

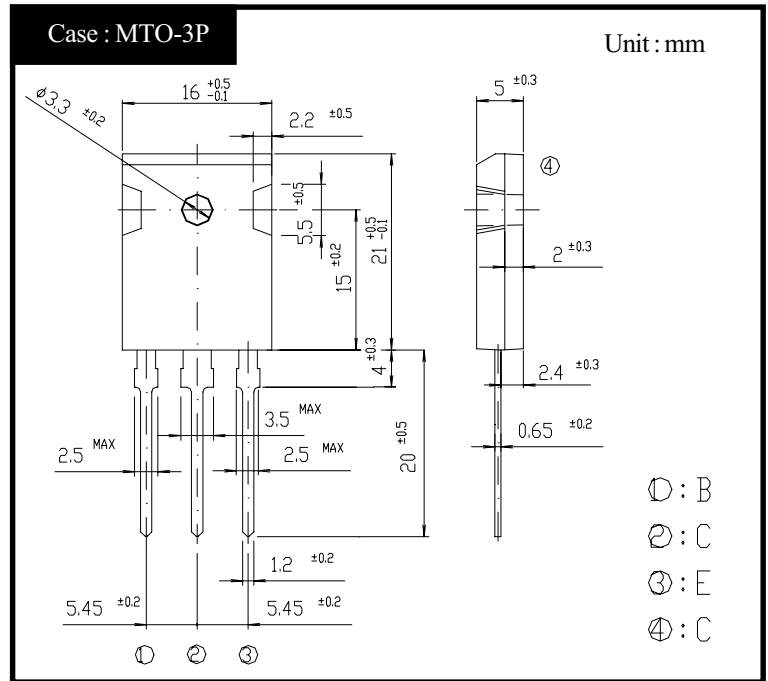
# SHINDENGEN

## Darlington Transistor

**2SD1027**  
**(T15L20)**

**15A NPN**

### OUTLINE DIMENSIONS



### RATINGS

#### ● Absolute Maximum Ratings

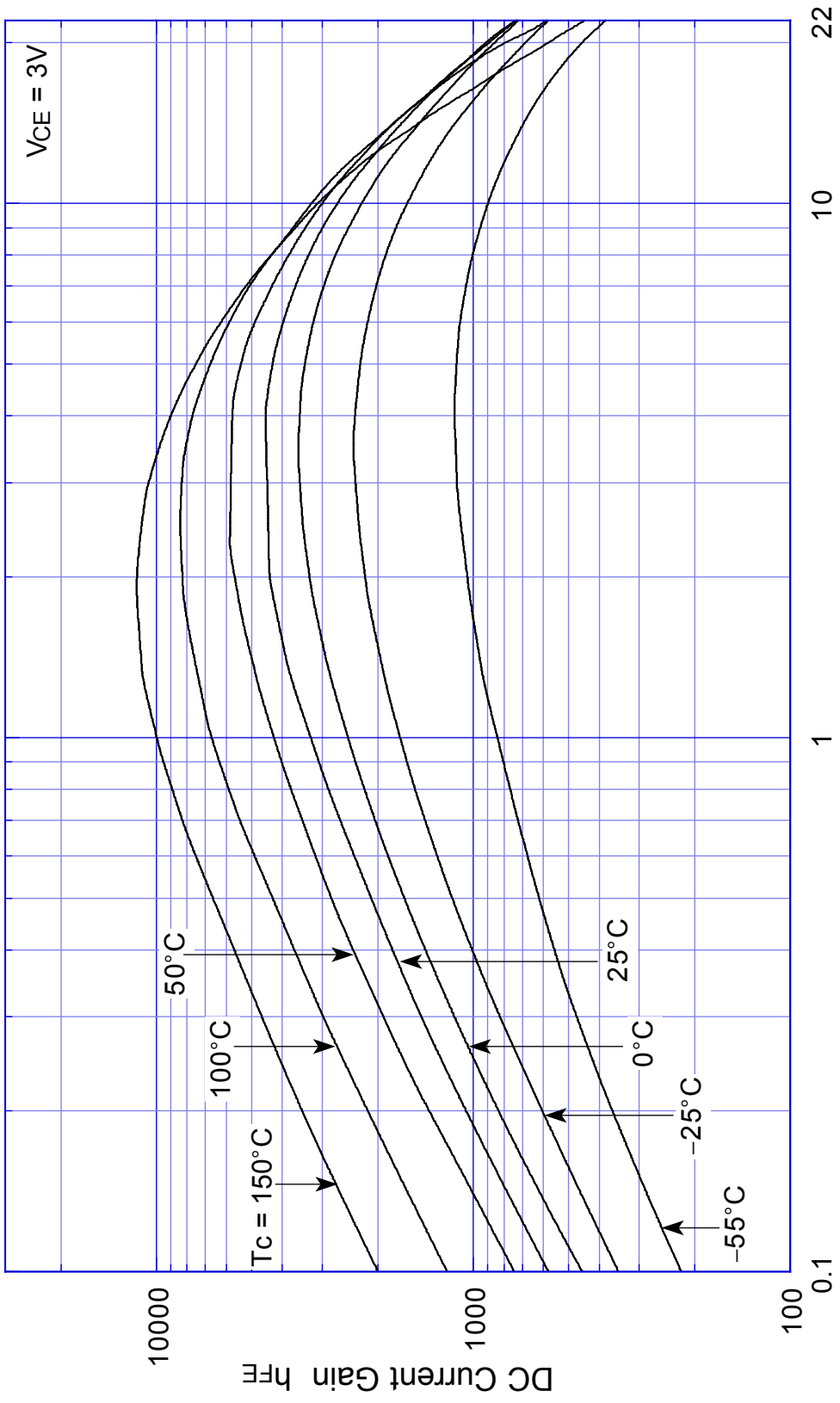
| Item                         | Symbol    | Conditions                    | Ratings  | Unit |
|------------------------------|-----------|-------------------------------|----------|------|
| Storage Temperature          | $T_{stg}$ |                               | -55~+150 | °C   |
| Junction Temperature         | $T_j$     |                               | +150     | °C   |
| Collector to Base Voltage    | $V_{CBO}$ |                               | 200      | V    |
| Collector to Emitter Voltage | $V_{CEO}$ |                               | 200      | V    |
| Emitter to Base Voltage      | $V_{EBO}$ |                               | 7        | V    |
| Collector Current DC         | $I_C$     |                               | 15       | A    |
| Collector Current Peak       | $I_{CP}$  |                               | 22       | A    |
| Base Current DC              | $I_B$     |                               | 1        | A    |
| Base Current Peak            | $I_{BP}$  |                               | 2        | A    |
| Total Transistor Dissipation | $P_T$     | $T_c = 25^\circ\text{C}$      | 100      | W    |
| Mounting Torque              | TOR       | (Recommended torque : 0.5N·m) | 0.8      | N·m  |

