

| Parameter | Tr1 and Tr2 |
|-----------|-------------|
| $V_{CEO}$ | 20V         |
| $I_C$     | 200mA       |

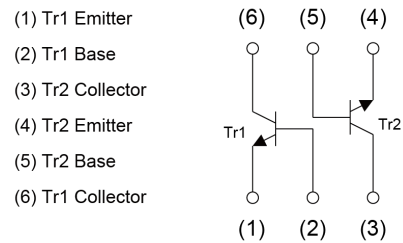
●Outline

|                          |  |
|--------------------------|--|
| <p>VMT6</p> <p>VT6X1</p> | <p>EMT6</p> <p>EMX51<br/>(SC-107C)</p> |
|--------------------------|--|

●Features

- 1) General Purpose.
- 2) Two 2SCR522 chips in one package.
- 3) Transister elements are independent, eliminating interface.
- 4) Mounting cost and area can be cut in half.
- 5) Lead Free/RoHS Compliant.

●Inner circuit



●Application

Switching, LED driver

●Packaging specifications

| Part No. | Package | Package size | Taping code | Reel size (mm) | Tape width (mm) | Basic ordering unit.(pcs) | Marking |
|----------|---------|--------------|-------------|----------------|-----------------|---------------------------|---------|
| VT6X1    | VMT6    | 1212         | T2R         | 180            | 8               | 8000                      | X1      |
| EMX51    | EMT6    | 1616         | T2R         | 180            | 8               | 8000                      | X51     |

● **Absolute maximum ratings** ( $T_a = 25^\circ\text{C}$ )

<For Tr1 and Tr2 in common>

| Parameter                    |       | Symbol        | Values      | Unit             |
|------------------------------|-------|---------------|-------------|------------------|
| Collector-base voltage       |       | $V_{CBO}$     | 20          | V                |
| Collector-emitter voltage    |       | $V_{CEO}$     | 20          | V                |
| Emitter-base voltage         |       | $V_{EBO}$     | 5           | V                |
| Collector current            |       | $I_C$         | 200         | mA               |
|                              |       | $I_{CP}^{*1}$ | 400         | mA               |
| Power dissipation            | VT6X1 | $P_D^{*2*3}$  | 150         | mW               |
|                              | EMX51 |               | 150         |                  |
| Junction temperature         |       | $T_j$         | 150         | $^\circ\text{C}$ |
| Range of storage temperature |       | $T_{stg}$     | -55 to +150 | $^\circ\text{C}$ |

● **Electrical characteristics** ( $T_a = 25^\circ\text{C}$ )

<For Tr1 and Tr2 in common>

| Parameter                            | Symbol        | Conditions   | Values |      |      | Unit          |
|--------------------------------------|---------------|--|--------|------|------|---------------|
|                                      |               |  | Min.   | Typ. | Max. |               |
| Collector-base breakdown voltage     | $BV_{CBO}$    | $I_C = 50\mu\text{A}$  | 20     | -    | -    | V             |
| Collector-emitter breakdown voltage  | $BV_{CEO}$    | $I_C = 1\text{mA}$   | 20     | -    | -    | V             |
| Emitter-base breakdown voltage       | $BV_{EBO}$    | $I_E = 50\mu\text{A}$  | 5      | -    | -    | V             |
| Collector cut-off current            | $I_{CBO}$     | $V_{CB} = 20\text{V}$  | -      | -    | 0.1  | $\mu\text{A}$ |
| Emitter cut-off current              | $I_{EBO}$     | $V_{EB} = 5\text{V}$   | -      | -    | 0.1  | $\mu\text{A}$ |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_C = 100\text{mA}, I_B = 10\text{mA}$                      | -      | 0.12 | 0.30 | V             |
| DC current gain                      | $h_{FE}$      | $V_{CE} = 6\text{V}, I_C = 1\text{mA}$                       | 120    | -    | 560  | -             |
| Transition frequency                 | $f_T$         | $V_{CE} = 10\text{V}, I_E = -10\text{mA}, f = 100\text{MHz}$ | -      | 400  | -    | MHz           |
| Output capacitance                   | $C_{ob}$      | $V_{CB} = 10\text{V}, I_E = 0\text{A}, f = 1\text{MHz}$      | -      | 1.6  | -    | pF            |

\*1  $P_w=1\text{ms}$  Single Pulse

\*2 Each terminal mounted on a reference footprint

\*3 120mW per element must not be exceeded.

