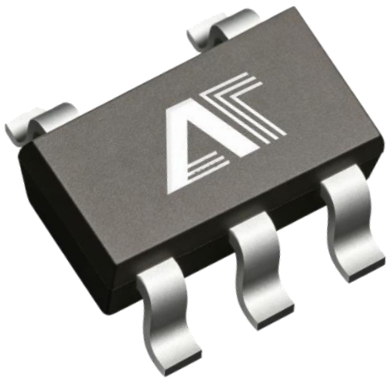




**Single channel 2-input  
NAND gate**

**SN74LVC1G00**

**Product Data Sheet**

|                 |
|-----------------|
| <b>AOTE DCC</b> |
| <b>RELEASE</b>  |

### ◆ Summary :

SN74LVC1G00 is a single channel 2-input NAND gate that can operate within a supply voltage range of 1.65V to 5.5V. The SN74LVC1G00 device executes the Boolean function  $Y=A \cdot B$  or  $Y=A+B$  in positive logic. This device can be used for Loff local power outage applications. When the device is powered off, the loff circuit will disable the output to prevent backflow current from damaging the device.

The device is packaged in SOT23-5 and SC70-5. The working temperature range is from -40°C to +125°C.

### ◆ Product features

- Small Package: SOT23-5、SC70-5
- Working voltage range: 2.0V~5.5V
- Low power consumption: 0.1μA (typical value)
- Working temperature range: -40°C~+125°C
- Input voltage up to 5.5V
- High Output driver: When powered by 3.0V, output driver  $\pm 24$ mA

### ◆ Applications

- Active Noise Cancellation
- barcode scanner
- blood pressure monitor
- CPAP machine
- Fingerprint recognition
- Network attached storage (NAS)

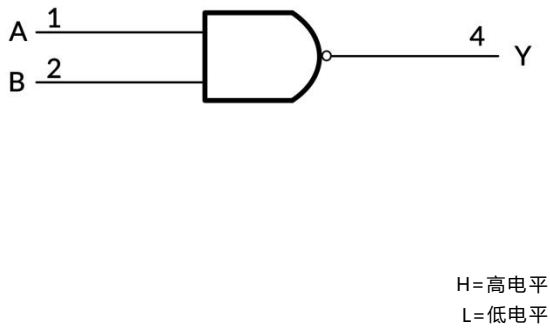
### ◆ Packaging and Order Description

| Product Name | Order Model     | Temperature Range (°C) | boxed type | screen printing | MSL(3) | Packing Specification |
|--------------|-----------------|------------------------|------------|-----------------|--------|-----------------------|
| SN74LVC1G00  | SN74LVC1G00DCKR | -40°C ~+125°C          | SC70-5     | CA5             | MSL3   | Tape and Reel, 3000   |
|              | SN74LVC1G00DBVR | -40°C ~+125°C          | SOT23-5    | C00K            | MSL3   | Tape and Reel, 3000   |

Attention:

- (1) This information is the latest data for the current version. If these data are updated, they will be promptly updated on our official website without further notice.
- (2) Silk screen printing may have additional codes for internal control traceability of products (including data codes and supplier codes) or marking the place of origin.
- (3) MSL, Humidity sensitivity level classified according to JEDEC industry standards.

◆ **Logic diagram**

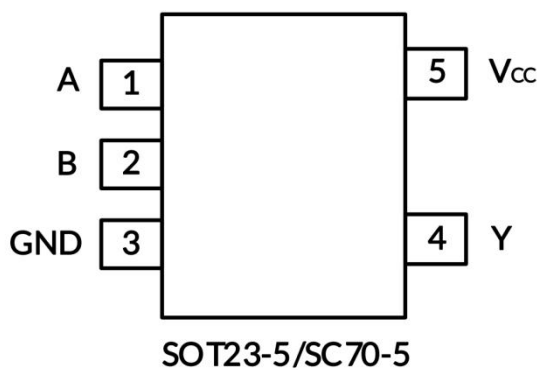


◆ **Menu**

| Input |   | Output |
|-------|---|--------|
| A     | B | Y      |
| H     | H | L      |
| L     | H | H      |
| H     | L | H      |
| L     | L | H      |

