package**
**SOT1115 (XSON6)**

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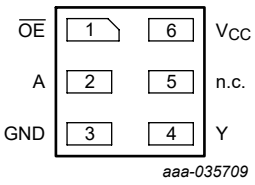
Transparent top view

**GS package**
**SOT1202 (XSON6)**

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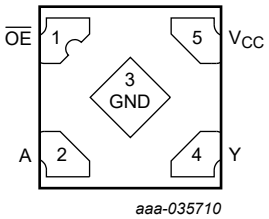
Transparent top view

**GX package**
**SOT1226-3 (X2SON5)**

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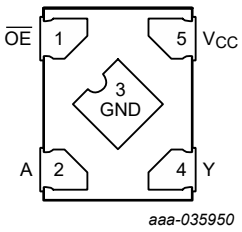
Transparent top view

**GZ package**
**SOT8065-1 (XSON5)**

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Transparent top view

### 6.2. Pin description

**Table 3. Pin description**

| Symbol | Pin | | Description |
|---|---|---|---|
| | TSSOP5, SC-74A, X2SON5 and XSON5 | XSON6 | |
| $\overline{OE}$ | 1 | 1 | output enable input |
| A | 2 | 2 | data input |
| GND | 3 | 3 | ground (0 V) |
| Y | 4 | 4 | data output |
| n.c. | - | 5 | not connected |
| $V_{CC}$ | 5 | 6 | supply voltage |

## 7. Functional description

**Table 4. Function table**

*H = HIGH voltage level; L = LOW voltage level; X = don't care; Z = high-impedance OFF-state.*

| Input | | Output |
|---|---|---|
| $\overline{OE}$ | A | Y |
| L | L | L |
| L | H | H |
| H | X | Z |

## 8. Limiting values

**Table 5. Limiting values**

*In accordance with the Absolute Maximum Rating System (IEC 60134). Voltages are referenced to GND (ground = 0 V).*

| Symbol | Parameter | Conditions | | Min | Max | Unit |
|---|---|---|---|---|---|---|
| $V_{CC}$ | supply voltage | | | -0.5 | +6.5 | V |
| $I_{IK}$ | input clamping current | $V_I < 0$ V | | -50 | - | mA |
| $V_I$ | input voltage | | [1] | -0.5 | +6.5 | V |
| $I_{OK}$ | output clamping current | $V_O > V_{CC}$ or $V_O < 0$ V | | - | ±50 | mA |
| $V_O$ | output voltage | Active mode | [1] | -0.5 | $V_{CC}$ + 0.5 | V |
| | | Power-down mode; $V_{CC}$ = 0 V | [1] | -0.5 | +6.5 | V |
| $I_O$ | output current | $V_O$ = 0 V to $V_{CC}$ | | - | ±50 | mA |
| $I_{CC}$ | supply current | | | - | 100 | mA |
| $I_{GND}$ | ground current | | | -100 | - | mA |
| $P_{tot}$ | total power dissipation | $T_{amb}$ = -40 °C to +125 °C | [2] | - | 250 | mW |
| $T_{stg}$ | storage temperature | | | -65 | +150 | °C |

[1] The input and output voltage ratings may be exceeded if the input and output current ratings are observed.
[2] For SOT353-1 (TSSOP5) package: $P_{tot}$ derates linearly with 3.3 mW/K above 74 °C.
For SOT753 (SC-74A) package: $P_{tot}$ derates linearly with 3.8 mW/K above 85 °C.
For SOT886 (XSON6) package: $P_{tot}$ derates linearly with 3.3 mW/K above 74 °C.
For SOT1115 (XSON6) package: $P_{tot}$ derates linearly with 3.2 mW/K above 71 °C.
For SOT1202 (XSON6) package: $P_{tot}$ derates linearly with 3.3 mW/K above 74 °C.
For SOT1226-3 (X2SON5) package: $P_{tot}$ derates linearly with 3.0 mW/K above 67 °C.
For SOT8065-1 (XSON5) package: $P_{tot}$ derates linearly with 3.2 mW/K above 72 °C.

# 9. Recommended operating conditions

**Table 6. Recommended operating conditions**

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| $V_{CC}$ | supply voltage | | 1.65 | - | 5.5 | V |
| $V_I$ | input voltage | | 0 | - | 5.5 | V |
| $V_O$ | output voltage | Active mode | 0 | - | $V_{CC}$ | V |
| | | Power-down mode; $V_{CC}$ = 0 V | 0 | - | 5.5 | V |
| $T_{amb}$ | ambient temperature | | -40 | - | +125 | °C |
| Δt/ΔV | input transition rise and fall rate | $V_{CC}$ = 1.65 V to 2.7 V | - | - | 20 | ns/V |
| | | $V_{CC}$ = 2.7 V to 5.5 V | - | - | 10 | ns/V |

# 10. Static characteristics

**Table 7. Static characteristics**

*At recommended operating conditions; voltages are referenced to GND (ground = 0 V).*

| Symbol | Parameter | Conditions | Min | Typ [1] | Max | Unit |
|---|---|---|---|---|---|---|
| **$T_{amb}$ = -40 °C to +85 °C** | | | | | | |
| $V_{IH}$ | HIGH-level input voltage | $V_{CC}$ = 1.65 V to 1.95 V | 0.65 × $V_{CC}$ | - | - | V |
| | | $V_{CC}$ = 2.3 V to 2.7 V | 1.7 | - | - | V |
| | | $V_{CC}$ = 2.7 V to 3.6 V | 2.0 | - | - | V |
| | | $V_{CC}$ = 4.5 V to 5.5 V | 0.7 × $V_{CC}$ | - | - | V |
| $V_{IL}$ | LOW-level input voltage | $V_{CC}$ = 1.65 V to 1.95 V | - | - | 0.35 × $V_{CC}$ | V |
| | | $V_{CC}$ = 2.3 V to 2.7 V | - | - | 0.7 | V |
| | | $V_{CC}$ = 2.7 V to 3.6 V | - | - | 0.8 | V |
| | | $V_{CC}$ = 4.5 V to 5.5 V | - | - | 0.3 × $V_{CC}$ | V |
| $V_{OL}$ | LOW-level output voltage | $V_I$ = $V_{IH}$ or $V_{IL}$ | | | | |
| | | $V_{CC}$ = 1.65 V to 5.5 V; $I_O$ = 100 µA | - | - | 0.1 | V |
| | | $V_{CC}$ = 1.65 V; $I_O$ = 4 mA | - | - | 0.45 | V |
| | | $V_{CC}$ = 2.3 V; $I_O$ = 8 mA | - | - | 0.3 | V |
| | | $V_{CC}$ = 2.7 V; $I_O$ = 12 mA | - | - | 0.4 | V |
| | | $V_{CC}$ = 3.0 V; $I_O$ = 24 mA | - | - | 0.55 | V |
| | | $V_{CC}$ = 4.5 V; $I_O$ = 32 mA | - | - | 0.55 | V |
| $V_{OH}$ | HIGH-level output voltage | $V_I$ = $V_{IH}$ or $V_{IL}$ | | | | |
| | | $V_{CC}$ = 1.65 V to 5.5 V; $I_O$ = -100 µA | $V_{CC}$ - 0.1 | - | - | V |
| | | $V_{CC}$ = 1.65 V; $I_O$ = -4 mA | 1.2 | - | - | V |
| | | $V_{CC}$ = 2.3 V; $I_O$ = -8 mA | 1.9 | - | - | V |
| | | $V_{CC}$ = 2.7 V; $I_O$ = -12 mA | 2.2 | - | - | V |
| | | $V_{CC}$ = 3.0 V; $I_O$ = -24 mA | 2.3 | - | - | V |
| | | $V_{CC}$ = 4.5 V; $I_O$ = -32 mA | 3.8 | - | - | V |

