

TOSHIBA TRANSISTOR SILICON NPN TRIPLE DIFFUSED TYPE

2SC5684

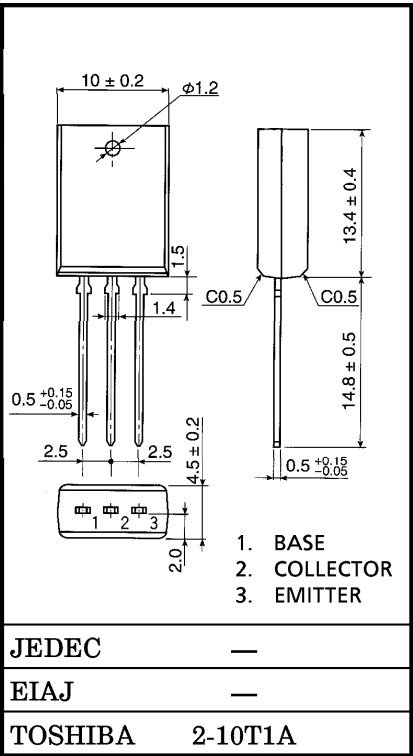
Unit in mm

SWITCHING REGULATOR AND HIGH VOLTAGE SWITCHING APPLICATIONS

- Excellent Switching Times ( $I_C = 0.3\text{ A}$ )  
:  $t_r = 0.7\text{ }\mu\text{s}$  (Max.),  $t_f = 0.5\text{ }\mu\text{s}$  (Max.)
- High Collector Breakdown Voltage :  $V_{CEO} = 800\text{ V}$
- High Speed DC-DC Converter Applications

MAXIMUM RATINGS (Ta = 25°C)

| CHARACTERISTIC              |       | SYMBOL    | RATING  | UNIT |
|-----------------------------|-------|-----------|---------|------|
| Collector-Base Voltage      |       | $V_{CBO}$ | 900     | V    |
| Collector-Emitter Voltage   |       | $V_{CEO}$ | 800     | V    |
| Emitter-Base Voltage        |       | $V_{EBO}$ | 7       | V    |
| Collector Current           | DC    | $I_C$     | 0.8     | A    |
|                             | Pulse | $I_{CP}$  | 1.5     |      |
| Base Current                |       | $I_B$     | 0.4     | A    |
| Collector Power Dissipation |       | $P_C$     | 1.8     | W    |
| Junction Temperature        |       | $T_j$     | 150     | °C   |
| Storage Temperature Range   |       | $T_{stg}$ | -55~150 | °C   |

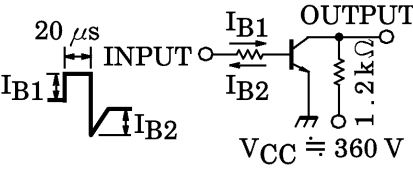


Weight : 1.5 g (Typ.)

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## ELECTRICAL CHARACTERISTICS (Ta = 25°C)

| CHARACTERISTIC                       |              | SYMBOL         | TEST CONDITION                                                                                                                                                                                 | MIN. | TYP. | MAX. | UNIT          |
|--------------------------------------|--------------|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|------|------|---------------|
| Collector Cut-off Current            |              | $I_{CBO}$      | $V_{CB} = 720 \text{ V}, I_E = 0$                                                                                                                                                              | —    | —    | 100  | $\mu\text{A}$ |
| Emitter Cut-off Current              |              | $I_{EBO}$      | $V_{EB} = 7 \text{ V}, I_C = 0$                                                                                                                                                                | —    | —    | 1    | mA            |
| Collector-Base Breakdown Voltage     |              | $V_{(BR) CBO}$ | $I_C = 1 \text{ mA}, I_E = 0$                                                                                                                                                                  | 900  | —    | —    | V             |
| Collector-Emitter Breakdown Voltage  |              | $V_{(BR) CEO}$ | $I_C = 10 \text{ mA}, I_B = 0$                                                                                                                                                                 | 800  | —    | —    | V             |
| DC Current Gain                      |              | $h_{FE} (1)$   | $V_{CE} = 5 \text{ V}, I_C = 1 \text{ mA}$                                                                                                                                                     | 10   | —    | —    |               |
|                                      |              | $h_{FE} (2)$   | $V_{CE} = 5 \text{ V}, I_C = 0.08 \text{ A}$                                                                                                                                                   | 15   | —    | 60   |               |
| Collector-Emitter Saturation Voltage |              | $V_{CE(sat)}$  | $I_C = 0.3 \text{ A}, I_B = 0.06 \text{ A}$                                                                                                                                                    | —    | —    | 1.0  | V             |
| Base-Emitter Saturation Voltage      |              | $V_{BE(sat)}$  | $I_C = 0.3 \text{ A}, I_B = 0.06 \text{ A}$                                                                                                                                                    | —    | —    | 1.2  | V             |
| Switching Time                       | Rise Time    | $t_r$          |  <p><math>I_{B1} = 0.06 \text{ A}, I_{B2} = -0.12 \text{ A}</math><br/>DUTY CYCLE <math>\leq 1\%</math></p> | —    | —    | 0.7  | $\mu\text{s}$ |
|                                      | Storage Time | $t_{stg}$      |                                                                                                                                                                                                | —    | —    | 4.5  |               |
|                                      | Fall Time    | $t_f$          |                                                                                                                                                                                                | —    | —    | 0.5  |               |