

| | |
|-------|------|
| V_R | 600V |
| I_F | 20A |
| Q_C | 31nC |

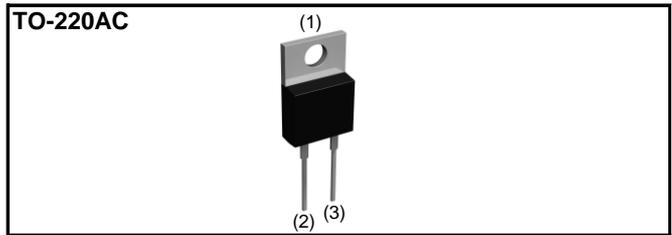
●Features

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

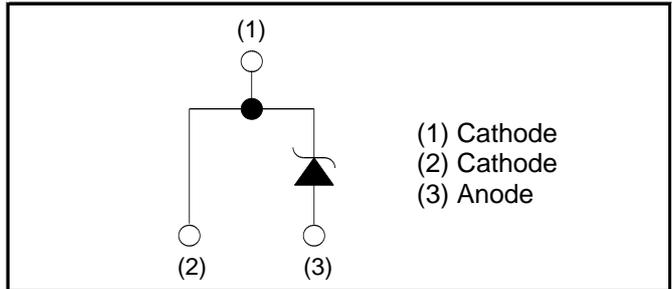
●Construction

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 | C |
| | Marking | SCS220AG |

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

| Parameter | Symbol | Value | Unit |
|-------------------------------------|-----------|-------------------|------|
| Reverse voltage (repetitive peak) | V_{RM} | 600 | V |
| Reverse voltage (DC) | V_R | 600 | V |
| Continuous forward current | I_F | 20 ^{*1} | A |
| Surge no repetitive forward current | I_{FSM} | 71 ^{*2} | A |
| | | 260 ^{*3} | A |
| | | 56 ^{*4} | A |
| Repetitive peak forward current | I_{FRM} | 76 ^{*5} | A |
| Total power dissipation | P_D | 130 ^{*6} | W |
| Junction temperature | T_j | 175 | °C |
| Range of storage temperature | T_{stg} | -55 to +175 | °C |

*1 $T_c=128^\circ\text{C}$ *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 $PW=8.3\text{ms}$ sinusoidal, $T_j=150^\circ\text{C}$ *5 $T_c=100^\circ\text{C}$, $T_j=150^\circ\text{C}$, Duty cycle=10% *6 $T_c=25^\circ\text{C}$

●Electrical characteristics (T_j = 25°C)

| Parameter | Symbol | Conditions | Values | | | Unit |
|-------------------------|-----------------|---|--------|------|------|------|
| | | | Min. | Typ. | Max. | |
| DC blocking voltage | V _{DC} | I _R =0.4mA | 600 | - | - | V |
| Forward voltage | V _F | I _F =20A, T _j =25°C | - | 1.35 | 1.55 | V |
| | | I _F =20A, T _j =150°C | - | 1.55 | - | V |
| | | I _F =20A, T _j =175°C | - | 1.63 | - | V |
| Reverse current | I _R | V _R =600V, T _j =25°C | - | 4 | 400 | μA |
| | | V _R =600V, T _j =150°C | - | 60 | - | μA |
| | | V _R =600V, T _j =175°C | - | 140 | - | μA |
| Total capacitance | C | V _R =1V, f=1MHz | - | 730 | - | pF |
| | | V _R =600V, f=1MHz | - | 74 | - | pF |
| Total capacitive charge | Q _C | V _R =400V, di/dt=350A/μs | - | 31 | - | nC |
| Switching time | t _c | V _R =400V, di/dt=350A/μs | - | 19 | - | ns |

●Thermal characteristics

| Parameter | Symbol | Conditions | Values | | | Unit |
|--------------------|----------------------|------------|--------|------|------|------|
| | | | Min. | Typ. | Max. | |
| Thermal resistance | R _{th(j-c)} | - | - | 0.79 | 1.1 | °C/W |