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

| Item                                    | Symbol               | Conditions   | Ratings    | Unit          |
|---|----------------------|--|------------|---------------|
| Collector Cutoff Current                | $I_{CBO}$            | $V_{CB} = 200\text{V}$   | Max 0.1    | mA            |
|   | $I_{CEO}$            | $V_{CE} = 200\text{V}$   | Max 0.1    |               |
| Emitter Cutoff Current                  | $I_{EBO}$            | $V_{EB} = 7\text{V}$   | Max 5      | mA            |
| DC Current Gain                         | $h_{FE}$             | $V_{CE} = 3\text{V}, I_C = 10\text{A}$                                   | Min 1,500  |               |
|   |                      |  | Max 30,000 |               |
| Collector to Emitter Saturation Voltage | $V_{CE}(\text{sat})$ | $I_C = 10\text{A}$   | Max 1.5    | V             |
| Base to Emitter Saturation Voltage      | $V_{BE}(\text{sat})$ | $I_B = 30\text{mA}$  | Max 2.0    | V             |
| Thermal Resistance                      | $\theta_{jc}$        | Junction to case   | Max 1.25   | °C/W          |
| Transition Frequency                    | $f_T$                | $V_{CE} = 10\text{V}, I_C = 1.5\text{A}$                                 | TYP 20     | MHz           |
| Turn on Time                            | $t_{on}$             |  | Max 2      | $\mu\text{s}$ |
| Storage Time                            | $t_s$                | $I_C = 10\text{A}$<br>$I_{B1} = I_{B2} = 30\text{mA}$<br>$R_L = 3\Omega$ | Max 8      |               |
| Fall Time                               | $t_f$                | $V_{BB2} = 4\text{V}$  | Max 5      |               |