| Symbol | Parameter | Conditions | Min | Typ [1] | Max | Unit |
|---|---|---|---|---|---|---|
| $I_I$ | input leakage current | $V_{CC}$ = 0 V to 5.5 V; $V_I$ = 5.5 V or GND | - | ±0.1 | ±1 | µA |
| $I_{OZ}$ | OFF-state output current | $V_{CC}$ = 3.6 V; $V_I$ = $V_{IH}$ or $V_{IL}$; $V_O$ = 5.5 V or GND | - | ±0.1 | ±2 | µA |
| $I_{OFF}$ | power-off leakage current | $V_{CC}$ = 0 V; $V_I$ or $V_O$ = 5.5 V | - | ±0.1 | ±2 | µA |
| $I_{CC}$ | supply current | $V_I$ = 5.5 V or GND; $V_{CC}$ = 1.65 V to 5.5 V; $I_O$ = 0 A | - | 0.1 | 4 | µA |
| $\Delta I_{CC}$ | additional supply current | per pin; $V_{CC}$ = 2.3 V to 5.5 V; $V_I$ = $V_{CC}$ - 0.6 V; $I_O$ = 0 A | - | 5 | 500 | µA |
| $C_I$ | input capacitance | | - | 5 | - | pF |
| **$T_{amb}$ = -40 °C to +125 °C** | | | | | | |
| $V_{IH}$ | HIGH-level input voltage | $V_{CC}$ = 1.65 V to 1.95 V | 0.65 × $V_{CC}$ | - | - | V |
| | | $V_{CC}$ = 2.3 V to 2.7 V | 1.7 | - | - | V |
| | | $V_{CC}$ = 2.7 V to 3.6 V | 2.0 | - | - | V |
| | | $V_{CC}$ = 4.5 V to 5.5 V | 0.7 × $V_{CC}$ | - | - | V |
| $V_{IL}$ | LOW-level input voltage | $V_{CC}$ = 1.65 V to 1.95 V | - | - | 0.35 × $V_{CC}$ | V |
| | | $V_{CC}$ = 2.3 V to 2.7 V | - | - | 0.7 | V |
| | | $V_{CC}$ = 2.7 V to 3.6 V | - | - | 0.8 | V |
| | | $V_{CC}$ = 4.5 V to 5.5 V | - | - | 0.3 × $V_{CC}$ | V |
| $V_{OL}$ | LOW-level output voltage | $V_I$ = $V_{IH}$ or $V_{IL}$ | | | | |
| | | $V_{CC}$ = 1.65 V to 5.5 V; $I_O$ = 100 µA | - | - | 0.1 | V |
| | | $V_{CC}$ = 1.65 V; $I_O$ = 4 mA | - | - | 0.70 | V |
| | | $V_{CC}$ = 2.3 V; $I_O$ = 8 mA | - | - | 0.45 | V |
| | | $V_{CC}$ = 2.7 V; $I_O$ = 12 mA | - | - | 0.60 | V |
| | | $V_{CC}$ = 3.0 V; $I_O$ = 24 mA | - | - | 0.80 | V |
| | | $V_{CC}$ = 4.5 V; $I_O$ = 32 mA | - | - | 0.80 | V |
| $V_{OH}$ | HIGH-level output voltage | $V_I$ = $V_{IH}$ or $V_{IL}$ | | | | |
| | | $V_{CC}$ = 1.65 V to 5.5 V; $I_O$ = -100 µA | $V_{CC}$ - 0.1 | - | - | V |
| | | $V_{CC}$ = 1.65 V; $I_O$ = -4 mA | 0.95 | - | - | V |
| | | $V_{CC}$ = 2.3 V; $I_O$ = -8 mA | 1.7 | - | - | V |
| | | $V_{CC}$ = 2.7 V; $I_O$ = -12 mA | 1.9 | - | - | V |
| | | $V_{CC}$ = 3.0 V; $I_O$ = -24 mA | 2.0 | - | - | V |
| | | $V_{CC}$ = 4.5 V; $I_O$ = -32 mA | 3.4 | - | - | V |
| $I_I$ | input leakage current | $V_{CC}$ = 0 V to 5.5 V; $V_I$ = 5.5 V or GND | - | - | ±1 | µA |
| $I_{OZ}$ | OFF-state output current | $V_{CC}$ = 3.6 V; $V_I$ = $V_{IH}$ or $V_{IL}$; $V_O$ = 5.5 V or GND | - | - | ±2 | µA |
| $I_{OFF}$ | power-off leakage current | $V_{CC}$ = 0 V; $V_I$ or $V_O$ = 5.5 V | - | - | ±2 | µA |
| $I_{CC}$ | supply current | $V_I$ = 5.5 V or GND; $V_{CC}$ = 1.65 V to 5.5 V; $I_O$ = 0 A | - | - | 4 | µA |
| $\Delta I_{CC}$ | additional supply current | per pin; $V_{CC}$ = 2.3 V to 5.5 V; $V_I$ = $V_{CC}$ - 0.6 V; $I_O$ = 0 A | - | - | 500 | µA |

[1] All typical values are measured at $V_{CC}$ = 3.3 V and $T_{amb}$ = 25 °C.

