

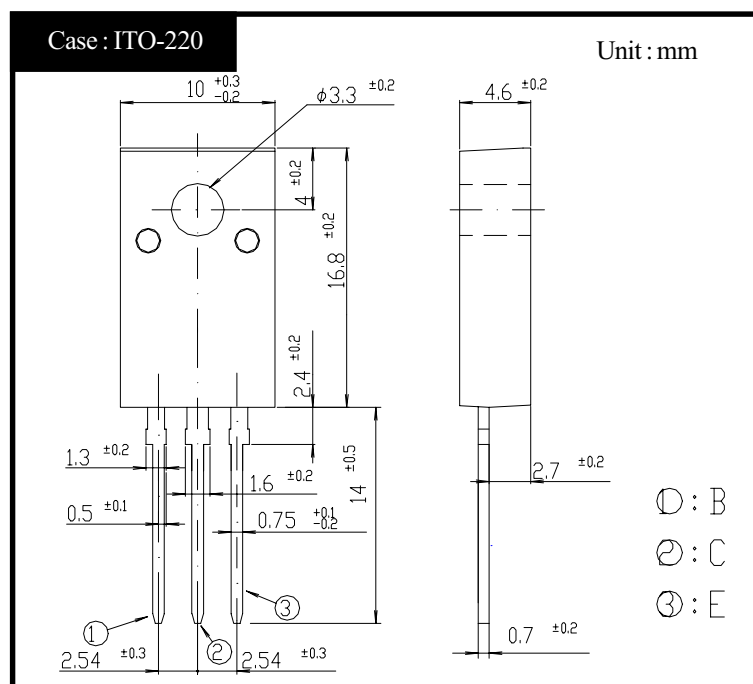
# SHINDENGEN

## Switching Power Transistor

# 2SC4940

## 4A NPN

### OUTLINE DIMENSIONS



### RATINGS

#### ● Absolute Maximum Ratings

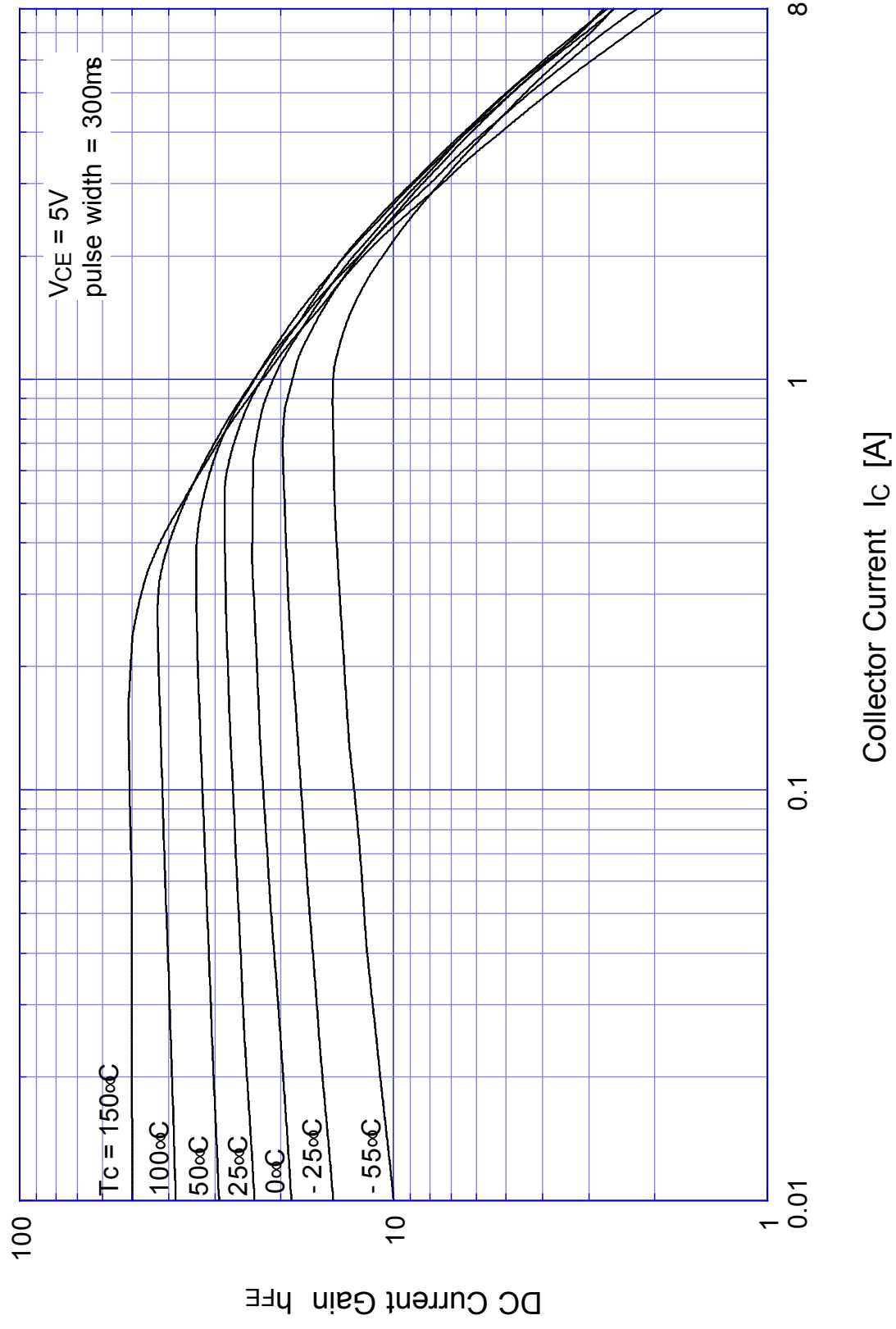
| Item                         | Symbol    | Conditions                     | Ratings  | Unit |
|------------------------------|-----------|--------------------------------|----------|------|
| Storage Temperature          | $T_{stg}$ |                                | -55~150  | °C   |
| Junction Temperature         | $T_j$     |                                | 150      | °C   |
| Collector to Base Voltage    | $V_{CBO}$ |                                | 1200     | V    |
| Collector to Emitter Voltage | $V_{CEO}$ |                                | 550      | V    |
| Emitter to Base Voltage      | $V_{EBO}$ |                                | 7        | V    |
| Collector Current DC         | $I_C$     |                                | 4        | A    |
| Collector Current Peak       | $I_{CP}$  |                                | 8        |      |
| Base Current DC              | $I_B$     |                                | 2        | A    |
| Base Current Peak            | $I_{BP}$  |                                | 4        |      |
| Total Transistor Dissipation | $P_T$     |                                | 30       | W    |
| Dielectric Strength          | $V_{dis}$ | Terminals to casd, AC 1 minute | 2        | kV   |
| Mounting Torque              | TOR       | (Recommended torque)           | 0.5(0.3) | N·m  |