◆ **On-product information:**

• **Footage image**



| Pin | Pin Name | I/O | Function Description |
|-----|----------|-----|----------------------|
| 1   | A        | I   | A input              |
| 2   | B        | I   | B input              |
| 3   | GND      | P   | grounding            |
| 4   | Y        | O   | Y output             |
| 5   | Vcc      | P   | power supply         |

◆ **Absolute maximum rating** Within the natural ventilation temperature range (unless otherwise specified)

|                          | Parameter                                                                               | Min     | Max     | Unit |      |
|--------------------------|-----------------------------------------------------------------------------------------|---------|---------|------|------|
| VCC                      | Power supply voltage range                                                              | -0.5    | 6.5     | V    |      |
| VI                       | Input voltage range                                                                     | -0.5    | 6.5     | V    |      |
| Vo                       | The voltage range applicable to any output under high impedance or power-off conditions | -0.5    | 6.5     | V    |      |
| Vo                       | The voltage range applicable to any output in either high or low level state            | -0.5    | VCC+0.5 | V    |      |
| IIK                      | Input clamp current<br>VI < 0                                                           | -       | -50     | mA   |      |
| IOK                      | Output clamp current<br>VO < 0                                                          | -       | -50     | mA   |      |
| IO                       | Continuous output current                                                               | -       | ± 50    | mA   |      |
|                          | Continuous current through VCC or GND                                                   | -       | ± 100   | mA   |      |
| • current parameters     |                                                                                         |         |         |      |      |
| θ JA                     | Thermal resistance to the environment                                                   | SOT23-5 | -       | 230  | °C/W |
|                          |                                                                                         | SC70-5  | -       | 380  |      |
| • current parameters     |                                                                                         |         |         |      |      |
| temperature<br>parameter | Junction temperature, TJ                                                                | -65     | 150     | °C   |      |
|                          | Storage temperature range, Tstg                                                         | -65     | 150     |      |      |

◆ **ESD level**

The following ESD information is only applicable to sensitive equipment operated within an ti-static protection zones

| –                          | nominal value | Unit |  <b>ESD sensitivity warning</b><br><br>The scope of ESD damage can range from minor performance degradation to complete equipment failure. Precision integrated circuits may be more susceptible to damage as very small parameter changes can result in devices not meeting their published parameter specifications. |
|----------------------------|---------------|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| human model (HBM)          | ±4000         | V    |                                                                                                                                                                                                                                                                                                                                                                                                            |
| Charged Device Model (CDM) | ±1000         |      |                                                                                                                                                                                                                                                                                                                                                                                                            |
| Mechanical Model (MM)      | ±200          |      |                                                                                                                                                                                                                                                                                                                                                                                                            |

Attention:

- (1) This only represents the limit values obtained by the product under testing conditions, and does not mean that the product can work normally under these conditions or other parameter conditions beyond the specifications. Exceeding the range specified by the absolute maximum rated value above will cause damage to the product, and it is impossible to predict the working state of the product outside of the above conditions. If the product operates under conditions other than those mentioned above for a long time, it may affect its performance.
- (2) If the input and output current ratings are followed, it may exceed the input and output negative voltage ratings.
- (3) The value of VCC is provided in the recommended working condition table.
- (4) The thermal impedance of the package is calculated according to JE5D-51 standard:
- (5) The maximum power consumption is a function of  $T_{J(MAX)}$ ,  $R\theta_{JA}$ , and  $T_A$ . The maximum power consumption at any ambient temperature is  $P_o = (T_{J(MAX)} - T_A) / R\theta_{JA}$ , which is suitable for packaging directly soldered to PCB.