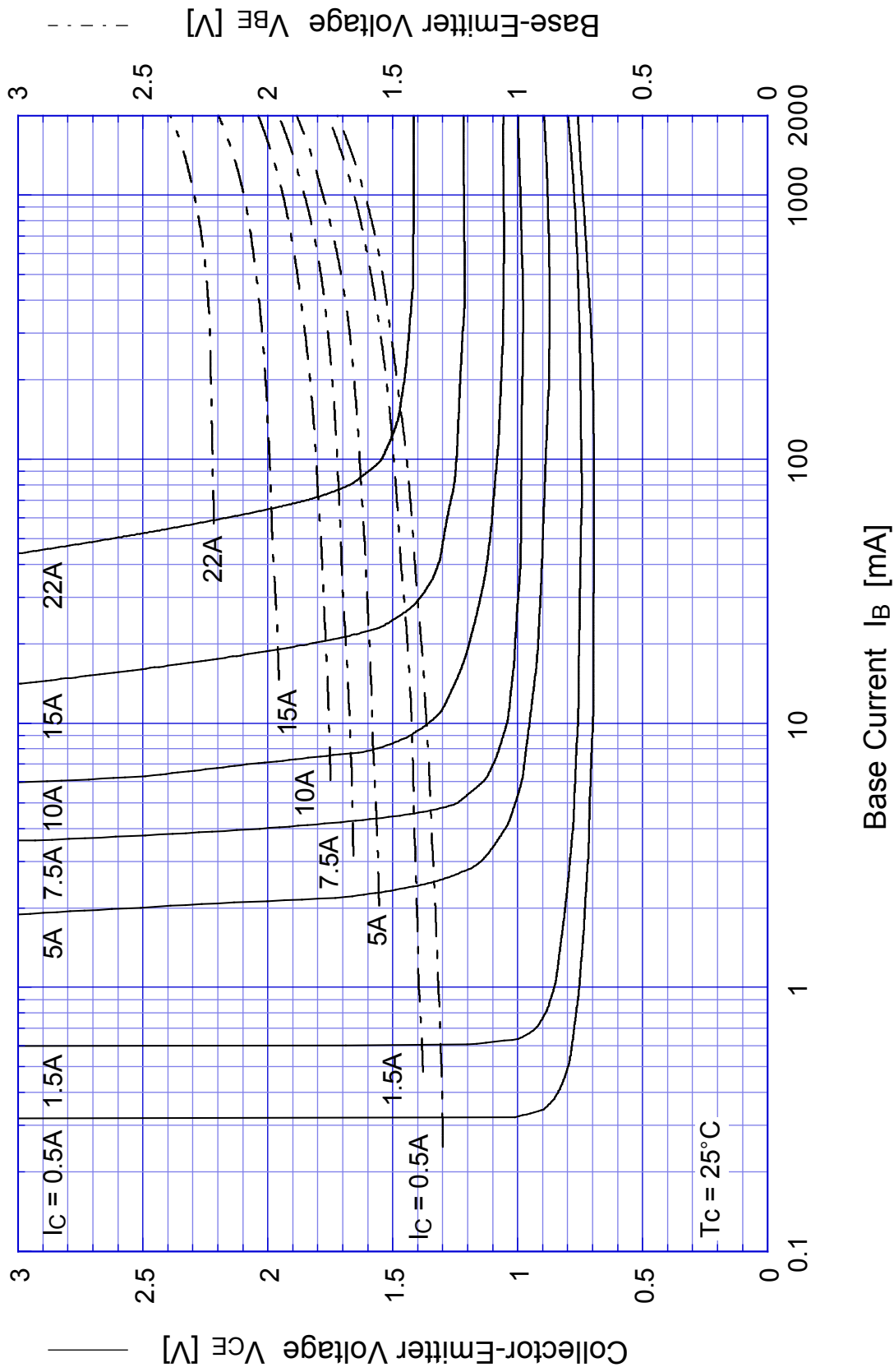
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$h_{FE} - I_C$