#### ● Electrical Characteristics ( $T_c=25^{\circ}\text{C}$ )

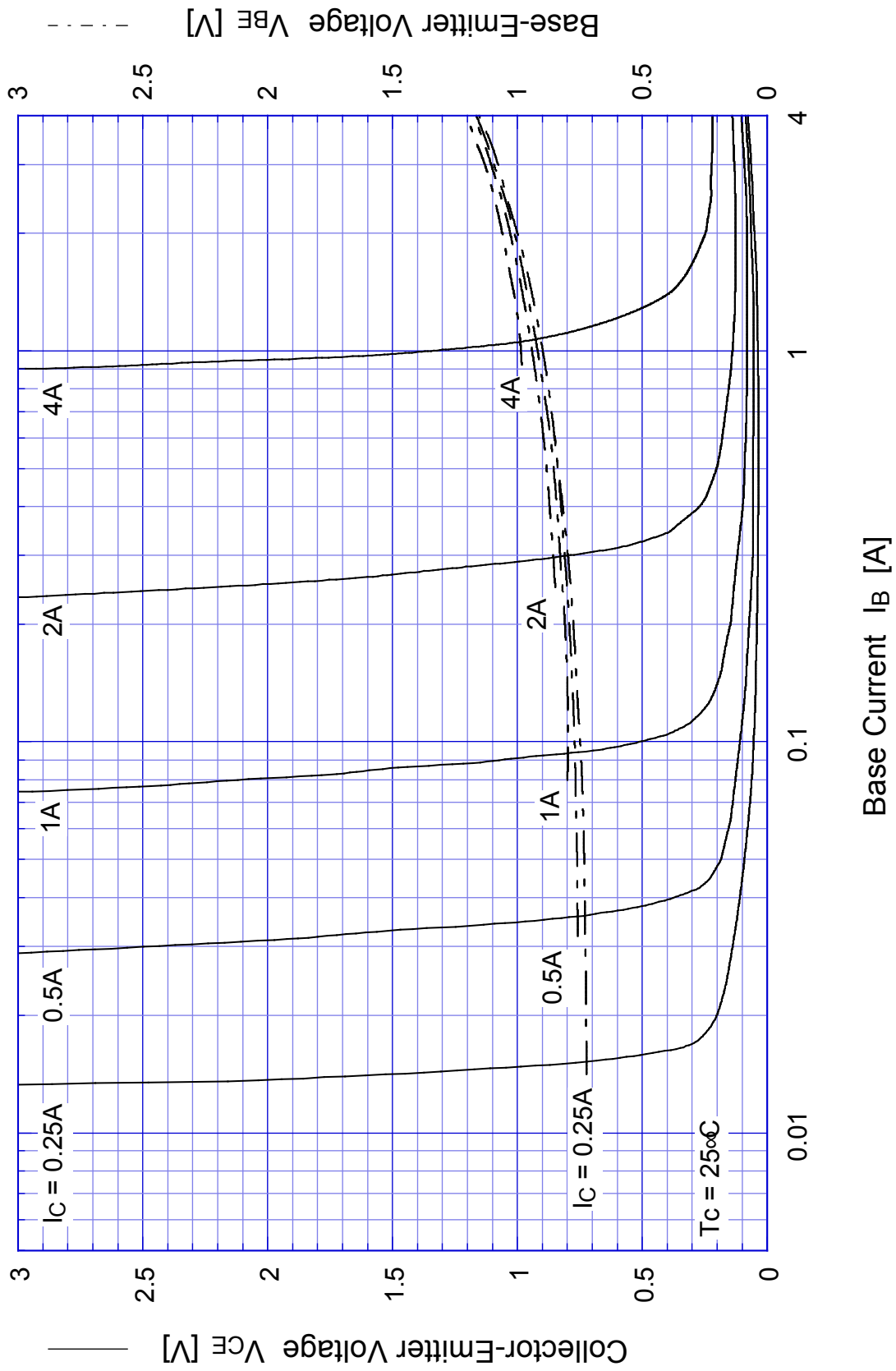
| Item                                    | Symbol         | Conditions                                   | Ratings  | Unit          |
|-----------------------------------------|----------------|----------------------------------------------|----------|---------------|
| Collector to Emitter Sustaining Voltage | $V_{CEO(sus)}$ | $I_C = 0.1\text{A}$                          | Min 550  | V             |
| Collector Cutoff Current                | $I_{CBO}$      | rated $V_{CBO}$                              | Max 0.1  | mA            |
|                                         | $I_{CEO}$      | rated $V_{CEO}$                              | Max 0.1  |               |
| Emitter Cutoff Current                  | $I_{EBO}$      | rated $V_{EBO}$                              | Max 0.1  | mA            |
| DC Current Gain                         | $h_{FE}$       | $V_{CE} = 5\text{V}, I_C = 2\text{A}$        | Min 10   |               |
|                                         | $h_{FEL}$      | $V_{CE} = 5\text{V}, I_C = 1\text{mA}$       | Min 10   |               |
| Collector to Emitter Saturation Voltage | $V_{CE(sat)}$  | $I_C = 2\text{A}$                            | Max 1.0  | V             |
| Base to Emitter Saturation Voltage      | $V_{BE(sat)}$  | $I_B = 0.4\text{A}$                          | Max 1.5  | V             |
| Thermal Resistance                      | $\theta_{jc}$  | Junction to case                             | Max 4.16 | °C/W          |
| Transition Frequency                    | $f_T$          | $V_{CE} = 10\text{V}, I_C = 0.4\text{A}$     | TYP 10   | MHz           |
| Turn on Time                            | $t_{on}$       | $I_C = 2\text{A}$                            | Max 0.8  | $\mu\text{s}$ |
| Storage Time                            | $t_s$          | $I_{B1} = 0.4\text{A}, I_{B2} = 0.8\text{A}$ | Max 3.0  |               |
| Fall Time                               | $t_f$          | $R_L = 75\Omega, V_{BB2} = 4\text{V}$        | Max 0.3  |               |

