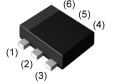
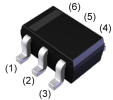
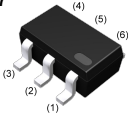


| Parameter | Tr1 and Tr2 |
|-----------|-------------|
| $V_{CEO}$ | -12V        |
| $I_C$     | -500mA      |

### ●Features

- 1)Two 2SA2018 chips in a EMT or UMT or SMT package.
- 2)Mounting possible with EMT3 or UMT3 or SMT3 automatic mounting machines.
- 3)Transistor elements are independent, eliminating interference.

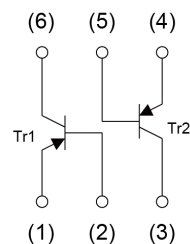
### ●Outline

|                                                                                                                           |                                                                                                                             |
|---------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| <p>SOT-563</p>  <p>EMT18<br/>(EMT6)</p> | <p>SOT-363</p>  <p>UMT18N<br/>(UMT6)</p> |
| <p>SOT-457</p>  <p>IMT18<br/>(SMT6)</p> |                                                                                                                             |

### ●Inner circuit

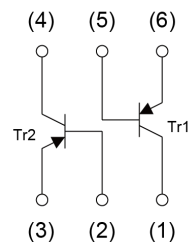
#### EMT18 / UMT18N

- (1) Tr1 Emitter
- (2) Tr1 Base
- (3) Tr2 Collector
- (4) Tr2 Emitter
- (5) Tr2 Base
- (6) Tr1 Collector



#### IMT18

- (1) Tr1 Collector
- (2) Tr2 Base
- (3) Tr2 Emitter
- (4) Tr2 Collector
- (5) Tr1 Base
- (6) Tr1 Emitter



### ●Application

LOW FREQUENCY AMPLIFIER, DRIVER

### ●Packaging specifications

| Part No. | Package           | Package size | Taping code | Reel size (mm) | Tape width (mm) | Basic ordering unit.(pcs) | Marking |
|----------|-------------------|--------------|-------------|----------------|-----------------|---------------------------|---------|
| EMT18    | SOT-563<br>(EMT6) | 1616         | T2R         | 180            | 8               | 8000                      | T18     |
| UMT18N   | SOT-363<br>(UMT6) | 2021         | TR          | 180            | 8               | 3000                      | T18     |
| IMT18    | SOT-457<br>(SMT6) | 2928         | T110        | 180            | 8               | 3000                      | T18     |

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

<It is the same ratings for the Tr1 and Tr2>

| 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            |               | $I_C$         | -500        | mA               |
|                              |               | $I_{CP}^{*1}$ | -1.0        | A                |
| Power dissipation            | EMT18/ UMT18N | $P_D^{*2*3}$  | 150         | mW/Total         |
|                              | IMT18         | $P_D^{*2*4}$  | 300         | mW/Total         |
| Junction temperature         |               | $T_j$         | 150         | $^\circ\text{C}$ |
| Range of storage temperature |               | $T_{stg}$     | -55 to +150 | $^\circ\text{C}$ |

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

<It is the same characteristics for the Tr1 and Tr2>

| Parameter                            | Symbol        | Conditions                                                           | Values |      |      | Unit |
|--------------------------------------|---------------|----------------------------------------------------------------------|--------|------|------|------|
|                                      |               |                                                                      | Min.   | Typ. | Max. |      |
| Collector-base breakdown voltage     | $BV_{CBO}$    | $I_C = -10\mu\text{A}$                                               | -15    | -    | -    | V    |
| Collector-emitter breakdown voltage  | $BV_{CEO}$    | $I_C = -1\text{mA}$                                                  | -12    | -    | -    | V    |
| Emitter-base breakdown voltage       | $BV_{EBO}$    | $I_E = -10\mu\text{A}$                                               | -6     | -    | -    | V    |
| Collector cut-off current            | $I_{CBO}$     | $V_{CB} = -15\text{V}$                                               | -      | -    | -100 | nA   |
| Emitter cut-off current              | $I_{EBO}$     | $V_{EB} = -6\text{V}$                                                | -      | -    | -100 | nA   |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_C = -200\text{mA}$ , $I_B = -10\text{mA}$                         | -      | -100 | -250 | mV   |
| DC current gain                      | $h_{FE}$      | $V_{CE} = -2\text{V}$ , $I_C = -10\text{mA}$                         | 270    | -    | 680  | -    |
| Transition frequency                 | $f_T$         | $V_{CE} = -2\text{V}$ , $I_E = 10\text{mA}$ ,<br>$f = 100\text{MHz}$ | -      | 260  | -    | MHz  |
| Output capacitance                   | $C_{ob}$      | $V_{CB} = -10\text{V}$ , $I_E = 0\text{A}$ ,<br>$f = 1\text{MHz}$    | -      | 6.5  | -    | pF   |

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

\*2 Each terminal mounted on a reference land.

