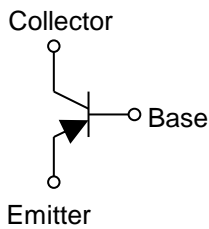


| Parameter | Value |
|-----------|-------|
| V_{CEO} | -12V |
| I_C | -1.5A |

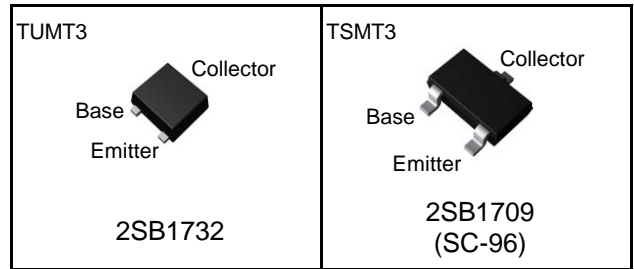
●Features

- 1) Suitable for Middle Power Driver
- 2) Complementary PNP Types : 2SD2702, 2SD2674
- 3) Low $V_{CE(sat)}$
 $V_{CE(sat)} = -0.20V(\text{Max.})$
 $(I_C/I_B = -500mA / -25mA)$
- 4) Lead Free/RoHS Compliant.

●Inner circuit



●Outline



●Applications

Motor driver , LED driver
Power supply

●Packaging specifications

| Part No. | Package | Package size (mm) | Taping code | Reel size (mm) | Tape width (mm) | Basic ordering unit (pcs) | Marking |
|----------|---------|-------------------|-------------|----------------|-----------------|---------------------------|---------|
| 2SB1732 | TUMT3 | 2021 | TL | 180 | 8 | 3,000 | EV |
| 2SB1709 | TSMT3 | 2928 | TL | 180 | 8 | 3,000 | EV |

● **Absolute maximum ratings** (Ta = 25°C)

| Parameter | | Symbol | Values | Unit |
|------------------------------|---------|---------------|-------------|------|
| Collector-base voltage | | V_{CBO} | -15 | V |
| Collector-emitter voltage | | V_{CEO} | -12 | V |
| Emitter-base voltage | | V_{EBO} | -6 | V |
| Collector current | DC | I_C | -1.5 | A |
| | Pulsed | I_{CP}^{*1} | -3.0 | A |
| Power dissipation | 2SB1732 | P_D^{*2} | 0.4 | W |
| | 2SB1709 | P_D^{*2} | 0.5 | W |
| Junction temperature | | T_j | 150 | °C |
| Range of storage temperature | | T_{stg} | -55 to +150 | °C |

*1 Pw=1ms , single pulse

*2 Each terminal mounted on a reference land

● **Electrical characteristics** (Ta = 25°C)

| Parameter | Symbol | Conditions | Min. | Typ. | Max. | Unit |
|--------------------------------------|---------------|---|------|------|------|------|
| Collector-emitter breakdown voltage | BV_{CEO} | $I_C = -10\mu A$ | -15 | - | - | V |
| Collector-base breakdown voltage | BV_{CBO} | $I_C = -1mA$ | -12 | - | - | V |
| Emitter-base breakdown voltage | BV_{EBO} | $I_E = -10\mu A$ | -6 | - | - | V |
| Collector cut-off current | I_{CBO} | $V_{CB} = -15V$ | - | - | -100 | nA |
| Emitter cut-off current | I_{EBO} | $V_{EB} = -6V$ | - | - | -100 | nA |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_C = -500mA, I_B = -25mA$ | - | -85 | -200 | mV |
| DC current gain | h_{FE}^{*3} | $V_{CE} = -2V, I_C = -200mA$ | 270 | - | 680 | - |
| Transition frequency | f_T^{*3} | $V_{CE} = -2V, I_E = 200mA$ $f = 100MHz$ | - | 400 | - | MHz |
| Output capacitance | C_{ob} | $V_{CB} = -10V, I_E = 0A,$ $f = 1MHz$ | - | 12 | - | pF |