2SC4940

$h_{FE} - I_C$

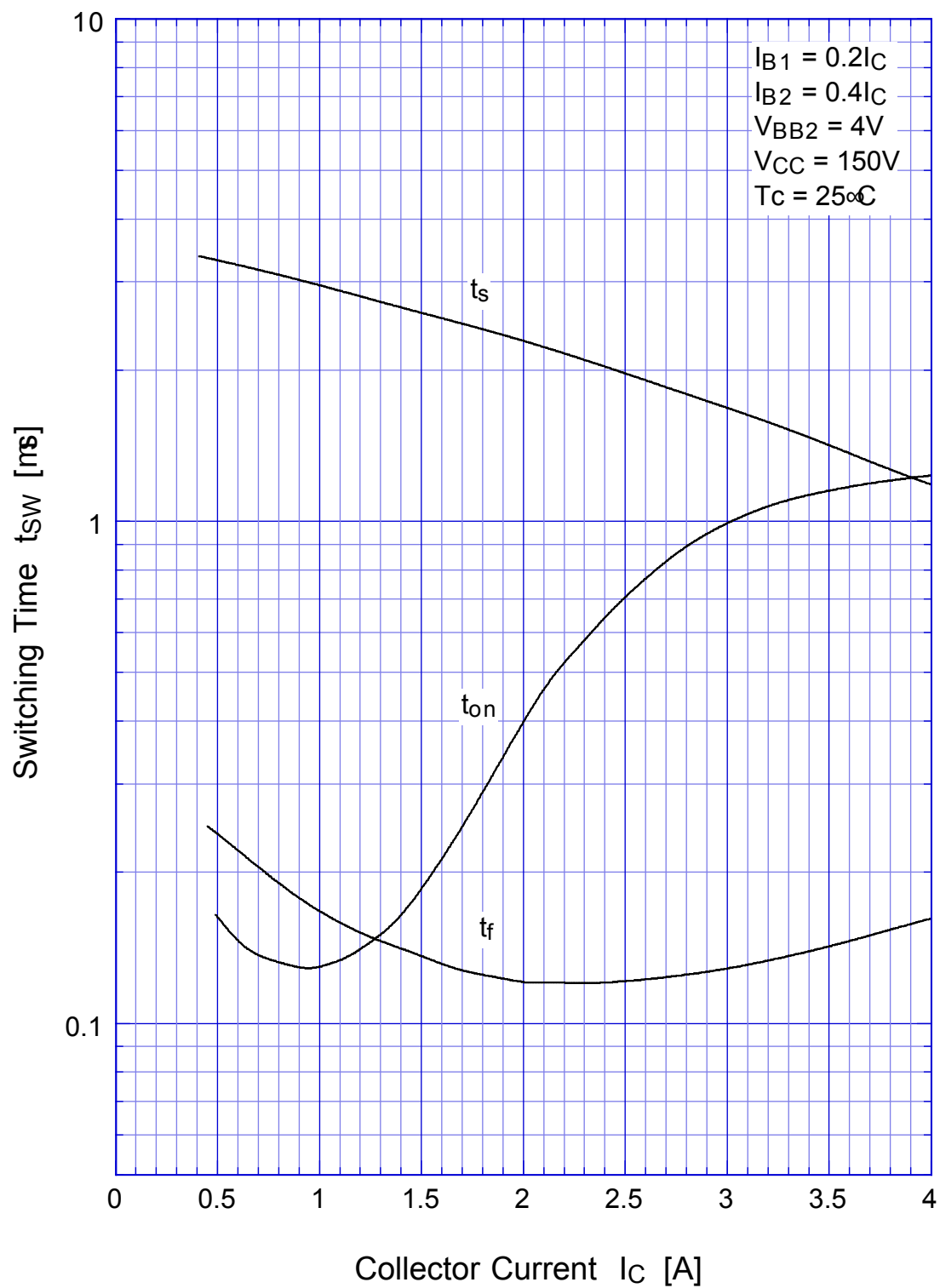


# 2SC4940      Saturation Voltage