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

\*4 200mW per element must not be exceeded.

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

<For Tr1 and Tr2 in common>

Fig.1 Grounded emitter propagation characteristics

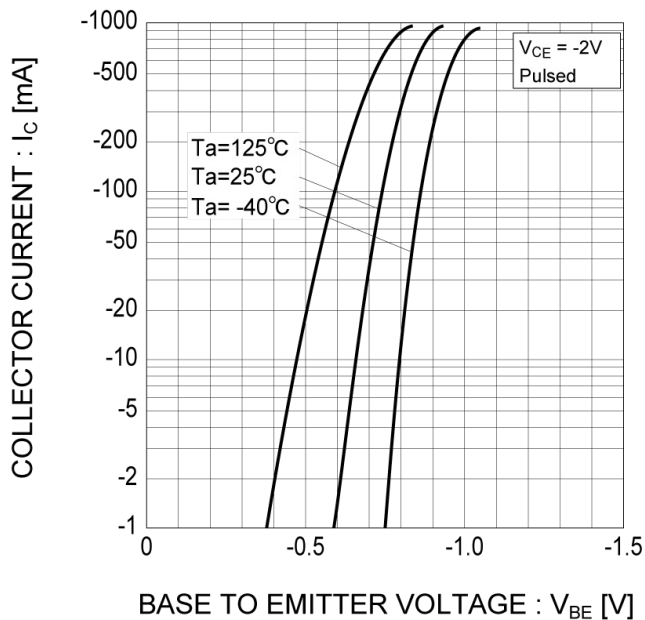


Fig.2 Typical output characteristics

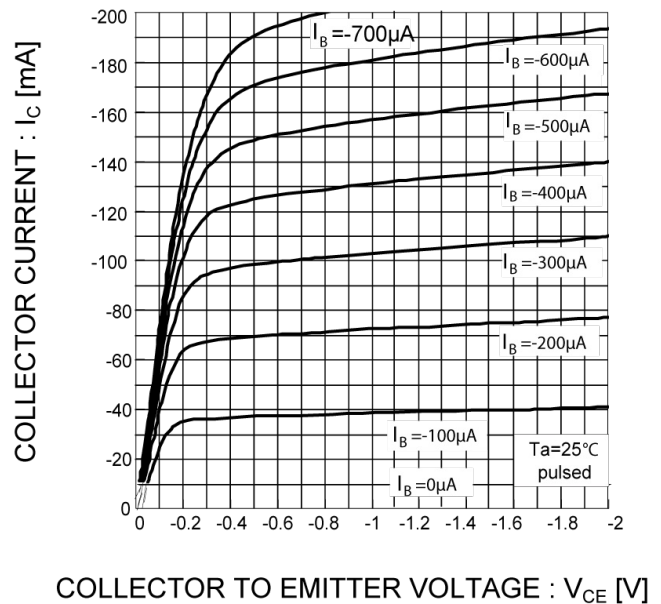


Fig.3 DC current gain vs. collector current (I)

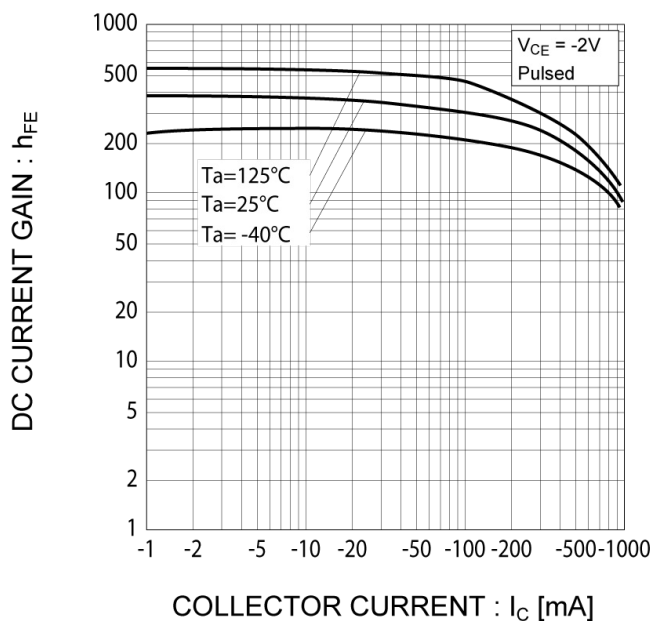
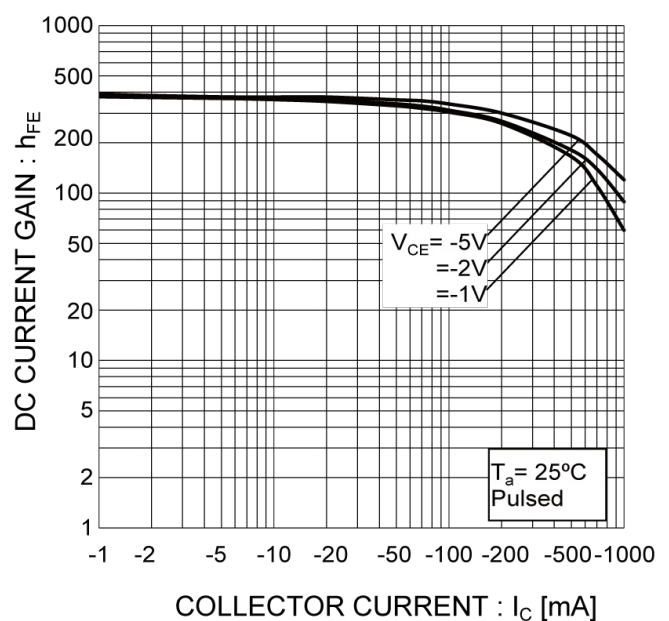


