

|       |       |
|-------|-------|
| $V_R$ | 1200V |
| $I_F$ | 5A    |
| $Q_C$ | 20nC  |

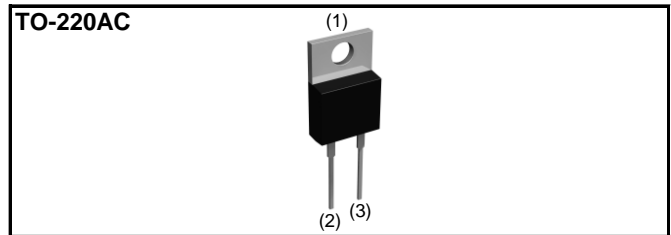
### ●Features

- 1) Shorter recovery time
- 2) Reduced temperature dependence
- 3) High-speed switching possible

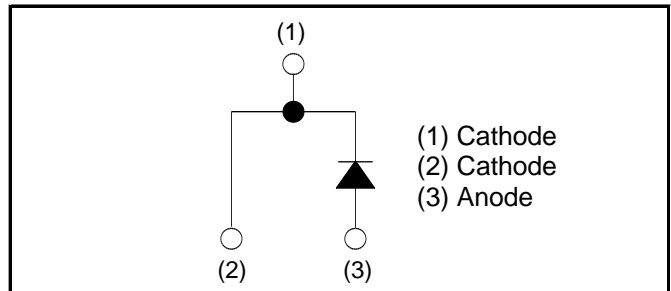
### ●Construction

Silicon carbide epitaxial planer type

### ●Outline



### ●Inner circuit



### ●Packaging specifications

| Type | Packaging                 | Tube     |
|------|---------------------------|----------|
|      | Reel size (mm)            | -        |
|      | Tape width (mm)           | -        |
|      | Basic ordering unit (pcs) | 50       |
|      | Taping code               | -        |
|      | Marking                   | SCS105KG |

### ●Absolute maximum ratings ( $T_j = 25^\circ\text{C}$ )

| Parameter                            | Symbol        | Value            | Unit |
|--------------------------------------|---------------|------------------|------|
| Reverse voltage (repetitive peak)    | $V_{RM}$      | 1200             | V    |
| Reverse voltage (DC)                 | $V_R$         | 1200             | V    |
| Continuous forward current           | $I_F$         | 5 <sup>*1</sup>  | A    |
| Surge no repetitive forward current  | $I_{FSM}$     | 21 <sup>*2</sup> | A    |
|                                      |               | 97 <sup>*3</sup> | A    |
| Repetitive peak forward current      | $I_{FRM}$     | 24 <sup>*4</sup> | A    |
| Total power dissipation              | $P_D$         | 83 <sup>*5</sup> | W    |
| Junction temperature                 | $T_j$         | 175              | °C   |
| Range of storage temperature         | $T_{stg}$     | -55 to +175      | °C   |
| Thermal resistance, junction to case | $R_{th(j-c)}$ | 1.8              | °C/W |

\*1  $T_c=148^\circ\text{C}$  \*2  $PW=8.3\text{ms}$  sinusoidal,  $T_j=25^\circ\text{C}$

\*3  $PW=10\mu\text{s}$  square,  $T_j=25^\circ\text{C}$  \*4  $T_c=100^\circ\text{C}$ ,  $T_j=150^\circ\text{C}$ , Duty cycle=10% \*5  $T_c=25^\circ\text{C}$

## ●Electrical characteristics (Tj = 25°C)

| Parameter               | Symbol   | Conditions                    | Values |      |      | Unit    |
|-------------------------|----------|-------------------------------|--------|------|------|---------|
|                         |          |                               | Min.   | Typ. | Max. |         |
| DC blocking voltage     | $V_{DC}$ | $I_R=0.1mA$                   | 1200   | -    | -    | V       |
| Forward voltage         | $V_F$    | $I_F=5A, T_j=25^{\circ}C$     | -      | 1.5  | 1.75 | V       |
|                         |          | $I_F=5A, T_j=175^{\circ}C$    | -      | 2.0  | -    | V       |
| Reverse current         | $I_R$    | $V_R=1200V, T_j=25^{\circ}C$  | -      | 5    | 100  | $\mu A$ |
|                         |          | $V_R=1200V, T_j=175^{\circ}C$ | -      | 60   | -    | $\mu A$ |
| Total capacitance       | C        | $V_R=1V, f=1MHz$              | -      | 325  | -    | pF      |
|                         |          | $V_R=800V, f=1MHz$            | -      | 25   | -    | pF      |
| Total capacitive charge | $Q_C$    | $V_R=800V, di/dt=500A/\mu s$  | -      | 20   | -    | nC      |
| Switching time          | $t_c$    | $V_R=800V, di/dt=500A/\mu s$  | -      | 15   | -    | ns      |