●Electrical characteristic curves

Fig.1 $V_F - I_F$ Characteristics

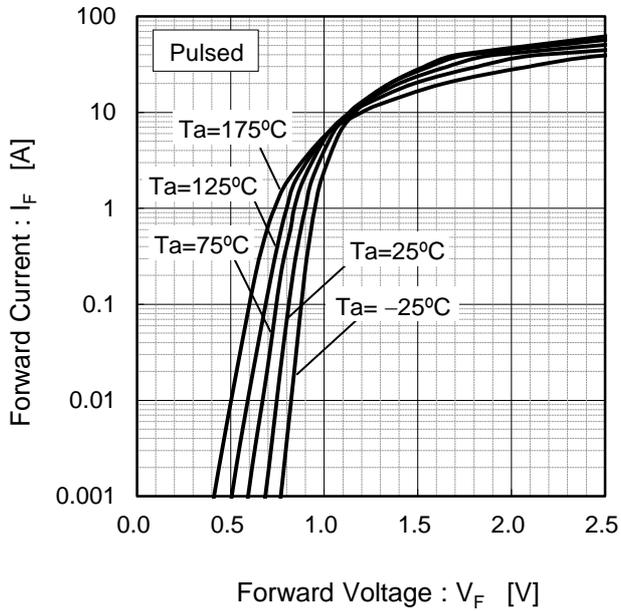


Fig.2 $V_F - I_F$ Characteristics

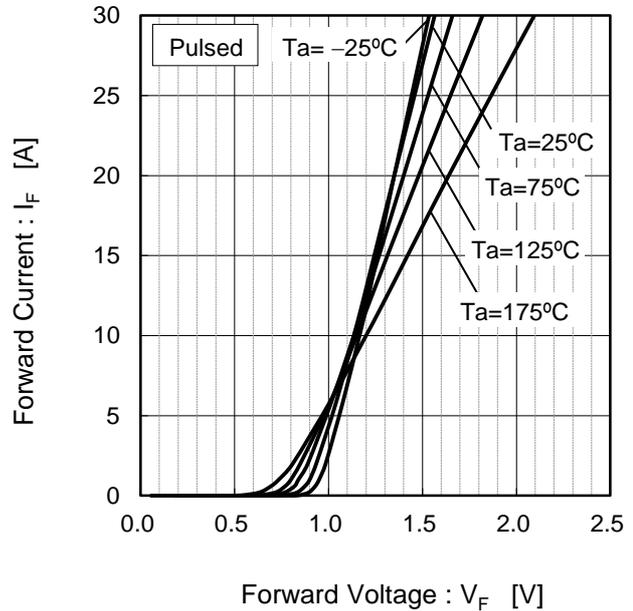


Fig.3 $V_R - I_R$ Characteristics

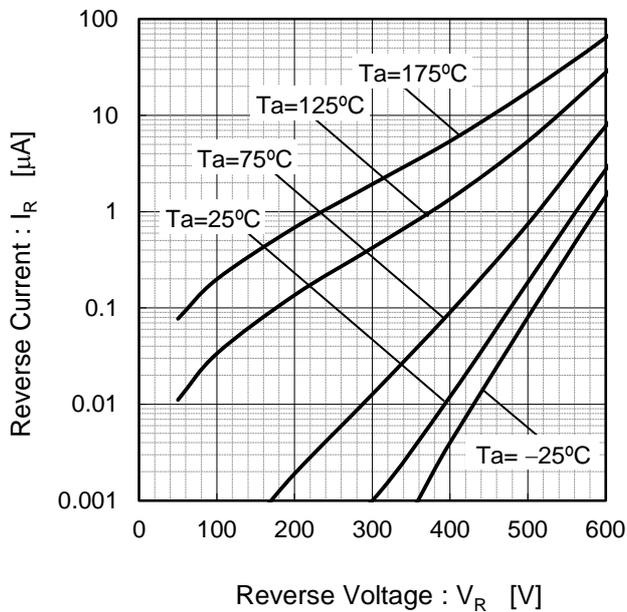
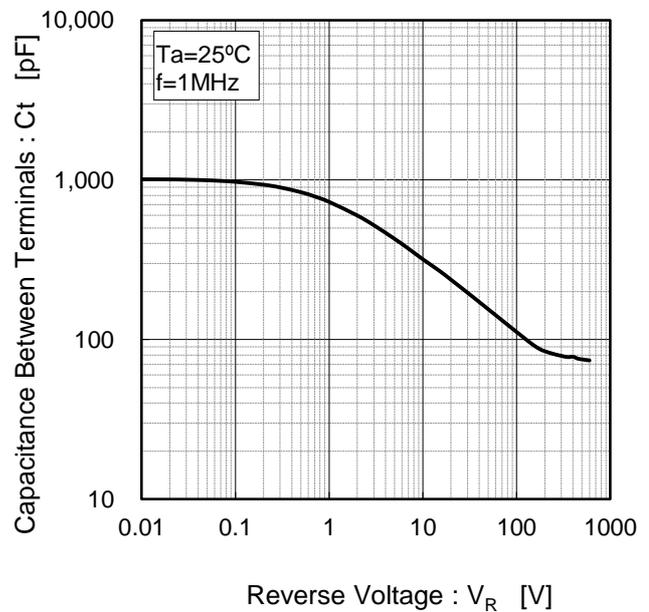