# 11. Dynamic characteristics

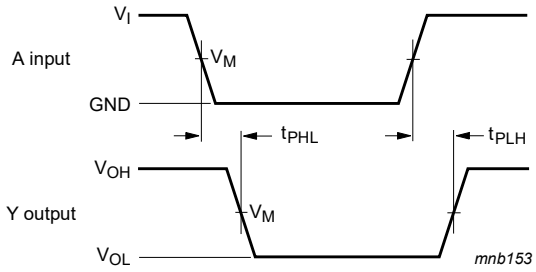
**Table 8. Dynamic characteristics**

*Voltages are referenced to GND (ground = 0 V). For test circuit see Fig. 6.*

| Symbol | Parameter | Conditions | -40 °C to +85 °C | | | -40 °C to +125 °C | | Unit |
|---|---|---|---|---|---|---|---|---|
| | | | Min | Typ[1] | Max | Min | Max | |
| $t_{pd}$ | propagation delay | A to Y; see Fig. 4 [2] | | | | | | |
| | | $V_{CC}$ = 1.65 V to 1.95 V | 1.0 | 3.3 | 8.0 | 1.0 | 10.5 | ns |
| | | $V_{CC}$ = 2.3 V to 2.7 V | 0.5 | 2.2 | 5.5 | 0.5 | 7 | ns |
| | | $V_{CC}$ = 2.7 V | 0.5 | 2.5 | 5.5 | 0.5 | 7 | ns |
| | | $V_{CC}$ = 3.0 V to 3.6 V | 0.5 | 2.1 | 4.5 | 0.5 | 6 | ns |
| | | $V_{CC}$ = 4.5 V to 5.5 V | 0.5 | 1.7 | 4.0 | 0.5 | 5.5 | ns |
| $t_{en}$ | enable time | $\overline{OE}$ to Y; see Fig. 5 [3] | | | | | | |
| | | $V_{CC}$ = 1.65 V to 1.95 V | 1.0 | 4.1 | 9.4 | 1.0 | 12 | ns |
| | | $V_{CC}$ = 2.3 V to 2.7 V | 0.5 | 2.8 | 6.6 | 0.5 | 8.5 | ns |
| | | $V_{CC}$ = 2.7 V | 0.5 | 3.3 | 6.6 | 0.5 | 8.5 | ns |
| | | $V_{CC}$ = 3.0 V to 3.6 V | 0.5 | 2.4 | 5.3 | 0.5 | 7 | ns |
| | | $V_{CC}$ = 4.5 V to 5.5 V | 0.5 | 2.1 | 5.0 | 0.5 | 6.5 | ns |
| $t_{dis}$ | disable time | $\overline{OE}$ to Y; see Fig. 5 [4] | | | | | | |
| | | $V_{CC}$ = 1.65 V to 1.95 V | 1.0 | 4.3 | 9.2 | 1.0 | 12 | ns |
| | | $V_{CC}$ = 2.3 V to 2.7 V | 0.5 | 2.7 | 5.0 | 0.5 | 6.5 | ns |
| | | $V_{CC}$ = 2.7 V | 0.5 | 3.0 | 5.0 | 0.5 | 6.5 | ns |
| | | $V_{CC}$ = 3.0 V to 3.6 V | 0.5 | 3.1 | 5.0 | 0.5 | 6.5 | ns |
| | | $V_{CC}$ = 4.5 V to 5.5 V | 0.5 | 2.2 | 4.2 | 0.5 | 5.5 | ns |
| $C_{PD}$ | power dissipation capacitance | per buffer; $V_I$ = GND to $V_{CC}$ [5] | | | | | | |
| | | output enabled | - | 25 | - | - | - | pF |
| | | output disabled | - | 6 | - | - | - | pF |

[1] Typical values are measured at $T_{amb}$ = 25 °C and $V_{CC}$ = 1.8 V, 2.5 V, 2.7 V, 3.3 V and 5.0 V respectively.
[2] $t_{pd}$ is the same as $t_{PLH}$ and $t_{PHL}$.
[3] $t_{en}$ is the same as $t_{PZH}$ and $t_{PZL}$.
[4] $t_{dis}$ is the same as $t_{PLZ}$ and $t_{PHZ}$.
[5] $C_{PD}$ is used to determine the dynamic power dissipation ($P_D$ in µW).
$P_D = C_{PD} \times V_{CC}^2 \times f_i \times N + \sum(C_L \times V_{CC}^2 \times f_o)$ where:
$f_i$ = input frequency in MHz;
$f_o$ = output frequency in MHz;
$C_L$ = output load capacitance in pF;
$V_{CC}$ = supply voltage in V;
N = number of inputs switching;
$\sum(C_L \times V_{CC}^2 \times f_o)$ = sum of outputs.

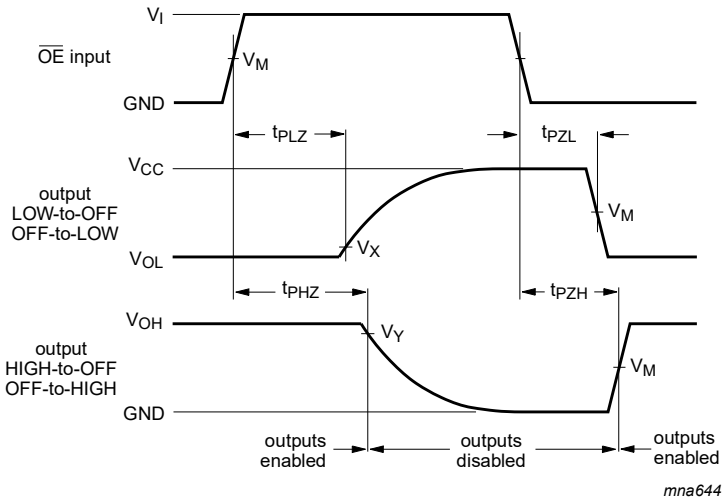
## 11.1. Waveforms and test circuit




Measurement points are given in Table 9.

$V_{OL}$ and $V_{OH}$ are typical output voltage levels that occur with the output load.

**Fig. 4. Input A to output Y propagation delay times**



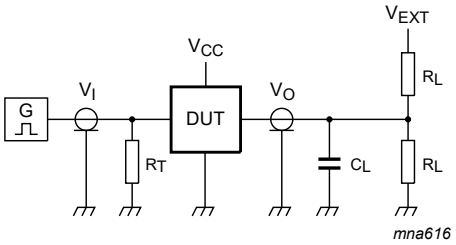

Measurement points are given in Table 9.

$V_{OL}$ and $V_{OH}$ are typical output voltage levels that occur with the output load.

**Fig. 5. 3-state enable and disable times**

**Table 9. Measurement points**

| Supply voltage | Input | Output | | |
|---|---|---|---|---|
| $V_{CC}$ | $V_M$ | $V_M$ | $V_X$ | $V_Y$ |
| 1.65 V to 1.95 V | 0.5 × $V_{CC}$ | 0.5 × $V_{CC}$ | $V_{OL}$ + 0.15 V | $V_{OH}$ - 0.15 V |
| 2.3 V to 2.7 V | 0.5 × $V_{CC}$ | 0.5 × $V_{CC}$ | $V_{OL}$ + 0.15 V | $V_{OH}$ - 0.15 V |
| 2.7 V | 1.5 V | 1.5 V | $V_{OL}$ + 0.3 V | $V_{OH}$ - 0.3 V |
| 3.0 V to 3.6 V | 1.5 V | 1.5 V | $V_{OL}$ + 0.3 V | $V_{OH}$ - 0.3 V |
| 4.5 V to 5.5 V | 0.5 × $V_{CC}$ | 0.5 × $V_{CC}$ | $V_{OL}$ + 0.3 V | $V_{OH}$ - 0.3 V |




Test data is given in Table 10.

Definitions for test circuit:

$R_L$ = Load resistance;

$C_L$ = Load capacitance including jig and probe capacitance;

$R_T$ = Termination resistance should be equal to the output impedance $Z_o$ of the pulse generator;

$V_{EXT}$ = External voltage for measuring switching times.

