

# 2SA1500

Silicon PNP epitaxial planar type

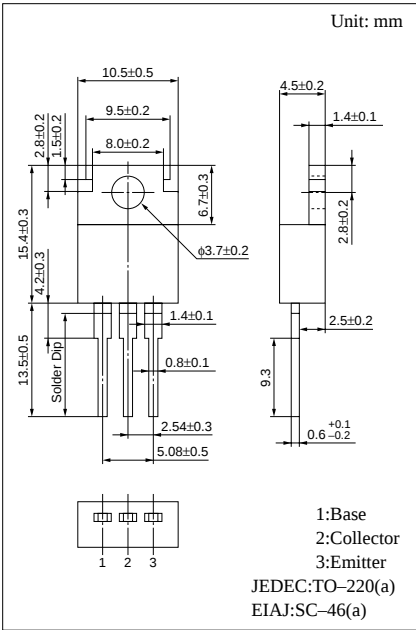
For power switching

## ■ Features

- High-speed switching
- High collector to base voltage  $V_{CBO}$
- Wide area of safe operation (ASO)
- Satisfactory linearity of forward current transfer ratio  $h_{FE}$

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

| Parameter                    | Symbol    | Ratings     | Unit             |
|------------------------------|-----------|-------------|------------------|
| Collector to base voltage    | $V_{CBO}$ | -400        | V                |
| Collector to emitter voltage | $V_{CEO}$ | -400        | V                |
| Emitter to base voltage      | $V_{EBO}$ | -7          | V                |
| Peak collector current       | $I_{CP}$  | -8          | A                |
| Collector current            | $I_C$     | -5          | A                |
| Collector power dissipation  | $P_C$     | 40          | W                |
|                              |           | 1.4         |                  |
| Junction temperature         | $T_j$     | 150         | $^\circ\text{C}$ |
| Storage temperature          | $T_{stg}$ | -55 to +150 | $^\circ\text{C}$ |

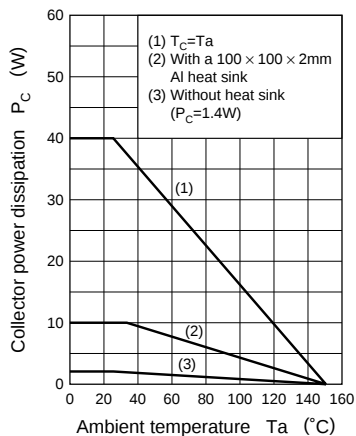
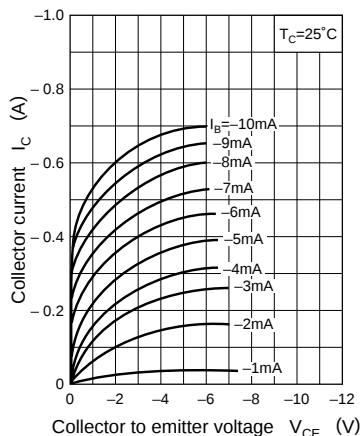
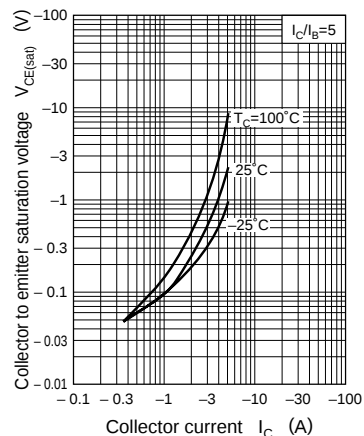
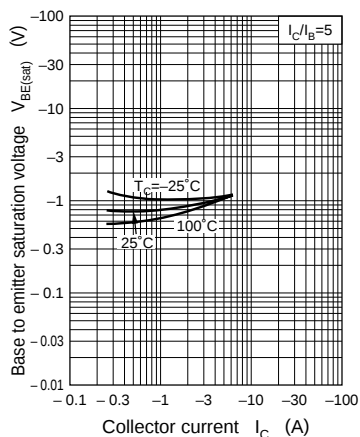
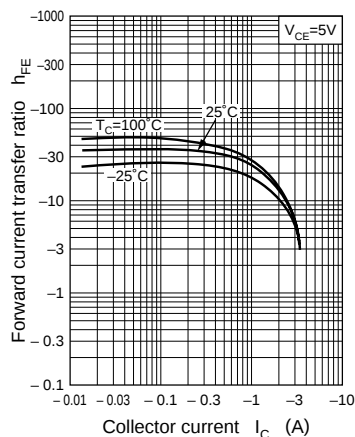
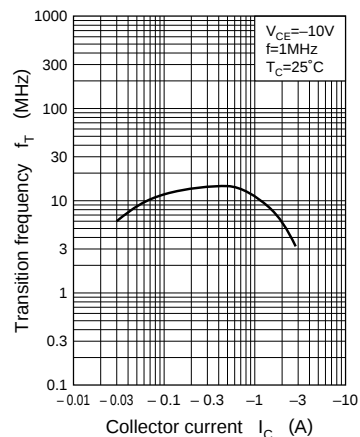
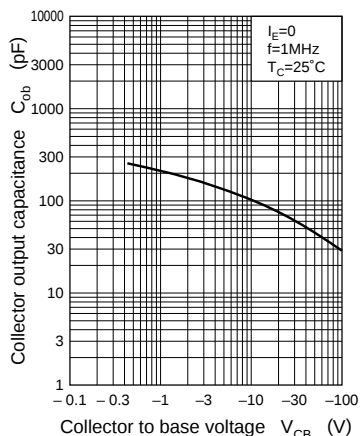
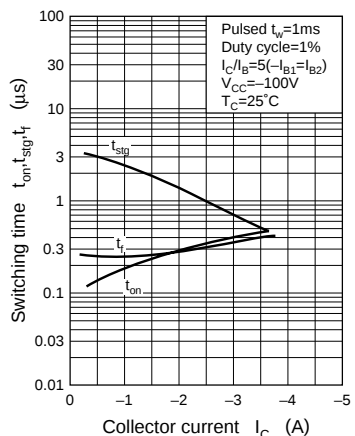