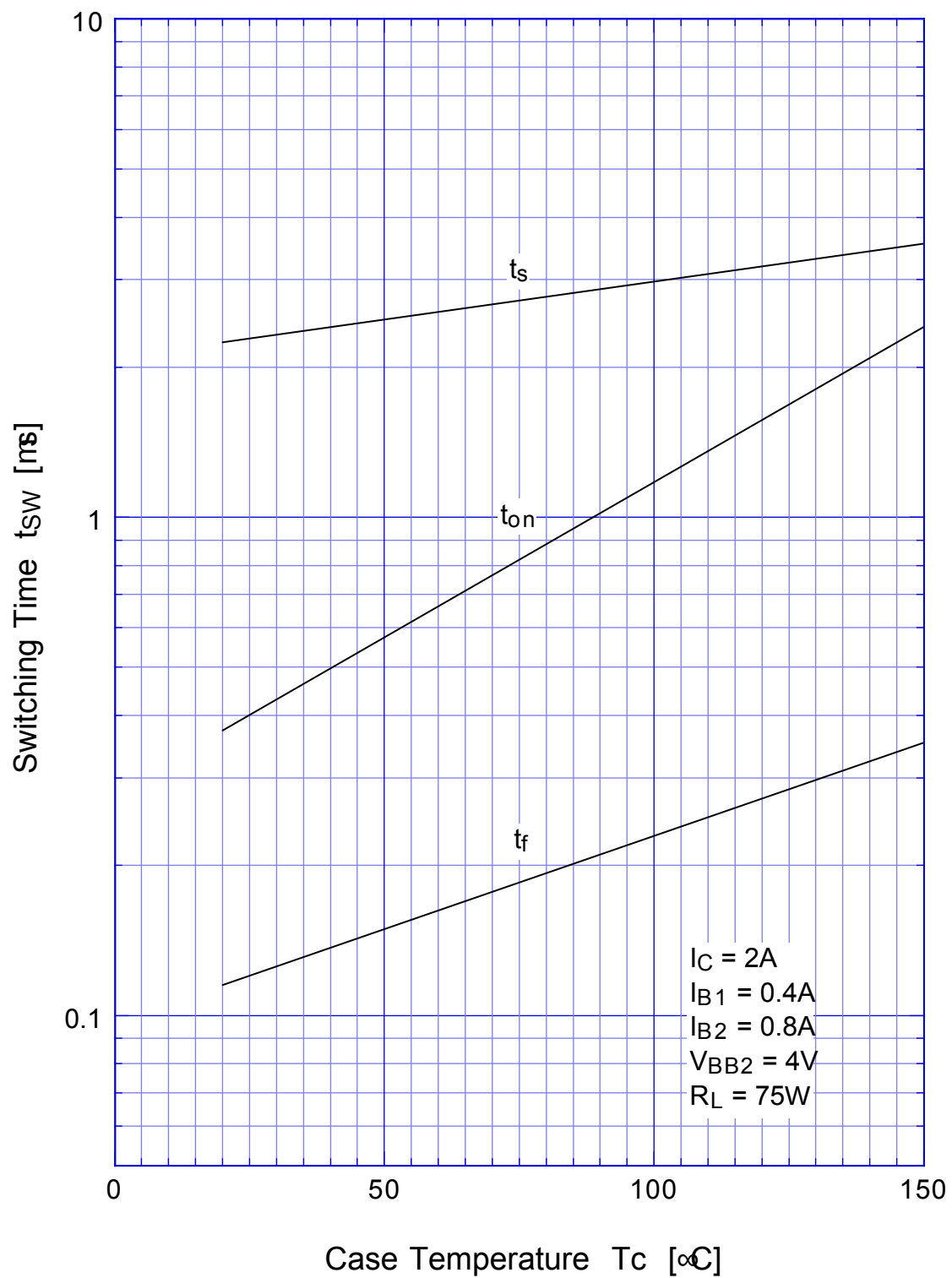
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## Switching Time - $I_C$