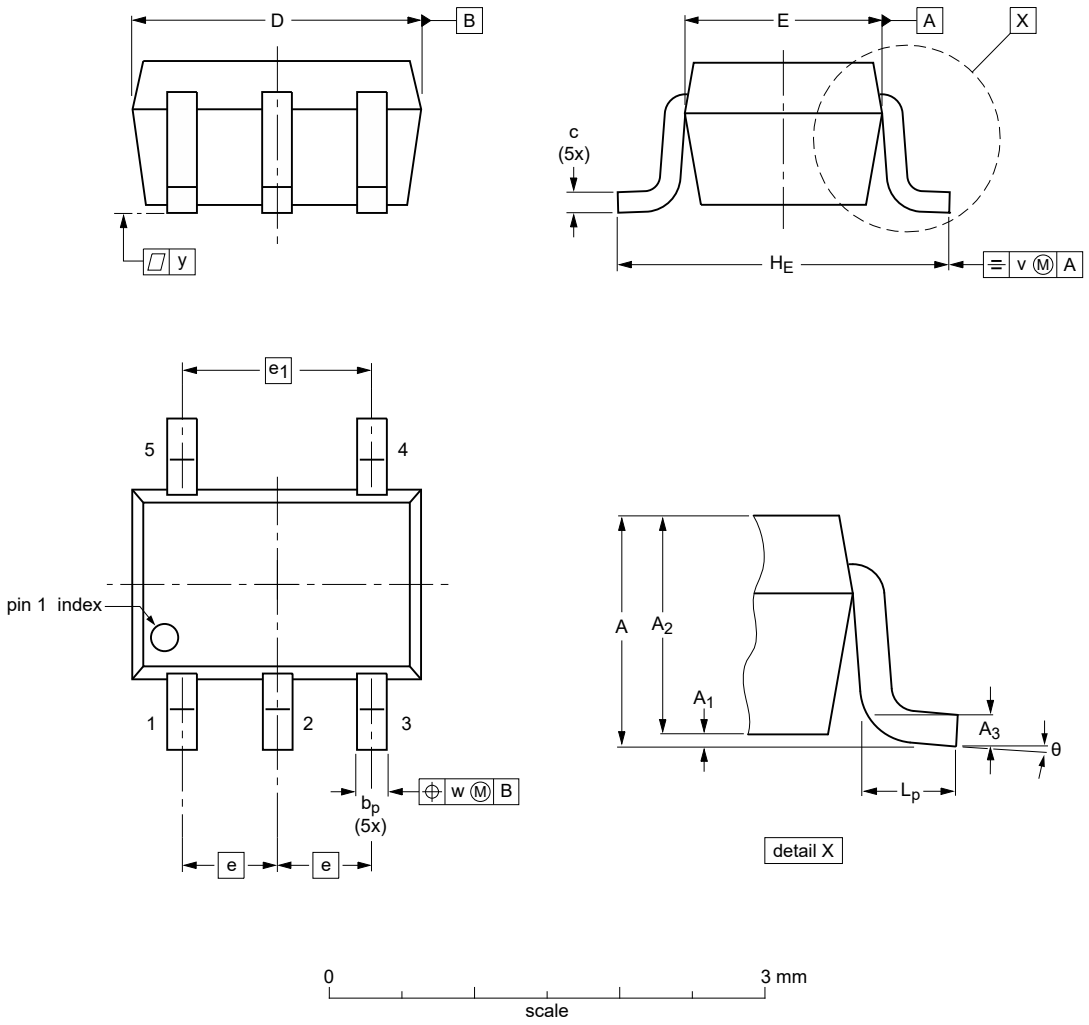
**Fig. 6. Test circuit for measuring switching times**

**Table 10. Test data**

| Supply voltage | Input | | Load | | $V_{EXT}$ | | |
|---|---|---|---|---|---|---|---|
| $V_{CC}$ | $V_I$ | $t_r$, $t_f$ | $C_L$ | $R_L$ | $t_{PLH}$, $t_{PHL}$ | $t_{PZH}$, $t_{PHZ}$ | $t_{PZL}$, $t_{PLZ}$ |
| 1.65 V to 1.95 V | $V_{CC}$ | ≤ 2.0 ns | 30 pF | 1 kΩ | open | GND | 2 × $V_{CC}$ |
| 2.3 V to 2.7 V | $V_{CC}$ | ≤ 2.0 ns | 30 pF | 500 Ω | open | GND | 2 × $V_{CC}$ |
| 2.7 V | 2.7 V | ≤ 2.5 ns | 50 pF | 500 Ω | open | GND | 6 V |
| 3.0 V to 3.6 V | 2.7 V | ≤ 2.5 ns | 50 pF | 500 Ω | open | GND | 6 V |
| 4.5 V to 5.5 V | $V_{CC}$ | ≤ 2.5 ns | 50 pF | 500 Ω | open | GND | 2 × $V_{CC}$ |

## 12. Package outline

**TSSOP5: plastic thin shrink small outline package; 5 leads; body width 1.25 mm** **SOT353-1**




Dimensions (mm are the original dimensions)

| Unit | | A | $A_1$ | $A_2$ | $A_3$ | $b_p$ | c | $D^{(1)}$ | $E^{(1)}$ | e | $e_1$ | $H_E$ | $L_p$ | v | w | y | θ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | max | 1.1 | 0.1 | 1.0 | 0.15 | 0.30 | 0.25 | 2.2 | 1.35 | 0.65 | 1.3 | 2.4 | 0.46 | 0.3 | 0.1 | 0.1 | 8° |
| | min | 0.8 | 0 | 0.8 | | 0.15 | 0.08 | 1.8 | 1.15 | | | 1.8 | 0.26 | | | | 0° |