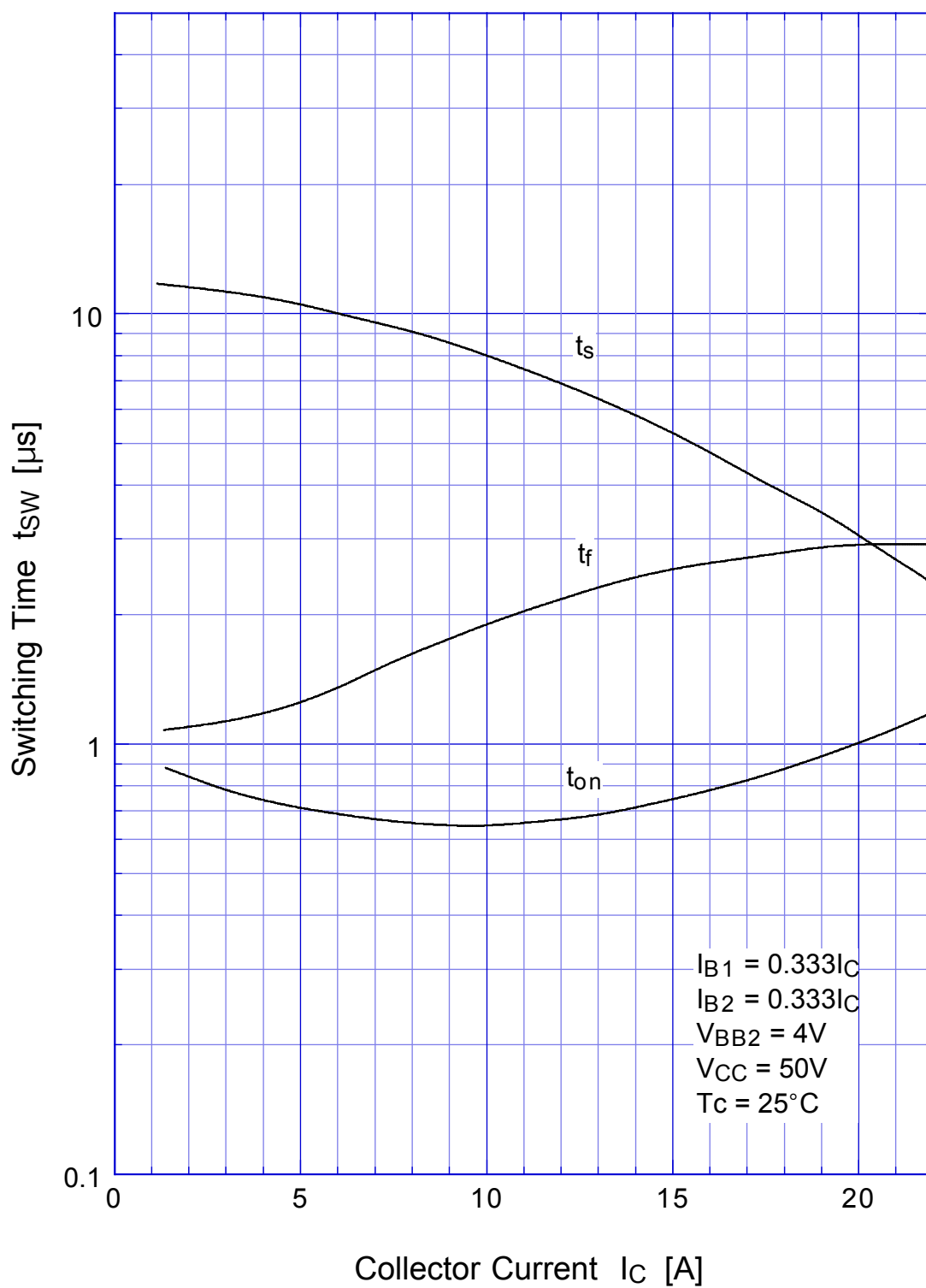
Collector Current  $I_C$  [A]

