

TOSHIBA Transistor Silicon NPN Triple Diffused Type (PCT process)

# 2SC5353

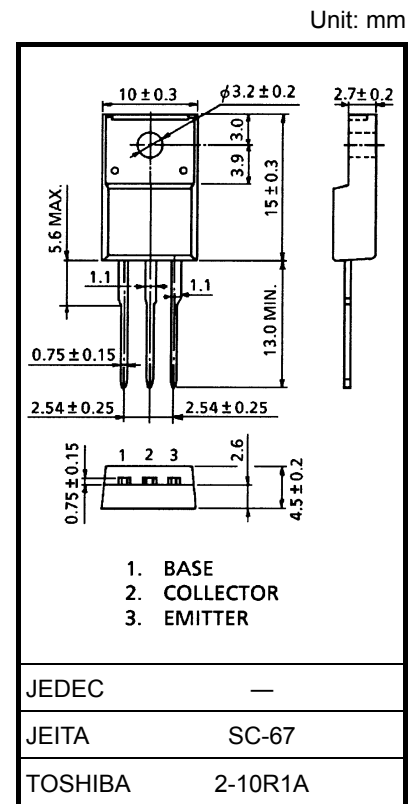
Switching Regulator and High Voltage Switching Applications

High-Speed DC-DC Converter Applications

- Excellent switching times:  $t_r = 0.7 \mu s$  (max),  $t_f = 0.5 \mu s$  (max)
- High collectors breakdown voltage:  $V_{CEO} = 800 V$

### Absolute Maximum Ratings ( $T_c = 25^\circ C$ )

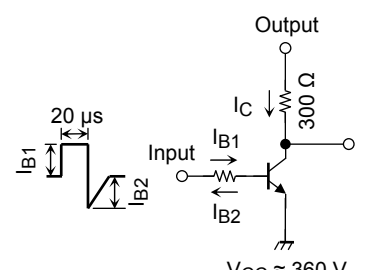
| Characteristics             | Symbol             | Rating     | Unit       |
|-----------------------------|--------------------|------------|------------|
| Collector-base voltage      | $V_{CBO}$          | 900        | V          |
| Collector-emitter voltage   | $V_{CEO}$          | 800        | V          |
| Emitter-base voltage        | $V_{EBO}$          | 7          | V          |
| Collector current           | DC                 | $I_C$      | 3          |
|                             | Pulse              | $I_{CP}$   | 5          |
| Base current                | $I_B$              | 1          | A          |
| Collector power dissipation | $T_a = 25^\circ C$ | $P_C$      | 2.0        |
|                             | $T_c = 25^\circ C$ |            | 25         |
| Junction temperature        | $T_j$              | 150        | $^\circ C$ |
| Storage temperature range   | $T_{stg}$          | -55 to 150 | $^\circ C$ |



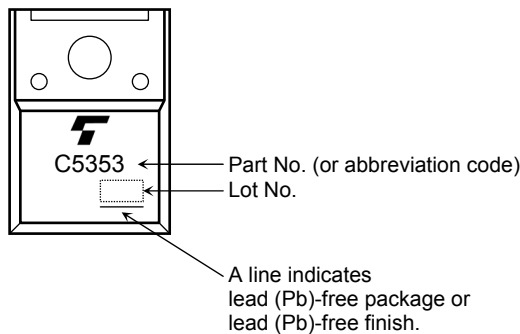
Weight: 1.7 g (typ.)

