

# 2SD1499

## Silicon NPN triple diffusion planar type

For high power amplification

Complementary to 2SB1063

### ■ Features

- Extremely satisfactory linearity of the forward current transfer ratio  $h_{FE}$
- Wide area of safe operation (ASO)
- High transition frequency  $f_T$
- Full-pack package which can be installed to the heat sink with one screw

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

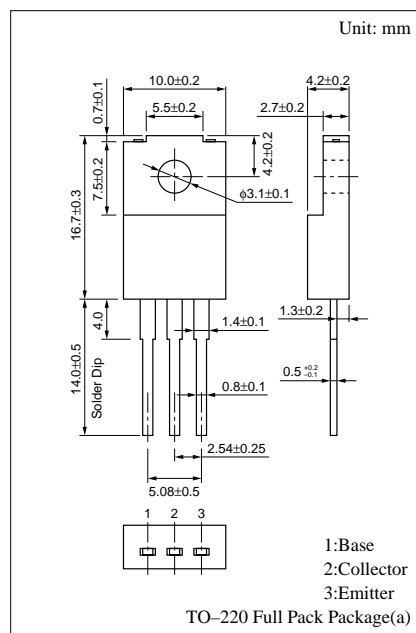
| Parameter                    | Symbol    | Ratings                | Unit             |
|------------------------------|-----------|------------------------|------------------|
| Collector to base voltage    | $V_{CBO}$ | 100                    | V                |
| Collector to emitter voltage | $V_{CEO}$ | 100                    | V                |
| Emitter to base voltage      | $V_{EBO}$ | 5                      | V                |
| Peak collector current       | $I_{CP}$  | 8                      | A                |
| Collector current            | $I_C$     | 5                      | A                |
| Collector power dissipation  | $P_C$     | $T_C=25^\circ\text{C}$ | 40               |
|                              |           | $T_a=25^\circ\text{C}$ | 2                |
| Junction temperature         | $T_j$     | 150                    | $^\circ\text{C}$ |
| Storage temperature          | $T_{stg}$ | -55 to +155            | $^\circ\text{C}$ |

### ■ Electrical Characteristics ( $T_C=25^\circ\text{C}$ )

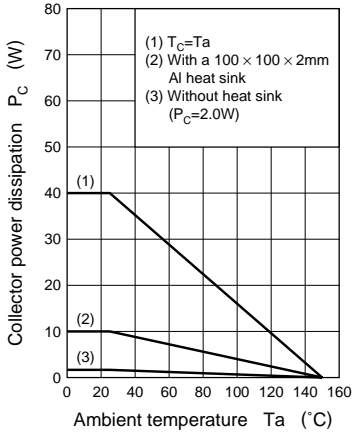
| Parameter                               | Symbol        | Conditions   | min | typ | max | Unit          |
|---|---------------|--|-----|-----|-----|---------------|
| Collector cutoff current                | $I_{CBO}$     | $V_{CB} = 100\text{V}, I_E = 0$                          |     |     | 50  | $\mu\text{A}$ |
| Emitter cutoff current                  | $I_{EBO}$     | $V_{EB} = 3\text{V}, I_C = 0$                            |     |     | 50  | $\mu\text{A}$ |
| Forward current transfer ratio          | $h_{FE1}$     | $V_{CE} = 5\text{V}, I_C = 20\text{mA}$                  | 20  |     |     |               |
|   | $h_{FE2}^*$   | $V_{CE} = 5\text{V}, I_C = 1\text{A}$                    | 60  |     | 200 |               |
|   | $h_{FE3}$     | $V_{CE} = 5\text{V}, I_C = 3\text{A}$                    | 20  |     |     |               |
| Base to emitter voltage                 | $V_{BE}$      | $V_{CE} = 5\text{V}, I_C = 3\text{A}$                    |     |     | 1.8 | V             |
| Collector to emitter saturation voltage | $V_{CE(sat)}$ | $I_C = 3\text{A}, I_B = 0.3\text{A}$                     |     |     | 2.0 | V             |
| Transition frequency                    | $f_T$         | $V_{CE} = 5\text{V}, I_C = 0.5\text{A}, f = 1\text{MHz}$ |     | 20  |     | MHz           |
| Collector output capacitance            | $C_{ob}$      | $V_{CB} = 10\text{V}, f = 1\text{MHz}$                   |     | 90  |     | pF            |

