

## 1-of-2 Demultiplexer / Decoder

### General Description

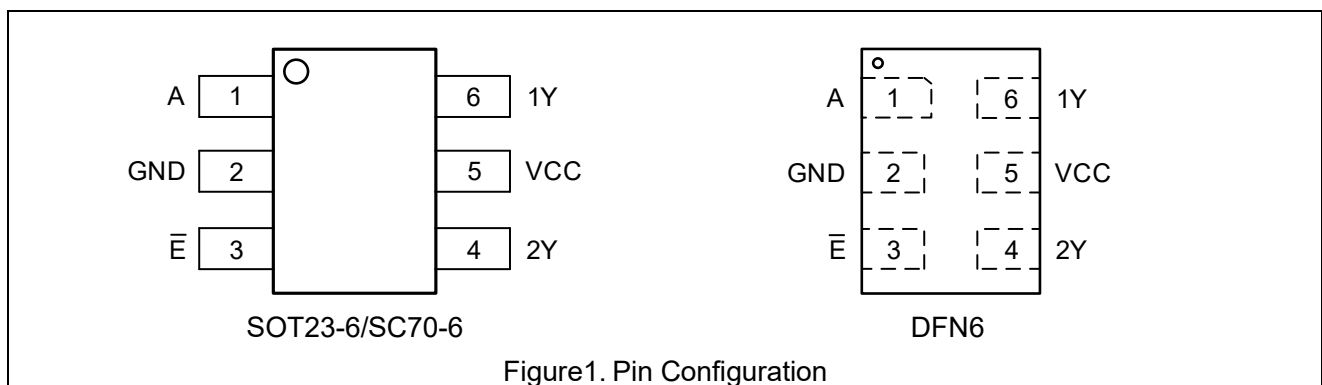
The ET74HC1G19 is a high-performance 1-to-2 demultiplexer / Decoder. This device buffers the data on input A and passes it to the outputs 1Y (True) and 2Y (Complement) when the enable ( $\bar{E}$ ) input signal is LOW. A HIGH  $\bar{E}$  causes both outputs to assume a HIGH state. The device operates over the voltage range from 2V to 6V.

### Features

- Designed for 2V to 6V  $V_{CC}$  Operation
- Over-Voltage Tolerant Inputs Accept Voltages to 5.5V
- $\pm 2.6\text{mA}$  Balanced Output Sink and Source Output Capability
- Near Zero Static Supply Current Substantially Reduces System Power Requirements
- These Devices are Pb-Free and RoHS Compliant
- ESD Protection Complies with JESD22 Standard
  - HBM:  $\pm 4000\text{V}$  Pass (JEDEC JS-001)
  - CDM:  $\pm 1000\text{V}$  Pass (JEDEC JS-002)
- Latch-up Performance Exceeds  $\pm 100\text{mA}$  per JEDEC JESD78F
- Part No. and Package Information

| Part No.    | Package                        | Packing Option         | MSL |
|-------------|--------------------------------|------------------------|-----|
| ET74HC1G19  | SC70-6 (1.3mm $\times$ 2.1mm)  | Tape and Reel, 3K/Reel | 1   |
| ET74HC1G19T | SOT23-6 (1.6mm $\times$ 2.9mm) | Tape and Reel, 3K/Reel | 3   |
| ET74HC1G19Y | DFN6 (1.0mm $\times$ 1.5mm)    | Tape and Reel, 3K/Reel | 1   |