### ◆ Electrical Characteristics

(Within the natural ventilation temperature range (typical test conditions are: TA=+25 ° C, full temperature=-40 ° C~125 ° C)

### ◆ Recommended working conditions

| Parameter                                                      | symbol              | Test conditions                       | Min                    | Max                   | Unit |
|----------------------------------------------------------------|---------------------|---------------------------------------|------------------------|-----------------------|------|
| power supply voltage                                           | V <sub>CC</sub>     | work                                  | 1.65                   | 5.5                   | V    |
|                                                                |                     | Only retain data                      | 1.5                    | 5.5                   |      |
| High level input voltage                                       | V <sub>IH</sub>     | V <sub>CC</sub> = 1.65V - 1.95V       | 0.65 x V <sub>CC</sub> | -                     | V    |
|                                                                |                     | V <sub>CC</sub> =2.3V - 2.7V          | 1.7                    |                       |      |
|                                                                |                     | V <sub>CC</sub> =3V - 3.6V            | 2.2                    |                       |      |
|                                                                |                     | V <sub>CC</sub> =4.5V - 5.5V          | 0.7 x V <sub>CC</sub>  |                       |      |
| Low level input voltage                                        | V <sub>IL</sub>     | V <sub>CC</sub> = 1.65V - 1.95V       | -                      | 0.3 x V <sub>CC</sub> | V    |
|                                                                |                     | V <sub>CC</sub> =2.3V- 2.7V           |                        | 0.7                   |      |
|                                                                |                     | V <sub>CC</sub> =3V - 3.6V            |                        | 0.8                   |      |
|                                                                |                     | V <sub>CC</sub> =4.5V - 5.5V          |                        | 0.3 x V <sub>CC</sub> |      |
| input voltage                                                  | V <sub>I</sub>      | -                                     | 0                      | 5.5                   | V    |
| output voltage                                                 | V <sub>O</sub>      | -                                     | 0                      | V <sub>CC</sub>       | V    |
| Input conversion up or down rate                               | $\Delta t/\Delta v$ | V <sub>CC</sub> = 1.8±0.15V,2.5V±0.2V | -                      | 20                    | ns/V |
|                                                                |                     | V <sub>CC</sub> =3.3V ±0.3V           |                        | 10                    |      |
|                                                                |                     | V <sub>CC</sub> =5V ±0.5V             |                        | 5                     |      |
| Working temperature range under natural ventilation conditions | T <sub>A</sub>      | -                                     | -40                    | +125                  | °C   |

All unused input ports of the device must be kept at VCC or GND to ensure proper operation of the device

### ◆ DC characteristics

| Parameter                      | Test conditions                                                   | Vcc          | temperature               | Min     | Typ  | Max  | Unit |
|--------------------------------|-------------------------------------------------------------------|--------------|---------------------------|---------|------|------|------|
| V <sub>OH</sub>                | IOH = -100μA                                                      | 1.65V-5.5V   | Full temperature          | VCC-0.1 | -    | -    | V    |
|                                | IOH = -4mA                                                        | 1.65V        |                           | 1.2     |      |      |      |
|                                | IOH = -8mA                                                        | 2.3V         |                           | 1.9     |      |      |      |
|                                | IOH = -16mA                                                       | 3V           |                           | 2.4     |      |      |      |
|                                | IOH = -24mA                                                       |              |                           | 2.3     |      |      |      |
|                                | IOH = -32mA                                                       | 4.5V         |                           | 3.8     |      |      |      |
| V <sub>OL</sub>                | IOH = 100μA                                                       | 1.65V-5.5V   | Full temperature          | -       | -    | 0.1  | V    |
|                                | IOH = 4mA                                                         | 1.65V        |                           | -       | -    | 0.45 |      |
|                                | IOH = 8mA                                                         | 2.3V         |                           | -       | -    | 0.3  |      |
|                                | IOH = 16mA                                                        | 3V           |                           | -       | -    | 0.4  |      |
|                                | IOH = 24mA                                                        |              |                           | -       | -    | 0.55 |      |
|                                | IOH = 32mA                                                        | 4.5V         |                           | -       | -    | 0.55 |      |
| I <sub>I</sub><br>Input A or B | V <sub>I</sub> =5.5V orGND                                        | 0V - 5.5V    | +25°C<br>Full temperature | -       | ±0.1 | ±5   | μA   |
| I <sub>off</sub>               | V <sub>I</sub> or V <sub>O</sub> =5.5V                            | 0V           | +25°C<br>Full temperature | -       | ±0.1 | ±10  | μA   |
| I <sub>CC</sub>                | V <sub>I</sub> =5.5V or GND, I <sub>O</sub> =0                    | 1.65V - 5.5V | 25°C<br>Full temperature  | -       | 0.1  | 10   | μA   |
| ΔI <sub>CC</sub>               | One input at V <sub>cc</sub> -0.6V,<br>Other inputs at VCC or GND | 3V - 5.5V    | Full temperature          |         |      | 500  | μA   |