\* $h_{FE2}$  Rank classification

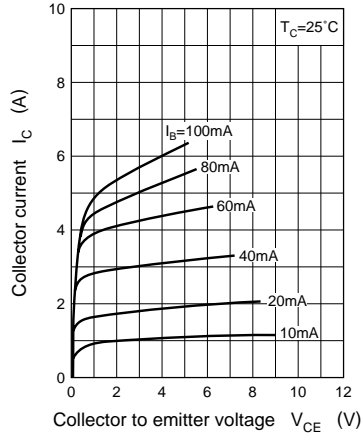
| Rank      | Q         | P          |
|-----------|-----------|------------|
| $h_{FE2}$ | 60 to 120 | 100 to 200 |



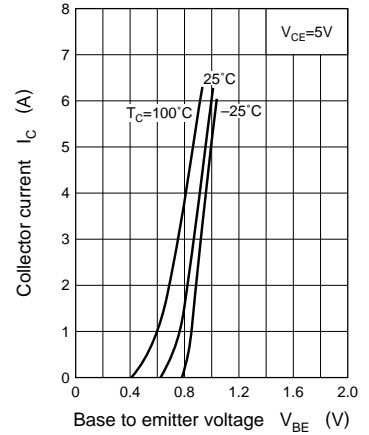
$P_C - T_a$



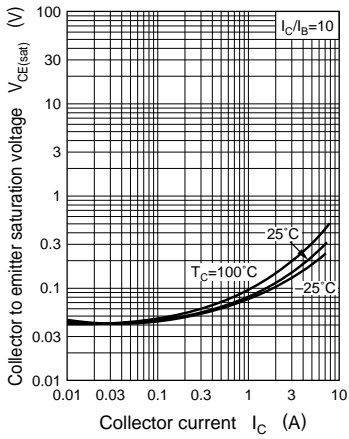
$I_C - V_{CE}$



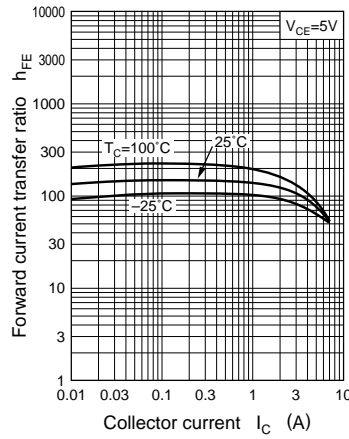
$I_C - V_{BE}$



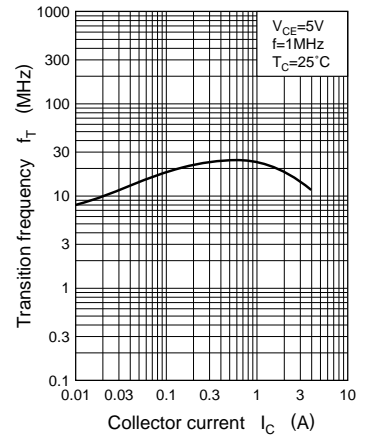
$V_{CE(sat)} - I_C$



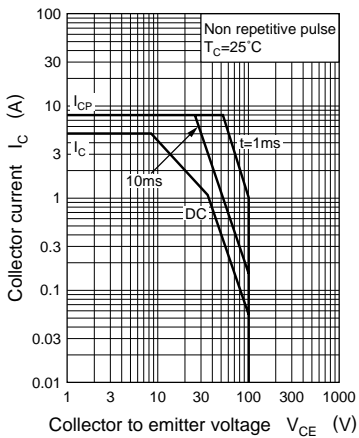
$h_{FE} - I_C$



$f_T - I_C$



Area of safe operation (ASO)



$R_{th(t)} - t$