*3 Pulsed

●Electrical characteristic curves(Ta = 25°C)

Fig.1 Ground Emitter Propagation Characteristics

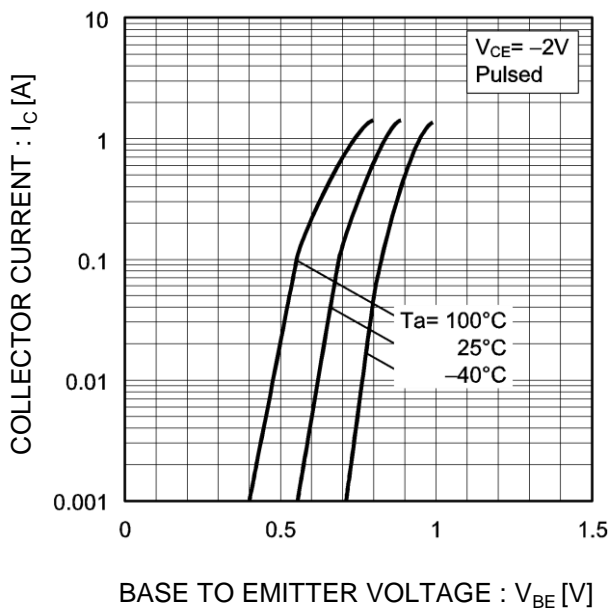


Fig.2 Typical Output Characteristics

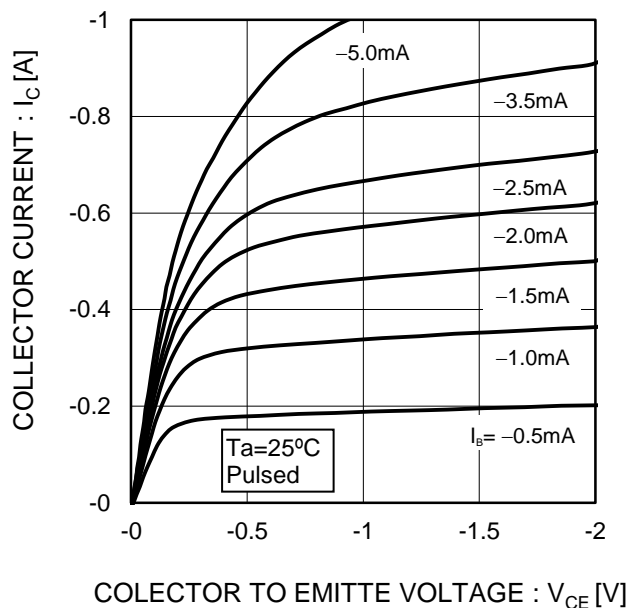


Fig.3 DC Current Gain vs. Collector Current(I)

