

# 2SC4528

Silicon NPN Triple-Diffused Planar Darlington Type

High Power Switching

## ■ Features

- High speed switching
- High collector-base voltage ( $V_{CB0}$ )
- Wide area of safety operation (ASO)
- Good linearity of DC current gain ( $h_{FE}$ )

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

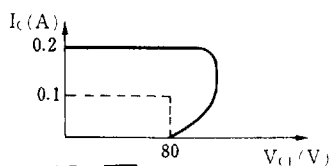
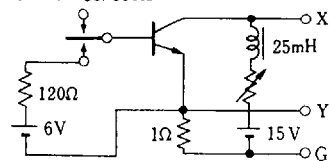
| Item                        | Symbol                 | Value           | Unit             |
|-----------------------------|------------------------|-----------------|------------------|
| Collector-base voltage      | $V_{CB0}$              | 1500            | V                |
| Collector-emitter voltage   | $V_{CEO}$              | 500             | V                |
| Emitter-base voltage        | $V_{EBO}$              | 7               | V                |
| Peak collector current      | $I_{CP}$               | 20              | A                |
| Collector current           | $I_C$                  | 10              | A                |
| Collector power dissipation | $T_c=25^\circ\text{C}$ | 150             | W                |
|                             | $T_a=25^\circ\text{C}$ | 3.5             |                  |
| Junction temperature        | $T_j$                  | 150             | $^\circ\text{C}$ |
| Storage temperature         | $T_{stg}$              | $-55 \sim +150$ | $^\circ\text{C}$ |

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

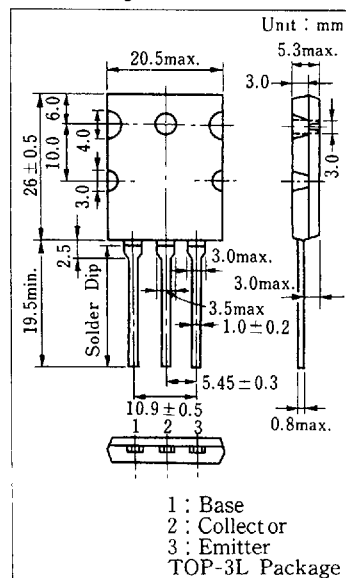
| Item                                 | Symbol         | Condition                                           | min. | typ. | max. | Unit          |
|--------------------------------------|----------------|-----------------------------------------------------|------|------|------|---------------|
| Collector cutoff current             | $I_{CBO}$      | $V_{CB}=1500\text{V}, I_E=0$                        |      |      | 1    | mA            |
| Emitter cutoff current               | $I_{EBO}$      | $V_{EB}=7\text{V}, I_C=0$                           |      |      | 500  | mA            |
| Collector-emitter voltage            | $V_{CEO(sus)}$ | $I_C=0.25\text{A}, L=25\text{mH}$                   | 500  |      |      | V             |
| DC current gain                      | $h_{FE}$       | $V_{CE}=5\text{V}, I_C=10\text{A}$                  | 50   |      | 250  |               |
| Collector-emitter saturation voltage | $V_{CE(sat)}$  | $I_C=10\text{A}, I_B=1\text{A}$                     |      |      | 2.0  | V             |
| Base-emitter saturation voltage      | $V_{BE(sat)}$  | $I_C=10\text{A}, I_B=1\text{A}$                     |      |      | 2.5  | V             |
| Transition frequency                 | $f_T$          | $V_{CE}=10\text{V}, I_C=0.5\text{A}, f=1\text{MHz}$ |      | 5    |      | MHz           |
| Turn-on time                         | $t_{on}$       | $I_C=10\text{A}$                                    |      |      | 4.0  | $\mu\text{s}$ |
| Storage time                         | $t_{stg}$      | $I_{B1}=1\text{A}, I_{B2}=-5\text{A}$               |      |      | 5.5  | $\mu\text{s}$ |
| Collector current fall time          | $t_f$          | $V_{CC}=200\text{V}$                                |      |      | 4.0  | $\mu\text{s}$ |
| Diode forward voltage                | $V_F$          | $I_C=-10\text{A}, I_B=0$                            |      |      | 2    | V             |