●Electrical characteristic curves

Fig.1  $V_F - I_F$  Characteristics

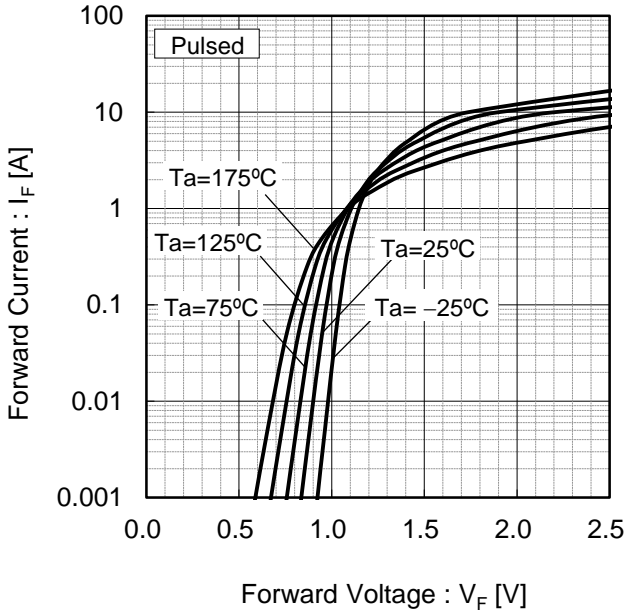


Fig.2  $V_F - I_F$  Characteristics

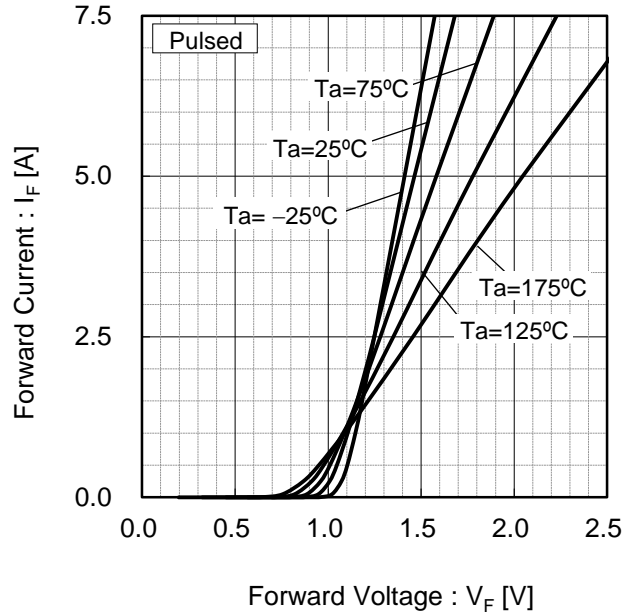


Fig.3  $V_R - I_R$  Characteristics

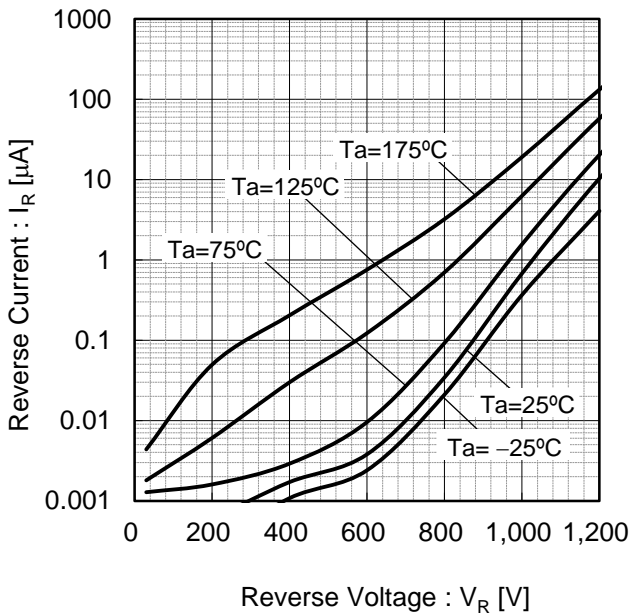
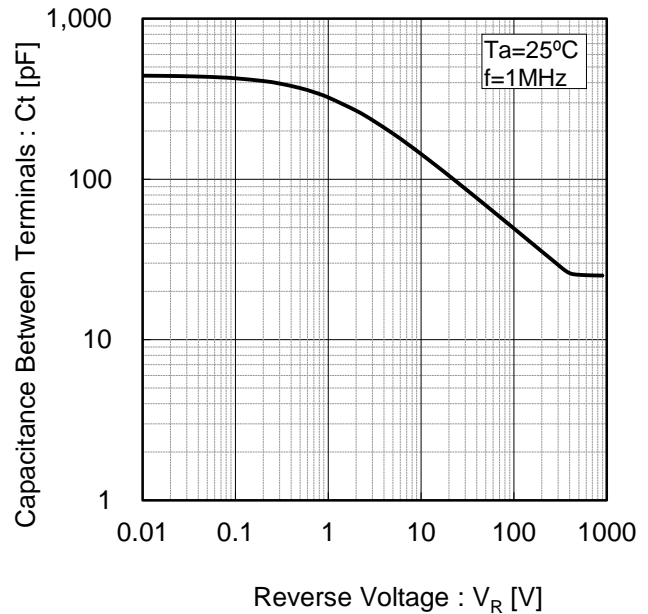