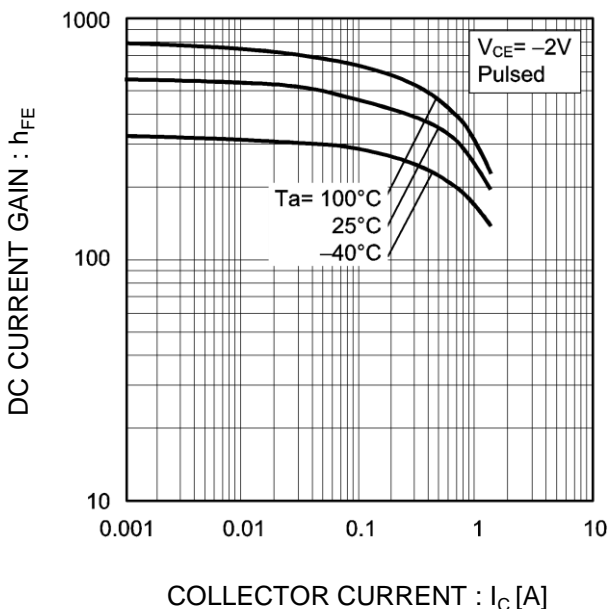
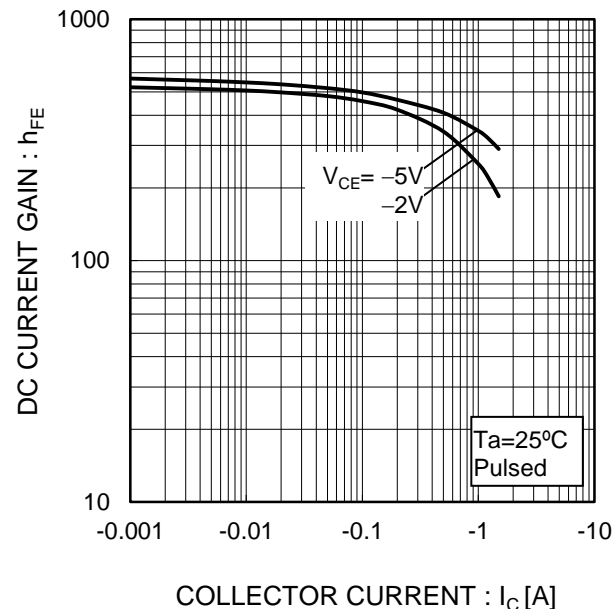


Fig.4 DC Current Gain vs. Collector Current(II)



●Electrical characteristic curves(Ta = 25°C)

Fig.5 Collector-Emitter Saturation Voltage vs. Collector Current (I)

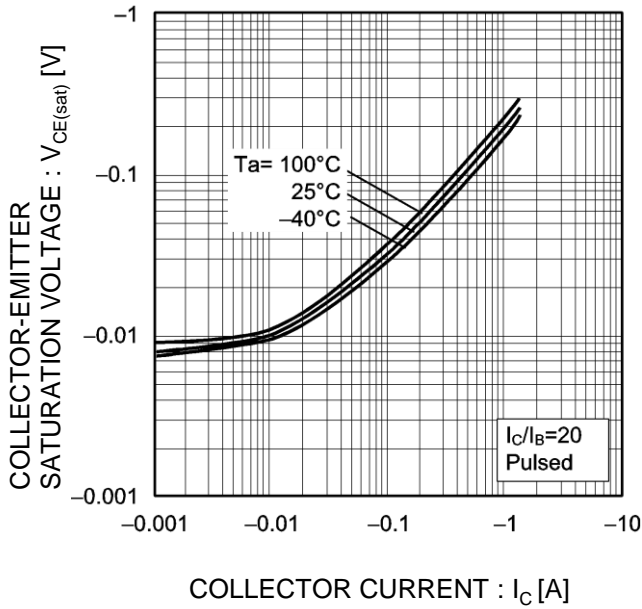


Fig.6 Collector-Emitter Saturation Voltage vs. Collector Current (II)