Fig.4 DC current gain vs. collector current (II)



● **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)

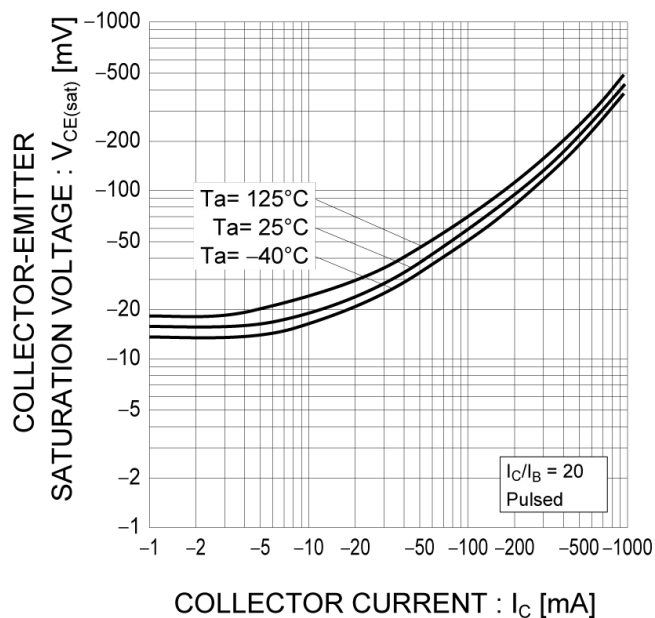


Fig.6 Collector-emitter saturation voltage vs. collector current (II)