Fig.4  $V_R - C_t$  Characteristics



●Electrical characteristic curves

Fig.5 Thermal Resistance vs. Pulse Width

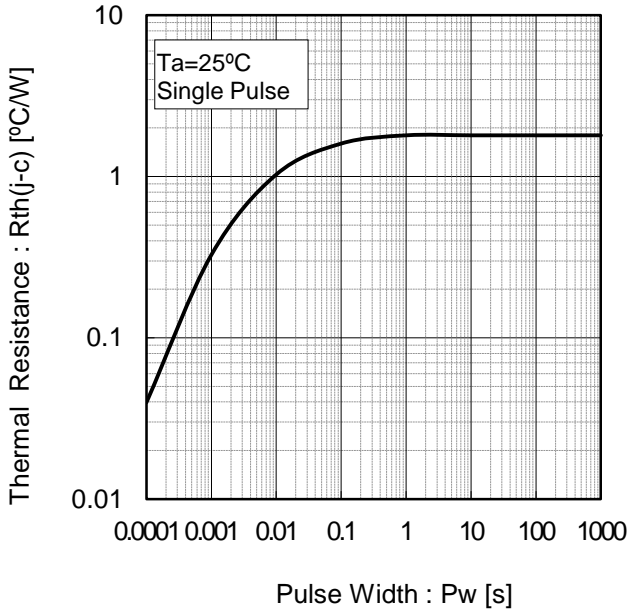


Fig.6 Power Dissipation

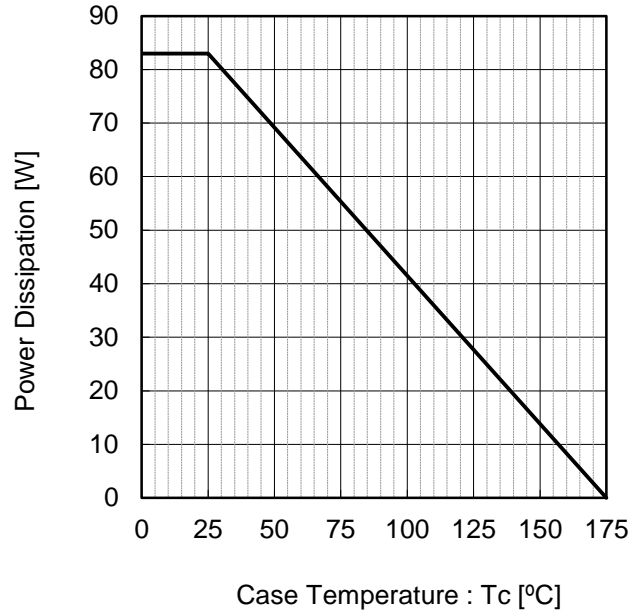


Fig.7 Derating Curve  $I_p$ - $T_c$

