

# 2SD1743, 2SD1743A

Silicon NPN triple diffusion planar type

For power amplification

Complementary to 2SB1173 and 2SB1173A

## Features

- High forward current transfer ratio  $h_{FE}$  which has satisfactory linearity
- Low collector to emitter saturation voltage  $V_{CE(sat)}$
- I type package enabling direct soldering of the radiating fin to the printed circuit board, etc. of small electronic equipment.

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

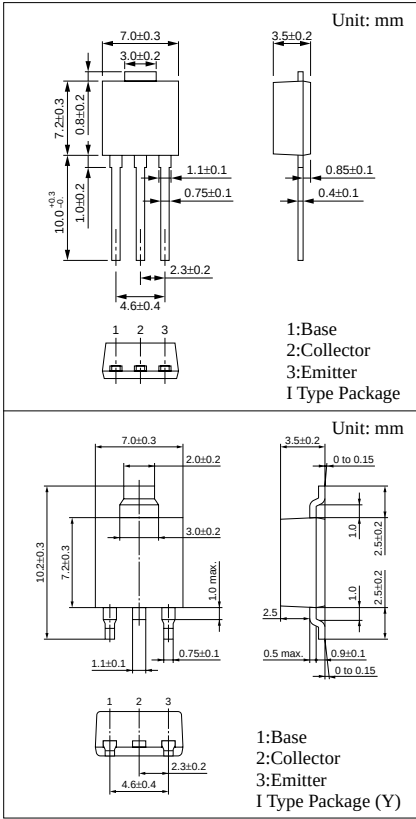
| Parameter                    | Symbol    | Ratings     | Unit             |
|------------------------------|-----------|-------------|------------------|
| Collector to base voltage    | $V_{CBO}$ | 60          | V                |
| 2SD1743A                     |           | 80          |                  |
| Collector to emitter voltage | $V_{CEO}$ | 60          | V                |
| 2SD1743A                     |           | 80          |                  |
| Emitter to base voltage      | $V_{EBO}$ | 5           | V                |
| Peak collector current       | $I_{CP}$  | 8           | A                |
| Collector current            | $I_C$     | 4           | A                |
| Collector power dissipation  | $P_C$     | 15          | W                |
| $T_C=25^\circ\text{C}$       |           | 1.3         |                  |
| Junction temperature         | $T_j$     | 150         | $^\circ\text{C}$ |
| Storage temperature          | $T_{stg}$ | -55 to +150 | $^\circ\text{C}$ |

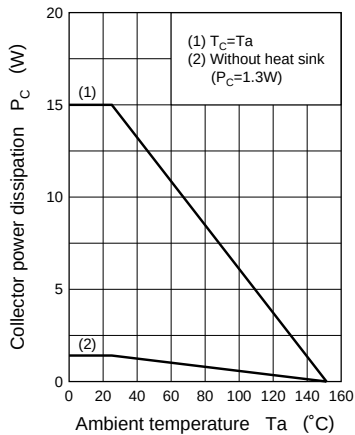
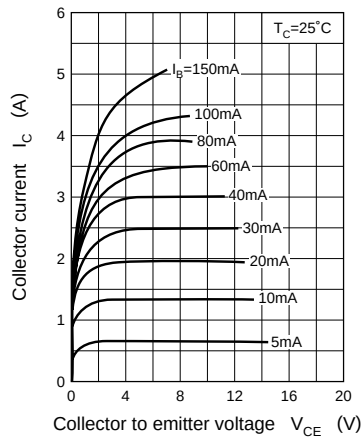
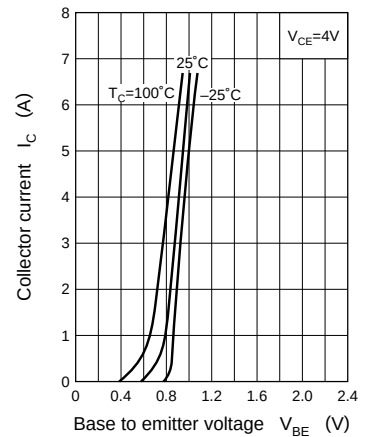
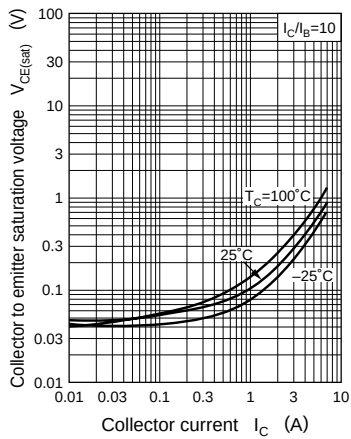
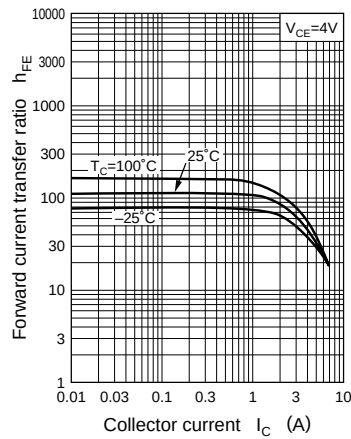
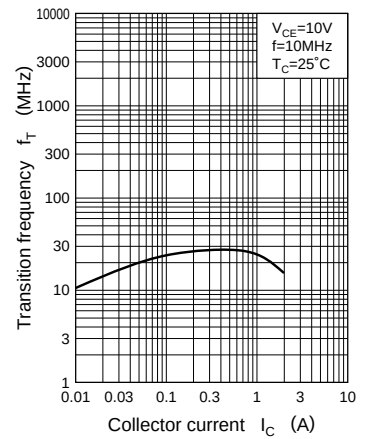
## Electrical Characteristics ( $T_C=25^\circ\text{C}$ )

