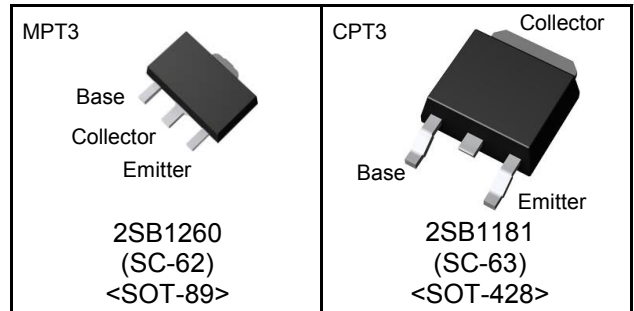


| Parameter | Value |
|-----------|-------|
| $V_{CEO}$ | -80V  |
| $I_C$     | -1.0A |

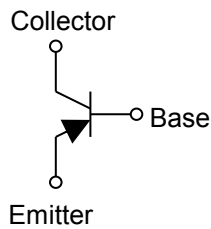
### ●Features

- 1) Suitable for Middle Power Driver
- 2) Complementary NPN Types : 2SD1898 / 2SD1733
- 3) Low  $V_{CE(sat)}$   
 $V_{CE(sat)} = -0.4V$  Max. ( $I_C/I_B = -500mA / -50mA$ )
- 4) Lead Free/RoHS Compliant.

### ●Outline



### ●Inner circuit



### ●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 |
|----------|---------|-------------------|-------------|----------------|-----------------|---------------------------|---------|
| 2SB1260  | MPT3    | 4540              | T100        | 180            | 12              | 1,000                     | BE      |
| 2SB1181  | CPT3    | 6595              | TL          | 330            | 16              | 2,500                     | B1181   |

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

| Parameter                    |         | Symbol        | Values      | Unit |
|------------------------------|---------|---------------|-------------|------|
| Collector-base voltage       |         | $V_{CBO}$     | -80         | V    |
| Collector-emitter voltage    |         | $V_{CEO}$     | -80         | V    |
| Emitter-base voltage         |         | $V_{EBO}$     | -5          | V    |
| Collector current            | DC      | $I_C$         | -1.0        | A    |
|                              | Pulsed  | $I_{CP}^{*1}$ | -2.0        | A    |
| Power dissipation            | 2SB1260 | $P_D$         | $0.5^{*2}$  | W    |
|                              |         |               | $2.0^{*3}$  |      |
|                              | 2SB1181 |               | $1^{*4}$    | W    |
|                              |         |               | $10^{*5}$   |      |
| Junction temperature         |         | $T_j$         | 150         | °C   |
| Range of storage temperature |         | $T_{stg}$     | -55 to +150 | °C   |

\*1 Pw=20ms , duty=1/2

\*2 Each terminal mounted on a reference land

\*3 Mounted on a ceramic board (40×40×0.7 mm)

\*4 Mounted on a substrate

\*5  $T_C=25^\circ\text{C}$ 
**●Electrical characteristics (Ta = 25°C)**

| Parameter                            | Symbol        | Conditions   | Min. | Typ.      | Max. | Unit          |
|--------------------------------------|---------------|--|------|-----------|------|---------------|
| Collector-emitter breakdown voltage  | $BV_{CEO}$    | $I_C = -1\text{mA}$  | -80  | -         | -    | V             |
| Collector-base breakdown voltage     | $BV_{CBO}$    | $I_C = -50\mu\text{A}$   | -80  | -         | -    | V             |
| Emitter-base breakdown voltage       | $BV_{EBO}$    | $I_E = -50\mu\text{A}$   | -5   | -         | -    | V             |
| Collector cut-off current            | $I_{CBO}$     | $V_{CB} = -60\text{V}$   | -    | -         | -1   | $\mu\text{A}$ |
| Emitter cut-off current              | $I_{EBO}$     | $V_{EB} = -4\text{V}$  | -    | -         | -1   | $\mu\text{A}$ |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_C = -1\text{A}, I_B = -50\text{mA}$                         | -    | -         | -0.4 | V             |
| DC current gain                      | $h_{FE}$      | $V_{CE} = -3\text{V}, I_C = -0.1\text{A}$                      | 120  | -         | 390  | -             |
| Transition frequency                 | $f_T$         | $V_{CE} = -10\text{V}, I_E = 50\text{mA}$<br>$f=100\text{MHz}$ | -    | 100       | -    | MHz           |
| Output capacitance                   | $C_{ob}$      | $V_{CB} = -10\text{V}, I_E = 0\text{A}$<br>$f = 1\text{MHz}$   | -    | $20^{*6}$ | -    | pF            |
|                                      |               |  | -    | $25^{*7}$ | -    | pF            |