(1) All unused input ports of the device must be kept at VCC or GND to ensure proper operation of the device.

(2) The limit value is 100% production testing conducted at 25°C. Ensure the limitation of the working temperature range by utilizing the correlation of statistical quality control (SQC) methods.

(3) Typical values represent the most likely parameter specifications determined during characterization. The actual typical values may vary over time and will also depend on the application and configuration.

### ◆ AC characteristics

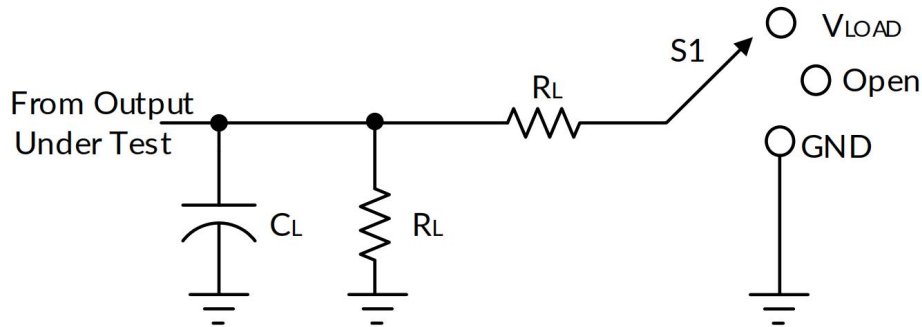
| Parameter                  | symbol          | Test conditions                                                                                                                 |                                                                                                                                                                                                  | °C    | Min | Typ                     | Max | Unit |
|----------------------------|-----------------|---------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-----|-------------------------|-----|------|
| propagation delay          | t <sub>pd</sub> | V <sub>CC</sub> = 1.8V ± 0.15V<br>V <sub>CC</sub> = 2.5V ± 0.2V<br>V <sub>CC</sub> = 3.3V ± 0.3V<br>V <sub>CC</sub> = 5V ± 0.5V | C <sub>L</sub> = 30 pF, R <sub>L</sub> = 500Ω<br>C <sub>L</sub> = 30 pF, R <sub>L</sub> = 500Ω<br>C <sub>L</sub> = 50 pF, R <sub>L</sub> = 500Ω<br>C <sub>L</sub> = 50 pF, R <sub>L</sub> = 500Ω | 全温    |     | 21<br>7.8<br>5.7<br>4.2 | -   | ns   |
| input capacitance          | C <sub>i</sub>  | V <sub>CC</sub> = 3.3V                                                                                                          | V <sub>I</sub> = V <sub>CC</sub> or GND                                                                                                                                                          | +25°C |     | 4                       |     | pF   |
| Powerconsumption capacitor | C <sub>pd</sub> | V <sub>CC</sub> = 1.8V<br>V <sub>CC</sub> = 2.5V<br>V <sub>CC</sub> = 3.3V<br>V <sub>CC</sub> = 5V                              | F = 10MHz                                                                                                                                                                                        | +25°C |     | 21<br>22<br>22<br>25    |     | pF   |

(1) All unused input ports of the device must be kept at VCC or GND to ensure proper operation of the device.

(2) The limit value is 100% production testing conducted at 25°C. Ensure the limitation of the working temperature range by utilizing the correlation of statistical quality control (SQC) methods.