● Electrical characteristic curves (Ta=25°C)  
 <For Tr1 and Tr2 in common>

Fig.1 Grounded Emitter Propagation Characteristics

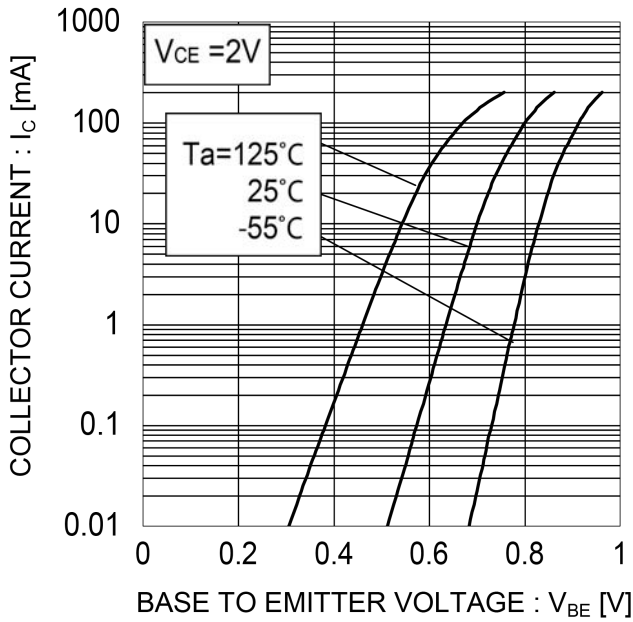


Fig.2 Typical Output Characteristics

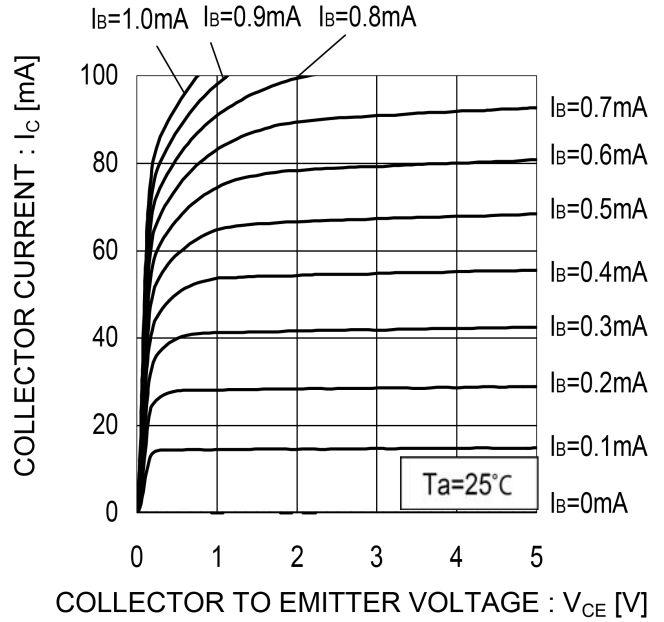


Fig.3 DC Current Gain vs. Collector Current (I)