\*6 2SB1260

\*7 2SB1181

**● $h_{FE}$  rank categories**

| Rank     | Q          | R          |
|----------|------------|------------|
| $h_{FE}$ | 120 to 270 | 180 to 390 |

●Electrical characteristic curves(Ta = 25°C)

Fig.1 Ground Emitter Propagation Characteristics

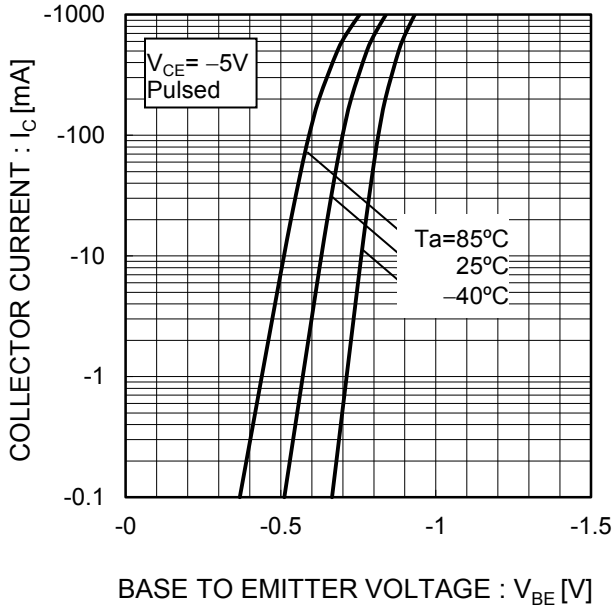


Fig.2 Typical Output Characteristics

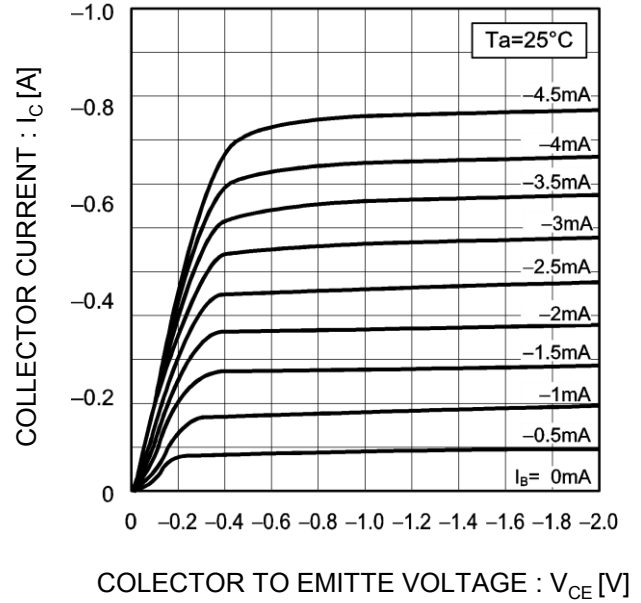


Fig.3 DC Current Gain vs. Collector Current(I)