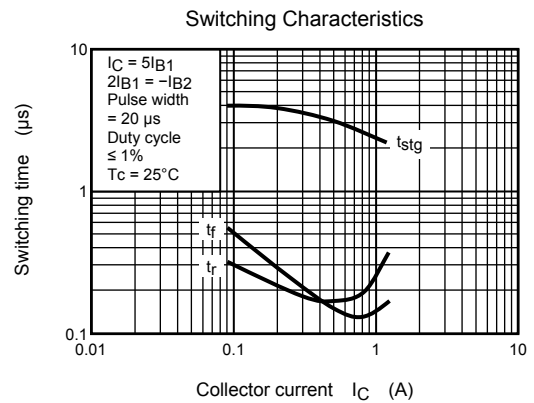
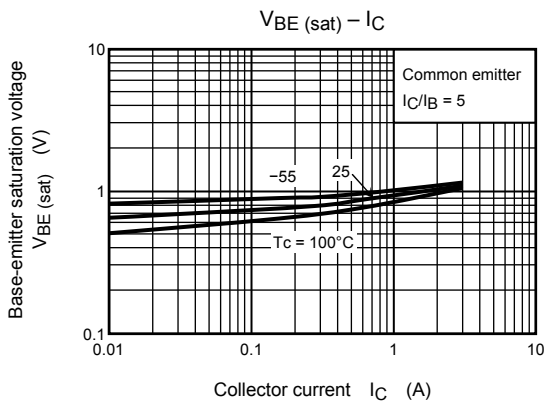
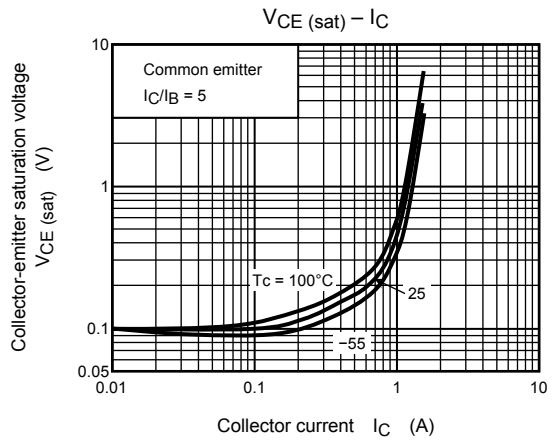
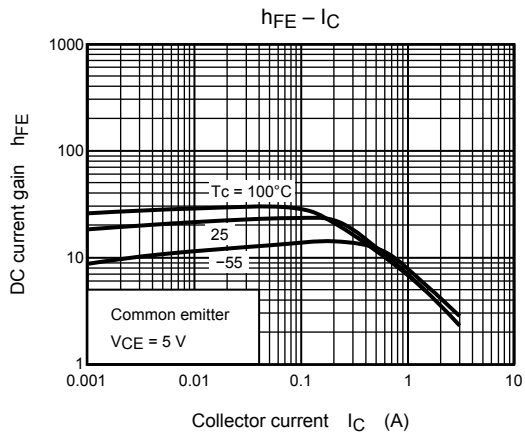
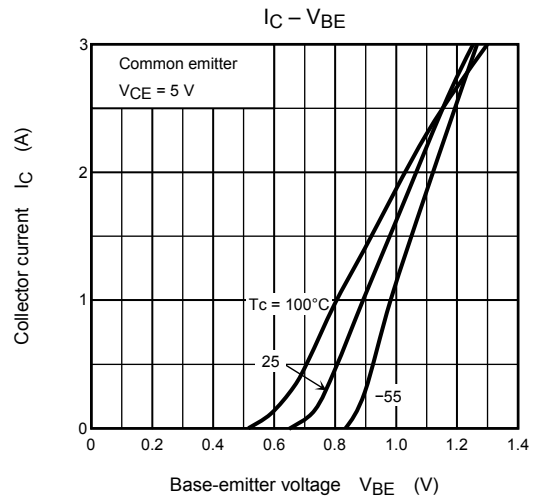
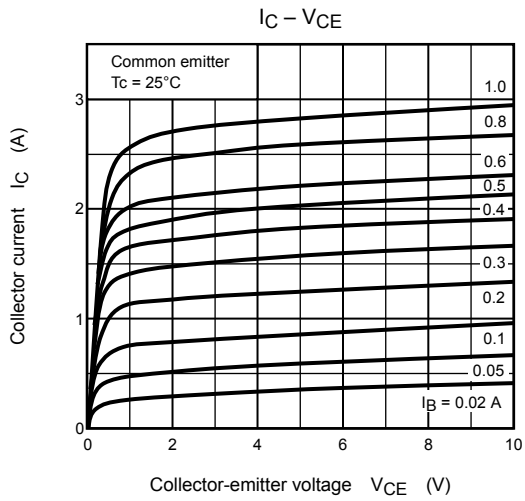
Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings. Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/Derating Concept and Methods) and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