| Parameter                               | Symbol        | Conditions                                                                          | min | typ | max | Unit          |
|-----------------------------------------|---------------|-------------------------------------------------------------------------------------|-----|-----|-----|---------------|
| Collector cutoff current                | $I_{CES}$     | $V_{CE} = 60\text{V}, V_{BE} = 0$                                                   |     |     | 400 | $\mu\text{A}$ |
| 2SD1743A                                |               | $V_{CE} = 80\text{V}, V_{BE} = 0$                                                   |     |     | 400 |               |
| Collector cutoff current                | $I_{CEO}$     | $V_{CE} = 30\text{V}, I_B = 0$                                                      |     |     | 700 | $\mu\text{A}$ |
| 2SD1743A                                |               | $V_{CE} = 60\text{V}, I_B = 0$                                                      |     |     | 700 |               |
| Emitter cutoff current                  | $I_{EBO}$     | $V_{EB} = 5\text{V}, I_C = 0$                                                       |     |     | 1   | mA            |
| Collector to emitter voltage            | $V_{CEO}$     | $I_C = 30\text{mA}, I_B = 0$                                                        | 60  |     |     | V             |
| 2SD1743A                                |               |                                                                                     | 80  |     |     |               |
| Forward current transfer ratio          | $h_{FE1}^*$   | $V_{CE} = 4\text{V}, I_C = 1\text{A}$                                               | 70  |     | 250 |               |
|                                         | $h_{FE2}$     | $V_{CE} = 4\text{V}, I_C = 3\text{A}$                                               | 15  |     |     |               |
| Base to emitter voltage                 | $V_{BE}$      | $V_{CE} = 4\text{V}, I_C = 3\text{A}$                                               |     |     | 2   | V             |
| Collector to emitter saturation voltage | $V_{CE(sat)}$ | $I_C = 4\text{A}, I_B = 0.4\text{A}$                                                |     |     | 1.5 | V             |
| Transition frequency                    | $f_T$         | $V_{CE} = 10\text{V}, I_C = 0.5\text{A}, f = 10\text{MHz}$                          |     | 25  |     | MHz           |
| Turn-on time                            | $t_{on}$      | $I_C = 4\text{A}, I_{B1} = 0.4\text{A}, I_{B2} = -0.4\text{A}, V_{CC} = 50\text{V}$ |     | 0.4 |     | $\mu\text{s}$ |
| Storage time                            | $t_{stg}$     |                                                                                     |     | 1.2 |     | $\mu\text{s}$ |
| Fall time                               | $t_f$         |                                                                                     |     | 0.5 |     | $\mu\text{s}$ |

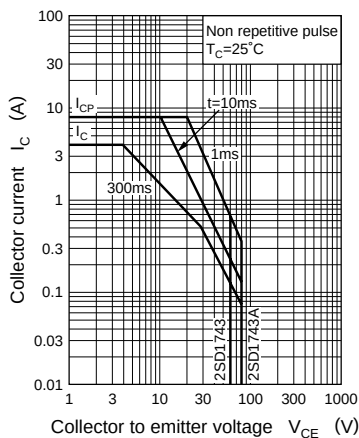
\* $h_{FE1}$  Rank classification

| Rank      | Q         | P          |
|-----------|-----------|------------|
| $h_{FE1}$ | 70 to 150 | 120 to 250 |



$P_C - T_a$  $I_C - V_{CE}$  $I_C - V_{BE}$  $V_{CE(sat)} - I_C$  $h_{FE} - I_C$  $f_T - I_C$ 

Area of safe operation (ASO)

 $R_{th(t)} - t$ 