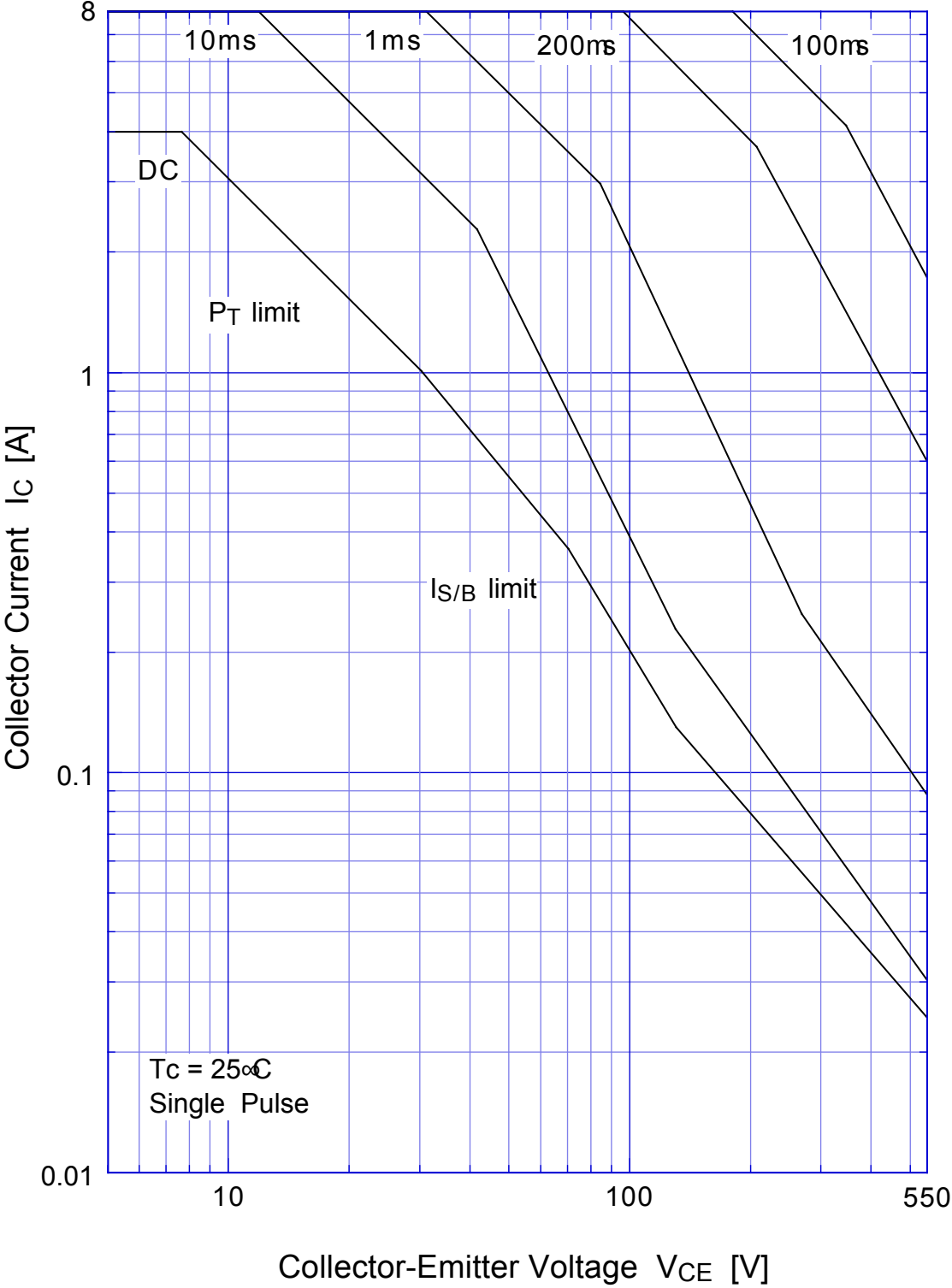


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