

# 2SD1775, 2SD1775A

Silicon NPN triple diffusion planar type

For high-speed switching and high current amplification ratio

## ■ Features

- High forward current transfer ratio  $h_{FE}$
- Satisfactory linearity of forward current transfer ratio  $h_{FE}$
- N type package enabling direct soldering of the radiating fin to the printed circuit board, etc. of small electronic equipment.

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

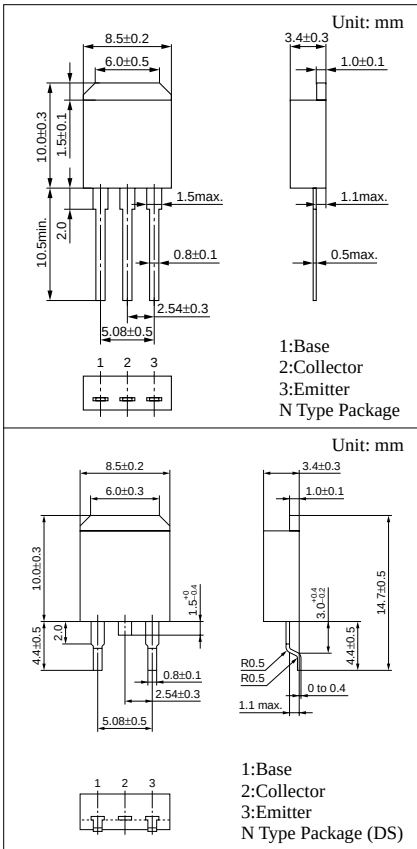
| Parameter                    | Symbol    | Ratings     | Unit             |
|------------------------------|-----------|-------------|------------------|
| Collector to base voltage    | $V_{CBO}$ | 80          | V                |
| Collector to emitter voltage | $V_{CEO}$ | 60          | V                |
| Emitter to base voltage      | $V_{EBO}$ | 6           | V                |
| Peak collector current       | $I_{CP}$  | 4           | A                |
| Collector current            | $I_C$     | 2           | A                |
| Base current                 | $I_B$     | 0.5         | A                |
| Collector power dissipation  | $P_C$     | 25          | W                |
| Junction temperature         | $T_j$     | 150         | $^\circ\text{C}$ |
| Storage temperature          | $T_{stg}$ | -55 to +150 | $^\circ\text{C}$ |

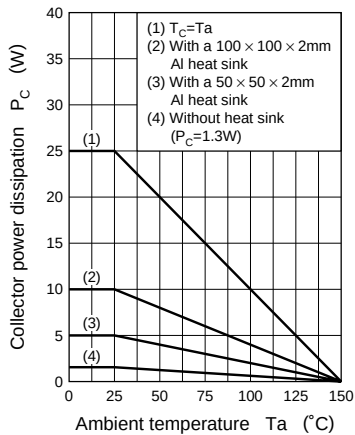
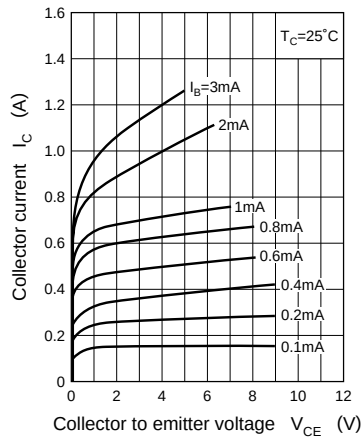
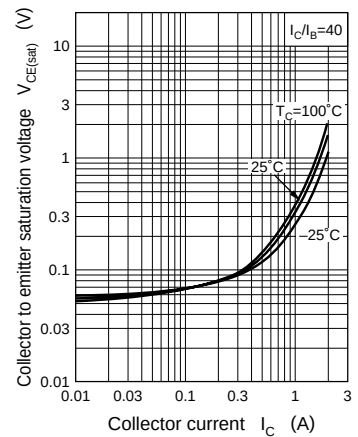
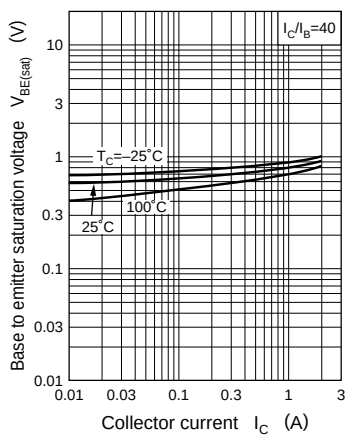
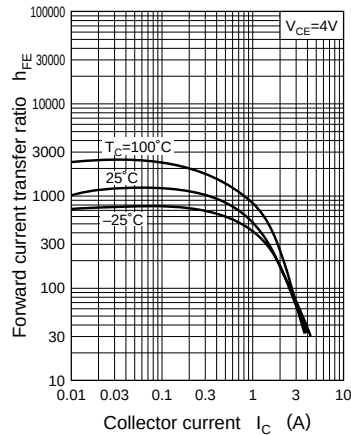
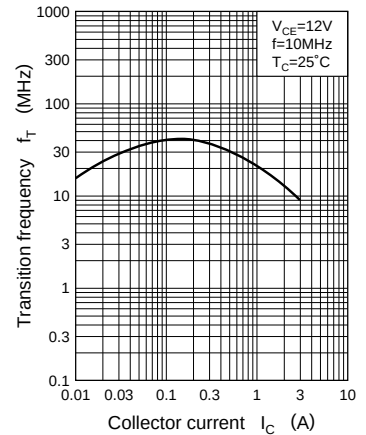
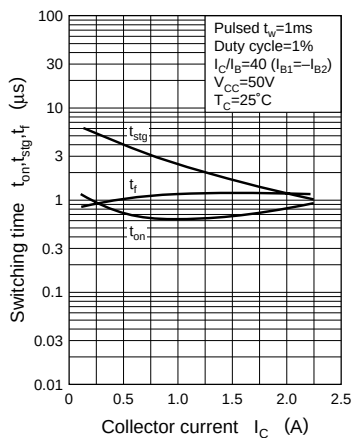
## ■ Electrical Characteristics ( $T_C=25^\circ\text{C}$ )