## ■ Electrical Characteristics ( $T_C=25^\circ\text{C}$ )

| Parameter                               | Symbol        | Conditions                                                           | min  | typ | max  | Unit          |
|-----------------------------------------|---------------|----------------------------------------------------------------------|------|-----|------|---------------|
| Collector cutoff current                | $I_{CBO}$     | $V_{CB} = -400\text{V}, I_E = 0$                                     |      |     | -100 | $\mu\text{A}$ |
| Emitter cutoff current                  | $I_{EBO}$     | $V_{EB} = -7\text{V}, I_C = 0$                                       |      |     | -100 | $\mu\text{A}$ |
| Collector to emitter voltage            | $V_{CEO}$     | $I_C = -10\text{mA}, I_B = 0$                                        | -400 |     |      | V             |
| Forward current transfer ratio          | $h_{FE1}^*$   | $V_{CE} = -5\text{V}, I_C = -0.5\text{A}$                            | 20   |     | 100  |               |
|                                         | $h_{FE2}$     | $V_{CE} = -5\text{V}, I_C = -2\text{A}$                              | 8    |     |      |               |
| Collector to emitter saturation voltage | $V_{CE(sat)}$ | $I_C = -2\text{A}, I_B = -0.4\text{A}$                               |      |     | -1.0 | V             |
| Base to emitter saturation voltage      | $V_{BE(sat)}$ | $I_C = -2\text{A}, I_B = -0.4\text{A}$                               |      |     | -1.5 | V             |
| Transition frequency                    | $f_T$         | $V_{CE} = -10\text{V}, I_C = -0.5\text{A}, f = 1\text{MHz}$          |      | 15  |      | MHz           |
| Turn-on time                            | $t_{on}$      | $I_{B1} = -0.4\text{A}, I_{B2} = 0.4\text{A}, V_{CC} = -100\text{V}$ |      |     | 1.0  | $\mu\text{s}$ |
| Storage time                            | $t_{stg}$     |                                                                      |      |     | 2.5  | $\mu\text{s}$ |
| Fall time                               | $t_f$         |                                                                      |      |     | 1.0  | $\mu\text{s}$ |

\* $h_{FE1}$  Rank classification

| Rank      | Q        | P         |
|-----------|----------|-----------|
| $h_{FE1}$ | 20 to 60 | 50 to 100 |

$P_C - T_a$  $I_C - V_{CE}$  $V_{CE(\text{sat})} - I_C$  $V_{BE(\text{sat})} - I_C$  $h_{FE} - I_C$  $f_T - I_C$  $C_{ob} - V_{CB}$  $t_{on}, t_{stg}, t_f - I_C$ 

Area of safe operation (ASO)