# 2SD1027 Saturation Voltage



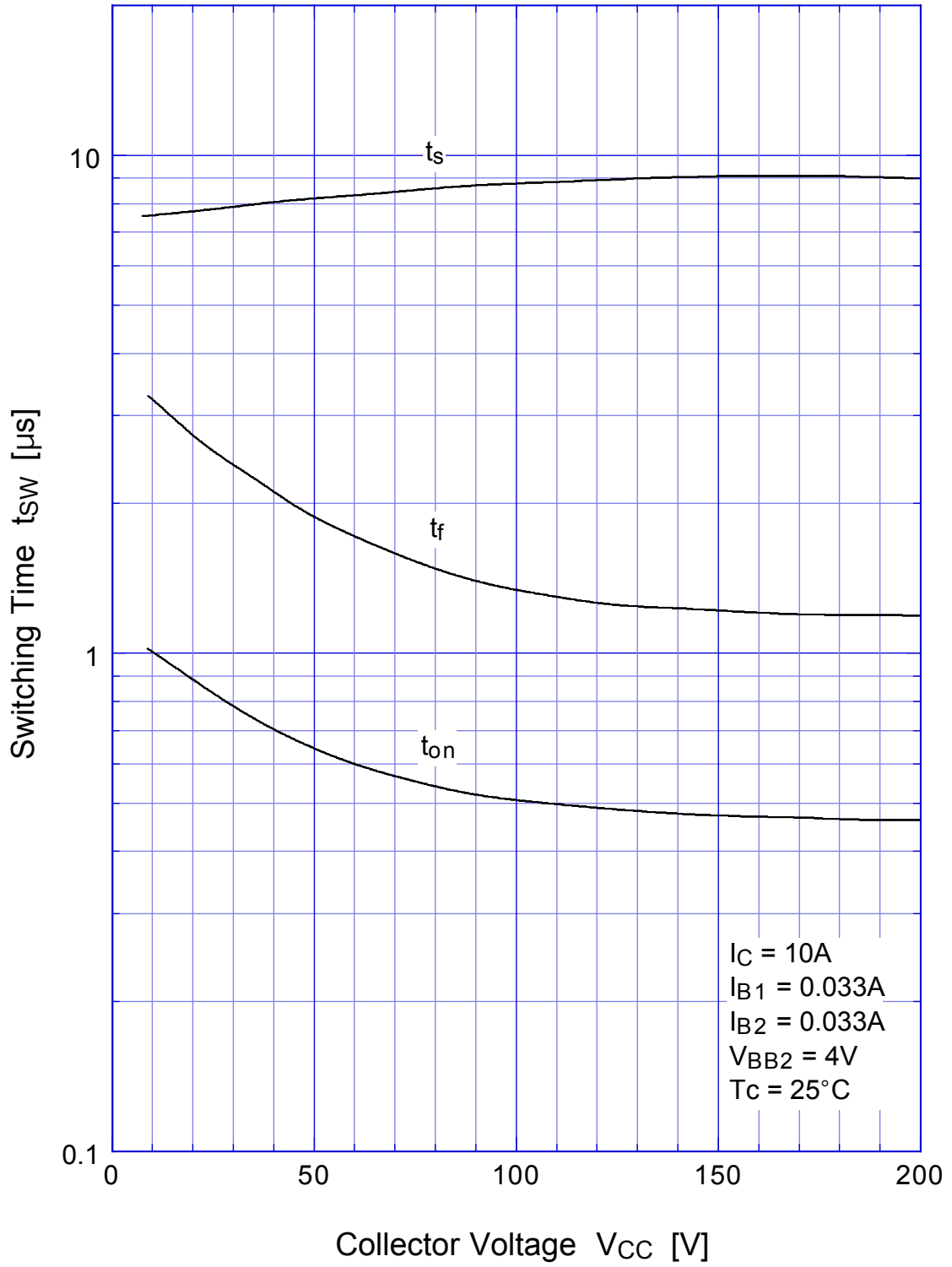
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Switching Time -  $I_C$