\*  $V_{CEO(sus)}$  Test method

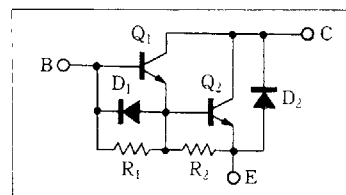
Mercury relay 50/60Hz

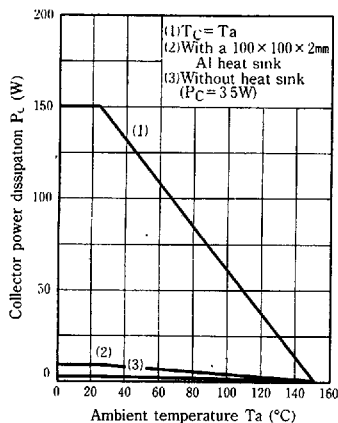
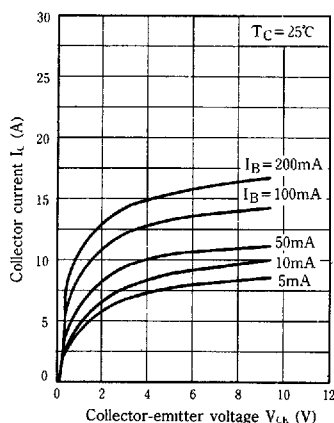
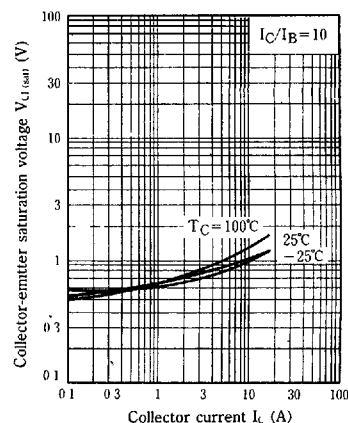
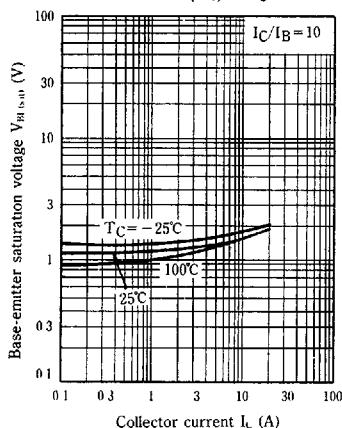
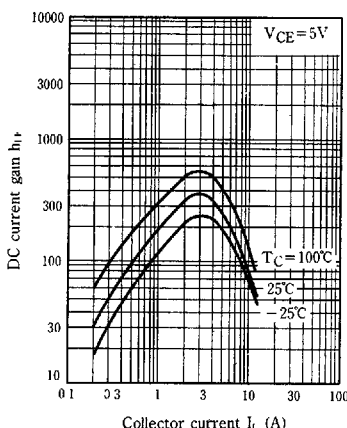


## ■ Package Dimensions

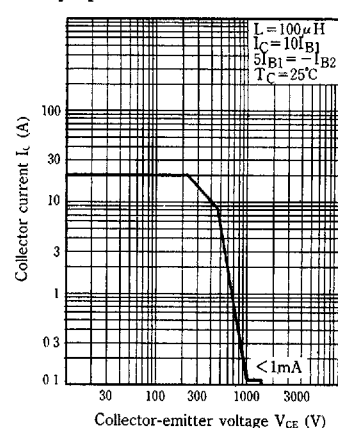


## ■ Inner Circuit

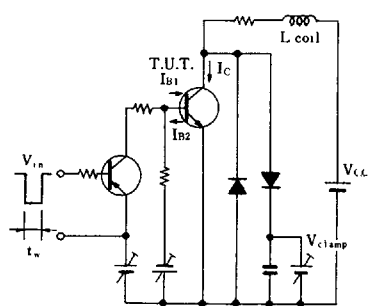


$P_C - T_a$  $I_C - V_{CE}$  $V_{CE(sat)} - I_C$  $V_{BE(sat)} - I_C$  $h_{FE} - I_C$ 

Safety operation area-reverse bias (ASO)



Measurement circuit of reverse bias ASO

 $R_{th(t)} - t$ 