

TOSHIBA TRANSISTOR SILICON NPN TRIPLE DIFFUSED TYPE

# 2SC5548A

SWITCHING REGULATOR APPLICATIONS

HIGH VOLTAGE SWITCHING APPLICATIONS

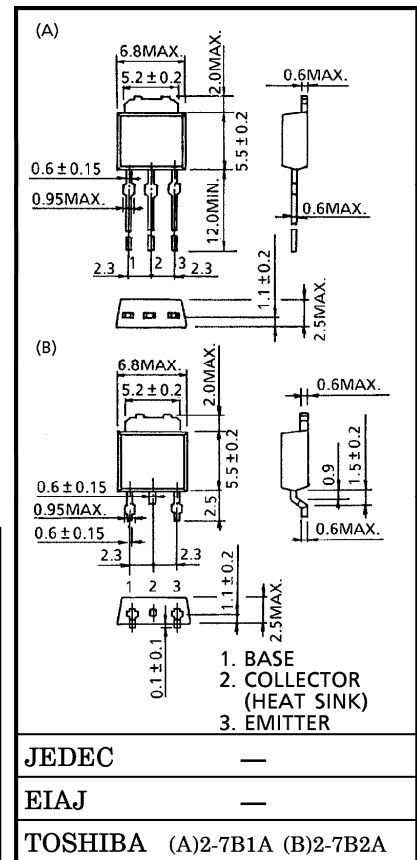
DC-DC CONVERTER APPLICATIONS

- High Speed Switching :  $t_r = 0.5 \mu s$  (Max.),  $t_f = 0.3 \mu s$  (Max.)  
( $I_C = 0.8 A$ )
- High Collector Breakdown Voltage :  $V_{CEO} = 400 V$
- High DC Current Gain :  $h_{FE} = 40$  (Min.) ( $I_C = 0.2 A$ )

MAXIMUM RATINGS ( $T_a = 25^\circ C$ )

| 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                 | $I_C$    | 2          |
|                             | Pulse              | $I_{CP}$ | 4          |
| Base Current                | $I_B$              | 0.5      | A          |
| Collector Power Dissipation | $T_a = 25^\circ C$ | $P_C$    | 1.0        |
|                             | $T_c = 25^\circ C$ |          | 15         |
| Junction Temperature        | $T_j$              | 150      | $^\circ C$ |
| Storage Temperature Range   | $T_{stg}$          | -55~150  | $^\circ C$ |

Unit in mm



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ELECTRICAL CHARACTERISTICS (Ta = 25°C)

| CHARACTERISTIC                       |              | SYMBOL        | TEST CONDITION  | MIN.   | TYP. | MAX. | UNIT          |
|--------------------------------------|--------------|---------------|---|--|------|------|---------------|
| Collector Cut-off Current            |              | $I_{CBO}$     | $V_{CB} = 480\text{ V}, I_E = 0$  | —  | —    | 20   | $\mu\text{A}$ |
| Emitter Cut-off Current              |              | $I_{EBO}$     | $V_{EB} = 7\text{ V}, I_C = 0$  | —  | —    | 10   | $\mu\text{A}$ |
| Collector-Base Breakdown Voltage     |              | $V_{(BR)CBO}$ | $I_C = 1\text{ mA}, I_B = 0$  | 600  | —    | —    | V             |
| Collector-Emitter Breakdown Voltage  |              | $V_{(BR)CEO}$ | $I_C = 10\text{ mA}, I_B = 0$   | 400  | —    | —    | V             |
| DC Current Gain                      |              | $h_{FE(1)}$   | $V_{CE} = 5\text{ V}, I_C = 1\text{ mA}$  | 20   | —    | —    |               |
|                                      |              | $h_{FE(2)}$   | $V_{CE} = 5\text{ V}, I_C = 0.2\text{ A}$   | 40   | —    | 100  |               |
| Collector-Emitter Saturation Voltage |              | $V_{CE(sat)}$ | $I_C = 0.8\text{ A}, I_B = 0.1\text{ A}$  | —  | —    | 1.0  | V             |
| Base-Emitter Saturation Voltage      |              | $V_{BE(sat)}$ | $I_C = 0.8\text{ A}, I_B = 0.1\text{ A}$  | —  | —    | 1.3  | V             |
| Switching Time                       | Turn-on Time | $t_r$         | <p> <math>V_{CC} \cong 200\text{ V}</math><br/> <math>I_C = 250\Omega</math><br/> <math>20\ \mu\text{s}</math><br/>                     INPUT <math>I_{B1}</math> <math>I_{B21}</math> OUTPUT<br/> <math>I_{B2}</math> </p> | —  | —    | 0.5  | $\mu\text{s}$ |
|                                      | Storage Time | $t_{stg}$     |   | —  | —    | 3.0  |               |
|                                      | Fall Time    | $t_f$         |   | $I_{B1} = 0.1\text{ A}, I_{B2} = -0.2\text{ A}$<br>DUTY CYCLE $\leq 1\%$ | —    | —    |               |