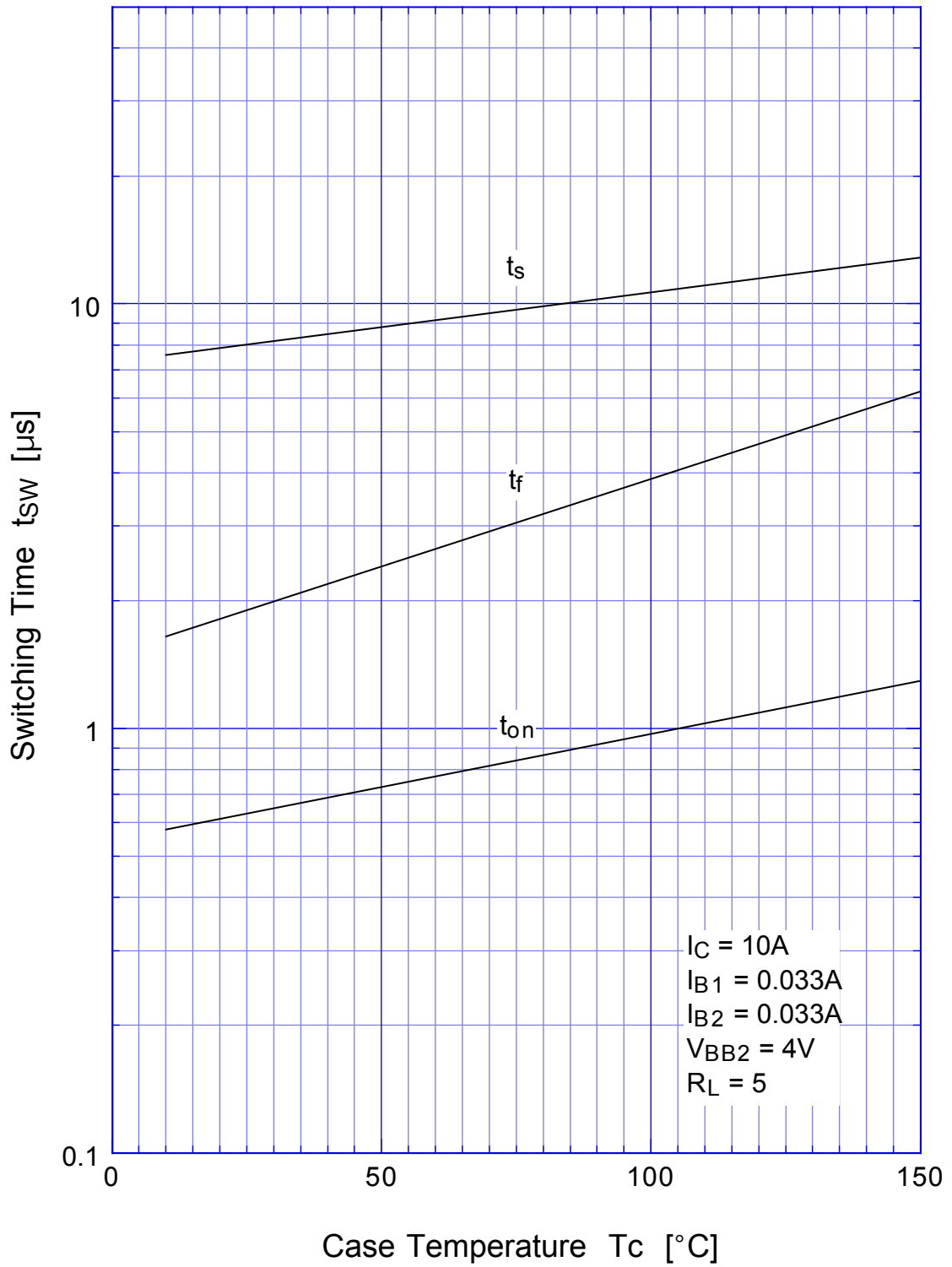
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# Switching Time