### Pin Configuration



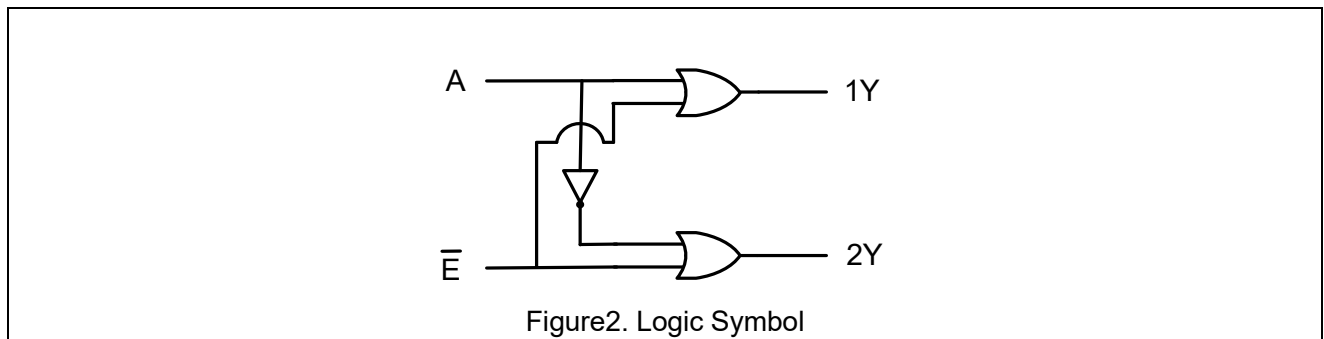
# ET74HC1G19

## Pin Function

SC70-6/ SOT23-6/ DFN6

| Pin No. | Pin Name  | Pin Function              |
|---------|-----------|---------------------------|
| 1       | A         | Data Input                |
| 2       | GND       | Ground                    |
| 3       | $\bar{E}$ | Enable Input (Active LOW) |
| 4       | 2Y        | Data Output 2             |
| 5       | VCC       | Power                     |
| 6       | 1Y        | Data Output 1             |

## Block Diagram



## Function Table

| Input     |   | Output |    |
|-----------|---|--------|----|
| $\bar{E}$ | A | 1Y     | 2Y |
| L         | L | L      | H  |
| L         | H | H      | L  |
| H         | L | H      | H  |
| H         | H | H      | H  |

# ET74HC1G19

## Absolute Maximum Ratings

| Symbol           | Parameter                                                                       |                                     | Value                         | Unit |
|------------------|---------------------------------------------------------------------------------|-------------------------------------|-------------------------------|------|
| V <sub>CC</sub>  | DC Supply Voltage (VCC Pin)                                                     |                                     | -0.5 to 7.0                   | V    |
| V <sub>I</sub>   | DC Input Voltage <sup>(1)</sup>                                                 |                                     | -0.5 ≤ V <sub>I</sub> ≤ 7.0   | V    |
| V <sub>O</sub>   | DC Output Voltage Output in Higher or Low State                                 |                                     | -0.5 to V <sub>CC</sub> + 0.5 | V    |
| I <sub>IK</sub>  | DC Input Diode Current, V <sub>I</sub> < GND                                    |                                     | -50                           | mA   |
| I <sub>OK</sub>  | DC Output Diode Current, V <sub>O</sub> < GND, V <sub>O</sub> > V <sub>CC</sub> |                                     | ±50                           | mA   |
| I <sub>O</sub>   | DC Output Sink Current                                                          |                                     | ±50                           | mA   |
| I <sub>CC</sub>  | DC Supply Current Per Supply Pin                                                |                                     | 100                           | mA   |
| I <sub>GND</sub> | DC Ground Current Per Supply Pin                                                |                                     | -100                          | mA   |
| T <sub>STG</sub> | Storage Temperature Range                                                       |                                     | -65 to 150                    | °C   |
| T <sub>L</sub>   | Lead Temperature, Soldering 10 Seconds                                          |                                     | 260                           | °C   |
| T <sub>J</sub>   | Max Junction Temperature                                                        |                                     | 150                           | °C   |
| V <sub>ESD</sub> | ESD Classification                                                              | Human Body Model <sup>(2)</sup>     | ±4000                         | V    |
|                  |                                                                                 | Charged Device Model <sup>(3)</sup> | ±1000                         |      |
| I <sub>LU</sub>  | Max Latch Up Current Above V <sub>CC</sub> and GND at 125°C <sup>(4)</sup>      |                                     | ±100                          | mA   |

Stresses exceeding those listed in this table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