| Parameter                               | Symbol        | Conditions                                                                          | min | typ | max  | Unit          |
|-----------------------------------------|---------------|-------------------------------------------------------------------------------------|-----|-----|------|---------------|
| Collector cutoff current                | $I_{CBO}$     | $V_{CB} = 80\text{V}, I_E = 0$                                                      |     |     | 100  | $\mu\text{A}$ |
| Collector cutoff current                | $I_{CEO}$     | $V_{CE} = 40\text{V}, I_B = 0$                                                      |     |     | 100  | $\mu\text{A}$ |
| Emitter cutoff current                  | $I_{EBO}$     | $V_{EB} = 6\text{V}, I_C = 0$                                                       |     |     | 100  | $\mu\text{A}$ |
| Collector to emitter voltage            | $V_{CEO}$     | $I_C = 25\text{mA}, I_B = 0$                                                        | 60  |     |      | V             |
| Forward current transfer ratio          | $h_{FE}^*$    | $V_{CE} = 4\text{V}, I_C = 300\text{mA}$                                            | 500 |     | 1500 |               |
| Collector to emitter saturation voltage | $V_{CE(sat)}$ | $I_C = 1\text{A}, I_B = 25\text{mA}$                                                |     |     | 1.0  | V             |
| Base to emitter saturation voltage      | $V_{BE(sat)}$ | $I_C = 1\text{A}, I_B = 25\text{mA}$                                                |     |     | 1.2  | V             |
| Transition frequency                    | $f_T$         | $V_{CE} = 12\text{V}, I_C = 200\text{mA}, f = 10\text{MHz}$                         |     | 40  |      | MHz           |
| Collector output capacitance            | $C_{ob}$      | $V_{CB} = 10\text{V}, I_E = 0, f = 1\text{MHz}$                                     |     | 30  |      | pF            |
| Turn-on time                            | $t_{on}$      | $I_C = 1\text{A}, I_{B1} = 25\text{mA}, I_{B2} = -25\text{mA}, V_{CC} = 50\text{V}$ |     | 0.6 |      | $\mu\text{s}$ |
| Storage time                            | $t_{stg}$     |                                                                                     |     | 2.5 |      | $\mu\text{s}$ |
| Fall time                               | $t_f$         |                                                                                     |     | 1.0 |      | $\mu\text{s}$ |

\* $h_{FE}$  Rank classification

| Rank     | Q           | P           |
|----------|-------------|-------------|
| $h_{FE}$ | 500 to 1000 | 800 to 1500 |



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

Area of safe operation (ASO)

