

# 2SD1749, 2SD1749A

Silicon NPN triple diffusion planar type Darlington

For low-frequency power amplification

Complementary to 2SB1179 and 2SB1179A

## Features

- High forward current transfer ratio  $h_{FE}$
- High-speed switching
- 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                |
| 2SD1749A                     |           | 80          |                  |
| Collector to emitter voltage | $V_{CEO}$ | 60          | V                |
| 2SD1749A                     |           | 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 | $^\circ\text{C}$ |

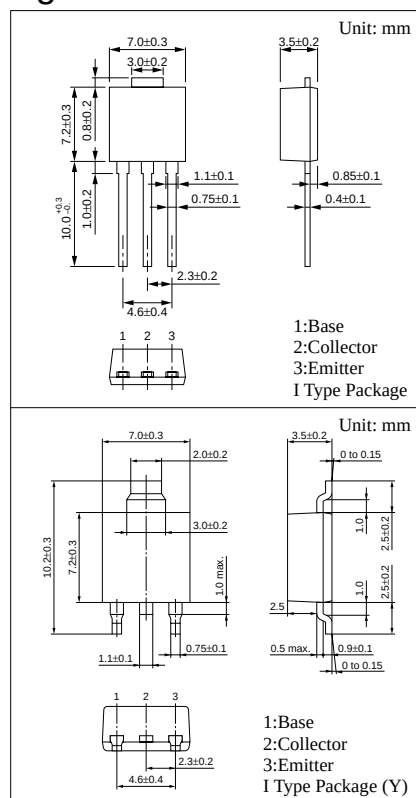
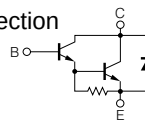
## Electrical Characteristics ( $T_C=25^\circ\text{C}$ )