**Note1:** I<sub>O</sub> absolute maximum rating must be observed.

**Note2:** HBM tested per JEDEC JS-001;

**Note3:** CDM tested per JEDEC JS-002;

**Note4:** Latch Up Current Maximum Rating tested per JEDEC JESD78F.

## Thermal Characteristics

| Symbol           | Package | Ratings                                                      | Value | Unit |
|------------------|---------|--------------------------------------------------------------|-------|------|
| R <sub>θJA</sub> | SC70-6  | Thermal Characteristics, Thermal Resistance, Junction-to-Air | 280   | °C/W |
|                  | SOT23-6 |                                                              | 180   |      |
|                  | DFN6    |                                                              | 440   |      |
| P <sub>D</sub>   | SC70-6  | Power Dissipation in Still Air at 85°C                       | 230   | mW   |
|                  | SOT23-6 |                                                              | 360   |      |
|                  | DFN6    |                                                              | 150   |      |

## Recommended Operating Conditions

| Symbol          | Parameter                            | Min | Max             | Unit |
|-----------------|--------------------------------------|-----|-----------------|------|
| V <sub>CC</sub> | DC Supply Voltage                    | 2   | 6               | V    |
| V <sub>I</sub>  | DC Input Voltage                     | 0   | V <sub>CC</sub> | V    |
| V <sub>O</sub>  | DC Output Voltage(High or Low State) | 0   | V <sub>CC</sub> | V    |
| T <sub>A</sub>  | Operating Temperature Range          | -40 | 125             | °C   |

# ET74HC1G19

## Electrical Characteristics

### DC Electrical Characteristics

| Symbol           | Parameter                 | Condition                                  | V <sub>CC</sub> (V) | T <sub>A</sub> = 25°C |                 |      | -40°C ≤ T <sub>A</sub> ≤ 125°C |      | Unit |
|------------------|---------------------------|--------------------------------------------|---------------------|-----------------------|-----------------|------|--------------------------------|------|------|
|                  |                           |                                            |                     | Min                   | Typ             | Max  | Min                            | Max  |      |
| V <sub>IH</sub>  | High-level Input Voltage  |                                            | 2.0                 | 1.5                   |                 |      | 1.5                            |      | V    |
|                  |                           |                                            | 4.5                 | 3.15                  |                 |      | 3.15                           |      |      |
|                  |                           |                                            | 6.0                 | 4.2                   |                 |      | 4.2                            |      |      |
| V <sub>IL</sub>  | Low-level Input Voltage   |                                            | 2.0                 |                       |                 | 0.5  |                                | 0.5  | V    |
|                  |                           |                                            | 4.5                 |                       |                 | 1.35 |                                | 1.35 |      |
|                  |                           |                                            | 6.0                 |                       |                 | 1.8  |                                | 1.8  |      |
| V <sub>OH</sub>  | High-level Output Voltage | I <sub>OH</sub> = -20uA                    | 2~6                 | V <sub>CC</sub> - 0.1 | V <sub>CC</sub> |      | V <sub>CC</sub> - 0.1          |      | V    |
|                  |                           | I <sub>OH</sub> = -2mA                     | 4.5                 | 4.13                  | 4.32            |      | 3.7                            |      |      |
|                  |                           | I <sub>OH</sub> = -2.6mA                   | 6.0                 | 5.63                  | 5.81            |      | 5.2                            |      |      |
| V <sub>OL</sub>  | Low-level Output Voltage  | I <sub>OL</sub> = 20uA                     | 2~6                 |                       | 0.0             | 0.1  |                                | 0.1  | V    |
|                  |                           | I <sub>OL</sub> = 2mA                      | 4.5                 |                       | 0.15            | 0.33 |                                | 0.4  |      |
|                  |                           | I <sub>OL</sub> = 2.6mA                    | 6.0                 |                       | 0.16            | 0.33 |                                | 0.4  |      |
| I <sub>IN</sub>  | Input Leakage Current     | V <sub>I</sub> = 6V or GND                 | 0~6                 |                       |                 | ±0.1 |                                | ±1.0 | uA   |
| I <sub>OFF</sub> | Power Off Leakage Current | V <sub>I</sub> = 6V or V <sub>O</sub> = 6V | 0                   |                       |                 | 1    |                                | 10   | uA   |
| I <sub>CC</sub>  | Quiescent Supply Current  | V <sub>I</sub> = 6V or GND                 | 6                   |                       |                 | 1    |                                | 10   | uA   |