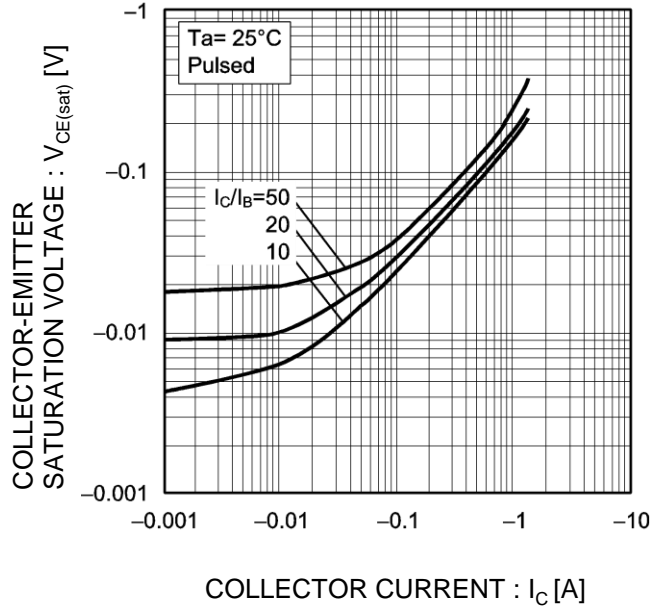


Fig.7 Base-Emitter Saturation Voltage vs. Collector Current

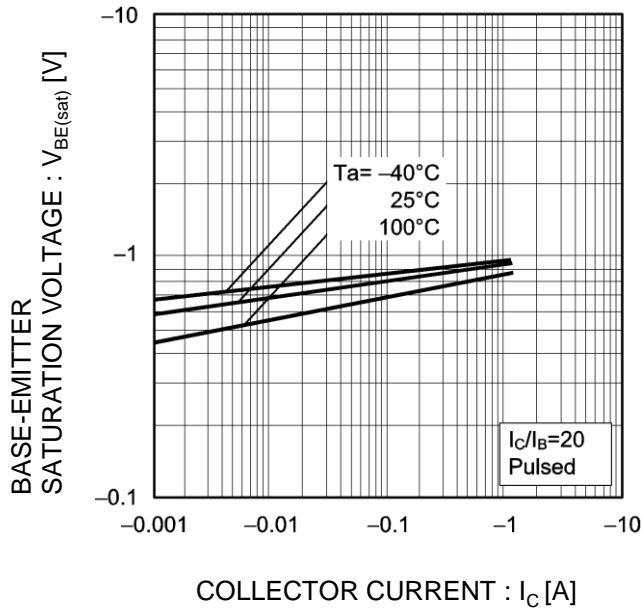
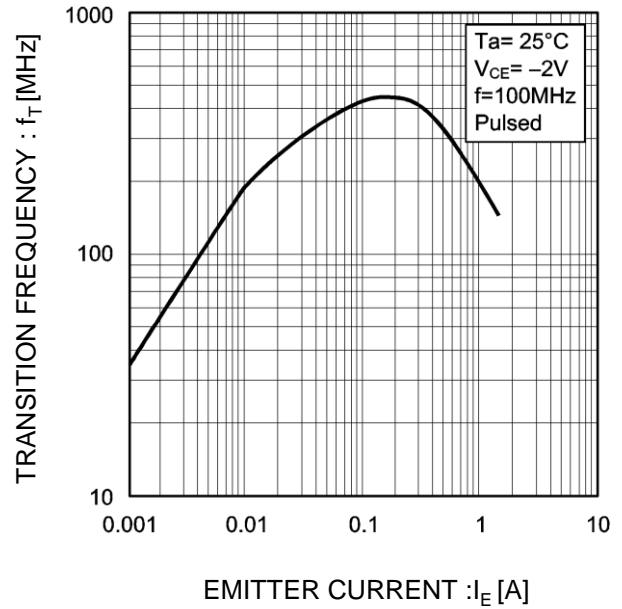


Fig.8 Gain Bandwidth Product vs. Emitter Current



●Electrical characteristic curves(Ta = 25°C)

Fig.9 Emitter input capacitance vs. Emitter-Base Voltage
Collector output capacitance vs. Collector-Base Voltage