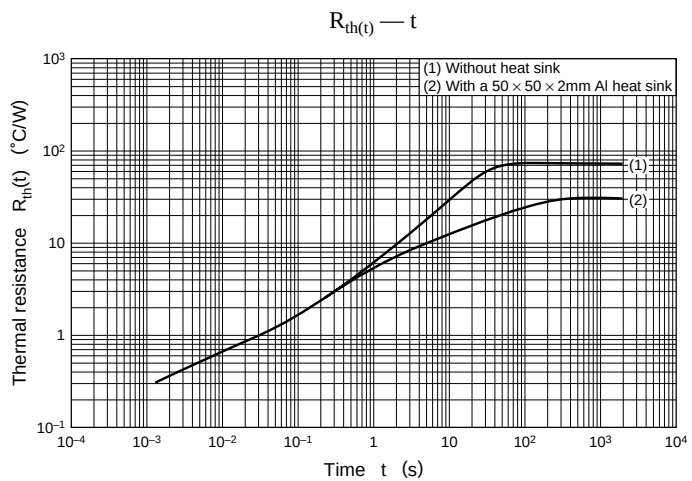
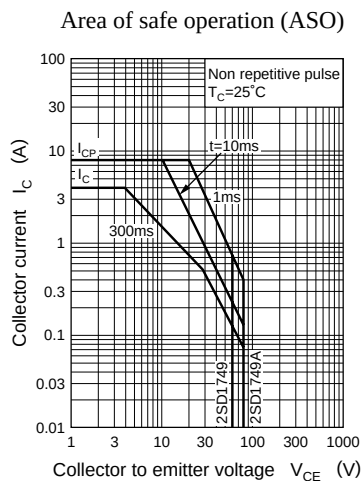
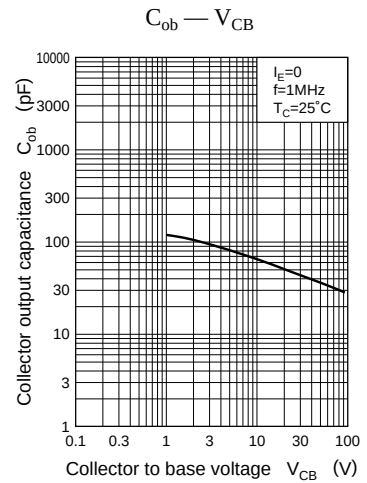
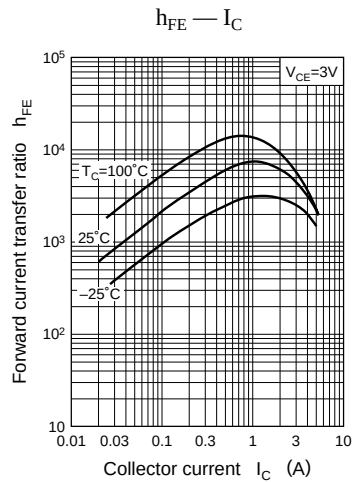
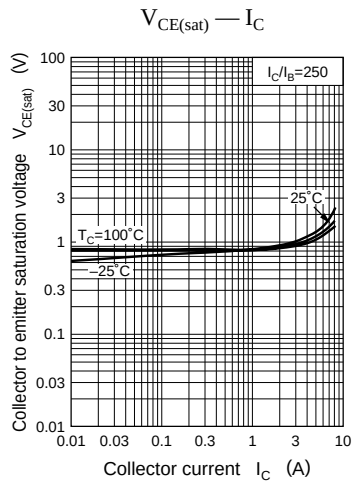
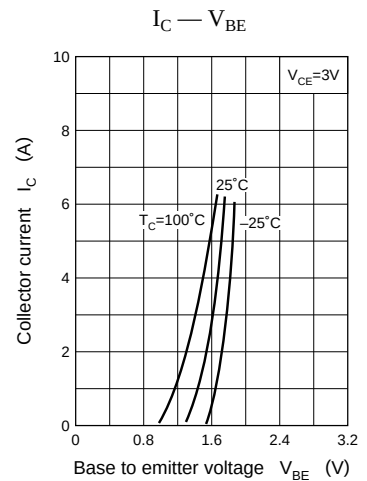
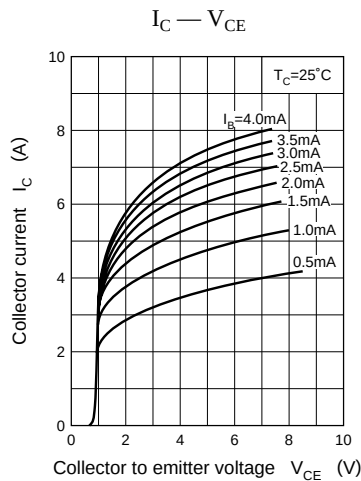
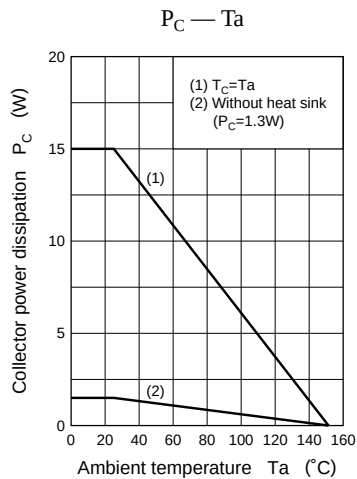
| Parameter                               | Symbol        | Conditions                                                                          | min  | typ | max   | Unit          |
|-----------------------------------------|---------------|-------------------------------------------------------------------------------------|------|-----|-------|---------------|
| Collector cutoff current                | $I_{CBO}$     | $V_{CB} = 60\text{V}, I_E = 0$                                                      |      |     | 200   | $\mu\text{A}$ |
| 2SD1749A                                |               | $V_{CB} = 80\text{V}, I_E = 0$                                                      |      |     | 200   |               |
| Collector cutoff current                | $I_{CEO}$     | $V_{CE} = 30\text{V}, I_B = 0$                                                      |      |     | 500   | $\mu\text{A}$ |
| 2SD1749A                                |               | $V_{CE} = 40\text{V}, I_B = 0$                                                      |      |     | 500   |               |
| Emitter cutoff current                  | $I_{EBO}$     | $V_{EB} = 5\text{V}, I_C = 0$                                                       |      |     | 2     | mA            |
| Collector to emitter voltage            | $V_{CEO}$     | $I_C = 30\text{mA}, I_B = 0$                                                        | 60   |     |       | V             |
| 2SD1749A                                |               |                                                                                     | 80   |     |       |               |
| Forward current transfer ratio          | $h_{FE1}$     | $V_{CE} = 3\text{V}, I_C = 0.5\text{A}$                                             | 1000 |     |       |               |
|                                         | $h_{FE2}^*$   | $V_{CE} = 3\text{V}, I_C = 3\text{A}$                                               | 2000 |     | 10000 |               |
| Base to emitter voltage                 | $V_{BE}$      | $V_{CE} = 3\text{V}, I_C = 3\text{A}$                                               |      |     | 2.5   | V             |
| Collector to emitter saturation voltage | $V_{CE(sat)}$ | $I_C = 3\text{A}, I_B = 12\text{mA}$                                                |      |     | 2     | V             |
|                                         |               | $I_C = 5\text{A}, I_B = 20\text{mA}$                                                |      |     | 4     |               |
| Transition frequency                    | $f_T$         | $V_{CE} = 10\text{V}, I_C = 0.5\text{A}, f = 1\text{MHz}$                           |      | 20  |       | MHz           |
| Turn-on time                            | $t_{on}$      | $I_C = 3\text{A}, I_{B1} = 12\text{mA}, I_{B2} = -12\text{mA}, V_{CC} = 50\text{V}$ |      | 0.5 |       | $\mu\text{s}$ |
| Storage time                            | $t_{stg}$     |                                                                                     |      | 4   |       | $\mu\text{s}$ |
| Fall time                               | $t_f$         |                                                                                     |      | 1   |       | $\mu\text{s}$ |

\* $h_{FE2}$  Rank classification

| Rank      | Q            | P             |
|-----------|--------------|---------------|
| $h_{FE2}$ | 2000 to 5000 | 4000 to 10000 |

Internal Connection





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