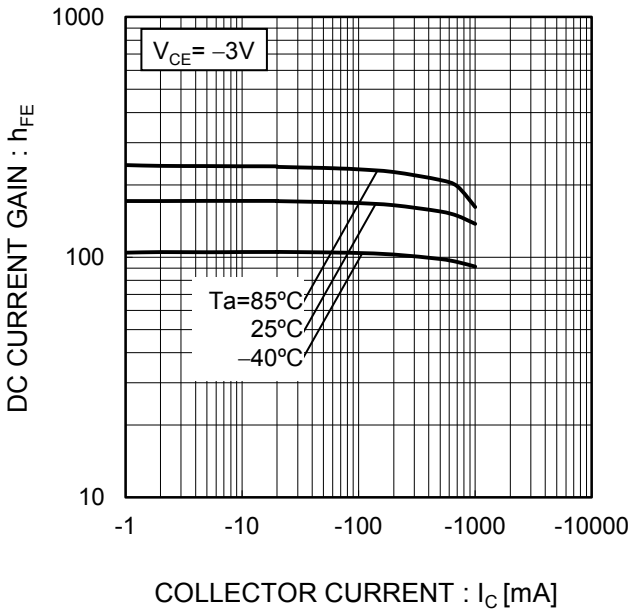
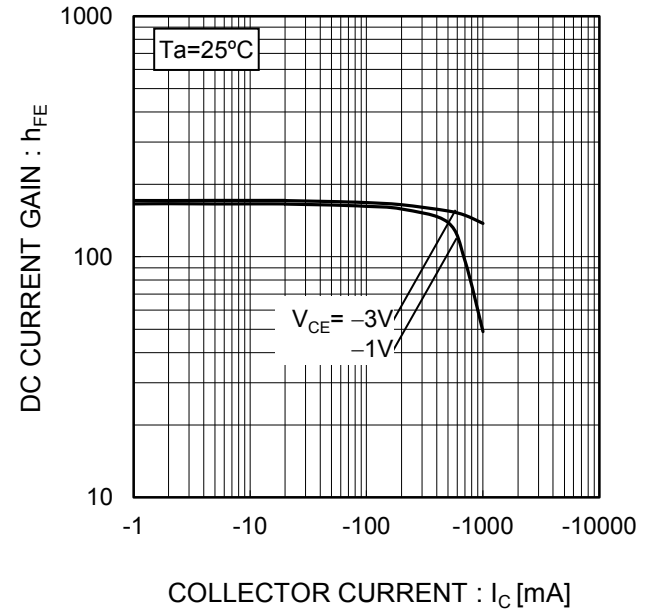


Fig.4 DC Current Gain vs. Collector Current(II)



●Electrical characteristic curves(Ta = 25°C)

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

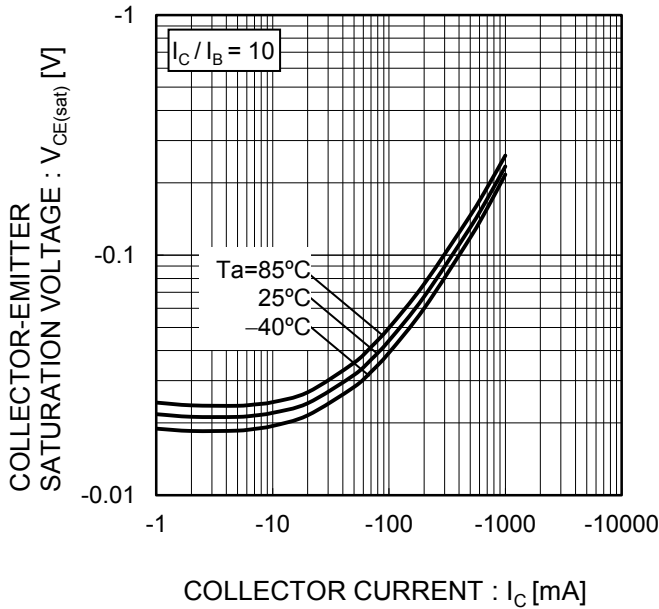


Fig.6 Collector-Emitter Saturation Voltage vs. Collector Current (II)