### AC Electrical Characteristics

t<sub>r</sub> = t<sub>f</sub> = 3ns; R<sub>L</sub> = 500Ω

| Symbol                               | Parameter                            | Condition             | V <sub>CC</sub> (V) | T <sub>A</sub> = 25°C |     |      | -40°C ≤ T <sub>A</sub> ≤ 125°C |      | Unit |
|--------------------------------------|--------------------------------------|-----------------------|---------------------|-----------------------|-----|------|--------------------------------|------|------|
|                                      |                                      |                       |                     | Min                   | Typ | Max  | Min                            | Max  |      |
| t <sub>PLH</sub><br>t <sub>PHL</sub> | Propagation Delay<br>(Figure3 and 4) | C <sub>L</sub> = 50pF | 2.0                 |                       | 31  | 121  |                                | 141  | ns   |
|                                      |                                      | C <sub>L</sub> = 50pF | 4.5                 |                       | 11  | 25   |                                | 29   |      |
|                                      |                                      | C <sub>L</sub> = 15pF | 5.0                 |                       | 8   |      |                                |      |      |
|                                      |                                      | C <sub>L</sub> = 50pF | 6.0                 |                       | 8.5 | 20.5 |                                | 23.5 |      |

# ET74HC1G19

## Capacitance Characteristics

| Symbol   | Parameter                                    | Condition                                           | Typ | Unit |
|----------|----------------------------------------------|-----------------------------------------------------|-----|------|
| $C_{IN}$ | Input Capacitance                            | $V_{CC} = 6V, V_I = 0V \text{ or } V_{CC}$          | 3.5 | pF   |
| $C_{PD}$ | Power Dissipation Capacitance <sup>(5)</sup> | 10MHz, $V_{CC} = 3.3V, V_I = 0V \text{ or } V_{CC}$ | 26  | pF   |
|          |                                              | 10MHz, $V_{CC} = 6V, V_I = 0V \text{ or } V_{CC}$   | 30  |      |

**Note5:**  $C_{PD}$  is used to determine the dynamic power dissipation ( $P_D$  in  $\mu W$ ).

$$P_D = C_{PD} \times V_{CC}^2 \times f_i \times N + \Sigma(C_L \times V_{CC}^2 \times f_o) \text{ where:}$$

$f_i$  = 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;

$\Sigma(C_L \times V_{CC}^2 \times f_o)$  = sum of outputs.