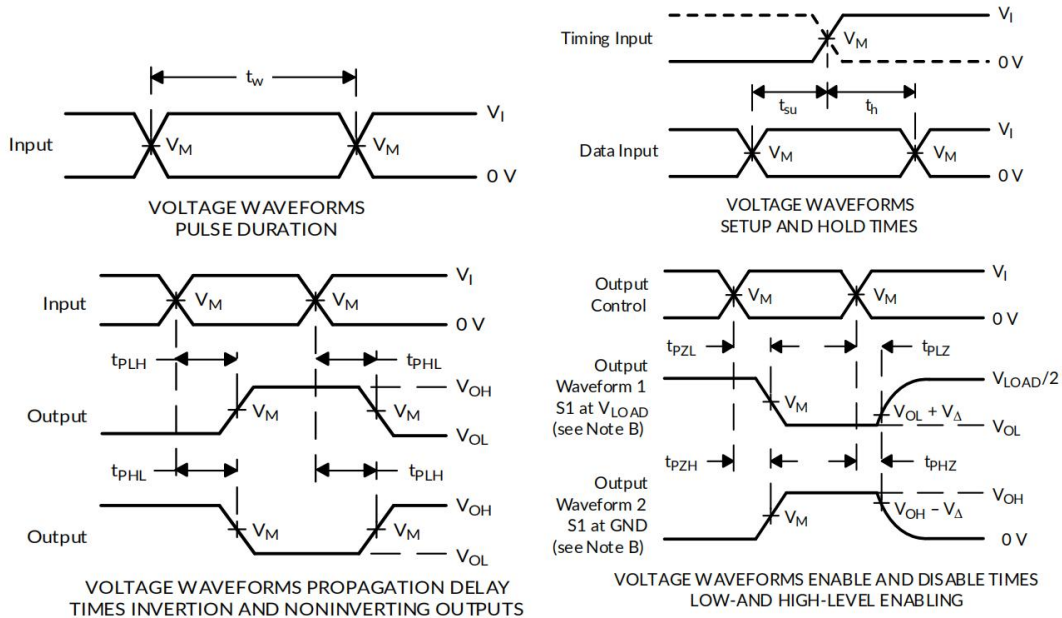
(3) Typical values represent the most likely parameter specifications determined during characterization. The actual typical values may vary over time and will also depend on the application and configuration.

◆ **Parameter measurement information**



| TEST              | S1         |
|-------------------|------------|
| $t_{PLH}/t_{PHL}$ | Open       |
| $t_{PLZ}/t_{PZL}$ | $V_{LOAD}$ |
| $t_{PHZ}/t_{PZH}$ | GND        |

| $V_{CC}$         | INPUTS   |              | $V_M$      | $V_{LOAD}$        | $C_L$ | $R_L$ | $V_{\Delta}$ |
|------------------|----------|--------------|------------|-------------------|-------|-------|--------------|
|                  | $V_I$    | $t_r/t_f$    |            |                   |       |       |              |
| $1.8V \pm 0.15V$ | $V_{CC}$ | $\leq 2ns$   | $V_{CC}/2$ | $2 \times V_{CC}$ | 30pF  | 500Ω  | 0.15V        |
| $2.5V \pm 0.2V$  | $V_{CC}$ | $\leq 2ns$   | $V_{CC}/2$ | $2 \times V_{CC}$ | 30pF  | 500Ω  | 0.15V        |
| $3.3V \pm 0.3V$  | 3V       | $\leq 2.5ns$ | 1.5V       | 6V                | 50pF  | 500Ω  | 0.3V         |
| $5V \pm 0.5V$    | $V_{CC}$ | $\leq 2.5ns$ | $V_{CC}/2$ | $2 \times V_{CC}$ | 50pF  | 500Ω  | 0.3V         |



Note: A.  $C_L$  includes probe and fixture capacitors.

B. Waveform 1 is used for outputs with internal conditions, where the output is low unless disabled by the output controller. Waveform 2 is used for outputs with internal conditions, where the output is high unless disabled by the output controller.

