

# 2SD1252, 2SD1252A

Silicon NPN triple diffusion planar type

For power amplification

Complementary to 2SB929 and 2SB929A

## Features

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

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

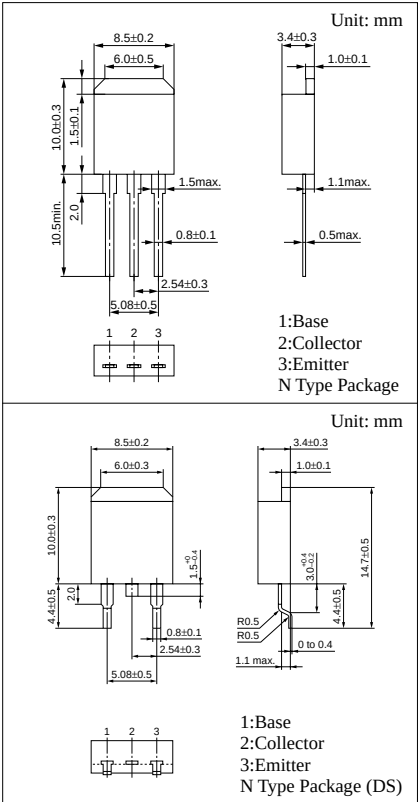
| Parameter                    |                          | Symbol           | Ratings     | Unit               |
|------------------------------|--------------------------|------------------|-------------|--------------------|
| Collector to base voltage    | 2SD1252                  | $V_{CBO}$        | 60          | V                  |
|                              | 2SD1252A                 |                  | 80          |                    |
| Collector to emitter voltage | 2SD1252                  | $V_{CEO}$        | 60          | V                  |
|                              | 2SD1252A                 |                  | 80          |                    |
| Emitter to base voltage      |                          | $V_{EBO}$        | 6           | V                  |
| Peak collector current       |                          | $I_{CP}$         | 5           | A                  |
| Collector current            |                          | $I_C$            | 3           | A                  |
| Collector power dissipation  | $T_C=25^{\circ}\text{C}$ | $P_C$            | 35          | W                  |
|                              | $T_a=25^{\circ}\text{C}$ |                  | 1.3         |                    |
| Junction temperature         |                          | $T_j$            | 150         | $^{\circ}\text{C}$ |
| Storage temperature          |                          | $T_{\text{stg}}$ | −55 to +150 | $^{\circ}\text{C}$ |

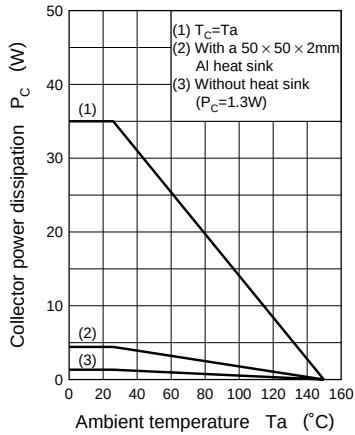
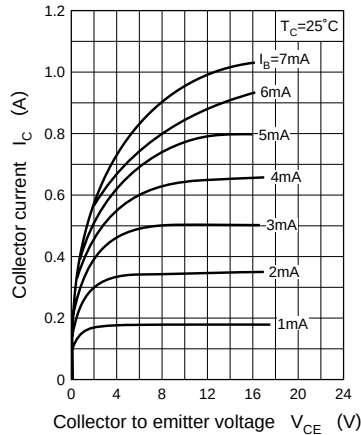
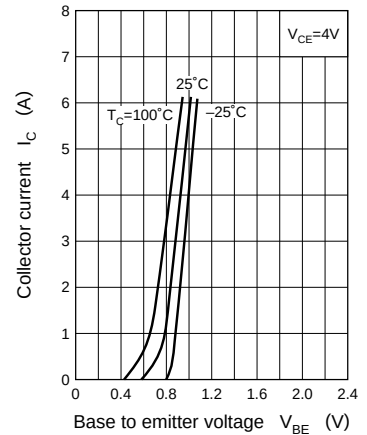
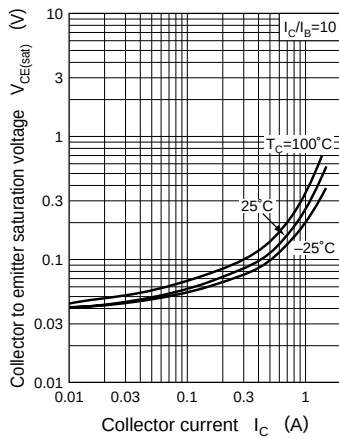
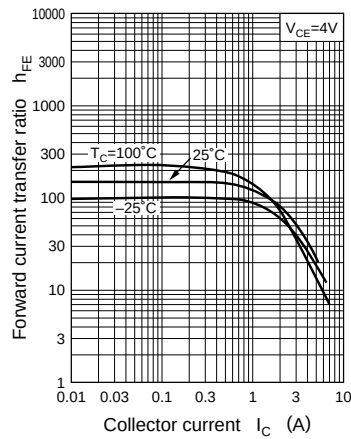
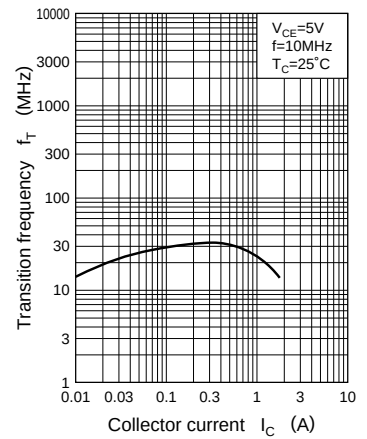
## Electrical Characteristics ( $T_C=25^\circ\text{C}$ )