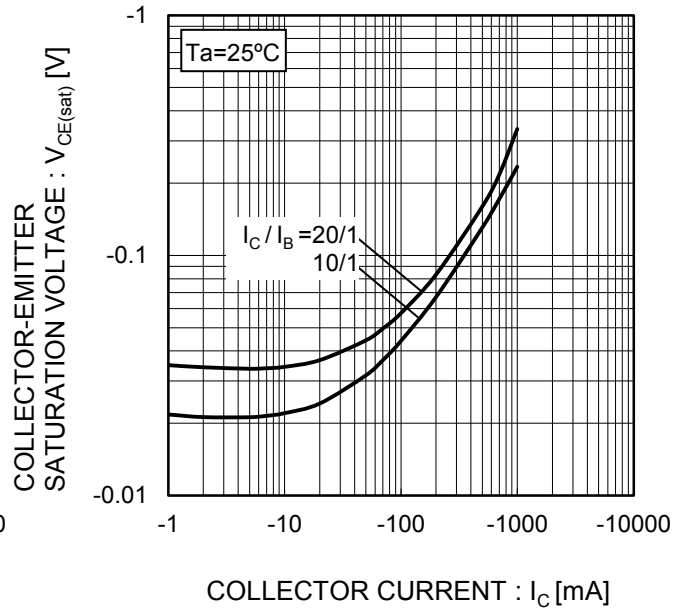


Fig.7 Base-Emitter Saturation Voltage vs. Collector Current

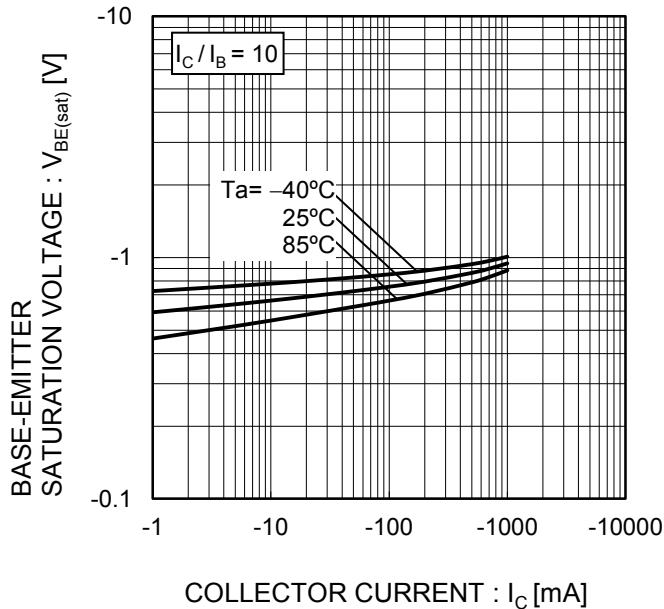
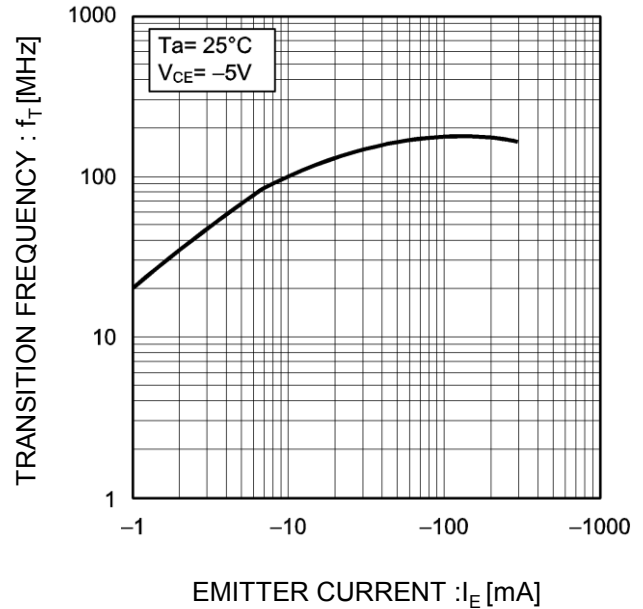


Fig.8 Gain Bandwidth Product vs. Emitter Current



●Electrical characteristic curves(Ta = 25°C)

