

TOSHIBA Transistor Silicon NPN Triple Diffused Type

## 2SC5439

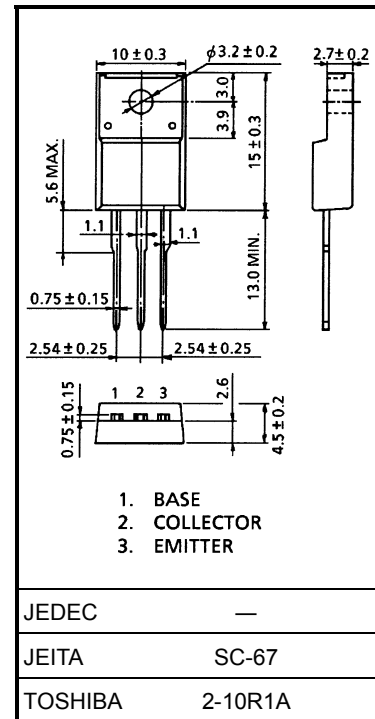
Switching Regulator Applications  
High-Voltage Switching Applications  
DC-DC Converter Applications  
Inverter Lighting Applications

- Excellent switching times:  $t_r = 0.2 \mu s$  (typ.),  $t_f = 0.15 \mu s$  (typ.)
- High collector breakdown voltage:  $V_{CEO} = 450 V$

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

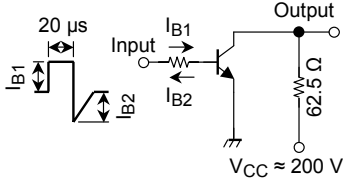
| Characteristics             | Symbol             | Rating     | Unit       |
|-----------------------------|--------------------|------------|------------|
| Collector-base voltage      | $V_{CBO}$          | 1000       | V          |
| Collector-emitter voltage   | $V_{CEO}$          | 450        | V          |
| Emitter-base voltage        | $V_{EBO}$          | 9          | V          |
| Collector current           | DC                 | $I_C$      | A          |
|                             | Pulse              | $I_{CP}$   |            |
| Base current                | $I_B$              | 1          | A          |
| Collector power dissipation | $T_a = 25^\circ C$ | $P_C$      | W          |
|                             | $T_c = 25^\circ C$ |            |            |
| Junction temperature        | $T_j$              | 150        | $^\circ C$ |
| Storage temperature range   | $T_{stg}$          | -55 to 150 | $^\circ C$ |