C. All input pulses are provided by a generator with the following characteristics:  $PRR \leq 10MHz$ ,  $Z_o = 50\Omega$

D. Output one measurement at a time, with a transition for each measurement.

E.  $t_{PLZ}$  and  $t_{PHZ}$  are the same as  $t_{dis}$ .

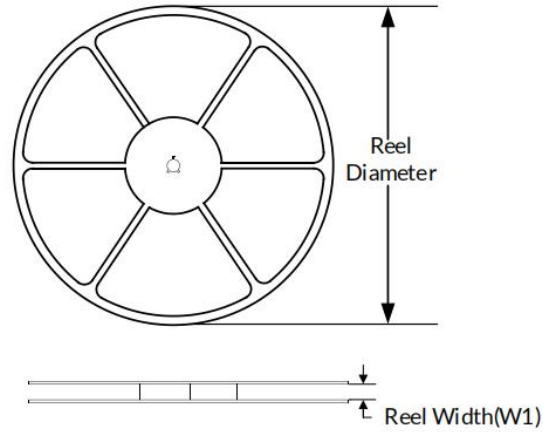
F.  $t_{PZL}$  and  $t_{PZH}$  are the same as  $t_{en}$ .

G.  $t_{PLH}$  and  $t_{PHL}$  are the same as  $t_{pd}$ .

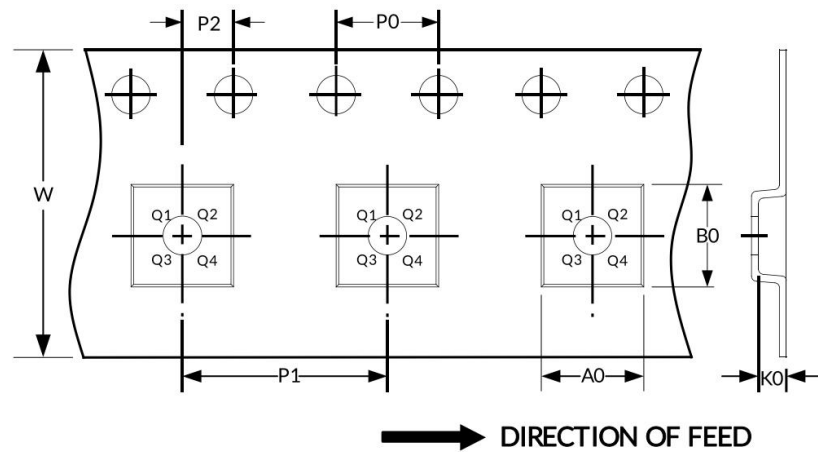
H. Not all parameters and waveforms are applicable to all devices.

◆ Packaging specifications size

**REEL DIMENSIONS**



**TAPE DIMENSION**



Attention: The pictures are for reference only. Please use the physical object as the standard

◆ Key parameter table

| Package Type | Reel Diameter | Reel Width (mm) | A0 (mm) | B0 (mm) | K0 (mm) | P0 (mm) | P1 (mm) | P2 (mm) | W (mm) | Pin1 Quadrant |
|--------------|---------------|-----------------|---------|---------|---------|---------|---------|---------|--------|---------------|
| SC70-5       | 7"            | 9.5             | 2.25    | 2.55    | 1.20    | 4.0     | 4.0     | 2.0     | 8.0    | Q3            |
| SOT23-5      | 7"            | 9.5             | 3.20    | 3.20    | 1.40    | 4.0     | 4.0     | 2.0     | 8.0    | Q3            |

Attention:

All dimensions are nominal sizes.