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

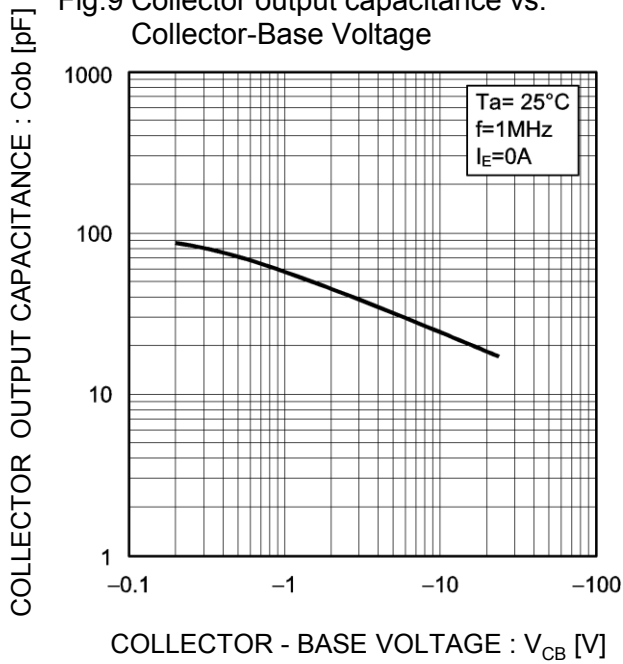


Fig.10 Safe Operating Area

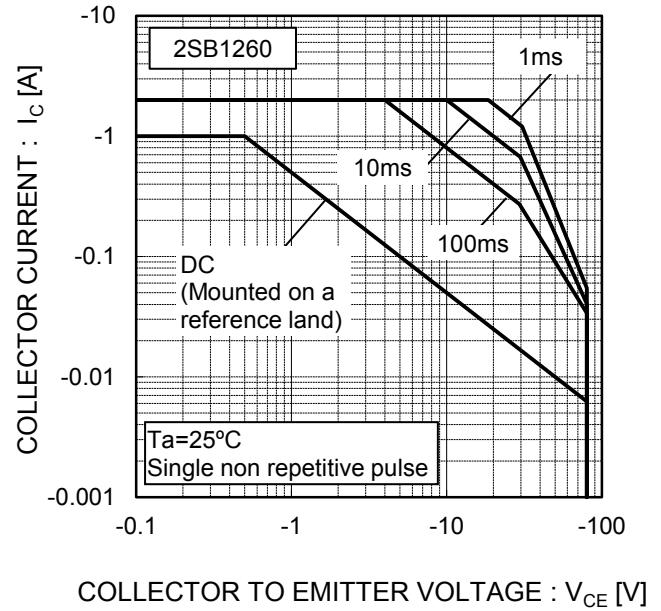
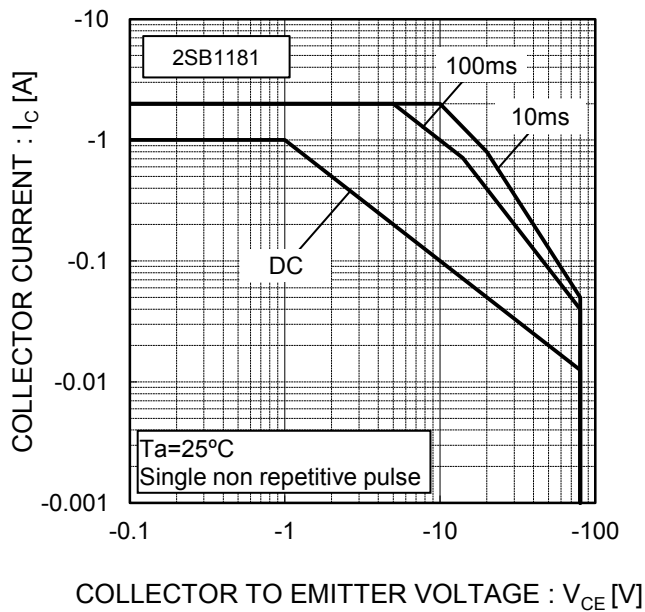
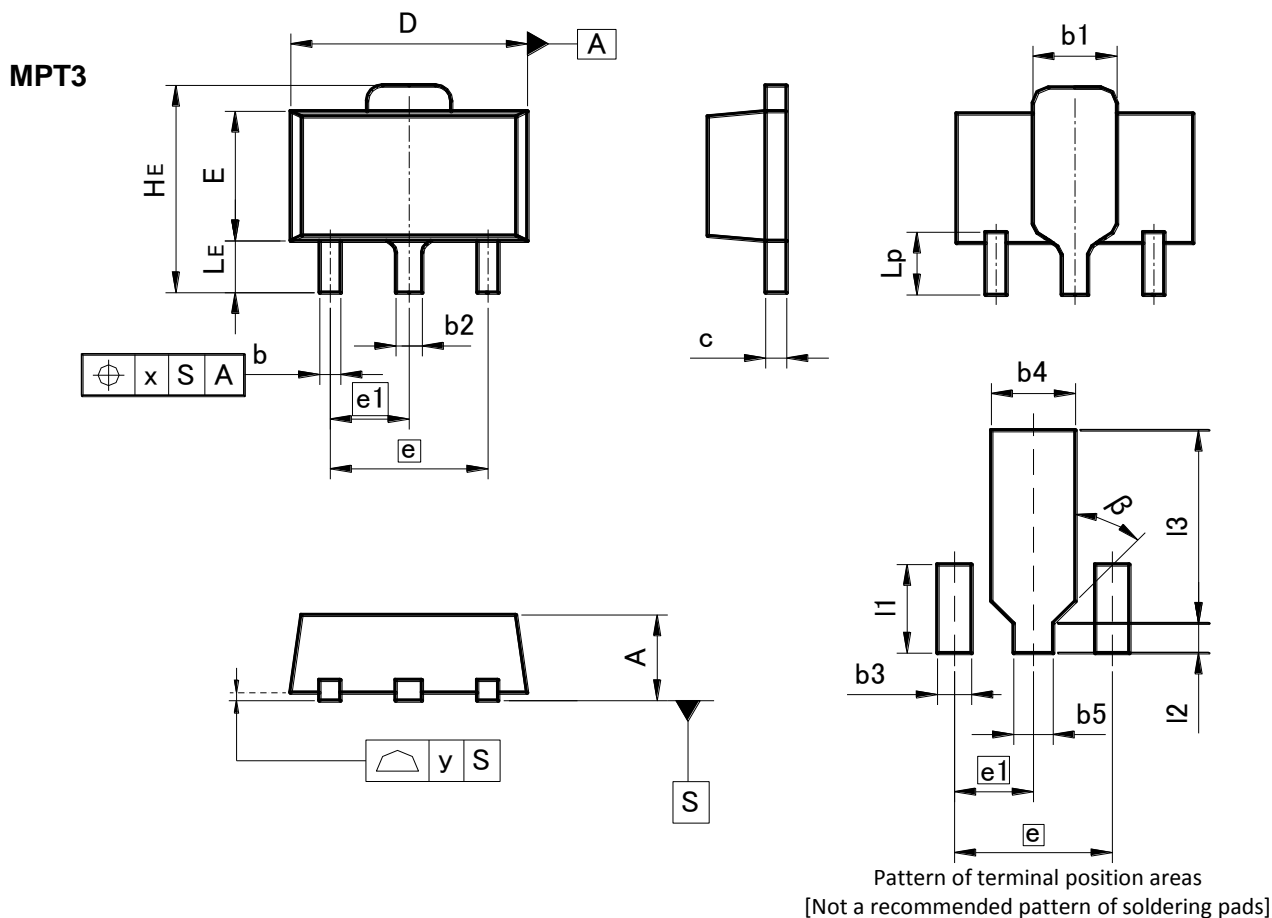