Unit: mm

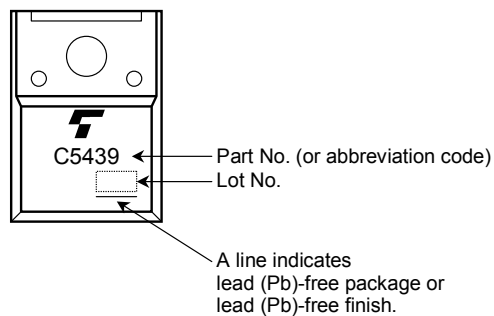


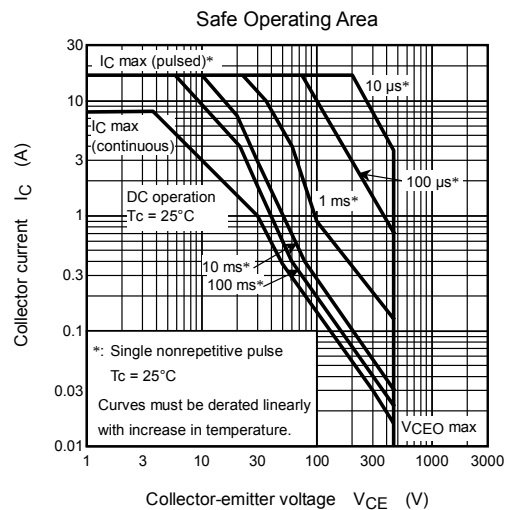
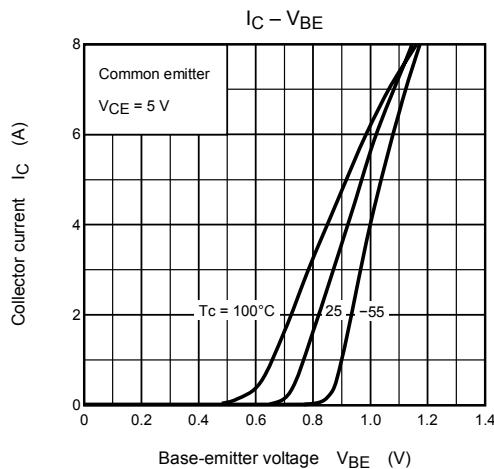
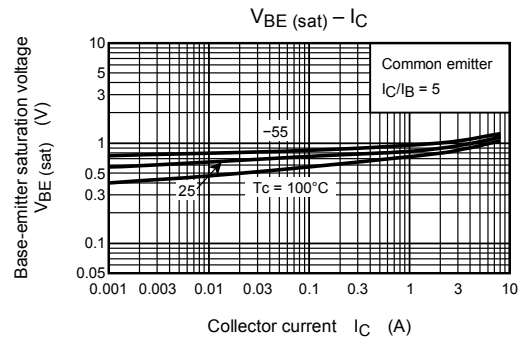
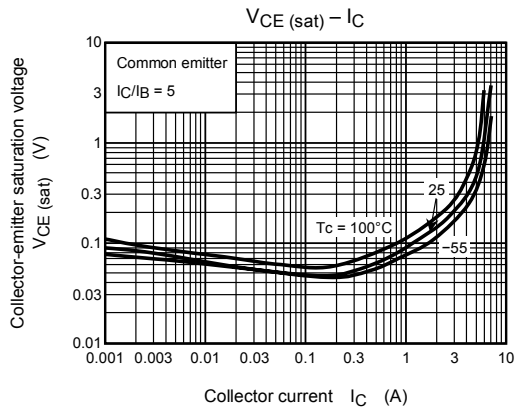
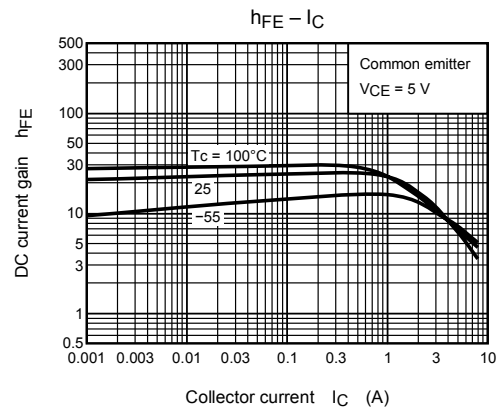
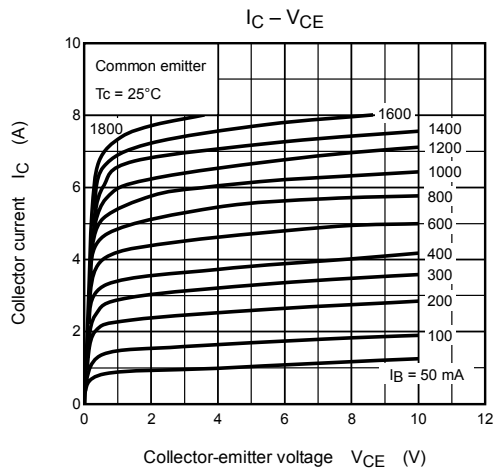
Weight: 1.7 g (typ.)

## Electrical Characteristics (Tc = 25°C)

| Characteristics                      |              | Symbol         | Test Condition                                                                                                                                                                                 | Min  | Typ. | Max | Unit          |
|--------------------------------------|--------------|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|------|-----|---------------|
| Collector cut-off current            |              | $I_{CBO}$      | $V_{CB} = 1000 \text{ V}, I_E = 0$                                                                                                                                                             | —    | —    | 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     |              | $V_{(BR) CBO}$ | $I_C = 1 \text{ mA}, I_E = 0$                                                                                                                                                                  | 1000 | —    | —   | V             |
| Collector-emitter breakdown voltage  |              | $V_{(BR) CEO}$ | $I_C = 10 \text{ mA}, I_B = 0$                                                                                                                                                                 | 450  | —    | —   | V             |
| DC current gain                      |              | $h_{FE} (1)$   | $V_{CE} = 5 \text{ V}, I_C = 1 \text{ mA}$                                                                                                                                                     | 10   | —    | —   |               |
|                                      |              | $h_{FE} (2)$   | $V_{CE} = 5 \text{ V}, I_C = 1 \text{ A}$                                                                                                                                                      | 14   | —    | 34  |               |
| Collector-emitter saturation voltage |              | $V_{CE (sat)}$ | $I_C = 3.2 \text{ A}, I_B = 0.64 \text{ A}$                                                                                                                                                    | —    | —    | 1.0 | V             |
| Base-emitter saturation voltage      |              | $V_{BE (sat)}$ | $I_C = 3.2 \text{ A}, I_B = 0.64 \text{ A}$                                                                                                                                                    | —    | —    | 1.5 | V             |
| Switching time                       | Turn-on time | $t_{on}$       |  <p><math>I_{B1} = 0.64 \text{ A}, I_{B2} = -1.28 \text{ A},</math><br/>duty cycle <math>\leq 1\%</math></p> | —    | 0.2  | —   | $\mu\text{s}$ |
|                                      | Storage time | $t_{stg}$      |                                                                                                                                                                                                | —    | 2.0  | 3.5 |               |
|                                      | Fall time    | $t_f$          |                                                                                                                                                                                                | —    | 0.15 | —   |               |

## Marking





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