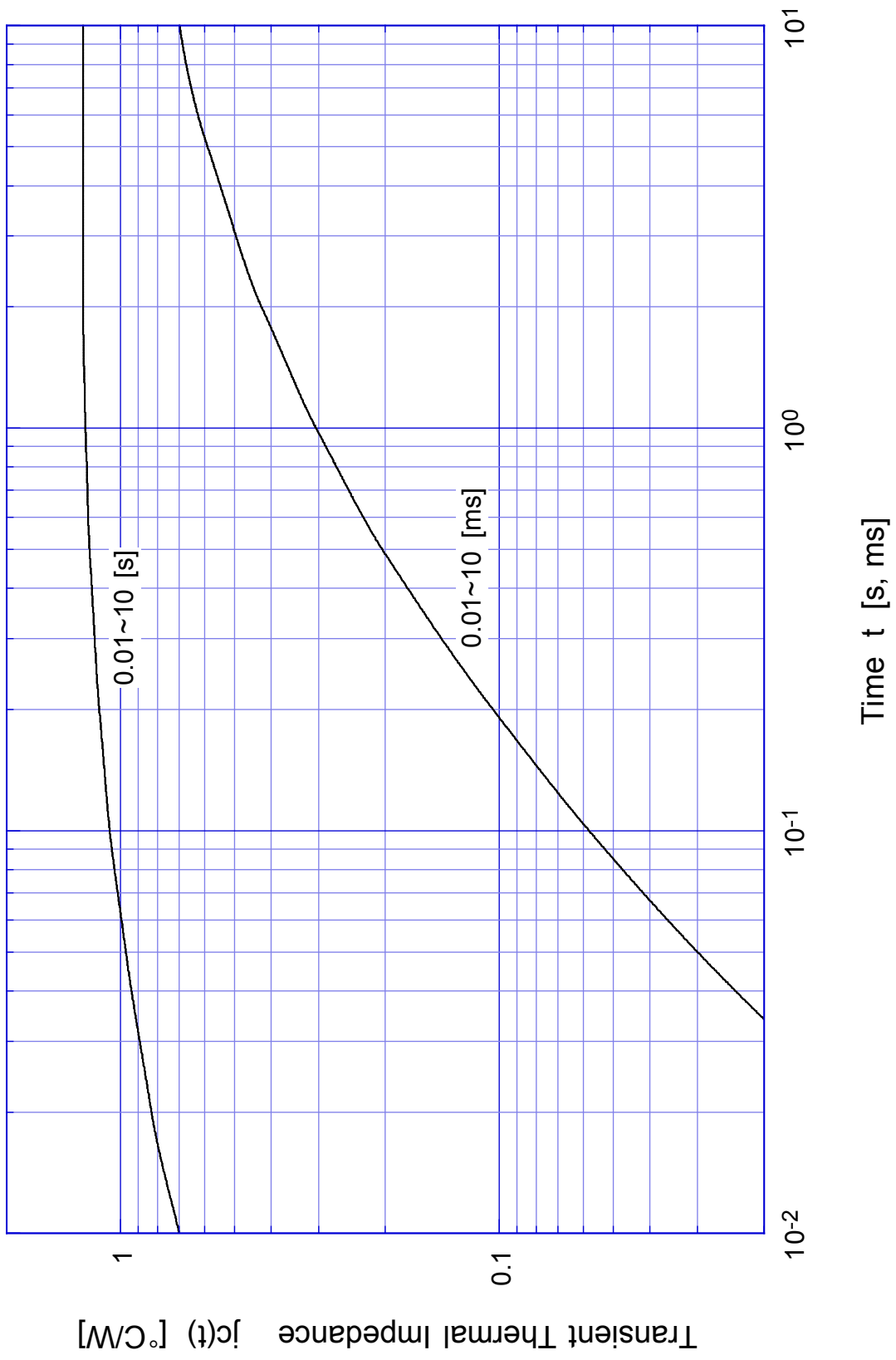
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## Switching Time - Tc