## AC Test Circuit

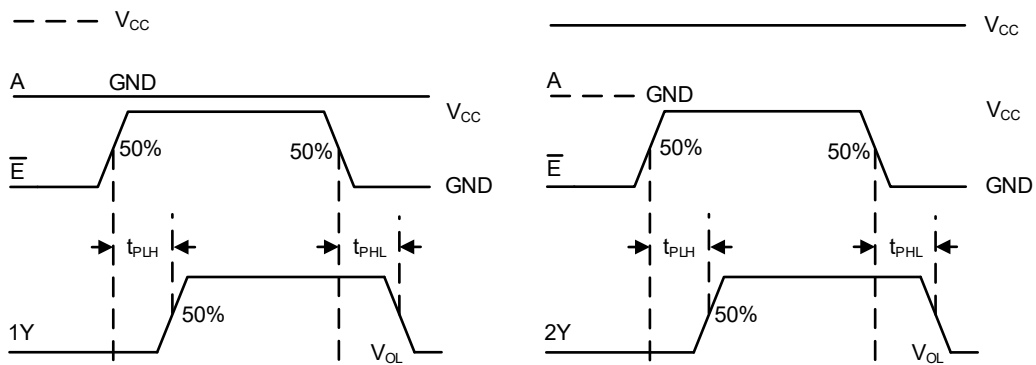


Figure3. Switching Waveform

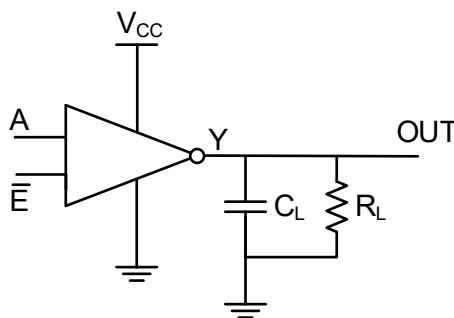
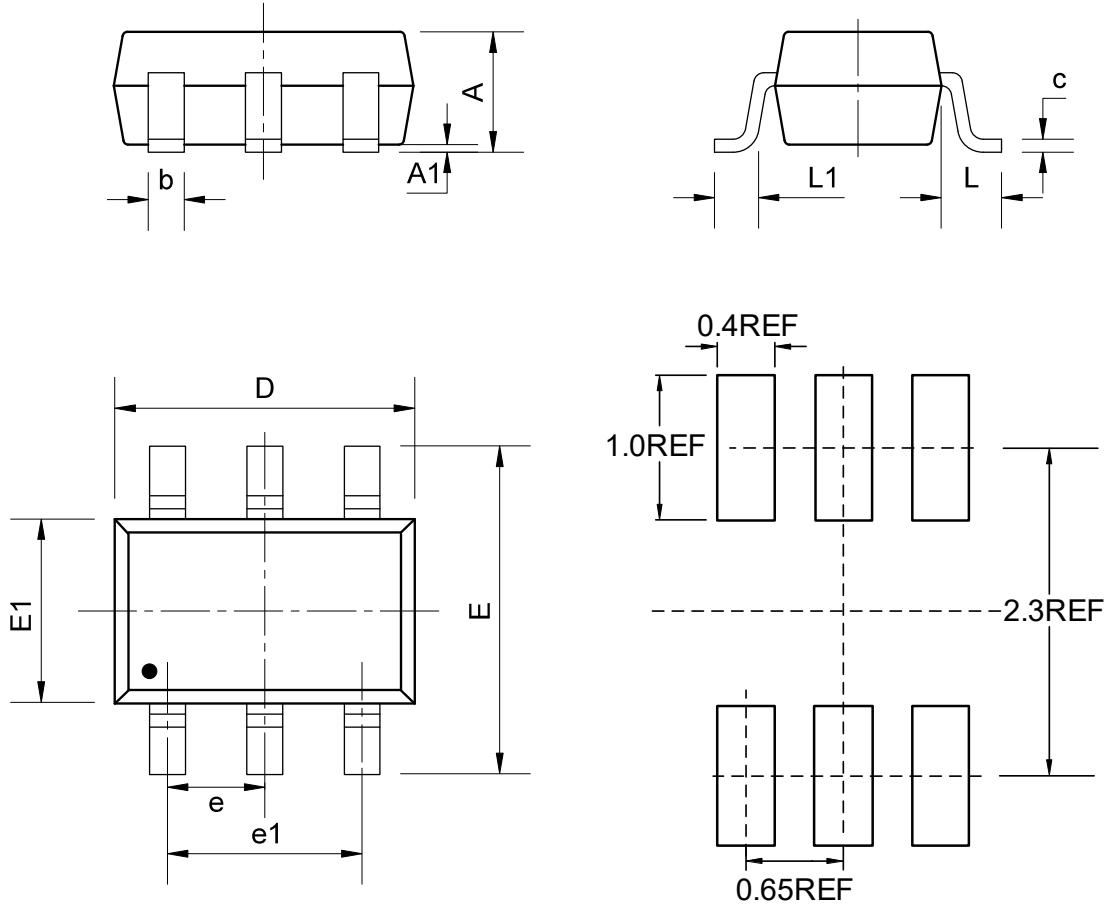


Figure4. Test Circuit

# ET74HC1G19

## Package Dimension

SC70-6 (1.3mm × 2.1mm)