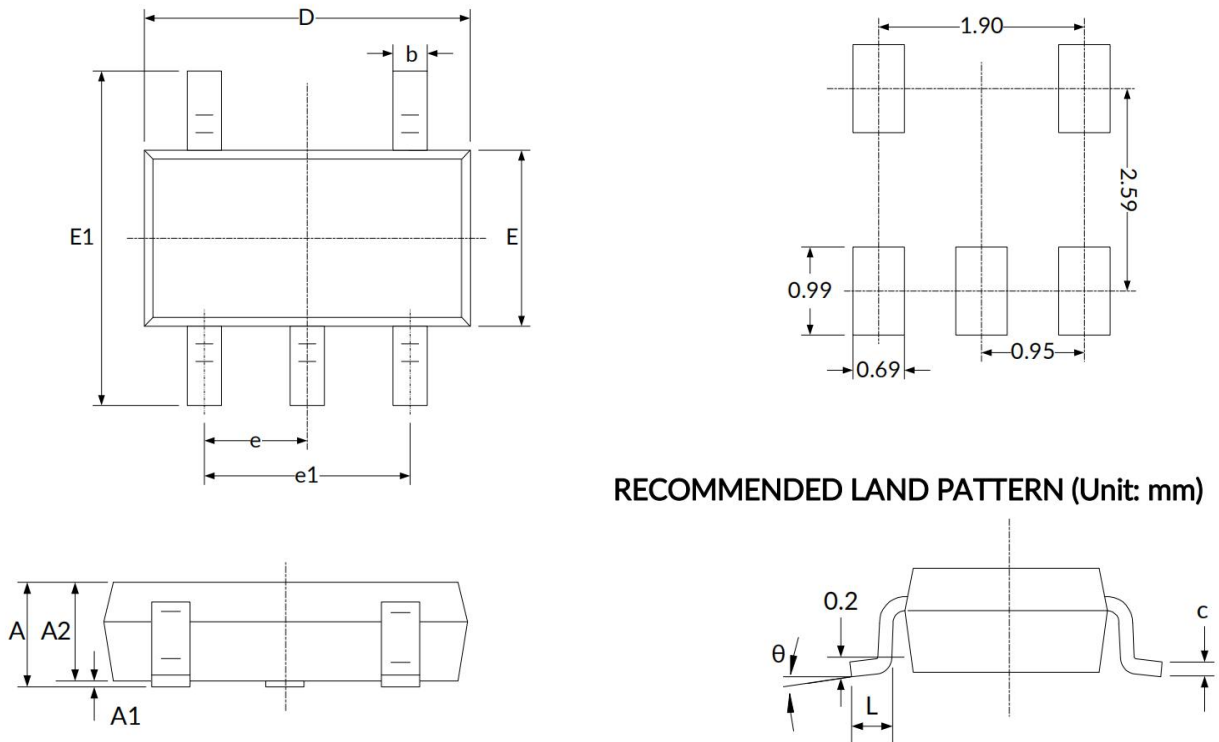
Excluding plastic wrap or metal protrusions with a maximum of 0.15 millimeters on each side.

# ◆ Packaging specifications and dimensions

Attention:

- 1、Excluding plastic wrap or metal protrusions with a maximum of 0.15mm on each side.
- 2、BSC (Basic Center Spacing), where the "basic" spacing is the nominal spacing.
- 3、This image is subject to change without prior notice