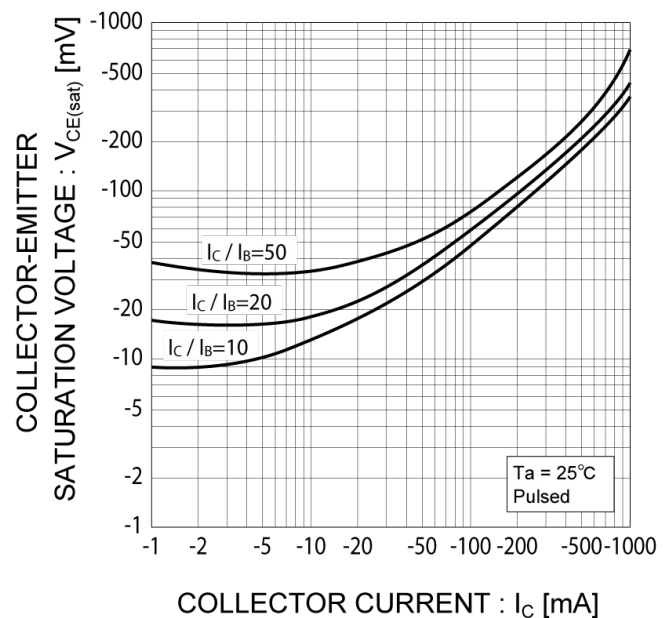


Fig.7 Base-emitter saturation voltage vs. collector current

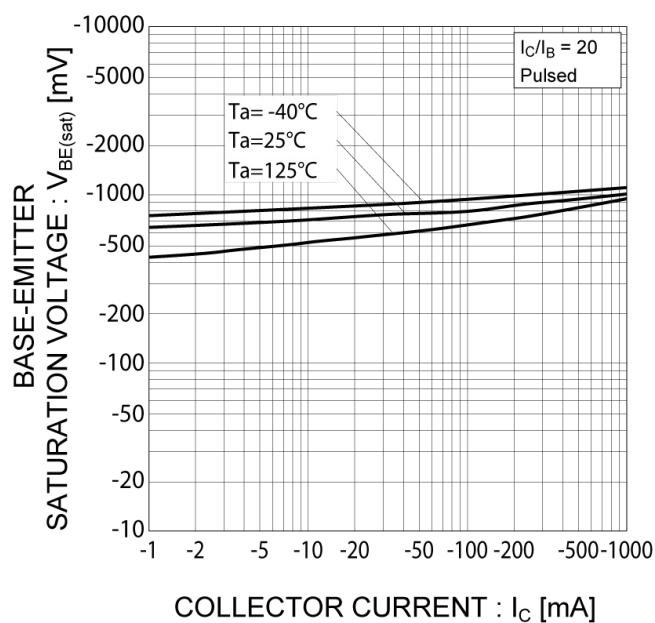
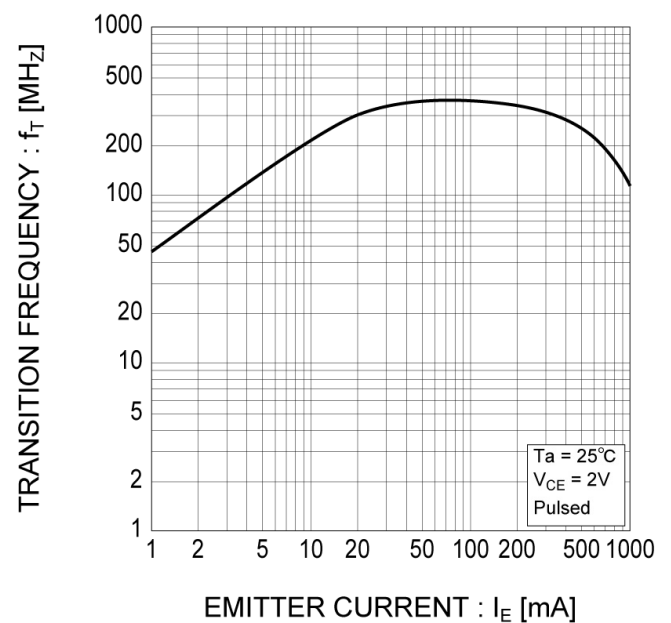


Fig.8 Gain bandwidth product vs. emitter current



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

<For Tr1 and Tr2 in common>

Fig.9 Collector output capacitance vs.  
collector-base voltage  
Emitter input capacitance vs.  
emitter-base voltage