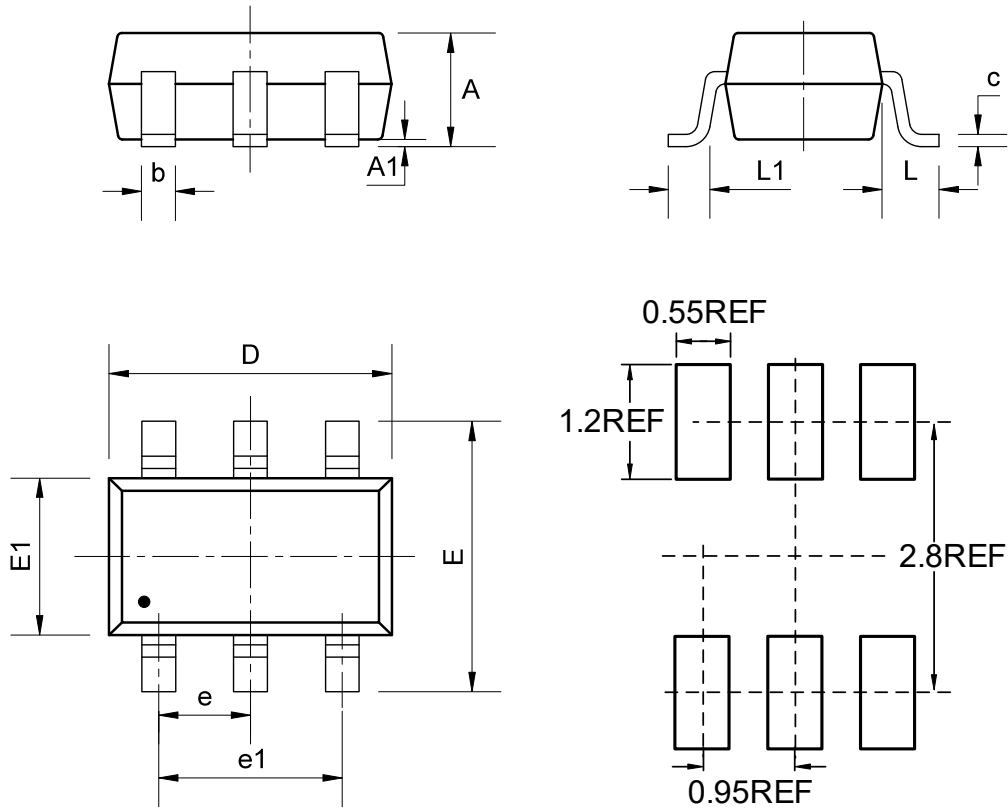
### COMMON DIMENSIONS

(Unit: mm)

| SYMBOL | MIN     | NOM  | MAX  |
|--------|---------|------|------|
| A      | -       | -    | 1.10 |
| A1     | 0.00    | -    | 0.15 |
| b      | 0.15    | -    | 0.35 |
| c      | 0.08    | -    | 0.20 |
| D      | 2.00    | 2.10 | 2.30 |
| e      | 0.65BSC |      |      |
| e1     | 1.30BSC |      |      |
| E      | 2.15    | 2.30 | 2.50 |
| E1     | 1.15    | 1.30 | 1.45 |
| L      | 0.50REF |      |      |
| L1     | 0.33REF |      |      |

# ET74HC1G19

SOT23-6 (1.6mm × 2.9mm)



