

# 2SD1510

## Silicon PNP Triple-Diffused Planar Darlington Type

### Power Amplifier

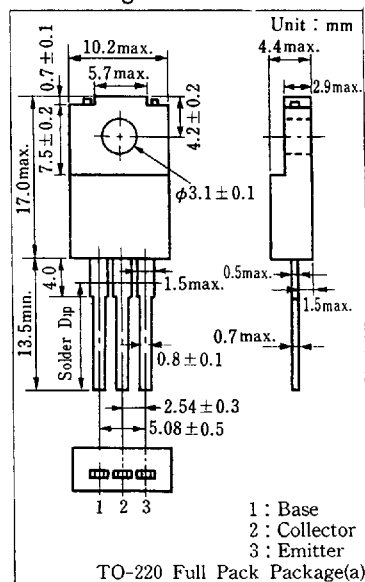
#### ■ Features

- High DC current gain ( $h_{FE}$ )
- High speed switching
- "Full Pack" package for simplified mounting on a heat sink with one screw

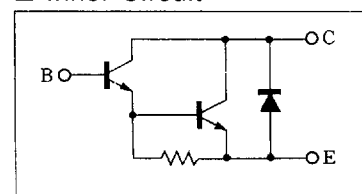
#### ■ Absolute Maximum Ratings ( $T_c=25^\circ\text{C}$ )

| Item                        | Symbol                 | Value           | Unit             |
|-----------------------------|------------------------|-----------------|------------------|
| Collector-base voltage      | $V_{CB0}$              | 60              | V                |
| Collector-emitter voltage   | $V_{CE0}$              | 60              | V                |
| Emitter-base voltage        | $V_{EB0}$              | 6               | V                |
| Peak collector current      | $I_{CP}$               | 8               | A                |
| Collector current           | $I_C$                  | 4               | A                |
| Collector power dissipation | $T_c=25^\circ\text{C}$ | 35              | W                |
|                             | $T_a=25^\circ\text{C}$ | 2               |                  |
| Junction temperature        | $T_j$                  | 150             | $^\circ\text{C}$ |
| Storage temperature         | $T_{stg}$              | $-55 \sim +150$ | $^\circ\text{C}$ |

#### ■ Package Dimensions



#### ■ Inner Circuit



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

| Item                                 | Symbol         | Condition                                              | min. | typ. | max.  | Unit          |
|--------------------------------------|----------------|--------------------------------------------------------|------|------|-------|---------------|
| Collector cutoff current             | $I_{CB0}$      | $V_{CB}=60\text{ V}, I_E=0$                            |      |      | 100   | $\mu\text{A}$ |
| Emitter cutoff current               | $I_{EB0}$      | $V_{EB}=6\text{ V}, I_C=0$                             |      |      | 2     | mA            |
| Collector-emitter voltage            | $V_{CE0}$      | $I_C=30\text{ mA}, I_B=0$                              | 60   |      |       | V             |
| DC current gain                      | $h_{FE1}$      | $V_{CE}=3\text{ V}, I_C=0.5\text{ A}$                  | 1000 |      |       |               |
|                                      | $h_{FE2}^*$    | $V_{CE}=3\text{ V}, I_C=3\text{ A}$                    | 1000 |      | 10000 |               |
| Base-emitter voltage                 | $V_{BE}$       | $V_{CE}=3\text{ V}, I_C=3\text{ A}$                    |      |      | 2.5   | V             |
| Collector-emitter saturation voltage | $V_{CE(sat)1}$ | $I_C=3\text{ A}, I_B=12\text{ mA}$                     |      |      | 2     | V             |
|                                      | $V_{CE(sat)2}$ | $I_C=5\text{ A}, I_B=20\text{ mA}$                     |      |      | 4     | V             |
| Transition frequency                 | $f_T$          | $V_{CE}=10\text{ V}, I_C=0.5\text{ A}, f=1\text{ MHz}$ |      | 20   |       | MHz           |

#### \* $h_{FE2}$ Classifications

| Class     | R         | Q         | P          |
|-----------|-----------|-----------|------------|
| $h_{FE2}$ | 1000~2500 | 2000~5000 | 4000~10000 |