Fig.11 Safe Operating Area



●Dimensions (Unit : mm)



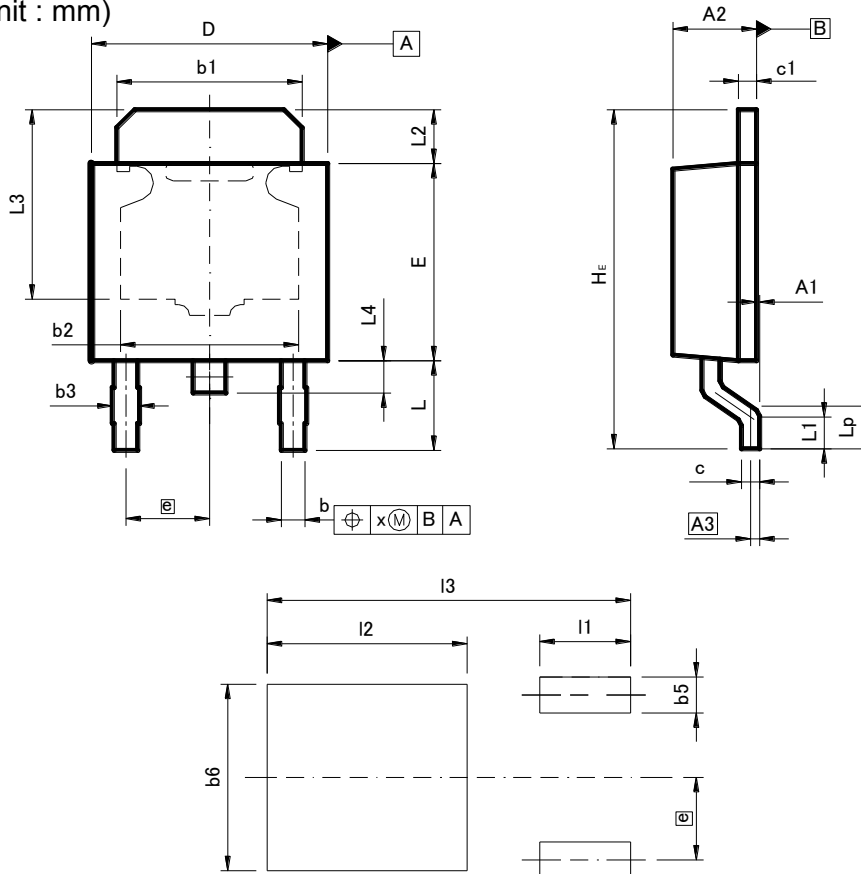
| DIM | MILIMETERS |      | INCHES |       |
|-----|------------|------|--------|-------|
|     | MIN        | MAX  | MIN    | MAX   |
| A   | 1.40       | 1.50 | 0.055  | 0.059 |
| b   | 0.30       | 0.50 | 0.012  | 0.020 |
| b1  | 1.50       | 1.70 | 0.059  | 0.067 |
| b2  | 0.40       | 0.60 | 0.016  | 0.024 |
| c   | 0.35       | 0.50 | 0.014  | 0.020 |
| D   | 4.40       | 4.70 | 0.173  | 0.185 |
| E   | 2.40       | 2.70 | 0.094  | 0.106 |
| e   | 3.00       |      | 0.118  |       |
| e1  | 1.50       |      | 0.059  |       |
| HE  | 3.70       | 4.30 | 0.146  | 0.169 |
| LE  | 0.80       | 1.20 | 0.031  | 0.047 |
| Lp  | 1.01       | 1.41 | 0.040  | 0.056 |
| x   | -          | 0.15 | -      | 0.006 |
| y   | -          | 0.10 | -      | 0.004 |

