

# 2SD1742, 2SD1742A

## Silicon PNP Triple-Diffused Planar Type

AF Power Amplifier

Complementary Pair with 2SB1172, 2SB1172A

### ■ Features

- High DC current gain ( $h_{FE}$ ) and good linearity
- Low collector-emitter saturation voltage ( $V_{CE(sat)}$ )
- "I Type" package configuration with a cooling fin for direct soldering on PC board of a small-size electronic equipment

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

| Item                        | Symbol                 | Value           | Unit             |
|-----------------------------|------------------------|-----------------|------------------|
| Collector-base voltage      | 2SD1742                | 60              | V                |
|                             | 2SD1742A               | 80              |                  |
| Collector-emitter voltage   | 2SD1742                | 60              | V                |
|                             | 2SD1742A               | 80              |                  |
| Emitter-base voltage        | $V_{EBO}$              | 6               | V                |
| Peak collector current      | $I_{CP}$               | 5               | A                |
| Collector current           | $I_C$                  | 3               | A                |
| Collector power dissipation | $T_c=25^\circ\text{C}$ | 15              | W                |
|                             | $T_a=25^\circ\text{C}$ | 1.3             |                  |
| Junction temperature        | $T_j$                  | 150             | $^\circ\text{C}$ |
| Storage temperature         | $T_{stg}$              | $-55 \sim +150$ | $^\circ\text{C}$ |

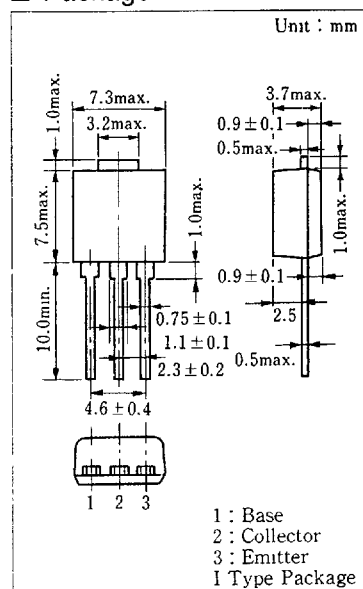
### ■ Electrical Characteristics ( $T_c=25^\circ\text{C}$ )

| Item                                 | Symbol        | Condition                                                                           | min. | typ. | max. | Unit          |
|--------------------------------------|---------------|-------------------------------------------------------------------------------------|------|------|------|---------------|
| Collector cutoff current             | 2SD1742       | $V_{CE}=60\text{ V}, V_{BE}=0$                                                      |      |      | 200  | $\mu\text{A}$ |
|                                      | 2SD1742A      | $V_{CE}=80\text{ V}, V_{BE}=0$                                                      |      |      | 200  |               |
| Collector cutoff current             | 2SD1742       | $V_{CE}=30\text{ V}, I_B=0$                                                         |      |      | 300  | $\mu\text{A}$ |
|                                      | 2SD1742A      | $V_{CE}=60\text{ V}, I_B=0$                                                         |      |      | 300  |               |
| Emitter cutoff current               | $I_{FBO}$     | $V_{EB}=6\text{ V}, I_C=0$                                                          |      |      | 1    | mA            |
| Collector-emitter voltage            | 2SD1742       | $I_C=30\text{ mA}, I_B=0$                                                           | 60   |      |      | V             |
|                                      | 2SD1742A      |                                                                                     | 80   |      |      |               |
| DC current gain                      | $h_{FE1}^*$   | $V_{CE}=4\text{ V}, I_C=1\text{ A}$                                                 | 40   |      | 320  |               |
|                                      | $h_{FE2}$     | $V_{CE}=4\text{ V}, I_C=3\text{ A}$                                                 | 10   |      |      |               |
| Base-emitter voltage                 | $V_{BE}$      | $V_{CE}=4\text{ V}, I_C=3\text{ A}$                                                 |      |      | 1.8  | V             |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_C=3\text{ A}, I_B=0.375\text{ A}$                                                |      |      | 1.2  | V             |
| Transition frequency                 | $f_T$         | $V_{CE}=10\text{ V}, I_C=0.5\text{ A}, f=10\text{ MHz}$                             |      | 30   |      | MHz           |
| Turn-on time                         | $t_{on}$      | $I_C=1\text{ A}, I_{B1}=0.1\text{ A}, I_{B2}=-0.1\text{ A}$<br>$V_{CC}=50\text{ V}$ |      | 0.5  |      | $\mu\text{s}$ |
| Storage time                         | $t_{stg}$     |                                                                                     |      | 2.5  |      | $\mu\text{s}$ |
| Fall time                            | $t_f$         |                                                                                     |      | 0.4  |      | $\mu\text{s}$ |

\* $h_{FE1}$  Classifications

| Class     | R     | Q      | P       | O       |
|-----------|-------|--------|---------|---------|
| $h_{FE1}$ | 40~90 | 70~150 | 120~250 | 160~320 |

### ■ Package Dimensions



\*Surface-mount type is also available.  
(Refer to p.81.)