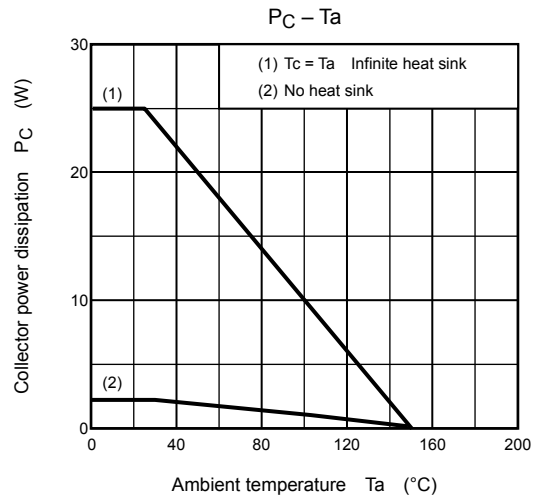
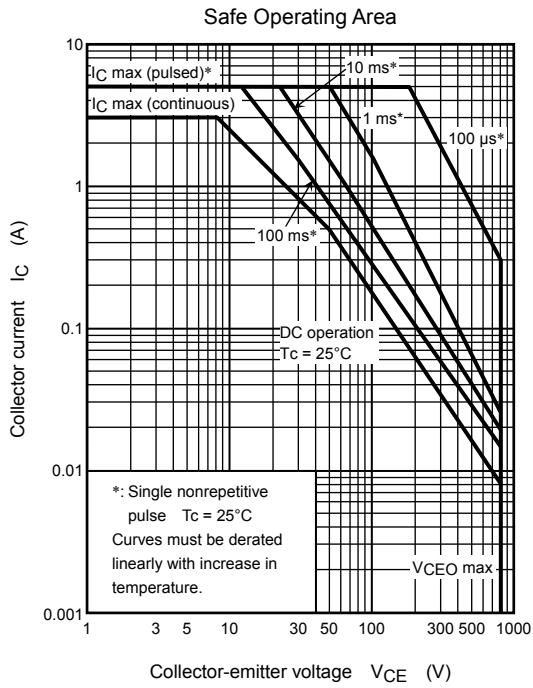
## Electrical Characteristics (Tc = 25°C)

| Characteristics                      |              | 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              |              | $I_{EBO}$      | $V_{EB} = 7 \text{ V}, I_C = 0$  | —   | —    | 10  | $\mu\text{A}$ |
| 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  | —    | —   |               |
|                                      |              | $h_{FE} (2)$   | $V_{CE} = 5 \text{ V}, I_C = 0.15 \text{ A}$   | 15  | —    | —   |               |
| Collector-emitter saturation voltage |              | $V_{CE (sat)}$ | $I_C = 1.2 \text{ A}, I_B = 0.24 \text{ A}$  | —   | —    | 1.0 | V             |
| Base-emitter saturation voltage      |              | $V_{BE (sat)}$ | $I_C = 1.2 \text{ A}, I_B = 0.24 \text{ A}$  | —   | —    | 1.3 | V             |
| Switching time                       | Rise time    | $t_r$          |  <p><math>I_{B1} = 0.24 \text{ A}, I_{B2} = -0.48 \text{ A},</math><br/>duty cycle <math>\leq 1\%</math></p> | —   | —    | 0.7 | $\mu\text{s}$ |
|                                      | Storage time | $t_{stg}$      |  | —   | —    | 4.0 |               |
|                                      | Fall time    | $t_f$          |  | —   | —    | 0.5 |               |

## Marking







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