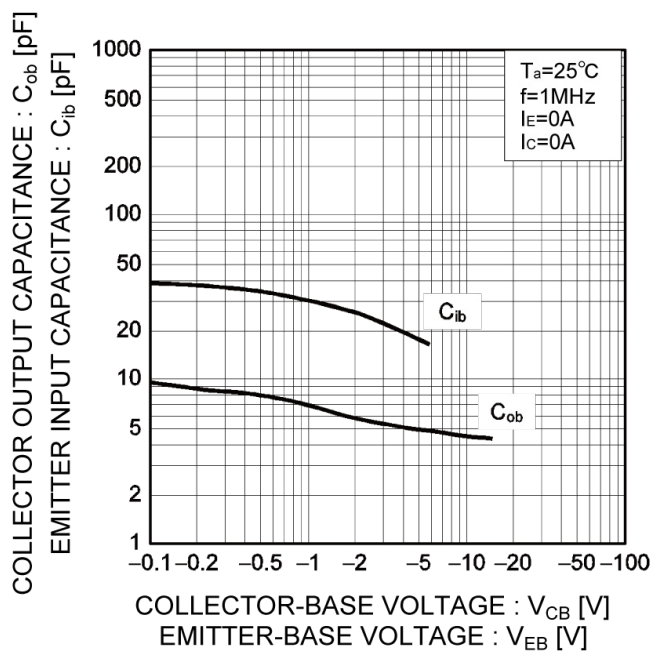


Fig.10 Safe Operating Area

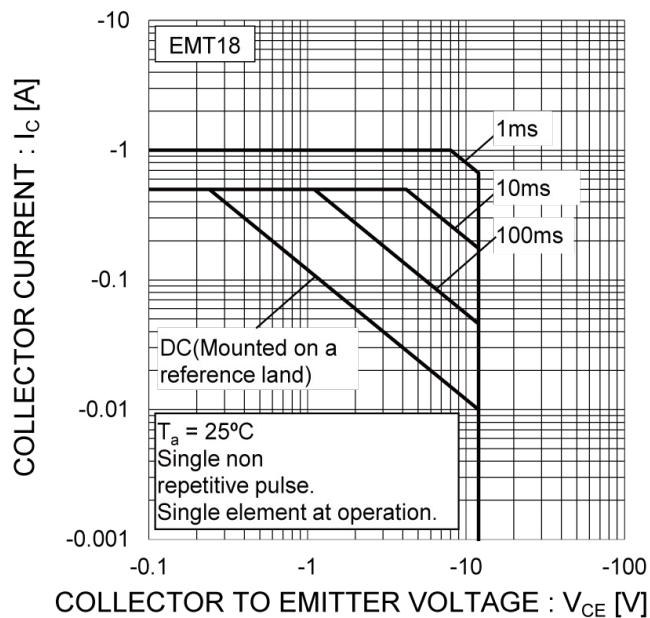


Fig.11 Safe Operating Area

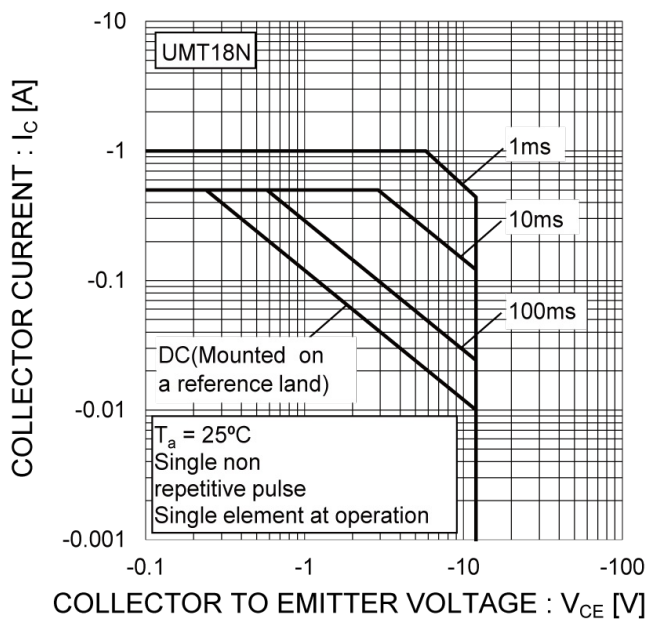
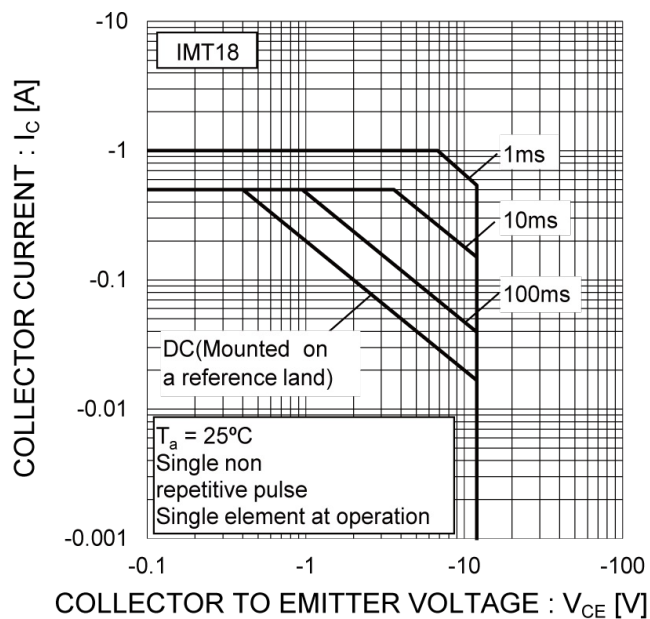
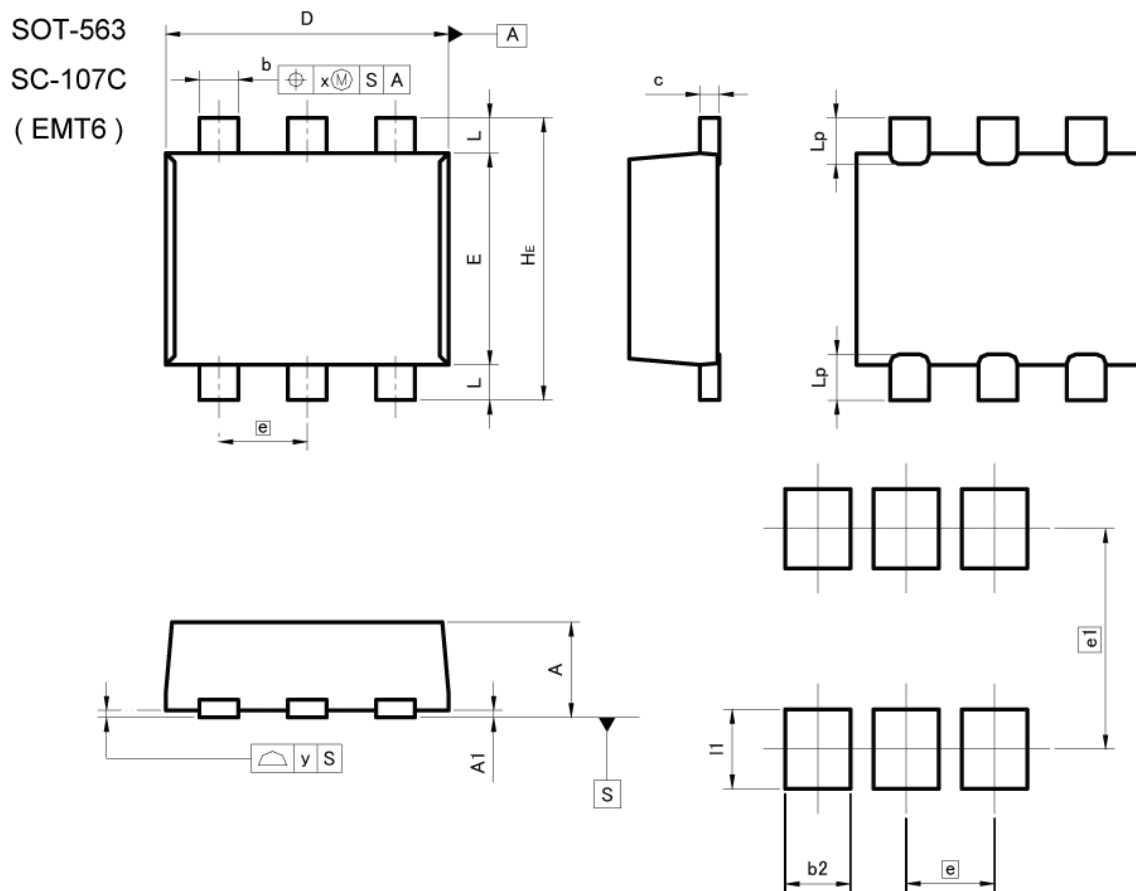


Fig.12 Safe Operating Area



## ●Dimensions



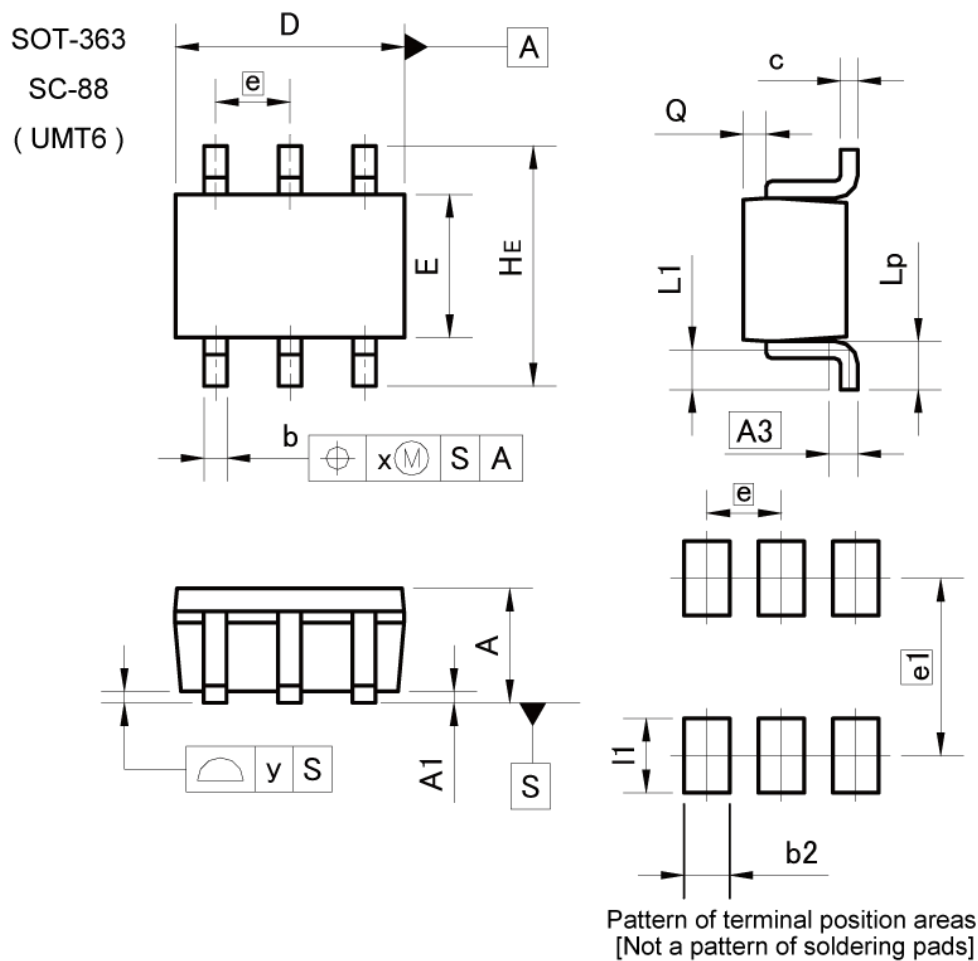
| DIM | MILIMETERS |      | INCHES |       |
|-----|------------|------|--------|-------|
|     | MIN        | MAX  | MIN    | MAX   |
| A   | 0.45       | 0.55 | 0.018  | 0.022 |
| A1  | 0.00       | 0.10 | 0.000  | 0.004 |
| b   | 0.17       | 0.27 | 0.007  | 0.011 |
| c   | 0.08       | 0.18 | 0.003  | 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  |       |
| l1  | —          | 0.45 | —      | 0.018 |