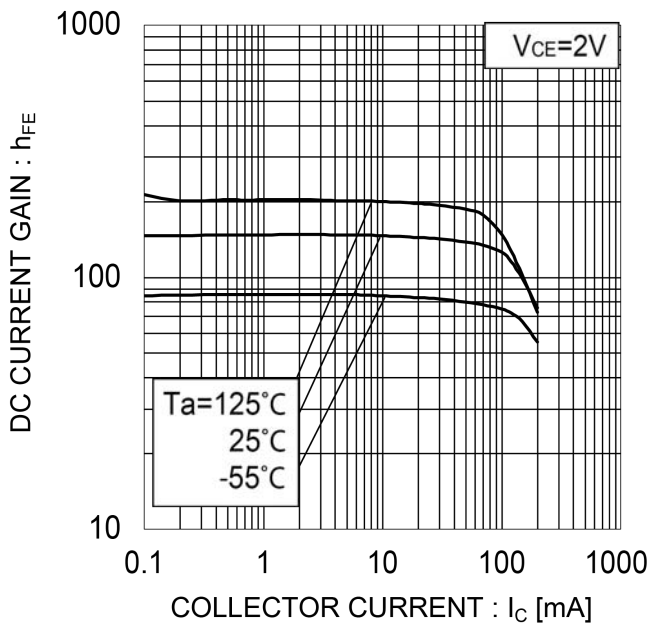
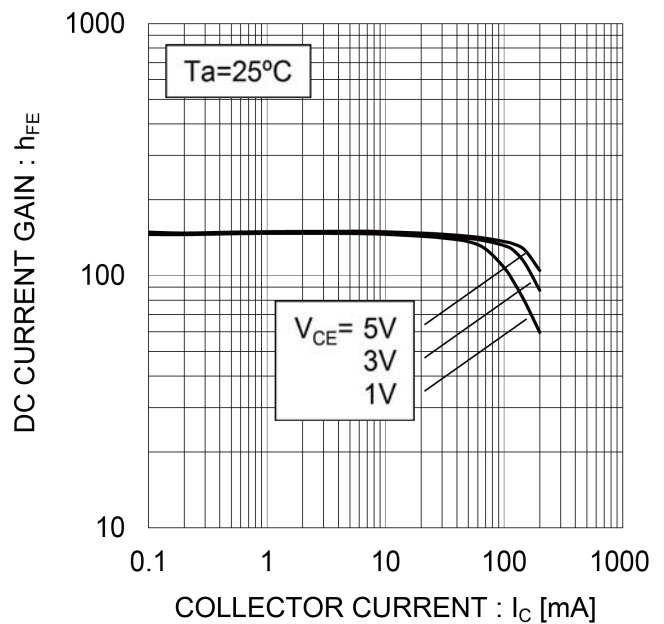


Fig.4 DC Current Gain vs. Collector Current (II)



● **Electrical characteristic curves** ( $T_a=25^\circ\text{C}$ )

<For Tr1 and Tr2 in common>

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

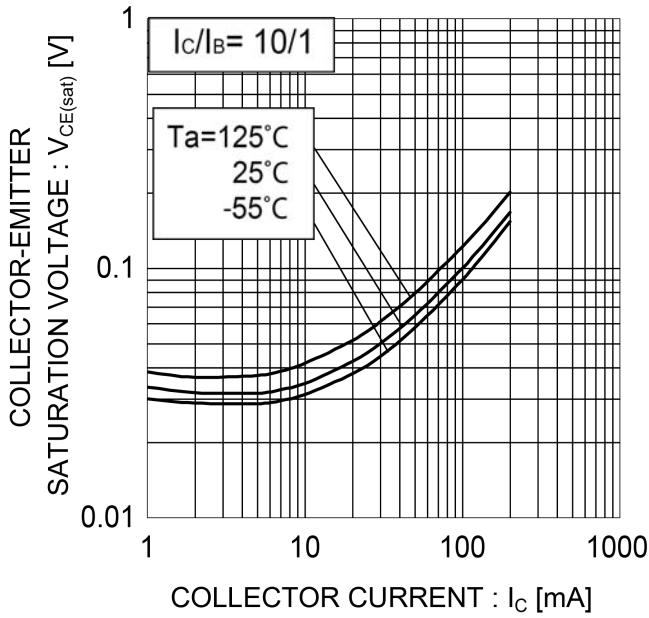


Fig.6 Collector-Emitter Saturation Voltage vs. Collector Current(II)