Fig.4 $V_R - C_t$ Characteristics



●Electrical characteristic curves

Fig.5 Thermal Resistance vs. Pulse Width

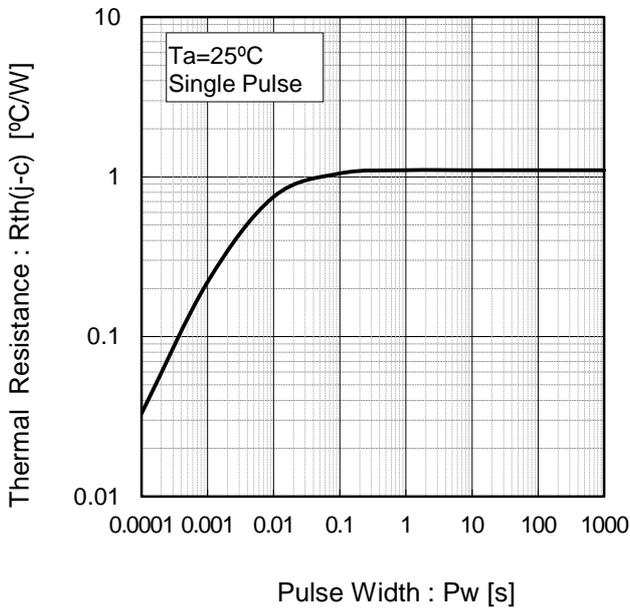


Fig.6 Power Dissipation

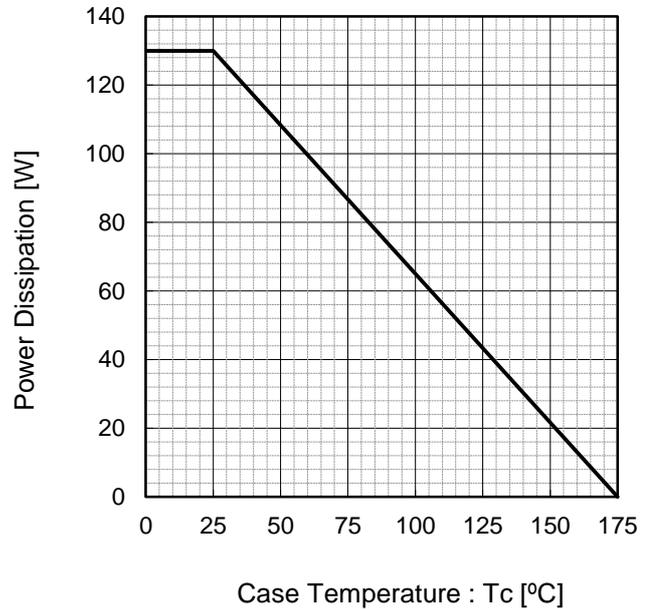


Fig.7 Ip-Tc Derating Curve