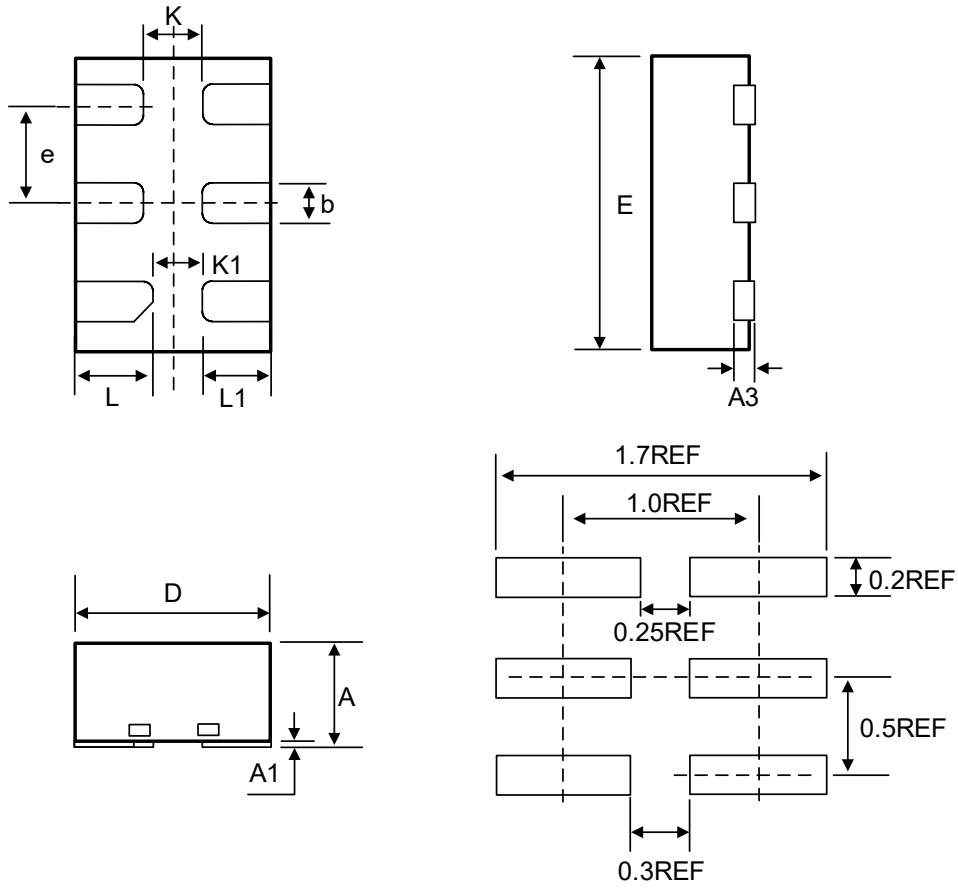
## COMMON DIMENSIONS

(Unit: mm)

| SYMBOL | MIN     | NOM  | MAX  |
|--------|---------|------|------|
| A      | -       | -    | 1.45 |
| A1     | 0.00    | -    | 0.15 |
| b      | 0.28    | 0.35 | 0.50 |
| c      | 0.08    | 0.15 | 0.22 |
| D      | 2.75    | 2.9  | 3.05 |
| e      | 0.90    | 0.95 | 1.00 |
| e1     | 1.80    | 1.90 | 2.00 |
| E      | 2.60    | 2.80 | 3.00 |
| E1     | 1.45    | 1.6  | 1.75 |
| L      | 0.60REF |      |      |
| L1     | 0.30    | 0.45 | 0.60 |

# ET74HC1G19

DFN6 (1.0mm × 1.5mm)



COMMON DIMENSIONS  
(Unit: mm)

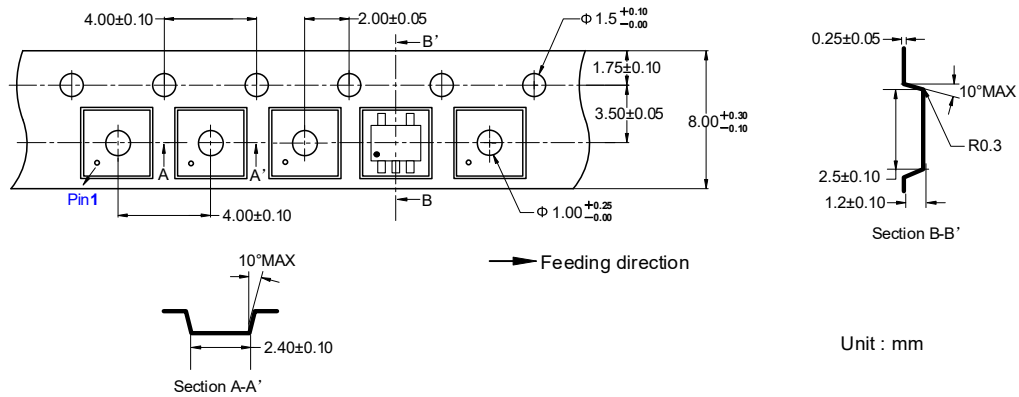
| SYMBOL | MIN     | NOM  | MAX  |
|--------|---------|------|------|
| A      | 0.50    | --   | 0.60 |
| A1     | 0.00    | 0.02 | 0.05 |
| A3     | 0.10REF |      |      |
| b      | 0.15    | 0.20 | 0.25 |
| D      | 0.90    | 1.00 | 1.10 |
| E      | 1.40    | 1.50 | 1.60 |
| e      | 0.50BSC |      |      |
| K      | 0.30REF |      |      |
| K1     | 0.25REF |      |      |
| L      | 0.35    | 0.40 | 0.45 |
| L1     | 0.30    | 0.35 | 0.40 |