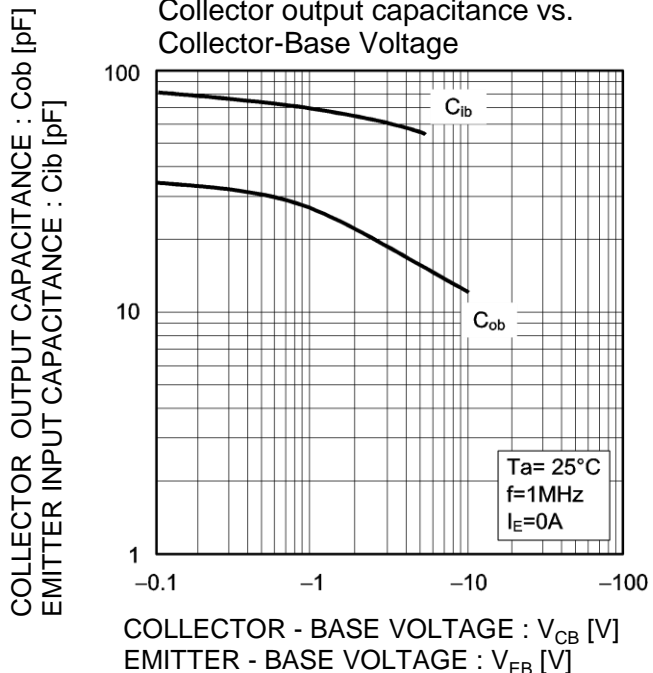


Fig.10 Safe Operating Area

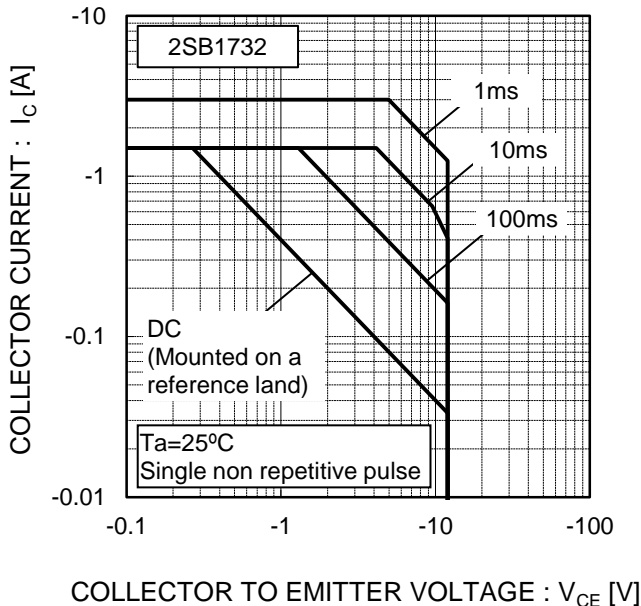