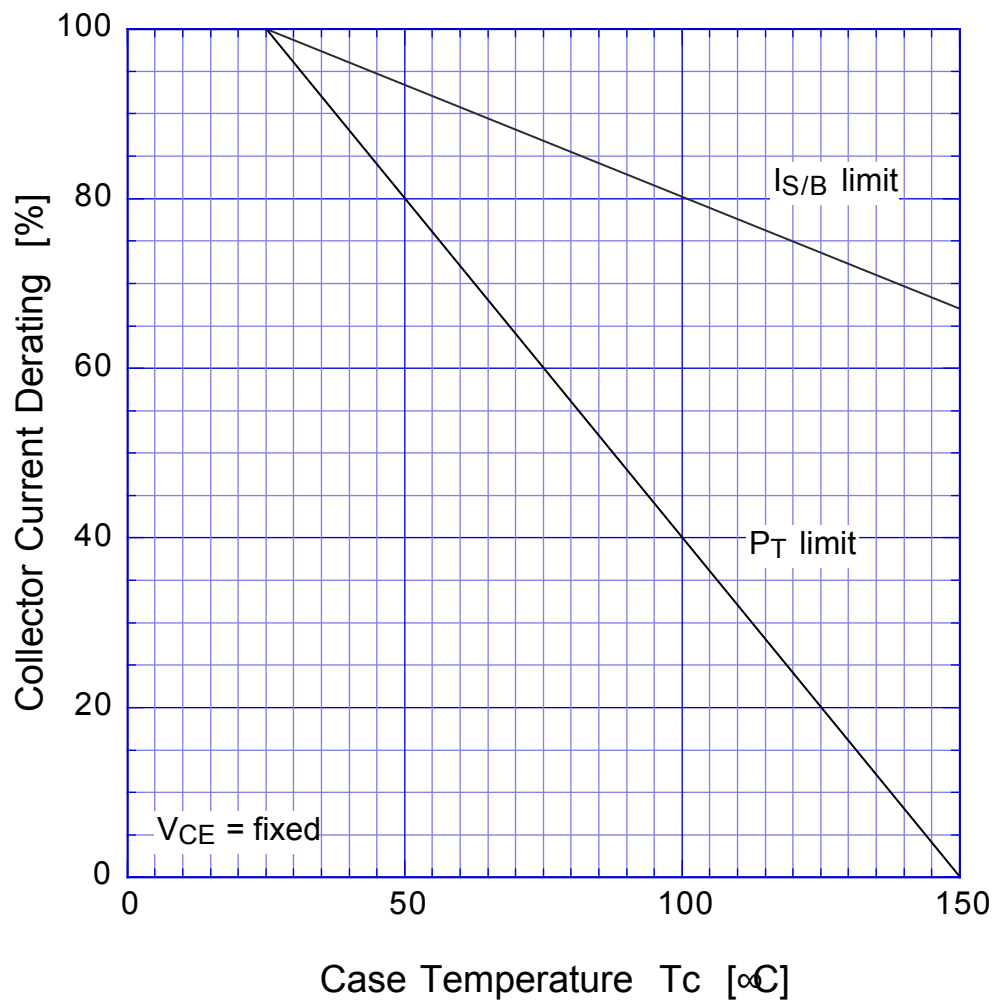
## Switching Time - $T_c$



