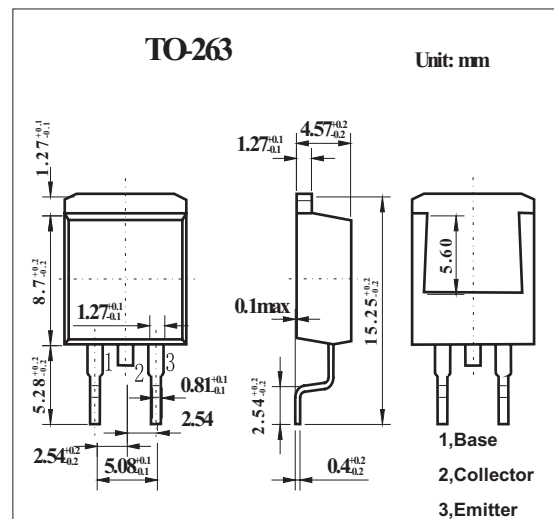


## NPN Triple Diffused Planar Silicon Transistor

## 2SC4598

## ■ Features

- Surface mount type device making the following possible.
- Reduction in the number of manufacturing processes for 2SC4598-applied equipment.
- High density surface mount applications.
- Small size of 2SC4598-applied equipment.
- High breakdown voltage, high reliability.
- Fast switching speed.
- Wide ASO.
- Adoption of MBIT process.

■ Absolute Maximum Ratings  $T_a = 25^\circ\text{C}$ 

| Parameter                   | Symbol    | Rating                   | Unit             |
|-----------------------------|-----------|--------------------------|------------------|
| Collector-base voltage      | $V_{CB0}$ | 500                      | V                |
| Collector-emitter voltage   | $V_{CE0}$ | 400                      | V                |
| Emitter-base voltage        | $V_{EB0}$ | 7                        | V                |
| Collector current (DC)      | $I_C$     | 7                        | A                |
| Collector current (Pulse) * | $I_{CP}$  | 14                       |                  |
| Base current                | $I_B$     | 3                        | A                |
| Collector power dissipation | $P_C$     | $T_a = 25^\circ\text{C}$ | 1.65             |
|                             |           | $T_c = 25^\circ\text{C}$ | 50               |
| Junction temperature        | $T_j$     | 150                      | $^\circ\text{C}$ |
| Storage temperature range   | $T_{stg}$ | -55 to +150              | $^\circ\text{C}$ |

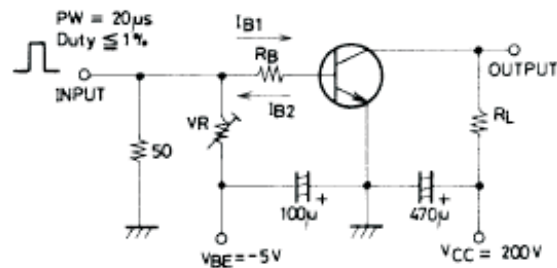
\*  $PW \leq 300\text{ms}$ , duty cycle  $\leq 10\%$

## 2SC4598

■ Electrical Characteristics  $T_a = 25^\circ\text{C}$ 

| Parameter                            | Symbol         | Testconditions   | Min | Typ | Max | Unit          |
|--------------------------------------|----------------|--|-----|-----|-----|---------------|
| Collector cut-off current            | $I_{CBO}$      | $V_{CB} = 400\text{ V}, I_E = 0$   |     |     | 10  | $\mu\text{A}$ |
| Emitter cut-off current              | $I_{EBO}$      | $V_{EB} = 5\text{ V}, I_C = 0$   |     |     | 10  | $\mu\text{A}$ |
| DC current gain                      | hFE            | $V_{CE} = 5\text{ V}, I_C = 0.8\text{ A}$  | 15  |     | 50  |               |
|                                      |                | $V_{CE} = 5\text{ V}, I_C = 4\text{ A}$  | 10  |     |     |               |
|                                      |                | $V_{CE} = 5\text{ V}, I_C = 10\text{ mA}$  | 10  |     |     |               |
| Gain-Bandwidth product               | ft             | $V_{CE} = 10\text{ V}, I_C = 0.8\text{ A}$   |     | 20  |     | MHz           |
| Output Capacitance                   | $C_{ob}$       | $V_{CB} = 10\text{ V}, f = 1\text{ MHz}$   |     | 80  |     | pF            |
| Collector-emitter saturation voltage | $V_{CE(sat)}$  | $I_C = 4\text{ A}, I_B = 0.8\text{ A}$   |     |     | 0.8 | V             |
| Base-emitter saturation voltage      | $V_{BE(sat)}$  | $I_C = 4\text{ A}, I_B = 0.8\text{ A}$   |     |     | 1.5 | V             |
| Collector-base breakdown voltage     | $V_{(BR)CBO}$  | $I_C = 1\text{ mA}, I_E = 0$   | 500 |     |     | V             |
| Collector-emitter breakdown voltage  | $V_{(BR)CEO}$  | $I_C = 5\text{ mA}, R_{BE} = \infty$   | 400 |     |     | V             |
| Emitter-to-Base Breakdown Voltage    | $V_{(BR)EBO}$  | $I_E = 1\text{ mA}, I_C = 0$   | 7   |     |     | V             |
| Collector-to-Emitter Sustain Voltage | $V_{CEX(SUS)}$ | $I_C = 3\text{ A}, I_{B1} = 0.3\text{ A}, L = 1\text{ mH}, I_{B2} = -1.2\text{ A}$                           | 400 |     |     | V             |
| Turn-ON time                         | $t_{on}$       | $I_C = 3\text{ A}, I_{B1} = 0.6\text{ A}, I_{B2} = -1.2\text{ A}, R_L = 66.6\ \Omega, V_{CC} = 200\text{ V}$ |     |     | 0.5 | $\mu\text{s}$ |
| Storage time                         | $t_{stg}$      |  |     |     | 2.5 |               |
| Fall time                            | $t_f$          |  |     |     | 0.3 |               |

## ■ Switching Time Test Circuit

Unit (resistance :  $\Omega$ , capacitance : F)

## ■ hFE Classification

| Rank | L        | M        | N        |
|------|----------|----------|----------|
| hFE  | 15 to 30 | 20 to 40 | 30 to 50 |