Note

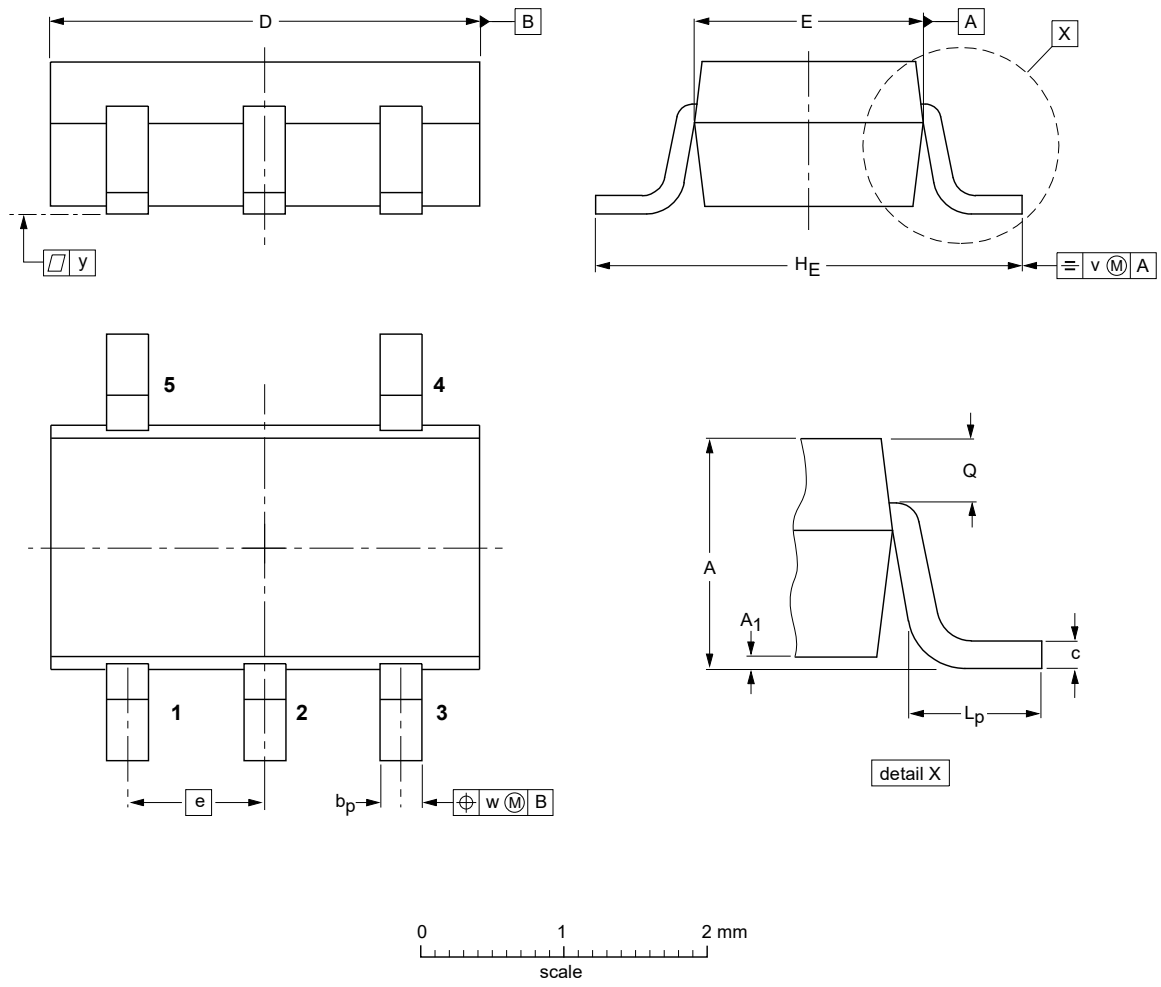
1. Plastic or metal protrusions of 0.2 mm maximum per side are not included.

*sot353-1_po*

| Outline version | References | | | | European projection | Issue date |
|---|---|---|---|---|---|---|
| | IEC | JEDEC | JEITA | | | |
| SOT353-1 | | MO-203 | SC-88A | | | ~~21-12-15~~ 21-12-16 |

**Fig. 7. Package outline SOT353-1 (TSSOP5)**

**Plastic surface-mounted package; 5 leads** **SOT753**



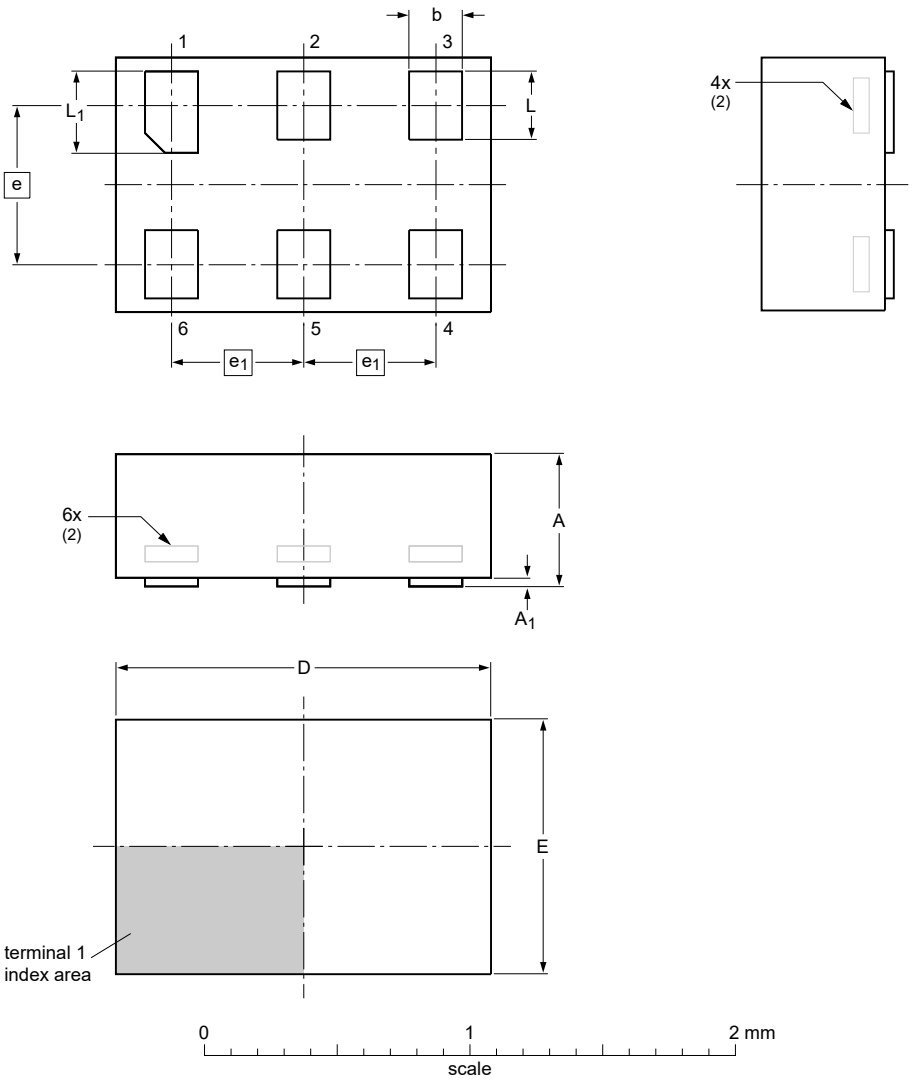

**DIMENSIONS (mm are the original dimensions)**

| UNIT | A | $A_1$ | $b_p$ | c | D | E | e | $H_E$ | $L_p$ | Q | v | w | y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | 1.1<br>0.9 | 0.100<br>0.013 | 0.40<br>0.25 | 0.26<br>0.10 | 3.1<br>2.7 | 1.7<br>1.3 | 0.95 | 3.0<br>2.5 | 0.6<br>0.2 | 0.33<br>0.23 | 0.2 | 0.2 | 0.1 |

| OUTLINE VERSION | REFERENCES | | | | EUROPEAN PROJECTION | ISSUE DATE |
|---|---|---|---|---|---|---|
| | IEC | JEDEC | JEITA | | | |
| SOT753 | | | SC-74A | | | ~~02-04-16~~<br>06-03-16 |

**Fig. 8. Package outline SOT753 (SC-74A)**

XSON6: plastic extremely thin small outline package; no leads; 6 terminals; body 1 x 1.45 x 0.5 mm SOT886