## SOT23-5



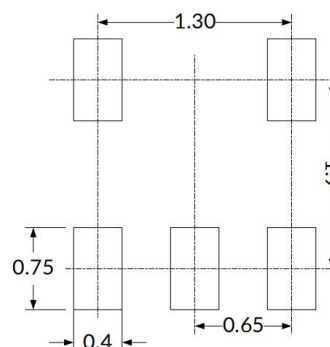
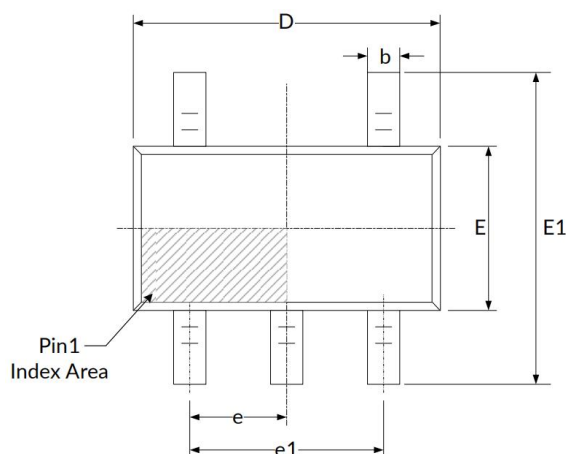
| symbol | Dimensions (in millimeters) |       | Dimensions (in inches) |       |
|--------|-----------------------------|-------|------------------------|-------|
|        | Min                         | Max   | Min                    | Max   |
| A      | 1.050                       | 1.250 | 0.041                  | 0.049 |
| A1     | 0.000                       | 0.100 | 0.000                  | 0.004 |
| A2     | 1.050                       | 1.150 | 0.041                  | 0.045 |
| b      | 0.300                       | 0.500 | 0.012                  | 0.020 |
| C      | 0.100                       | 0.200 | 0.004                  | 0.008 |
| D      | 2.820                       | 3.020 | 0.111                  | 0.119 |
| E      | 1.500                       | 1.700 | 0.059                  | 0.067 |
| E1     | 2.650                       | 2.950 | 0.104                  | 0.116 |
| e      | 0.950 (BSC)                 |       | 0.037 (BSC)            |       |
| e1     | 1.800                       | 2.000 | 0.071                  | 0.079 |
| L      | 0.300                       | 0.600 | 0.012                  | 0.024 |
| θ      | 0°                          | 8°    | 0°                     | 8°    |

# ◆ Packaging specifications and dimensions

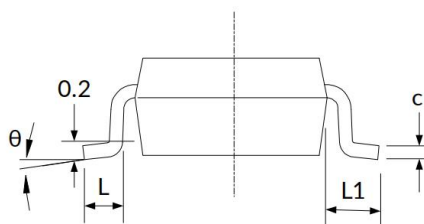
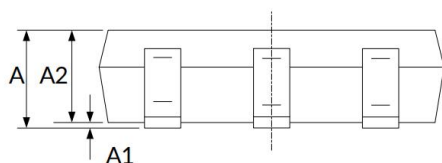
Attention:

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- 2、BSC (Basic Center Spacing), where the "basic" spacing is the nominal spacing.
- 3、This image is subject to change without prior notice

## SC70-5



RECOMMENDED LAND PATTERN (Unit: mm)



| symbol | Dimensions (in millimeters) |       | Dimensions (in inches) |       |
|--------|-----------------------------|-------|------------------------|-------|
|        | Min                         | Max   | Min                    | Max   |
| A      | 0.900                       | 1.100 | 0.035                  | 0.043 |
| A1     | 0.000                       | 0.100 | 0.000                  | 0.004 |
| A2     | 0.900                       | 1.000 | 0.035                  | 0.039 |
| b      | 0.150                       | 0.350 | 0.006                  | 0.014 |
| c      | 0.080                       | 0.150 | 0.003                  | 0.006 |
| D      | 2.000                       | 2.200 | 0.079                  | 0.087 |
| E      | 1.150                       | 1.350 | 0.045                  | 0.053 |
| E1     | 2.150                       | 2.450 | 0.085                  | 0.096 |
| e      | 0.650 (BSC)                 |       | 0.026(BSC)             |       |
| e1     | 1.300 (BSC)                 |       | 0.051(BSC)             |       |
| L      | 0.260                       | 0.460 | 0.010                  | 0.018 |
| L1     | 0.525                       |       | 0.021                  |       |
| θ      | 0°                          | 8°    | 0°                     | 8°    |

**◆ Attention**

- AOTE implements dynamic technical updates. Specifications are subject to change. Refer to the official website for the latest version.
- Users must strictly adhere to specified conditions. Failures caused by misuse (overload, high temperature, incompatible circuits) are excluded from warranty.
- Contact technical support for customized validation in critical applications (medical devices, industrial control).
- This document is valid until December 31, 2026 Updates will be notified on the official website.
- For further clarification on technical specifications or application solutions, please contact us through official channels: