

# 2SC3743

## Silicon NPN triple diffusion planar type

For high breakdown voltage high-speed switching

### ■ Features

- High-speed switching
- Wide safe operation area and high breakdown voltage
- Satisfactory linearity of forward current transfer ratio  $h_{FE}$
- Full-pack package which can be installed to the heat sink with one screw

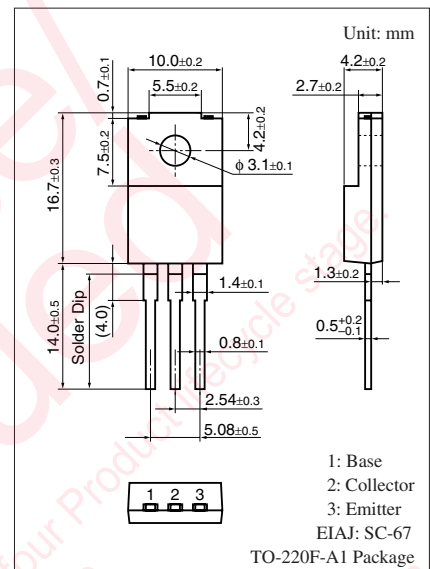
### ■ Absolute Maximum Ratings $T_C = 25^\circ\text{C}$

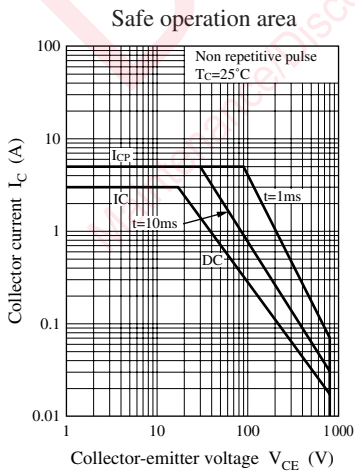
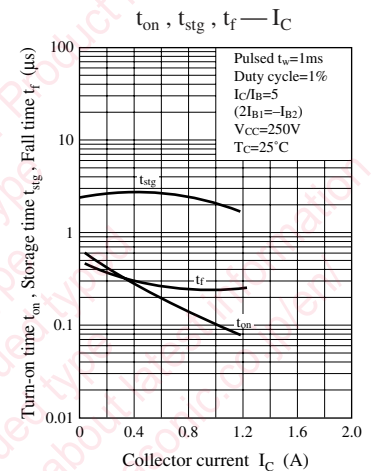
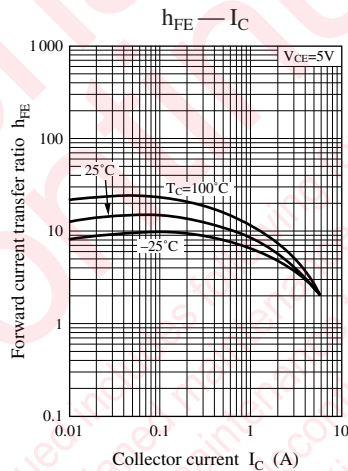
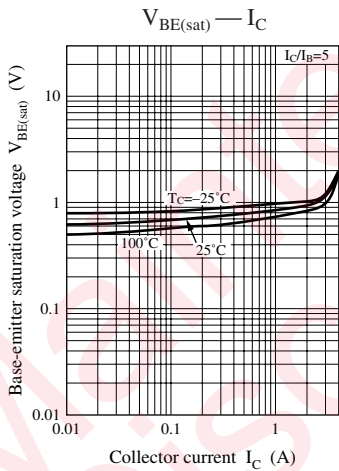
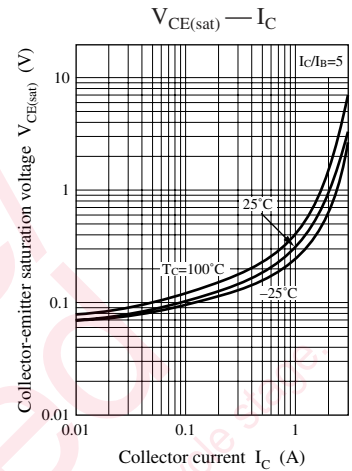
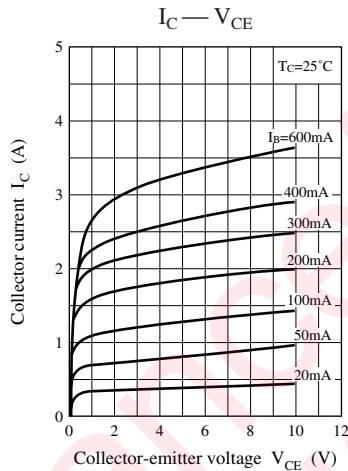
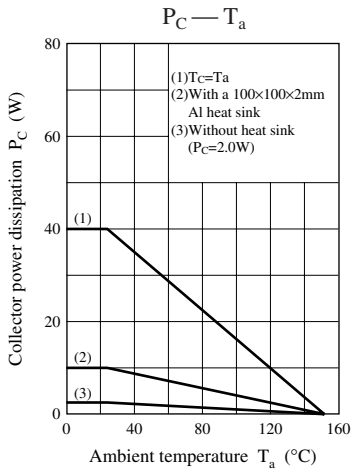
| Parameter                             | Symbol                   | Rating      | Unit             |
|---------------------------------------|--------------------------|-------------|------------------|
| Collector-base voltage (Emitter open) | $V_{CBO}$                | 900         | V                |
| Collector-emitter voltage (E-B short) | $V_{CES}$                | 900         | V                |
| Collector-emitter voltage (Base open) | $V_{CEO}$                | 800         | V                |
| Emitter-base voltage (Collector open) | $V_{EBO}$                | 7           | V                |
| Base current                          | $I_B$                    | 1           | A                |
| Collector current                     | $I_C$                    | 3           | A                |
| Peak collector current                | $I_{CP}$                 | 5           | A                |
| Collector power dissipation           | $P_C$                    | 40          | W                |
|                                       | $T_a = 25^\circ\text{C}$ | 2           |                  |
| Junction temperature                  | $T_j$                    | 150         | $^\circ\text{C}$ |
| Storage temperature                   | $T_{stg}$                | -55 to +150 | $^\circ\text{C}$ |

### ■ Electrical Characteristics $T_C = 25^\circ\text{C} \pm 3^\circ\text{C}$

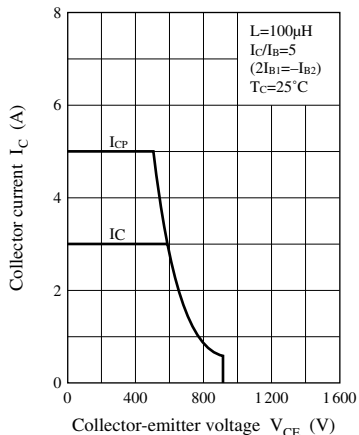
| Parameter                                    | Symbol        | Conditions  | Min | Typ | Max | Unit          |
|--|---------------|---|-----|-----|-----|---------------|
| Collector-emitter voltage (Base open)        | $V_{CEO}$     | $I_C = 10\text{ mA}, I_B = 0$                               | 800 |     |     | V             |
| Collector-base cutoff current (Emitter open) | $I_{CBO}$     | $V_{CB} = 900\text{ V}, I_E = 0$                            |     |     | 50  | $\mu\text{A}$ |
| Emitter-base cutoff current (Collector open) | $I_{EBO}$     | $V_{EB} = 7\text{ V}, I_C = 0$                              |     |     | 50  | $\mu\text{A}$ |
| Forward current transfer ratio               | $h_{FE1}$     | $V_{CE} = 5\text{ V}, I_C = 0.1\text{ A}$                   | 6   |     |     | —             |
|  | $h_{FE2}$     | $V_{CE} = 5\text{ V}, I_C = 0.8\text{ A}$                   | 6   |     |     |               |
| Collector-emitter saturation voltage         | $V_{CE(sat)}$ | $I_C = 0.8\text{ A}, I_B = 0.16\text{ A}$                   |     |     | 0.6 | V             |
| Base-emitter saturation voltage              | $V_{BE(sat)}$ | $I_C = 0.8\text{ A}, I_B = 0.16\text{ A}$                   |     |     | 1.2 | V             |
| Transition frequency                         | $f_T$         | $V_{CE} = 5\text{ V}, I_C = 0.1\text{ A}, f = 1\text{ MHz}$ |     | 4   |     | MHz           |
| Turn-on time                                 | $t_{on}$      | $I_C = 0.8\text{ A}$  |     |     | 1.0 | $\mu\text{s}$ |
| Storage time                                 | $t_{stg}$     | $I_{B1} = 0.16\text{ A}, I_{B2} = -0.32\text{ A}$           |     |     | 4.0 | $\mu\text{s}$ |
| Fall time                                    | $t_f$         | $V_{CC} = 250\text{ V}$                                     |     |     | 1.0 | $\mu\text{s}$ |

Note) Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

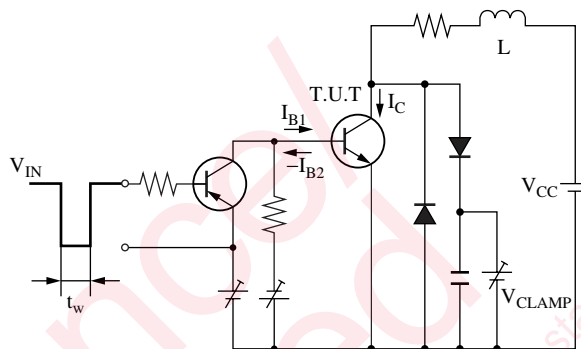




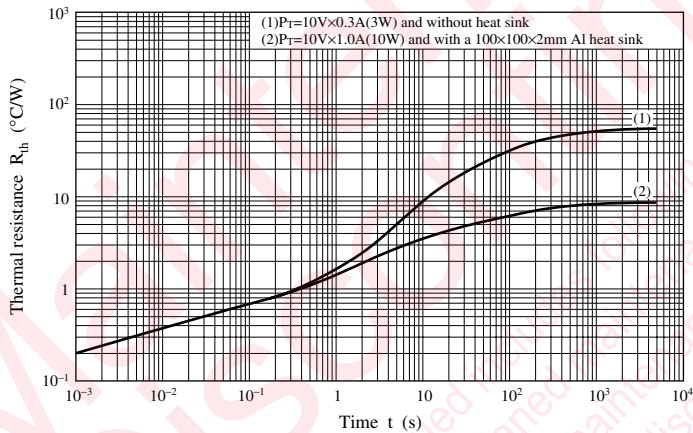
Safe operation area (Reverse bias)



Safe operation area (Reverse bias) measurement circuit



$R_{th} - t$



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