2SC4940 Forward Bias SOA

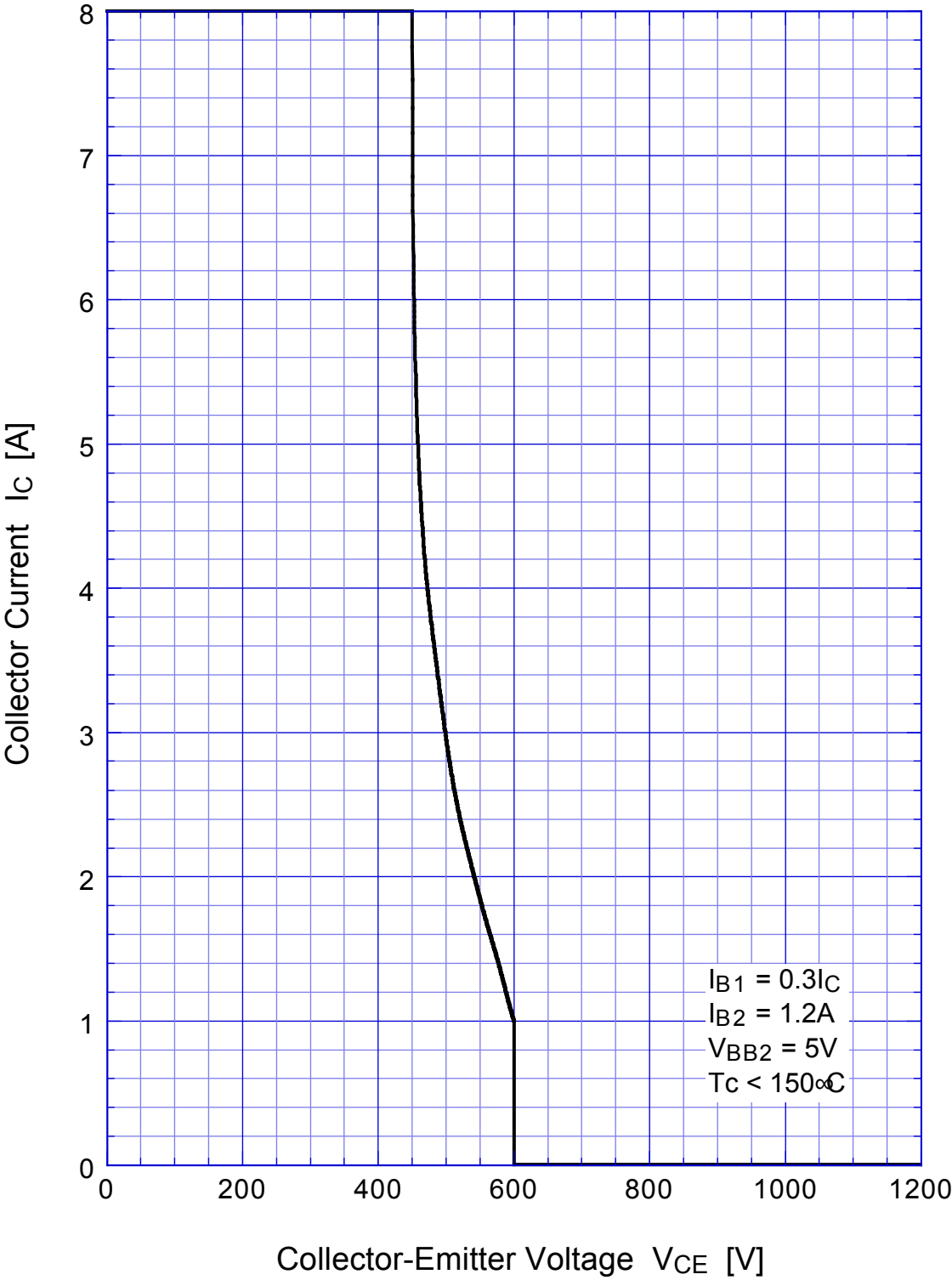


## 2SC4940 Collector Current Derating



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Reverse Bias SOA



## 2SC4940      Transient Thermal Impedance

