TOSHIBA TRANSISTOR SILICON NPN TRIPLE DIFFUSED TYPE (PCT PROCESS)

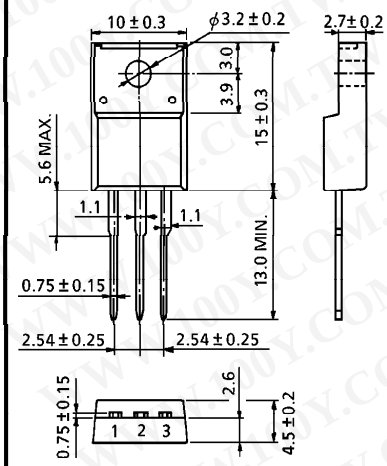
# 2SC5172

SWITCHING REGULATOR AND HIGH VOLTAGE SWITCHING APPLICATIONS

HIGH SPEED DC-DC CONVERTER APPLICATIONS

- Excellent Switching Times
  : $t_r = 0.5\mu s$ (Max.), $t_f = 0.3\mu s$ (Max.) at $I_C = 2A$
- High Collector Breakdown Voltage : $V_{CEO} = 400V$

Unit in mm




1. BASE
2. COLLECTOR
3. EMITTER

| | |
|---|---|
| JEDEC | — |
| EIAJ | SC-67 |
| TOSHIBA | 2-10R1A |

Weight : 1.7g

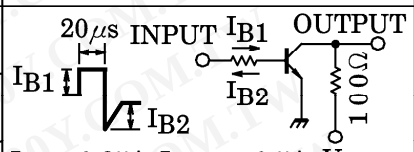
MAXIMUM RATINGS (Ta = 25°C)

| CHARACTERISTIC | | SYMBOL | RATING | UNIT |
|---|---|---|---|---|
| Collector-Base Voltage | | $V_{CBO}$ | 600 | V |
| Collector-Emitter Voltage | | $V_{CEO}$ | 400 | V |
| Emitter-Base Voltage | | $V_{EBO}$ | 7 | V |
| Collector Current | DC | $I_C$ | 5 | A |
| | Pulse | $I_{CP}$ | 7 | |
| Base Current | | $I_B$ | 2 | A |
| Collector Power Dissipation | Ta = 25°C | $P_C$ | 2.0 | W |
| | Tc = 25°C | | 25 | |
| Junction Temperature | | $T_j$ | 150 | °C |
| Storage Temperature Range | | $T_{stg}$ | −55~150 | °C |

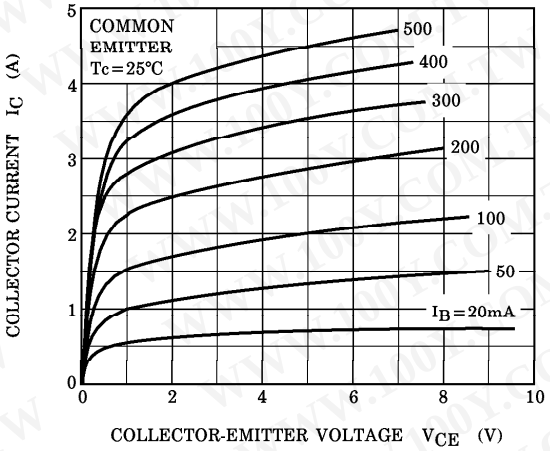


961001EAA2

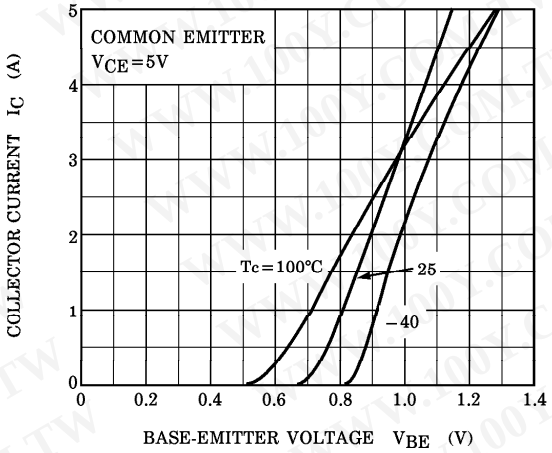
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