| Parameter                                  | Symbol        | Conditions                                                                          | min        | typ | max | Unit          |
|--------------------------------------------|---------------|-------------------------------------------------------------------------------------|------------|-----|-----|---------------|
| Collector cutoff current                   | $I_{CES}$     | 2SD1252 $V_{CE} = 60\text{V}, V_{BE} = 0$                                           |            |     | 200 | $\mu\text{A}$ |
| 2SD1252A $V_{CE} = 80\text{V}, V_{BE} = 0$ |               |                                                                                     |            |     | 200 |               |
| Collector cutoff current                   | $I_{CEO}$     | 2SD1252 $V_{CE} = 30\text{V}, I_B = 0$                                              |            |     | 300 | $\mu\text{A}$ |
| 2SD1252A $V_{CE} = 60\text{V}, I_B = 0$    |               |                                                                                     |            |     | 300 |               |
| Emitter cutoff current                     | $I_{EBO}$     | $V_{EB} = 6\text{V}, I_C = 0$                                                       |            |     | 1   | mA            |
| Collector to emitter voltage               | $V_{CEO}$     | $I_C = 30\text{mA}, I_B = 0$                                                        | 2SD1252 60 |     |     | V             |
| 2SD1252A                                   |               |                                                                                     | 80         |     |     |               |
| Forward current transfer ratio             | $h_{FE1}^*$   | $V_{CE} = 4\text{V}, I_C = 1\text{A}$                                               | 40         |     | 250 |               |
|                                            | $h_{FE2}$     | $V_{CE} = 4\text{V}, I_C = 3\text{A}$                                               | 10         |     |     |               |
| Base to emitter voltage                    | $V_{BE}$      | $V_{CE} = 4\text{V}, I_C = 3\text{A}$                                               |            |     | 1.8 | V             |
| Collector to emitter saturation voltage    | $V_{CE(sat)}$ | $I_C = 3\text{A}, I_B = 0.375\text{A}$                                              |            |     | 1.2 | V             |
| Transition frequency                       | $f_T$         | $V_{CE} = 5\text{V}, I_C = 0.5\text{A}, f = 10\text{MHz}$                           |            | 30  |     | MHz           |
| Turn-on time                               | $t_{on}$      | $I_C = 1\text{A}, I_{B1} = 0.1\text{A}, I_{B2} = -0.1\text{A}, V_{CC} = 50\text{V}$ |            | 0.5 |     | $\mu\text{s}$ |
| Storage time                               | $t_{stg}$     |                                                                                     |            | 2.5 |     | $\mu\text{s}$ |
| Fall time                                  | $t_f$         |                                                                                     |            | 0.4 |     | $\mu\text{s}$ |

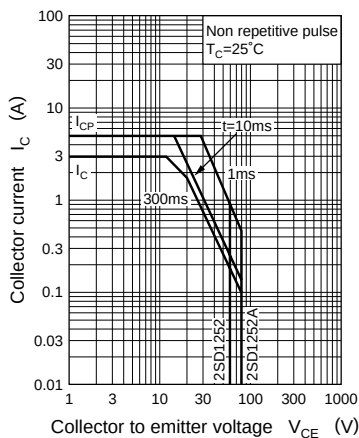
\* $h_{FE1}$  Rank classification

| Rank      | R        | Q         | P          |
|-----------|----------|-----------|------------|
| $h_{FE1}$ | 40 to 90 | 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)

 $R_{th(t)} - t$ 