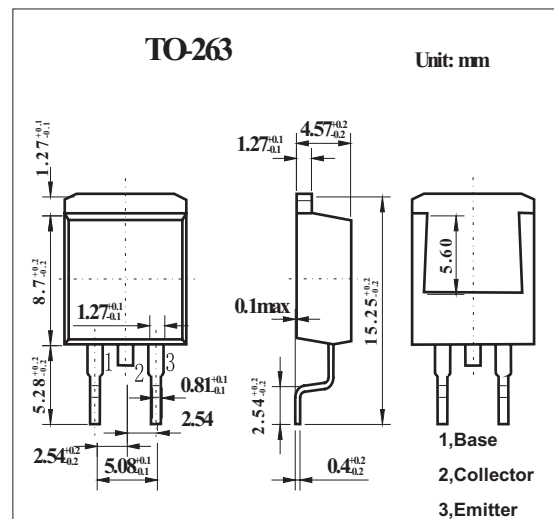


NPN Triple Diffused Planar Silicon Transistor

2SC4599

■ Features

- Surface mount type device making the following possible.
- Reduction in the number of manufacturing processes for 2SC4599-applied equipment.
- High density surface mount applications.
- Small size of 2SC4599-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} | 800 | V | |
| Collector-emitter voltage | V_{CE0} | 500 | V | |
| Emitter-base voltage | V_{EB0} | 7 | V | |
| Collector current (DC) | I_C | 3 | A | |
| Collector current (Pulse) * | I_{CP} | 6 | | |
| Base current | I_B | 1 | A | |
| Collector power dissipation | P_C | $T_a = 25^\circ\text{C}$ | 1.65 | W |
| | | $T_C = 25^\circ\text{C}$ | 40 | |
| Junction temperature | T_j | 150 | $^\circ\text{C}$ | |
| Storage temperature range | T_{stg} | -55 to +150 | $^\circ\text{C}$ | |

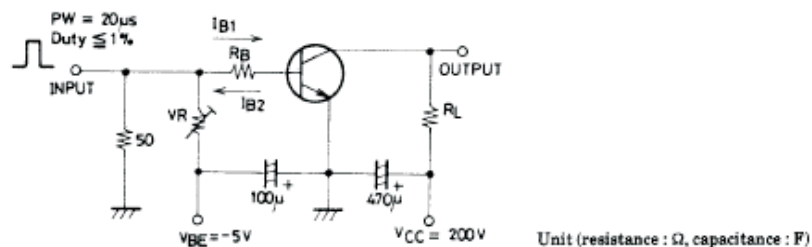
* $PW \leq 300\text{ms}$, duty cycle $\leq 10\%$

2SC4599

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

| Parameter | Symbol | Testconditions | Min | Typ | Max | Unit |
|--------------------------------------|----------------|---|-----|-----|-----|---------------|
| Collector cut-off current | I_{CBO} | $V_{CB} = 500\text{ V}, I_E = 0$ | | | 10 | μA |
| Emitter cut-off current | I_{EBO} | $V_{EB} = 5\text{ V}, I_C = 0$ | | | 10 | μA |
| DC current gain | h_{FE} | $V_{CE} = 5\text{ V}, I_C = 0.3\text{ A}$ | 15 | | 50 | |
| | | $V_{CE} = 5\text{ V}, I_C = 1.5\text{ A}$ | 8 | | | |
| Gain-Bandwidth product | f_T | $V_{CE} = 10\text{ V}, I_C = 0.3\text{ A}$ | | 18 | | MHz |
| Output Capacitance | C_{ob} | $V_{CB} = 10\text{ V}, f = 1\text{ MHz}$ | | 50 | | pF |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_C = 1.5\text{ A}, I_B = 0.3\text{ A}$ | | | 1.0 | V |
| Base-emitter saturation voltage | $V_{BE(sat)}$ | $I_C = 1.5\text{ A}, I_B = 0.3\text{ A}$ | | | 1.5 | V |
| Collector-base breakdown voltage | $V_{(BR)CBO}$ | $I_C = 1\text{ mA}, I_E = 0$ | 800 | | | V |
| Collector-emitter breakdown voltage | $V_{(BR)CEO}$ | $I_C = 5\text{ mA}, R_{BE} = \infty$ | 500 | | | V |
| Emitter-to-Base Breakdown Voltage | $V_{(BR)EBO}$ | $I_E = 1\text{ mA}, I_C = 0$ | 7 | | | V |
| Collector-to-Emitter Sustain Voltage | $V_{CEX(SUS)}$ | $I_C = 1.5\text{ A}, I_{B1} = 0.6\text{ A}, L = 2\text{ mH}, I_{B2} = -0.6\text{ A}$ | 500 | | | V |
| Turn-ON time | t_{on} | $I_C = 2\text{ A}, I_{B1} = 0.4\text{ A}, I_{B2} = -0.8\text{ A}, R_L = 100\ \Omega, V_{CC} = 200\text{ V}$ | | | 0.5 | μs |
| Storage time | t_{stg} | | | | 3.0 | |
| Fall time | t_f | | | | 0.3 | |

■ Switching Time Test Circuit

■ h_{FE} Classification

| Rank | L | M | N |
|----------|----------|----------|----------|
| h_{FE} | 15 to 30 | 20 to 40 | 30 to 50 |