

$V_R$	650V
$I_F$	20A
$Q_C$	31nC

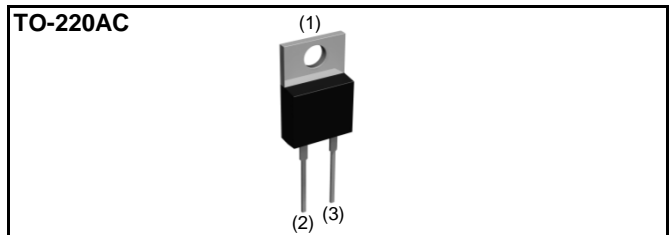
#### ●Features

- 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
	Packing code	C
	Marking	SCS220AG

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

Parameter	Symbol	Value	Unit
Reverse voltage (repetitive peak)	$V_{RM}$	650	V
Reverse voltage (DC)	$V_R$	650	V
Continuous forward current	$I_F$	20 <sup>*1</sup>	A
Surge no repetitive forward current	$I_{FSM}$	71 <sup>*2</sup>	A
		260 <sup>*3</sup>	A
		56 <sup>*4</sup>	A
Repetitive peak forward current	$I_{FRM}$	76 <sup>*5</sup>	A
Total power dissipation	$P_D$	130 <sup>*6</sup>	W
Junction temperature	$T_j$	175	$^\circ\text{C}$
Range of storage temperature	$T_{stg}$	-55 to +175	$^\circ\text{C}$

\*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<sub>j</sub> = 25°C)**

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
DC blocking voltage	V <sub>DC</sub>	I <sub>R</sub> =0.4mA	600	-	-	V
Forward voltage	V <sub>F</sub>	I <sub>F</sub> =20A, T <sub>j</sub> =25°C	-	1.35	1.55	V
		I <sub>F</sub> =20A, T <sub>j</sub> =150°C	-	1.55	-	V
		I <sub>F</sub> =20A, T <sub>j</sub> =175°C	-	1.63	-	V
Reverse current	I <sub>R</sub>	V <sub>R</sub> =600V, T <sub>j</sub> =25°C	-	4	400	μA
		V <sub>R</sub> =600V, T <sub>j</sub> =150°C	-	60	-	μA
		V <sub>R</sub> =600V, T <sub>j</sub> =175°C	-	140	-	μA
Total capacitance	C	V <sub>R</sub> =1V, f=1MHz	-	730	-	pF
		V <sub>R</sub> =600V, f=1MHz	-	74	-	pF
Total capacitive charge	Q <sub>C</sub>	V <sub>R</sub> =400V, di/dt=350A/μs	-	31	-	nC
Switching time	t <sub>c</sub>	V <sub>R</sub> =400V, di/dt=350A/μs	-	19	-	ns

**●Thermal characteristics**

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Thermal resistance	R <sub>th(j-c)</sub>	-	-	0.79	1.1	°C/W