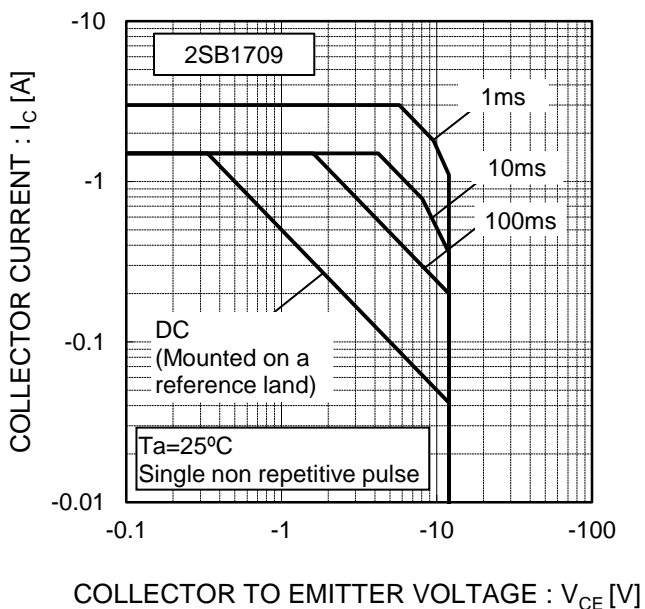
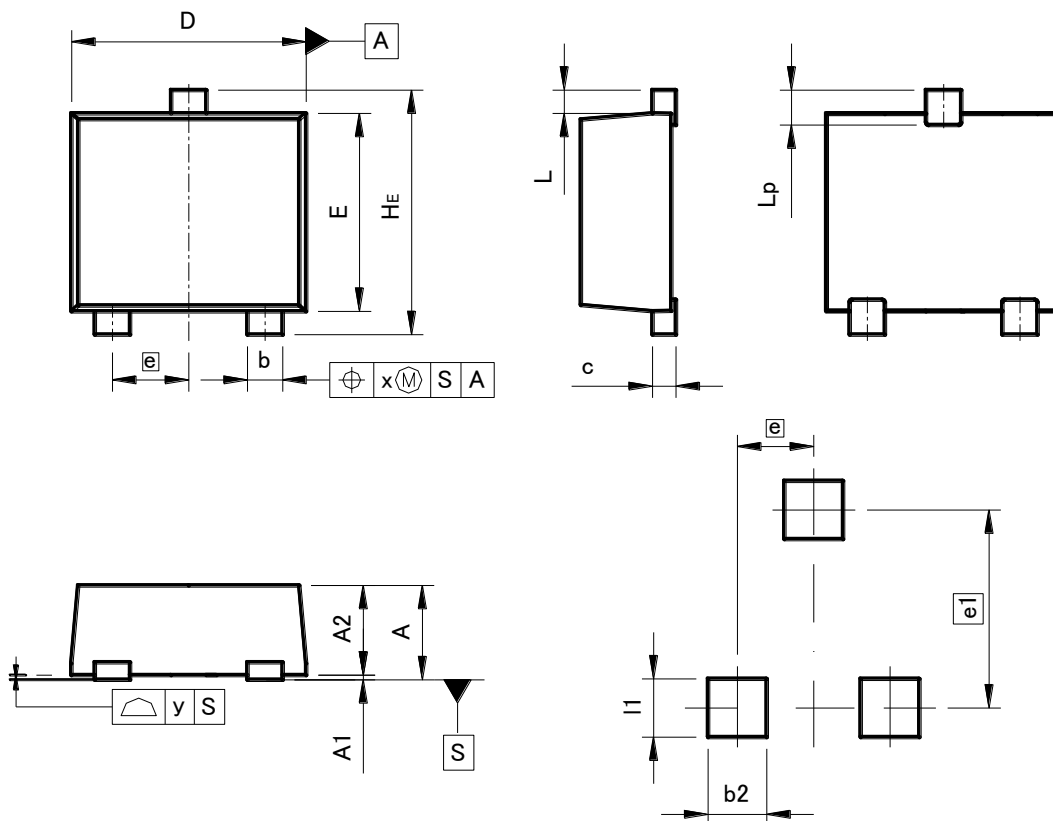