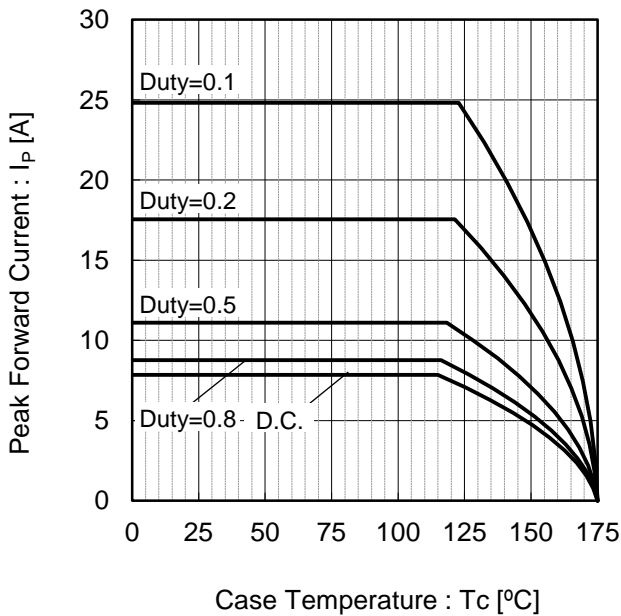
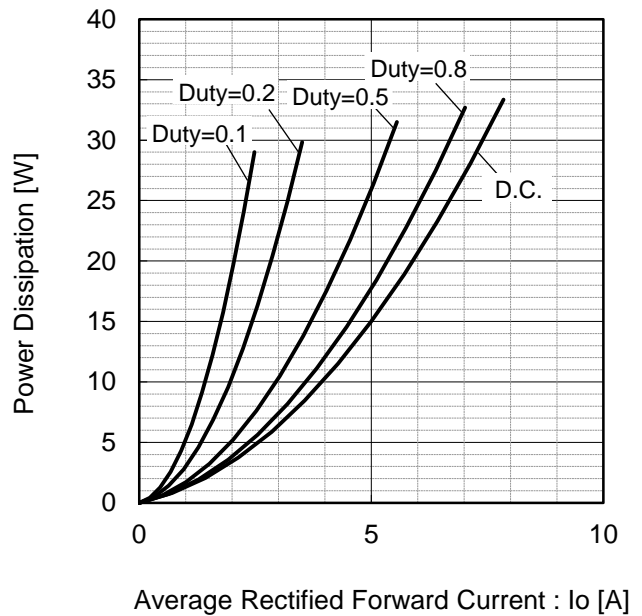
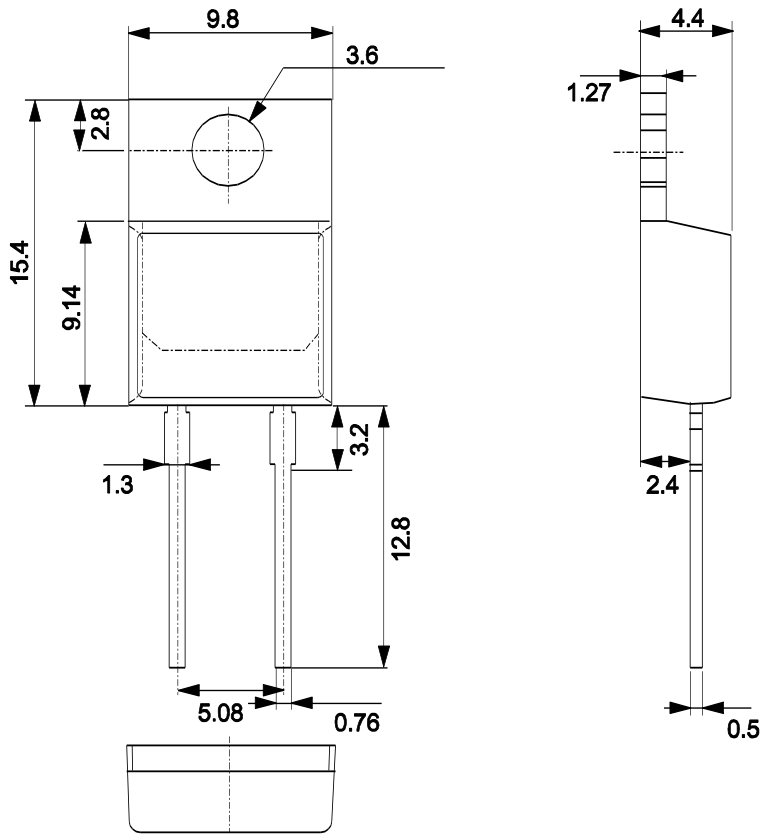


Fig.8  $I_o$ - $P_f$  Characteristics



●Dimensions (Unit : mm)

TO-220AC



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