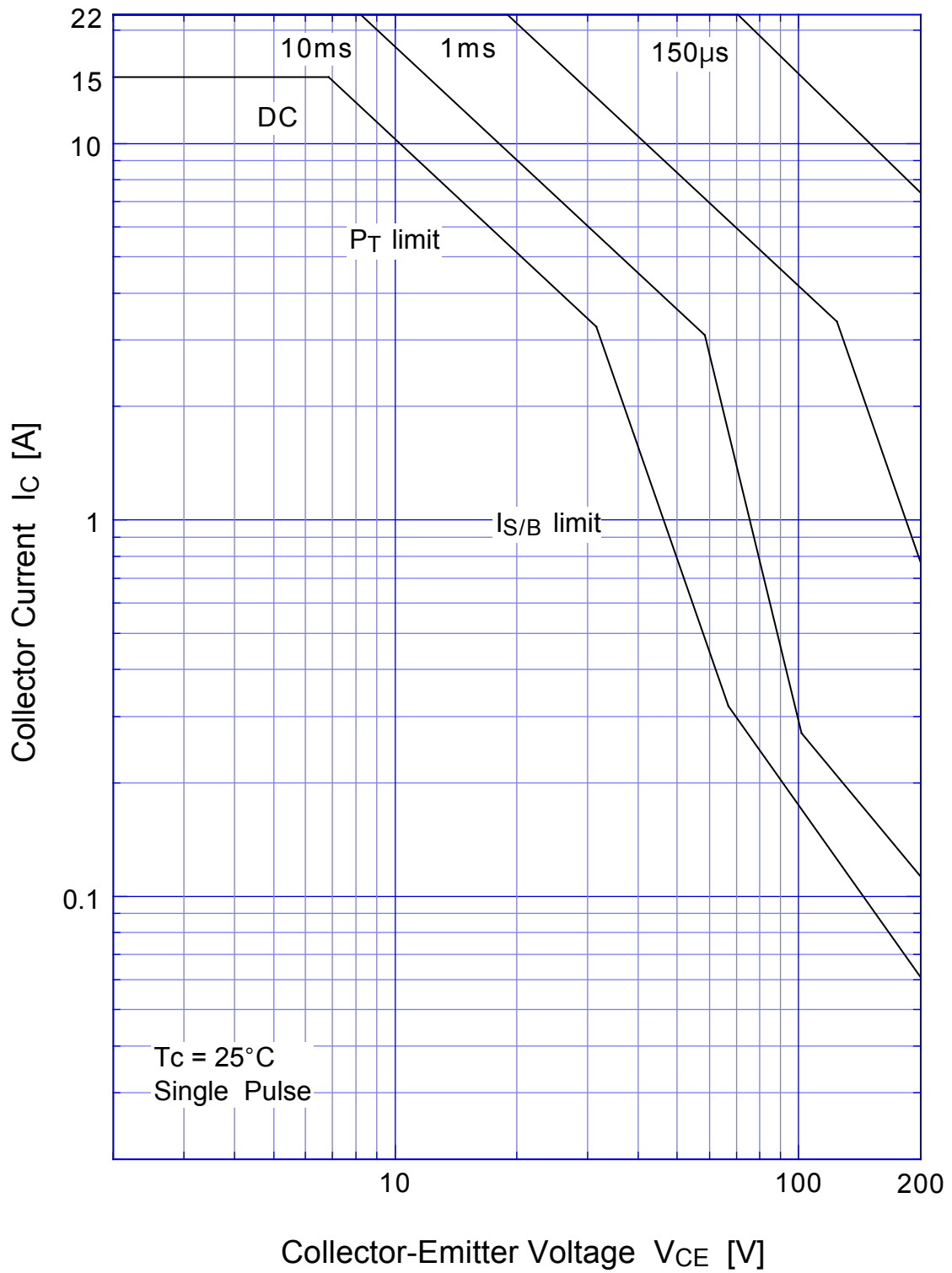


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Transient Thermal Impedance

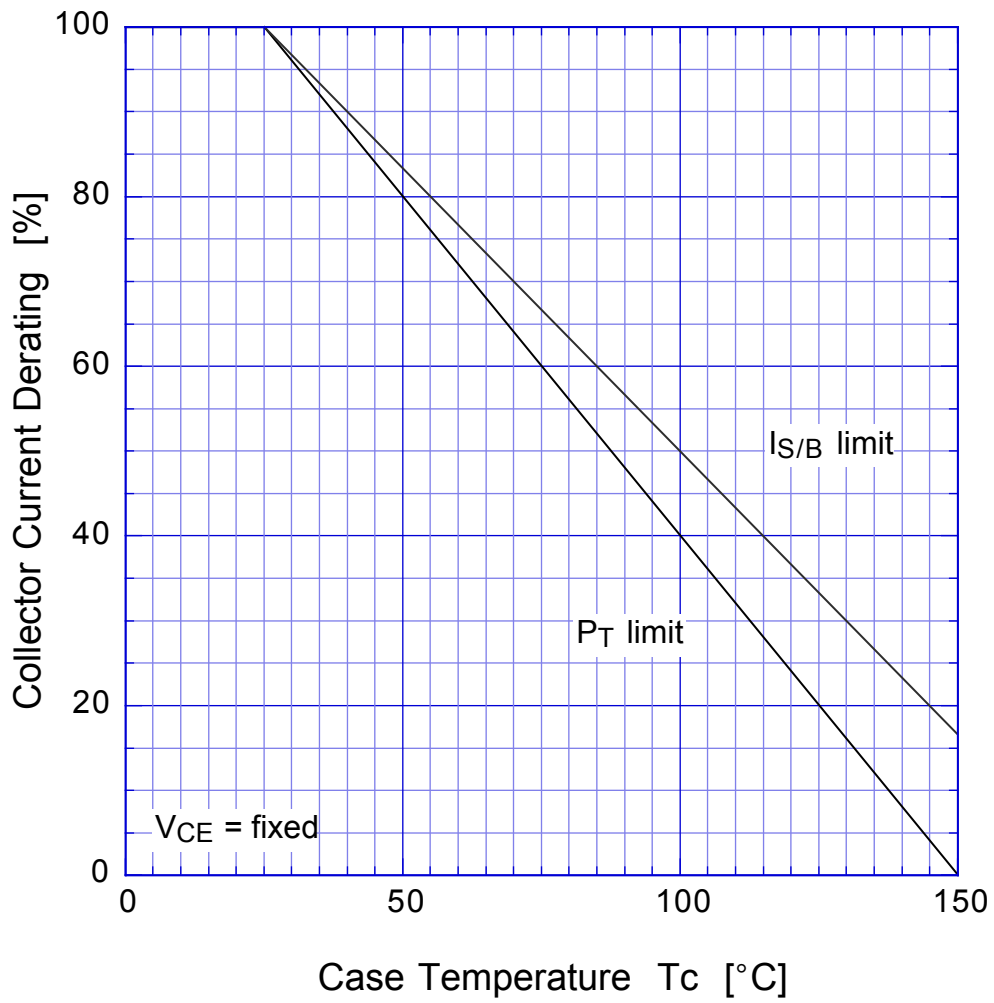


# 2SD1027 Forward Bias SOA





## 2SD1027 Collector Current Derating



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Reverse Bias SOA