Fig.11 Safe Operating Area



●Dimensions (Unit : mm)

TUMT3



Pattern of terminal position areas
[Not a recommended pattern of soldering pads]

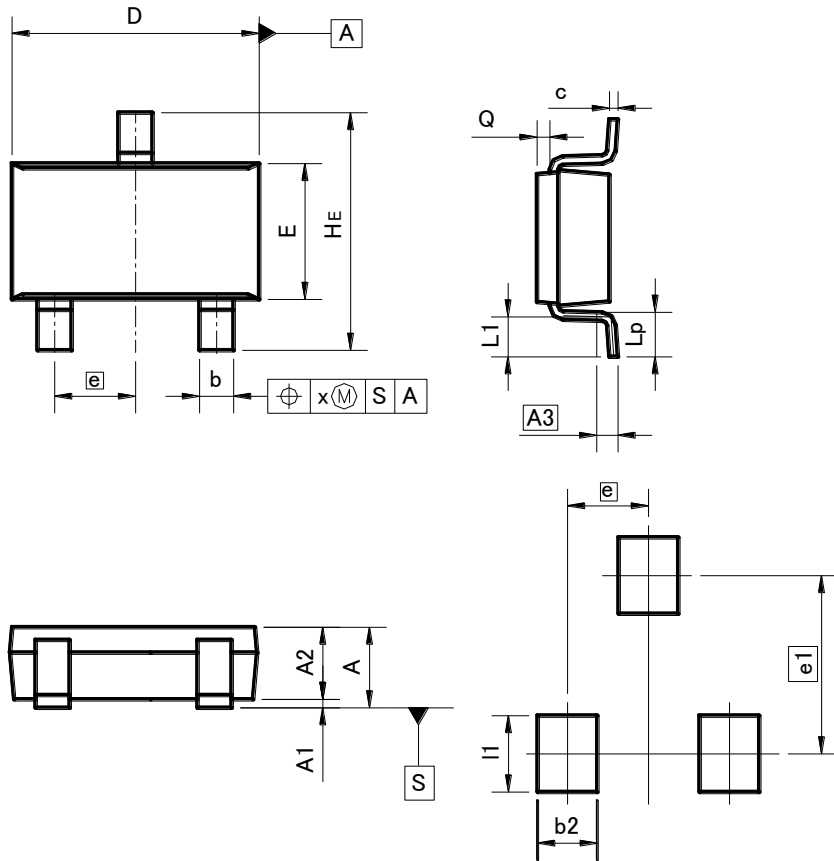
| DIM | MILIMETERS | | INCHES | |
|-----|------------|------|--------|-------|
| | MIN | MAX | MIN | MAX |
| A | - | 0.85 | - | 0.033 |
| A1 | 0.00 | 0.10 | 0.000 | 0.004 |
| A2 | 0.72 | 0.82 | 0.028 | 0.032 |
| b | 0.25 | 0.40 | 0.010 | 0.016 |
| c | 0.12 | 0.22 | 0.005 | 0.009 |
| D | 1.90 | 2.10 | 0.075 | 0.083 |
| E | 1.60 | 1.80 | 0.063 | 0.071 |
| e | 0.65 | | 0.026 | |
| HE | 2.00 | 2.20 | 0.079 | 0.087 |
| L | 0.20 | | 0.008 | |
| Lp | - | 0.40 | - | 0.016 |
| x | - | 0.10 | - | 0.004 |
| y | - | 0.10 | - | 0.004 |

| DIM | MILIMETERS | | INCHES | |
|-----|------------|------|--------|-------|
| | MIN | MAX | MIN | MAX |
| b2 | - | 0.50 | - | 0.020 |
| e1 | 1.70 | | 0.067 | |
| I1 | - | 0.50 | - | 0.020 |

Dimension in mm / inches

●Dimensions (Unit : mm)

TSMT3



Pattern of terminal position areas
[Not a recommended pattern of soldering pads]

| DIM | MILIMETERS | | INCHES | |
|-----|------------|------|--------|-------|
| | MIN | MAX | MIN | MAX |
| A | - | 1.00 | - | 0.039 |
| A1 | 0.00 | 0.10 | 0.000 | 0.004 |
| A2 | 0.75 | 0.95 | 0.030 | 0.037 |
| A3 | 0.25 | | 0.010 | |
| b | 0.35 | 0.50 | 0.014 | 0.020 |
| c | 0.10 | 0.26 | 0.004 | 0.010 |
| D | 2.80 | 3.00 | 0.110 | 0.118 |
| E | 1.50 | 1.80 | 0.059 | 0.071 |
| e | 0.95 | | 0.037 | |
| HE | 2.60 | 3.00 | 0.102 | 0.118 |
| L1 | 0.30 | 0.60 | 0.012 | 0.024 |
| Lp | 0.40 | 0.70 | 0.016 | 0.028 |
| Q | 0.05 | 0.25 | 0.002 | 0.010 |
| x | - | 0.20 | - | 0.008 |

| DIM | MILIMETERS | | INCHES | |
|-----|------------|------|--------|-------|
| | MIN | MAX | MIN | MAX |
| b2 | - | 0.70 | - | 0.028 |
| e1 | 2.10 | | 0.083 | |
| l1 | - | 0.90 | - | 0.035 |

Dimension in mm / inches

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