Dimensions (mm are the original dimensions)

| Unit | | A(1) | $A_1$ | b | D | E | e | $e_1$ | L | $L_1$ |
|---|---|---|---|---|---|---|---|---|---|---|
| mm | max | 0.5 | 0.04 | 0.25 | 1.50 | 1.05 | | | 0.35 | 0.40 |
| | nom | | | 0.20 | 1.45 | 1.00 | 0.6 | 0.5 | 0.30 | 0.35 |
| | min | | | 0.17 | 1.40 | 0.95 | | | 0.27 | 0.32 |

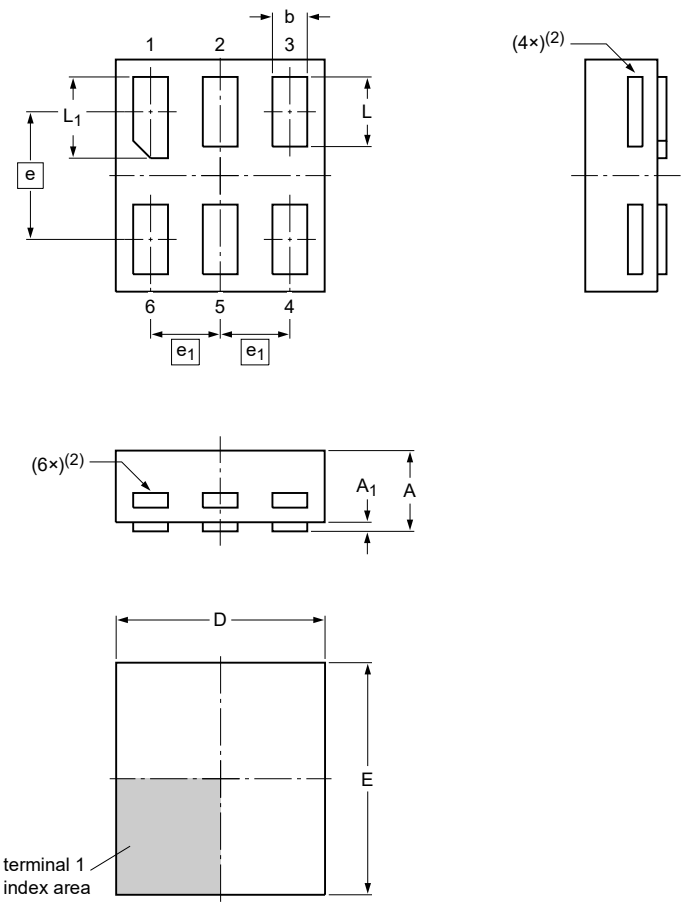
Notes
1. Including plating thickness.
2. Can be visible in some manufacturing processes.

sot886_po

| Outline version | References | | | | European projection | Issue date |
|---|---|---|---|---|---|---|
| | IEC | JEDEC | JEITA | | | |
| SOT886 | | MO-252 | | | | ~~04-07-22~~ 12-01-05 |

**Fig. 9. Package outline SOT886 (XSON6)**

**XSON6: extremely thin small outline package; no leads; 6 terminals; body 0.9 x 1.0 x 0.35 mm** **SOT1115**




0 0.5 1 mm

scale

Dimensions

| Unit | | $A^{(1)}$ | $A_1$ | b | D | E | e | $e_1$ | L | $L_1$ |
|---|---|---|---|---|---|---|---|---|---|---|
| mm | max | 0.35 | 0.04 | 0.20 | 0.95 | 1.05 | | | 0.35 | 0.40 |
| | nom | | | 0.15 | 0.90 | 1.00 | 0.55 | 0.3 | 0.30 | 0.35 |
| | min | | | 0.12 | 0.85 | 0.95 | | | 0.27 | 0.32 |

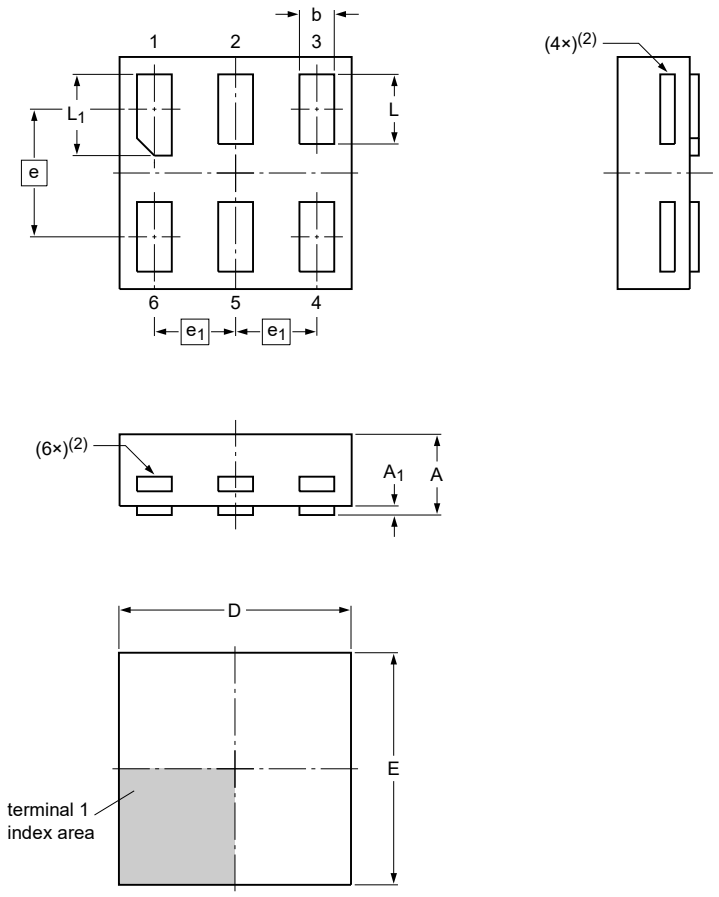
Note
1. Including plating thickness.
2. Visible depending upon used manufacturing technology.

*sot1115_po*

| Outline version | References | | | | European projection | Issue date |
|---|---|---|---|---|---|---|
| | IEC | JEDEC | JEITA | | | |
| SOT1115 | | | | | | ~~10-04-02~~ 10-04-07 |

**Fig. 10. Package outline SOT1115 (XSON6)**

**XSON6: extremely thin small outline package; no leads; 6 terminals; body 1.0 x 1.0 x 0.35 mm** **SOT1202**




Dimensions

| Unit | | $A^{(1)}$ | $A_1$ | b | D | E | e | $e_1$ | L | $L_1$ |
|---|---|---|---|---|---|---|---|---|---|---|
| mm | max | 0.35 | 0.04 | 0.20 | 1.05 | 1.05 | | | 0.35 | 0.40 |
| | nom | | | 0.15 | 1.00 | 1.00 | 0.55 | 0.35 | 0.30 | 0.35 |
| | min | | | 0.12 | 0.95 | 0.95 | | | 0.27 | 0.32 |