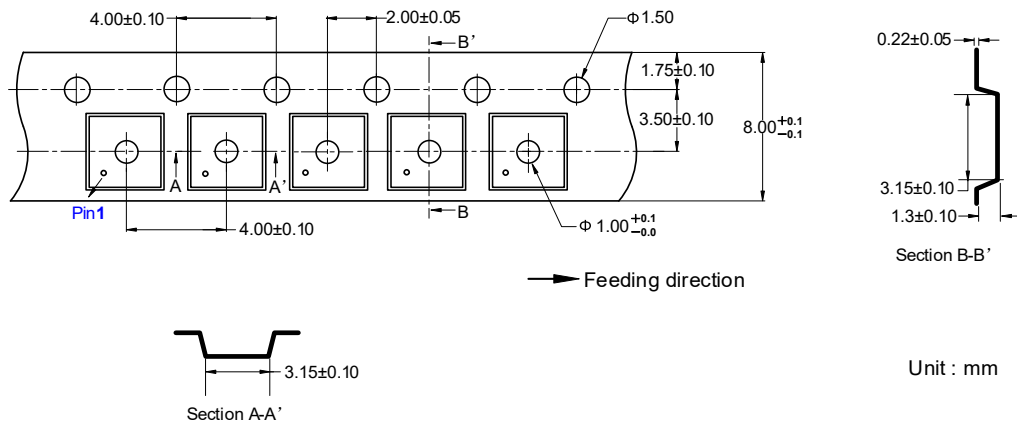
# ET74HC1G19

## Tape Information

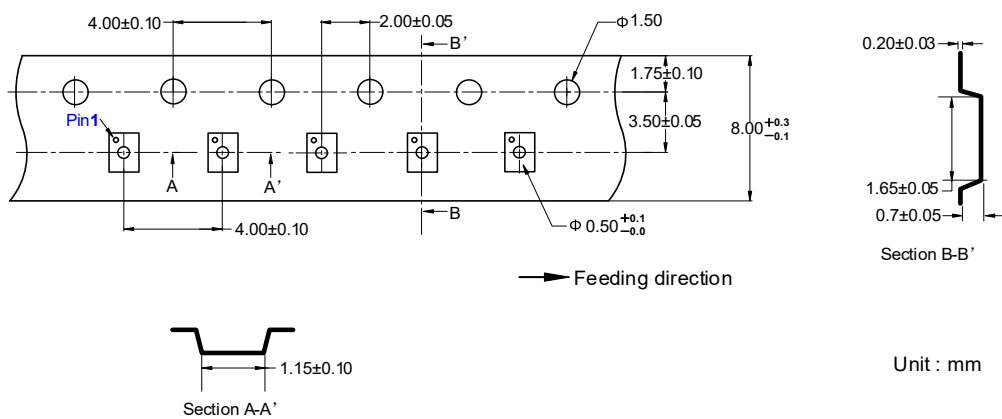
SC70-6 (1.3mm × 2.1mm)



SOT23-6 (1.6mm × 2.9mm)



DFN6 (1.0mm × 1.5mm)



# ET74HC1G19

## Marking Information

|                                                                                                    |                                                                                                                  |
|----------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|
| <div>1G19X</div> <div>●</div> <div>ET74HC1G19<br/>1G19 = Part Number<br/>X = Tracking Number</div> | <div>C119<br/>XXXXX</div> <div>●</div> <div>ET74HC1G19T<br/>C119 = Part Number<br/>XXXXX = Tracking Number</div> |
|----------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|

## Revision History and Checking Table

| Version | Date       | Revision Item    | Modifier | Function & Spec Checking | Package & Tape Checking |
|---------|------------|------------------|----------|--------------------------|-------------------------|
| 1.0     | 2026-03-29 | Official Version | Xu tao   | Yang xiaoxu              | Liu jiaying             |