| CHARACTERISTIC | | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|---|---|---|---|---|---|---|---|
| Collector Cut-off Current | | $I_{CBO}$ | $V_{CB}$ = 500V, $I_E$ = 0 | — | — | 20 | μA |
| Emitter Cut-off Current | | $I_{EBO}$ | $V_{EB}$ = 7V, $I_C$ = 0 | — | — | 100 | nA |
| Collector-Base Breakdown Voltage | | $V_{(BR)CBO}$ | $I_C$ = 1mA, $I_E$ = 0 | 600 | — | — | V |
| Collector-Emitter Breakdown Voltage | | $V_{(BR)CEO}$ | $I_C$ = 10mA, $I_B$ = 0 | 400 | — | — | V |
| DC Current Gain | | $h_{FE(1)}$ | $V_{CE}$ = 5V, $I_C$ = 1mA | 13 | — | — | |
| | | $h_{FE(2)}$ | $V_{CE}$ = 5V, $I_C$ = 0.5A | 20 | — | 65 | |
| Collector-Emitter Saturation Voltage | | $V_{CE(sat)}$ | $I_C$ = 2A, $I_B$ = 0.25A | — | — | 1.0 | V |
| Base-Emitter Saturation Voltage | | $V_{BE(sat)}$ | $I_C$ = 2A, $I_B$ = 0.25A | — | — | 1.3 | V |
| Switching Time | Rise Time | $t_r$ |  | — | — | 0.5 | μs |
| | Storage Time | $t_{stg}$ | | — | — | 2.0 | |
| | Fall Time | $t_f$ | $I_{B1}$ = 0.25A $I_{B2}$ = −0.5A $V_{CC}$ ≒ 200V DUTY CYCLE < 1% | — | — | 0.3 | |

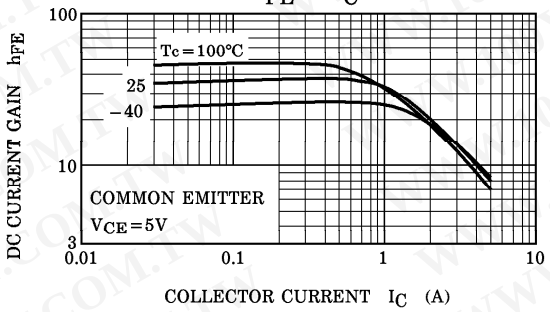
$I_C$ – $V_{CE}$



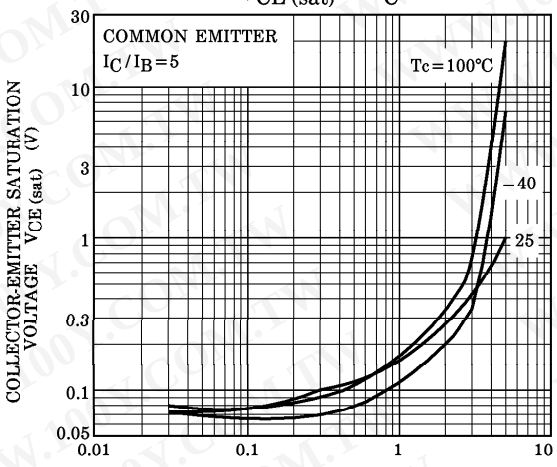

$I_C$ – $V_{BE}$



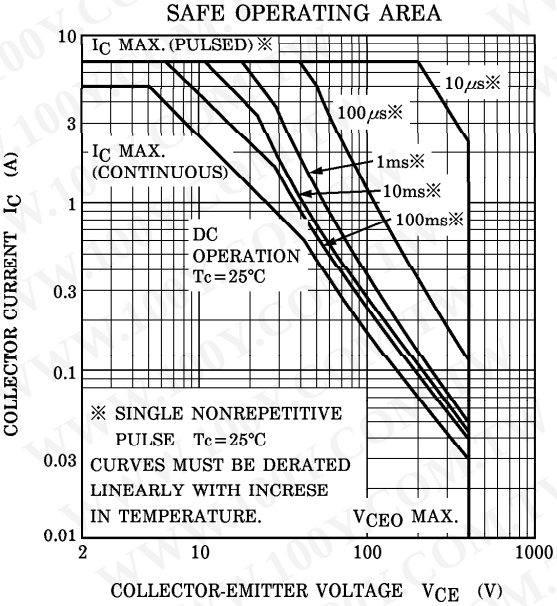

$h_{FE}$ – $I_C$




$V_{CE\,(sat)}$ – $I_C$




SAFE OPERATING AREA




$r_{th}$ – $t_w$