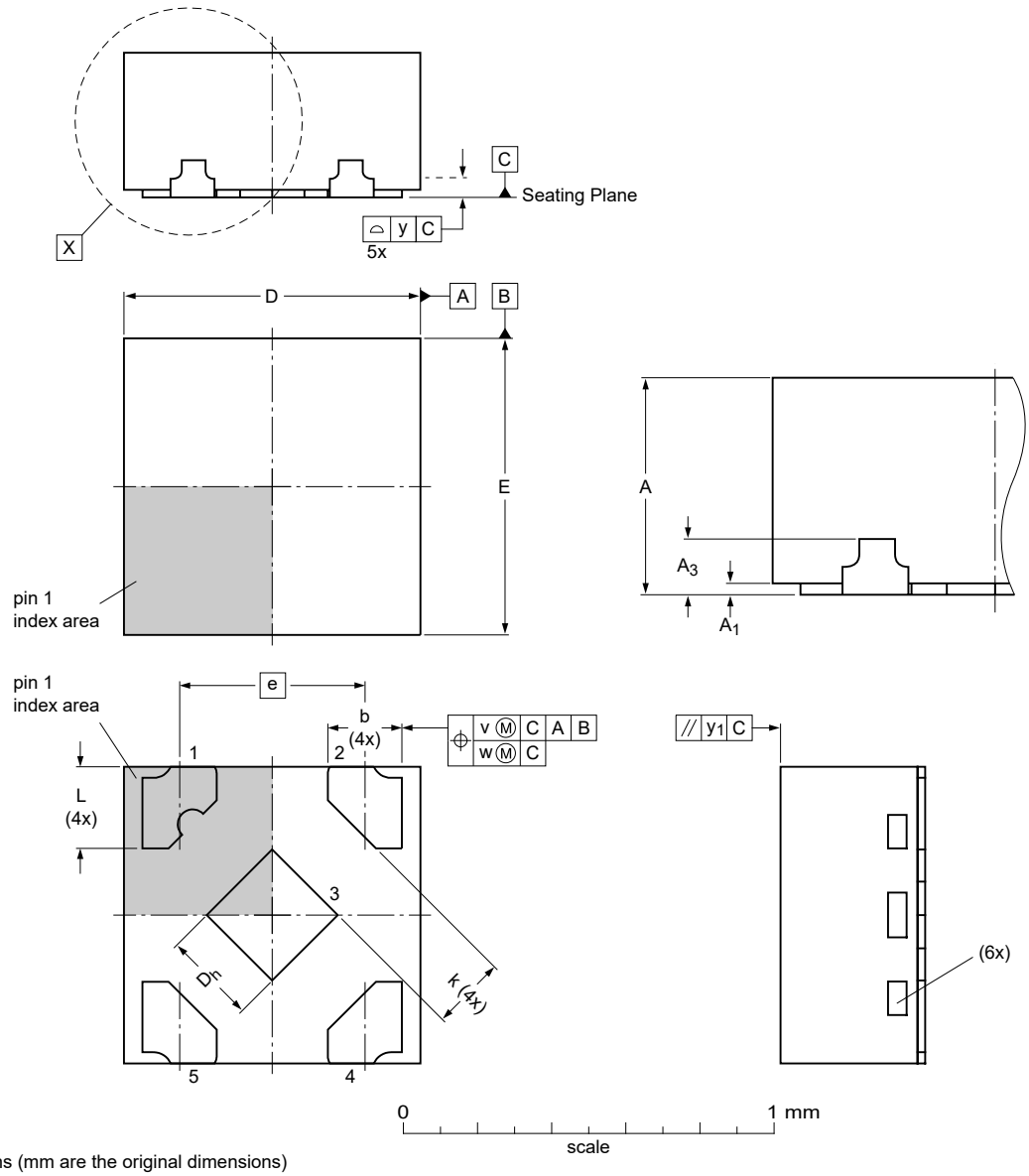
Note
1. Including plating thickness.
2. Visible depending upon used manufacturing technology.

*sot1202_po*

| Outline version | References | | | | European projection | Issue date |
|---|---|---|---|---|---|---|
| | IEC | JEDEC | JEITA | | | |
| SOT1202 | | | | | | ~~10-04-02~~ 10-04-06 |

**Fig. 11. Package outline SOT1202 (XSON6)**

**X2SON5: plastic thermal enhanced extremely thin small outline package; no leads; 5 terminals; body 0.8 x 0.8 x 0.32 mm** **SOT1226-3**




Dimensions (mm are the original dimensions)

| Unit | | A | $A_1$ | $A_3$ | D | $D_h$ | E | b | e | K | L | v | w | y | $y_1$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | max | 0.35 | 0.04 | 0.10 (Typ.) | 0.85 | 0.30 | 0.85 | 0.25 | 0.50 | | 0.27 | 0.1 | 0.05 | 0.05 | 0.05 |
| | nom | 0.32 | 0.02 | | 0.80 | 0.25 | 0.80 | 0.20 | | | 0.22 | | | | |
| | min | 0.30 | 0.00 | | 0.75 | 0.20 | 0.75 | 0.15 | | 0.20 | 0.17 | | | | |