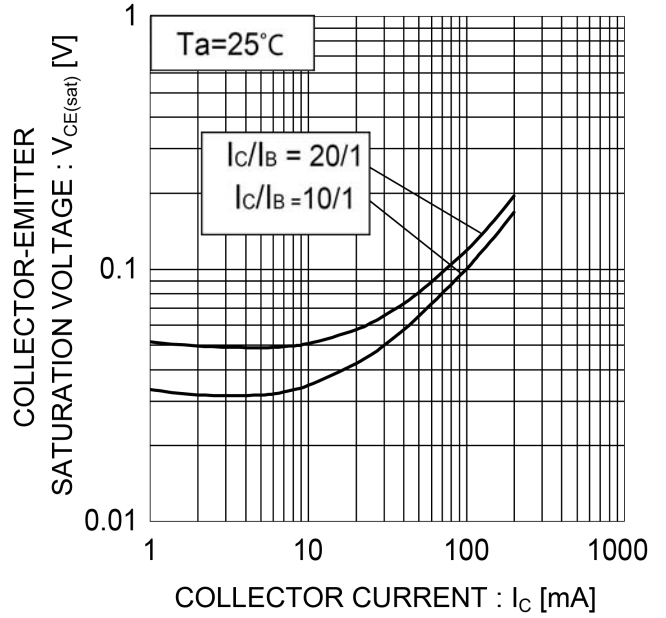


Fig.7 Base-Emitter Saturation Voltage vs. Collector Current

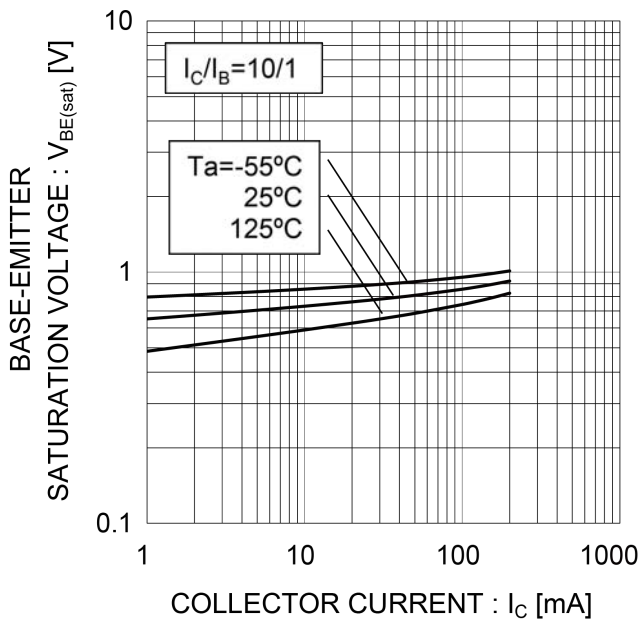
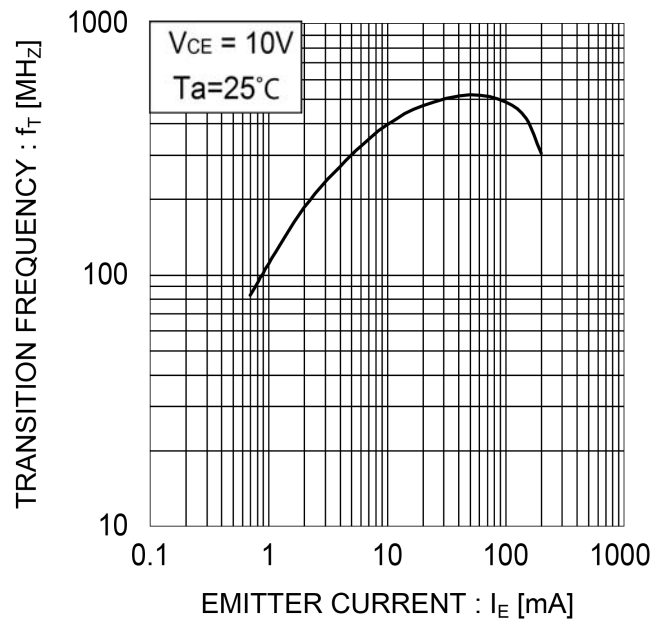


Fig.8 Gain Bandwidth Product vs. Emitter Current



● **Electrical characteristic curves** ( $T_a = 25^\circ\text{C}$ )