Dimension in mm/inches

## ●Dimensions

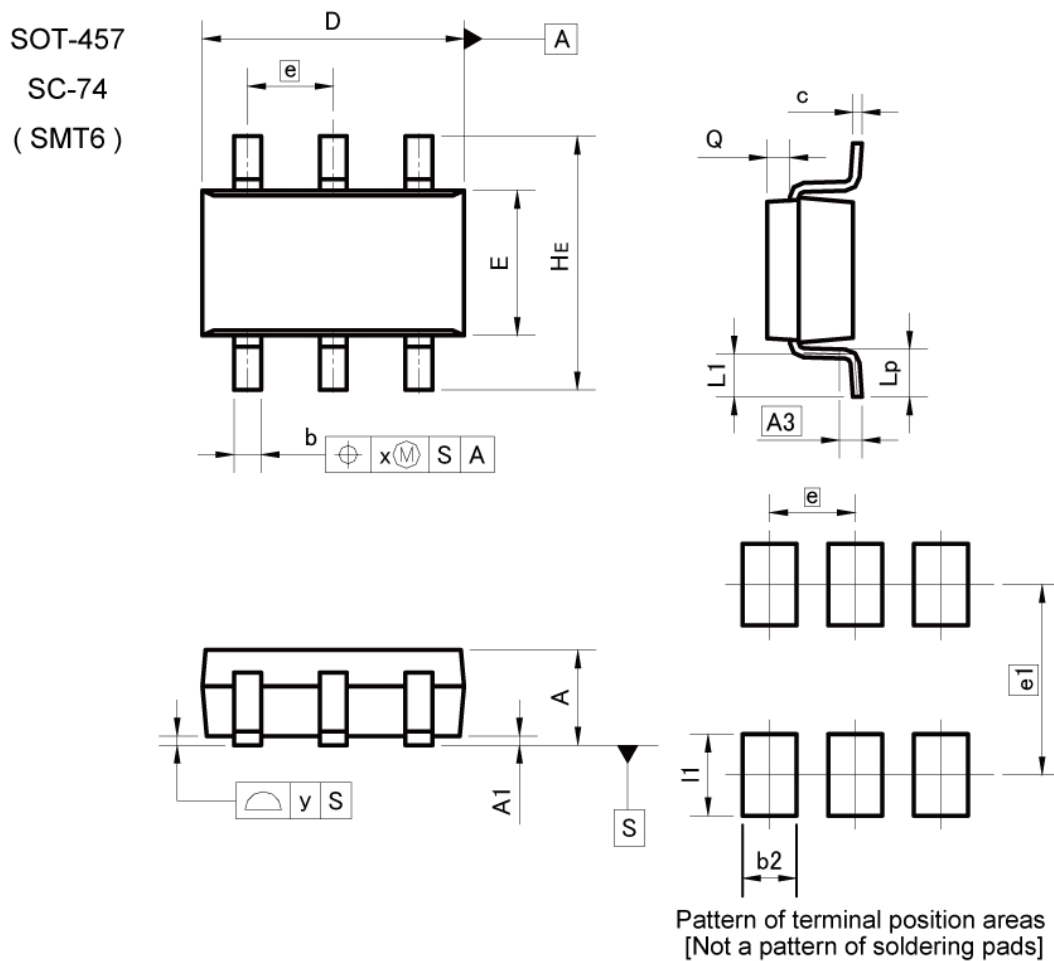


| DIM | MILIMETERS |      | INCHES |       |
|-----|------------|------|--------|-------|
|     | MIN        | MAX  | MIN    | MAX   |
| A   | 0.80       | 1.00 | 0.031  | 0.039 |
| A1  | 0.00       | 0.10 | 0.000  | 0.004 |
| A3  | 0.25       |      | 0.010  |       |
| b   | 0.15       | 0.30 | 0.006  | 0.012 |
| c   | 0.10       | 0.20 | 0.004  | 0.008 |
| D   | 1.90       | 2.10 | 0.075  | 0.083 |
| E   | 1.15       | 1.35 | 0.045  | 0.053 |
| e   | 0.65       |      | 0.026  |       |
| HE  | 2.00       | 2.20 | 0.079  | 0.087 |
| L1  | 0.20       | 0.50 | 0.008  | 0.020 |
| Lp  | 0.25       | 0.55 | 0.010  | 0.022 |
| Q   | 0.10       | 0.30 | 0.004  | 0.012 |
| x   | —          | 0.10 | —      | 0.004 |
| y   | —          | 0.10 | —      | 0.004 |