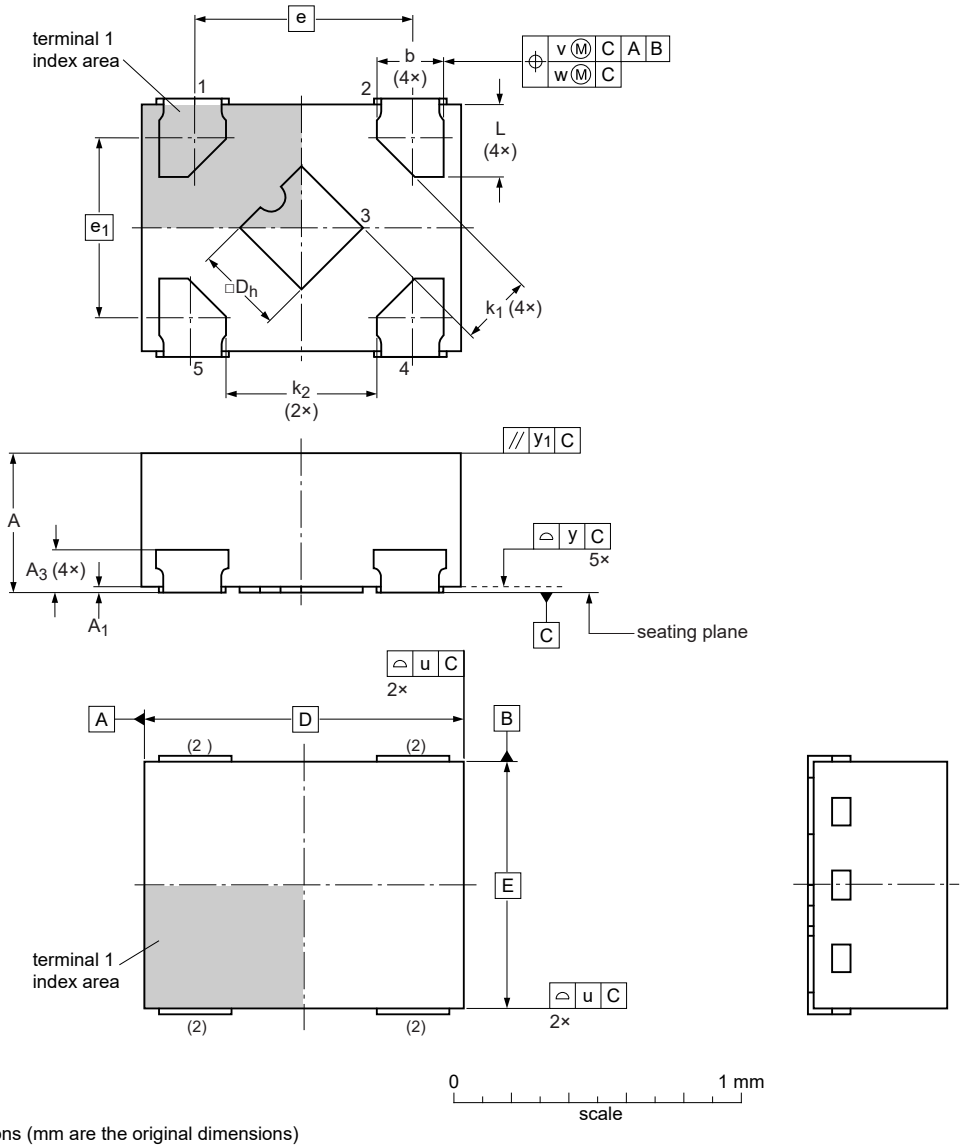
*sot1226-3_po*

| Outline version | References | | | | European projection | Issue date |
|---|---|---|---|---|---|---|
| | IEC | JEDEC | EIAJ | | | |
| SOT1226-3 | | --- | | | | ~~19-11-06~~ 19-11-07 |

**Fig. 12. Package outline SOT1226-3 (X2SON5)**

**XSON5: Plastic thermal enhanced extremely thin small outline package with side-wettable flanks (SWF); no leads; 5 terminals; body 1.1 × 0.85 × 0.5 mm**

**SOT8065-1**




Dimensions (mm are the original dimensions)

| Unit | | A(1) | A1 | A3 | b | D(1) | Dh | E(1) | e | e1 | k1 | k2 | L | u | v | w | y | y1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | max | 0.50 | 0.040 | 0.135 (typ) | 0.28 | 1.10 | 0.35 | 0.85 | 0.75 | 0.6 | 0.2 | 0.45 | 0.30 | 0.05 | 0.1 | 0.05 | 0.05 | 0.05 |
| | nom | 0.47 | 0.020 | | 0.23 | | 0.30 | | | | | | 0.25 | | | | | |
| | min | 0.44 | 0.005 | | 0.20 | | 0.27 | | | | | | 0.22 | | | | | |

Note:
1. Plastic or metal protrusions per side are not included.
2. Side wettable flanks (SWF), protrusion max. 0.02 mm.

*sot8065-1_po*

| Outline version | References | | | | European projection | Issue date |
|---|---|---|---|---|---|---|
| | IEC | JEDEC | JEITA | | | |
| SOT8065-1 | | MO-340 | | | | ~~24-07-09~~ 24-08-27 |

**Fig. 13. Package outline SOT8065-1 (XSON5)**

# 13. Abbreviations

**Table 11. Abbreviations**

| Acronym | Description |
|---|---|
| ANSI | American National Standards Institute |
| CDM | Charged Device Model |
| CMOS | Complementary Metal Oxide Semiconductor |
| DUT | Device Under Test |
| ESD | ElectroStatic Discharge |
| ESDA | ElectroStatic Discharge Association |
| HBM | Human Body Model |
| JEDEC | Joint Electron Device Engineering Council |
| TTL | Transistor-Transistor Logic |

# 14. Revision history

**Table 12. Revision history**

| Document ID | Release date | Data sheet status | Change notice | Supersedes |
|---|---|---|---|---|
| 74LVC1G125 v.17.1 | 20240903 | Product data sheet | - | 74LVC1G125 v.17 |
| Modifications: | • Fig. 13: Added JEDEC reference MO-340 to SOT8065-1 package outline drawing. | | | |
| 74LVC1G125 v.17 | 20240711 | Product data sheet | - | 74LVC1G125 v.16 |
| Modifications: | • Type number 74LVC1G125GZ (SOT8065-1/XSON5) added. | | | |
| 74LVC1G125 v.16 | 20230823 | Product data sheet | - | 74LVC1G125 v.15 |
| Modifications: | • Section 2: ESD specification updated according to the latest JEDEC standard. | | | |
| 74LVC1G125 v.15 | 20220119 | Product data sheet | - | 74LVC1G125 v.14 |
| Modifications: | • Fig. 7: Package outline drawing SOT353-1 (TSSOP5) has changed. | | | |
| 74LVC1G125 v.14 | 20211007 | Product data sheet | - | 74LVC1G125 v.13 |
| Modifications: | • Section 1 and Section 2 updated.<br>• SOT1226 (X2SON5) package changed to SOT1226-3 (X2SON5) package.<br>• Type number 74LVC1G125GF (SOT891/XSON6) removed.<br>• Table 5: Derating values for $P_{tot}$ total power dissipation updated. | | | |
| 74LVC1G125 v.13 | 20171107 | Product data sheet | - | 74LVC1G125 v.12 |
| Modifications: | • The format of this data sheet has been redesigned to comply with the identity guidelines of Nexperia.<br>• Legal texts have been adapted to the new company name where appropriate. | | | |
| 74LVC1G125 v.12 | 20161202 | Product data sheet | - | 74LVC1G125 v.11 |
| Modifications: | • Table 7: The maximum limits for leakage current and supply current have changed. | | | |
| 74LVC1G125 v.11 | 20120702 | Product data sheet | - | 74LVC1G125 v.10 |
| Modifications: | • Added type number 74LVC1G125GX (SOT1226)<br>• Package outline drawing of SOT886 (Fig. 9) modified. | | | |
| 74LVC1G125 v.10 | 20111207 | Product data sheet | - | 74LVC1G125 v.9 |
| Modifications: | • Legal pages updated. | | | |
| 74LVC1G125 v.9 | 20101229 | Product data sheet | - | 74LVC1G125 v.8 |
| 74LVC1G125 v.8 | 20100824 | Product data sheet | - | 74LVC1G125 v.7 |

# 15. Legal information

## Data sheet status

| Document status [1][2] | Product status [3] | Definition |
|---|---|---|
| Objective [short] data sheet | Development | This document contains data from the objective specification for product development. |
| Preliminary [short] data sheet | Qualification | This document contains data from the preliminary specification. |
| Product [short] data sheet | Production | This document contains the product specification. |

[1] Please consult the most recently issued document before initiating or completing a design.
[2] The term 'short data sheet' is explained in section "Definitions".
[3] The product status of device(s) described in this document may have changed since this document was published and may differ in case of multiple devices. The latest product status information is available on the internet at https://www.nexperia.com.

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**Date of release: 3 September 2024**