<For Tr1 and Tr2 in common>

Fig.9 Emitter input capacitance, Collector output capacitance

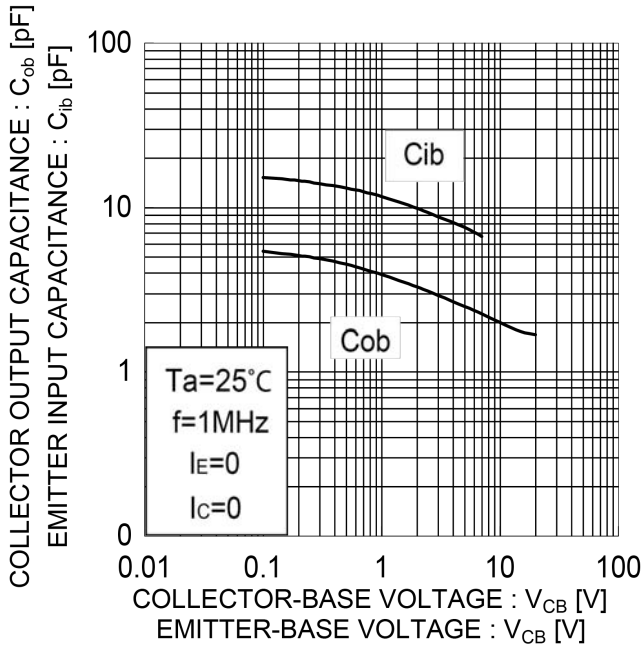
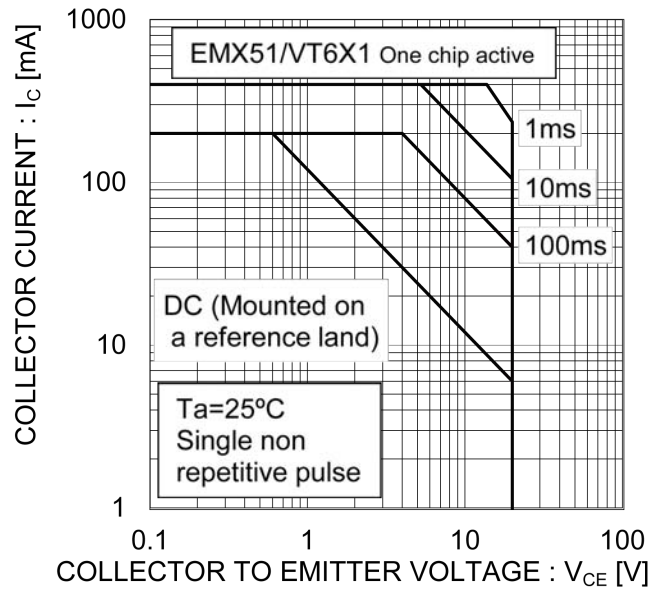
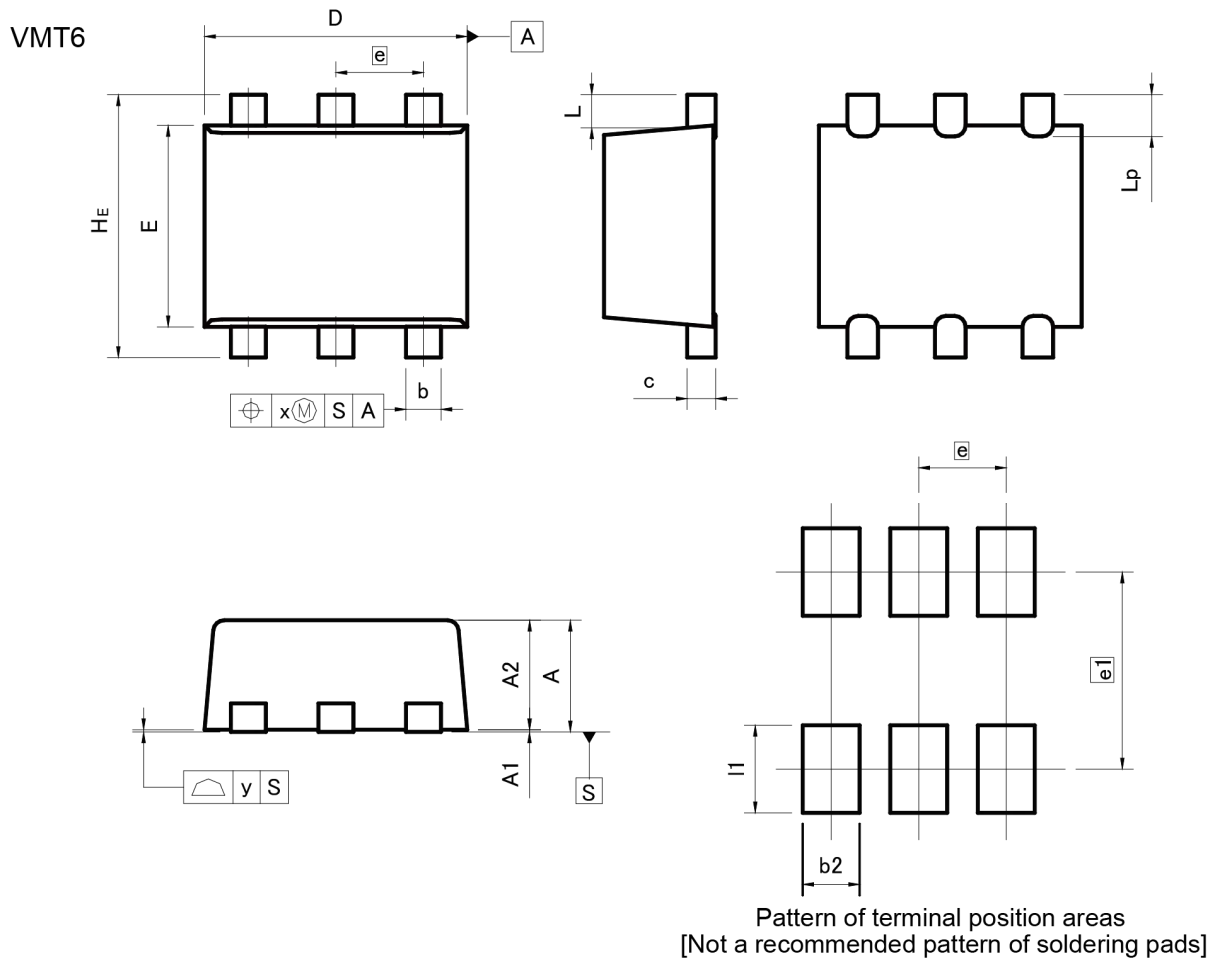