| DIM | MILIMETERS |      | INCHES |       |
|-----|------------|------|--------|-------|
|     | MIN        | MAX  | MIN    | MAX   |
| b3  | -          | 0.65 | -      | 0.026 |
| b4  | -          | 1.70 | -      | 0.067 |
| b5  | -          | 0.75 | -      | 0.030 |
| l1  | -          | 1.71 | -      | 0.067 |
| l2  | -          | 0.58 | -      | 0.023 |
| l3  | -          | 3.72 | -      | 0.146 |
| β   | 45°        |      | 45°    |       |

Dimension in mm / inches

●Dimensions (Unit : mm)

CPT3



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

| DIM | MILIMETERS |       | INCHES |       |
|-----|------------|-------|--------|-------|
|     | MIN        | MAX   | MIN    | MAX   |
| A1  | 0.00       | 0.15  | 0.000  | 0.006 |
| A2  | 2.20       | 2.50  | 0.087  | 0.098 |
| A3  | 0.25       |       | 0.010  |       |
| b   | 0.55       | 0.75  | 0.022  | 0.030 |
| b1  | 5.00       | 5.30  | 0.197  | 0.209 |
| b2  | 5.00       |       | 0.197  |       |
| b3  | 0.75       |       | 0.030  |       |
| c   | 0.40       | 0.60  | 0.016  | 0.024 |
| c1  | 0.40       | 0.60  | 0.016  | 0.024 |
| D   | 6.30       | 6.70  | 0.248  | 0.264 |
| E   | 5.40       | 5.80  | 0.213  | 0.228 |
| e   | 2.30       |       | 0.091  |       |
| HE  | 9.00       | 10.00 | 0.354  | 0.394 |
| L   | 2.20       | 2.80  | 0.087  | 0.110 |
| L1  | 0.80       | 1.40  | 0.031  | 0.055 |
| L2  | 1.20       | 1.80  | 0.047  | 0.071 |
| L3  | 5.30       |       | 0.209  |       |
| L4  | 0.90       |       | 0.035  |       |
| Lp  | 1.00       | 1.60  | 0.039  | 0.063 |
| x   | -          | 0.25  | -      | 0.010 |

| DIM | MILIMETERS |       | INCHES |       |
|-----|------------|-------|--------|-------|
|     | MIN        | MAX   | MIN    | MAX   |
| b5  | -          | 1.00  | -      | 0.04  |
| b6  | -          | 5.20  | -      | 0.205 |
| l1  | -          | 2.50  | -      | 0.098 |
| l2  | -          | 5.50  | -      | 0.217 |
| l3  | -          | 10.00 | -      | 0.394 |

Dimension in mm / inches

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