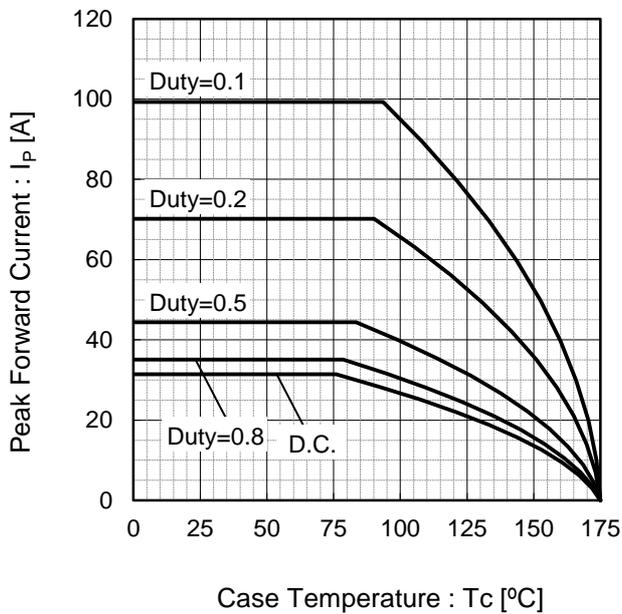
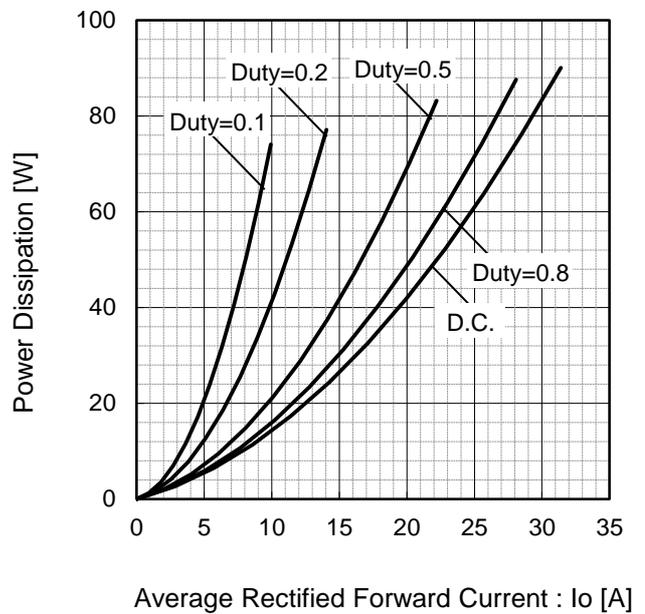
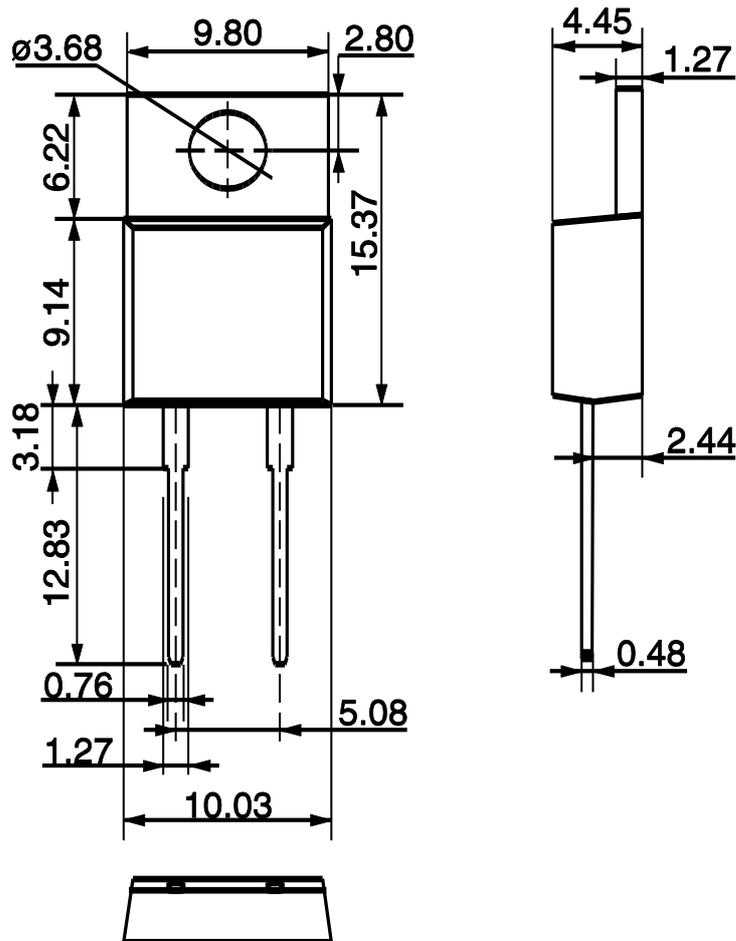


Fig.8 Io-Pf Characteristics



●Dimensions (Unit : mm)

TO-220AC



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