Fig.10 Safe Operating Area



●Dimensions



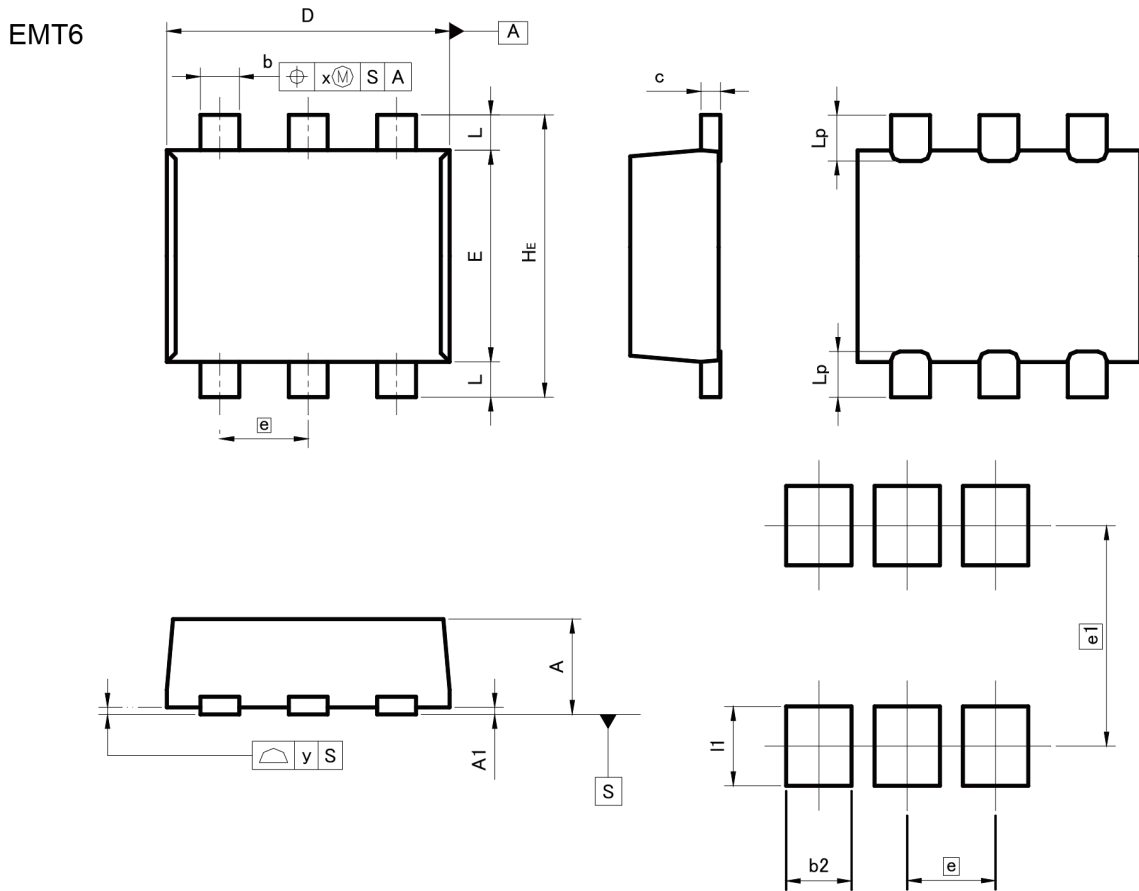
| DIM | MILIMETERS |      | INCHES |       |
|-----|------------|------|--------|-------|
|     | MIN        | MAX  | MIN    | MAX   |
| A   | 0.42       | 0.62 | 0.017  | 0.024 |
| A1  | 0.00       | 0.05 | 0.000  | 0.002 |
| A2  | 0.40       | 0.60 | 0.016  | 0.024 |
| b   | 0.11       | 0.21 | 0.004  | 0.008 |
| c   | 0.08       | 0.18 | 0.003  | 0.007 |
| D   | 1.10       | 1.30 | 0.043  | 0.051 |
| E   | 0.82       | 1.02 | 0.032  | 0.04  |
| e   | 0.40       |      | 0.016  |       |
| HE  | 1.10       | 1.30 | 0.043  | 0.051 |
| L   | 0.14       |      | 0.006  |       |
| Lp  | 0.10       | 0.30 | 0.004  | 0.012 |
| x   | -          | 0.05 | -      | 0.002 |
| y   | -          | 0.10 | -      | 0.004 |

| DIM | MILIMETERS |      | INCHES |       |
|-----|------------|------|--------|-------|
|     | MIN        | MAX  | MIN    | MAX   |
| b2  | -          | 0.26 | -      | 0.010 |
| e1  | 0.90       |      | 0.035  |       |
| l1  | -          | 0.40 | -      | 0.016 |

Dimension in mm/inches

●Dimensions



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

| DIM | MILIMETERS |      | INCHES |       |
|-----|------------|------|--------|-------|
|     | MIN        | MAX  | MIN    | MAX   |
| A   | 0.45       | 0.55 | 0.018  | 0.022 |
| A1  | 0.00       | 0.10 | 0.000  | 0.004 |
| b   | 0.17       | 0.27 | 0.007  | 0.011 |
| c   | 0.08       | 0.18 | 0.003  | 0.007 |
| D   | 1.50       | 1.70 | 0.059  | 0.067 |
| E   | 1.10       | 1.30 | 0.043  | 0.051 |
| e   | 0.50       |      | 0.020  |       |
| HE  | 1.50       | 1.70 | 0.059  | 0.067 |
| L   | 0.10       | 0.30 | 0.004  | 0.012 |
| Lp  | -          | 0.35 | -      | 0.014 |
| x   | -          | 0.10 | -      | 0.004 |
| y   | -          | 0.10 | -      | 0.004 |

| DIM | MILIMETERS |      | INCHES |       |
|-----|------------|------|--------|-------|
|     | MIN        | MAX  | MIN    | MAX   |
| b2  | -          | 0.37 | -      | 0.015 |
| e1  | 1.25       |      | 0.049  |       |
| I1  | -          | 0.45 | -      | 0.018 |

Dimension in mm/inches

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