| DIM | MILIMETERS |      | INCHES |       |
|-----|------------|------|--------|-------|
|     | MIN        | MAX  | MIN    | MAX   |
| b2  | —          | 0.40 | —      | 0.016 |
| e1  | 1.55       |      | 0.061  |       |
| l1  | —          | 0.65 | —      | 0.026 |

Dimension in mm/inches

## ●Dimensions



| DIM | MILIMETERS |      | INCHES |       |
|-----|------------|------|--------|-------|
|     | MIN        | MAX  | MIN    | MAX   |
| A   | 1.00       | 1.30 | 0.039  | 0.051 |
| A1  | 0.00       | 0.10 | 0.000  | 0.004 |
| A3  | 0.25       |      | 0.010  |       |
| b   | 0.25       | 0.40 | 0.010  | 0.016 |
| c   | 0.09       | 0.25 | 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   | 0.20       | 0.30 | 0.008  | 0.012 |
| x   | —          | 0.20 | —      | 0.008 |
| y   | —          | 0.10 | —      | 0.004 |

| DIM | MILIMETERS |      | INCHES |       |
|-----|------------|------|--------|-------|
|     | MIN        | MAX  | MIN    | MAX   |
| b2  | —          | 0.60 | —      | 0.024 |
| e1  | 2.10       |      | 0.083  |       |
| l1  | —          | 0.90 | —      | 0.035 |

Dimension in mm/inches



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|-----------|-----------|------------|-----------|
| CLASS III | CLASS III | CLASS II b | CLASS III |
| CLASS IV  |           | CLASS III  |           |

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  - Use of our Products in proximity to heat-producing components, plastic cords, or other flammable items
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  - Use of our Products without cleaning residue of flux (even if you use no-clean type fluxes, cleaning residue of flux is recommended); or Washing our Products by using water or water-soluble cleaning agents for cleaning residue after soldering
  - Use of the Products in places subject to dew condensation
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- Please verify and confirm characteristics of the final or mounted products in using the Products.
- In particular, if a transient load (a large amount of load applied in a short period of time, such as pulse. is applied, confirmation of performance characteristics after on-board mounting is strongly recommended. Avoid applying power exceeding normal rated power; exceeding the power rating under steady-state loading condition may negatively affect product performance and reliability.
- De-rate Power Dissipation (Pd) depending on Ambient temperature (Ta). When used in sealed area, confirm the actual ambient temperature.
- Confirm that operation temperature is within the specified range described in the product specification.
- ROHM shall not be in any way responsible or liable for failure induced under deviant condition from what is defined in this document.

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- When a highly active halogenous (chlorine, bromine, etc.) flux is used, the residue of flux may negatively affect product performance and reliability.
- In principle, the reflow soldering method must be used on a surface-mount products, the flow soldering method must be used on a through hole mount products. If the flow soldering method is preferred on a surface-mount products, please consult with the ROHM representative in advance.

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This Product is electrostatic sensitive product, which may be damaged due to electrostatic discharge. Please take proper caution in your manufacturing process and storage so that voltage exceeding the Products maximum rating will not be applied to Products. Please take special care under dry condition (e.g. Grounding of human body / equipment / solder iron, isolation from charged objects, setting of ionizer, friction prevention and temperature / humidity control).

## Precaution for Storage / Transportation

1. Product performance and soldered connections may deteriorate if the Products are stored in the places where:
  - [a] the Products are exposed to sea winds or corrosive gases, including Cl<sub>2</sub>, H<sub>2</sub>S, NH<sub>3</sub>, SO<sub>2</sub>, and NO<sub>2</sub>
  - [b] the temperature or humidity exceeds those recommended by ROHM
  - [c] the Products are exposed to direct sunshine or condensation
  - [d] the Products are exposed to high Electrostatic
2. Even under ROHM recommended storage condition, solderability of products out of recommended storage time period may be degraded. It is strongly recommended to confirm solderability before using Products of which storage time is exceeding the recommended storage time period.
3. Store / transport cartons in the correct direction, which is indicated on a carton with a symbol. Otherwise bent leads may occur due to excessive stress applied when dropping of a carton.
4. Use Products within the specified time after opening a humidity barrier bag. Baking is required before using Products of which storage time is exceeding the recommended storage time period.

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