●Electrical characteristic curves

Fig.1  $V_F - I_F$  Characteristics

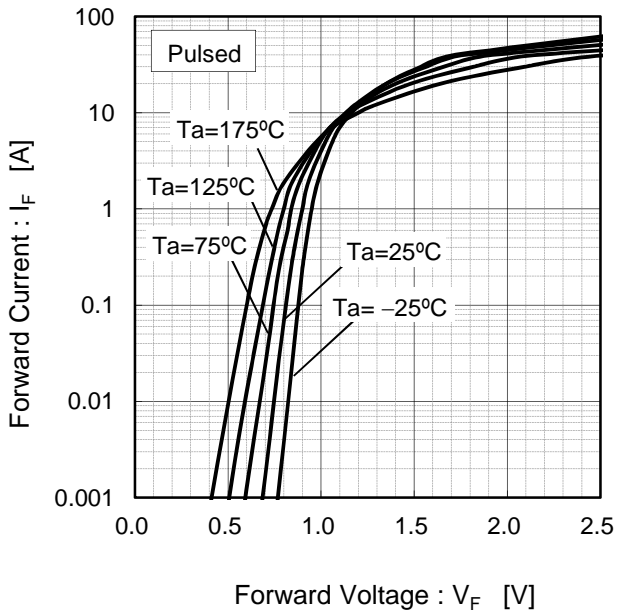


Fig.2  $V_F - I_F$  Characteristics

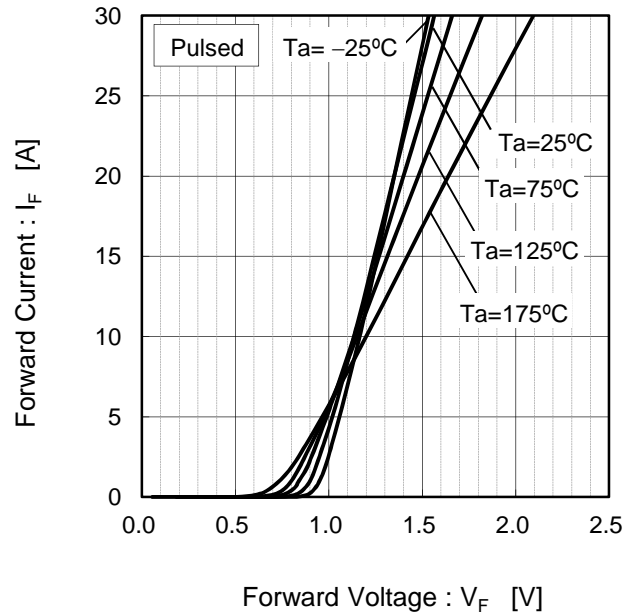


Fig.3  $V_R - I_R$  Characteristics

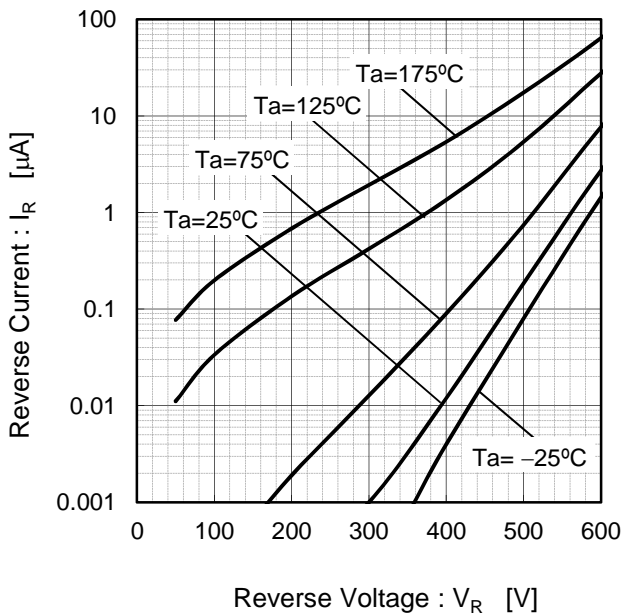
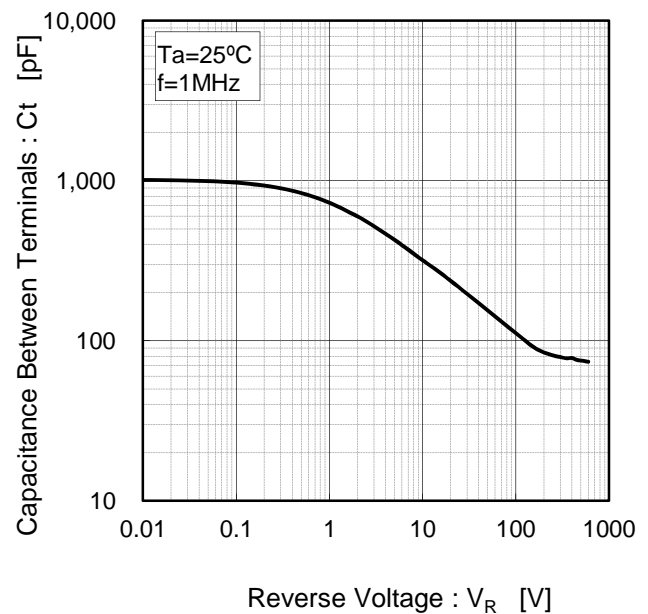


Fig.4  $V_R - C_t$  Characteristics



●Electrical characteristic curves

Fig.5 Thermal Resistance vs. Pulse Width

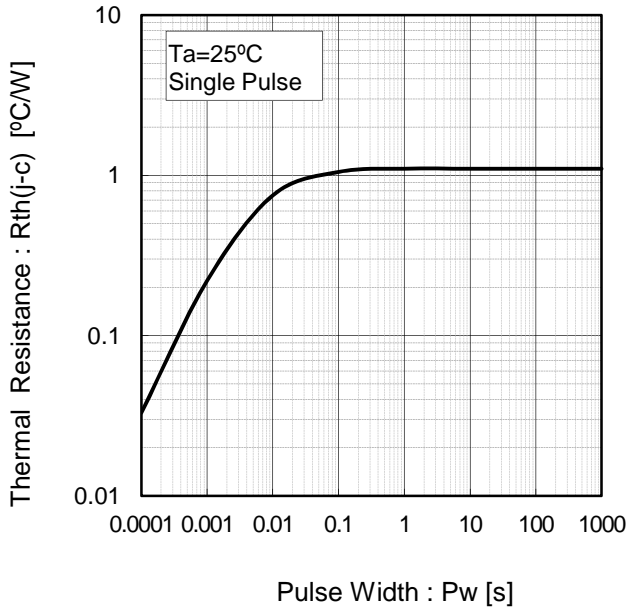


Fig.6 Power Dissipation

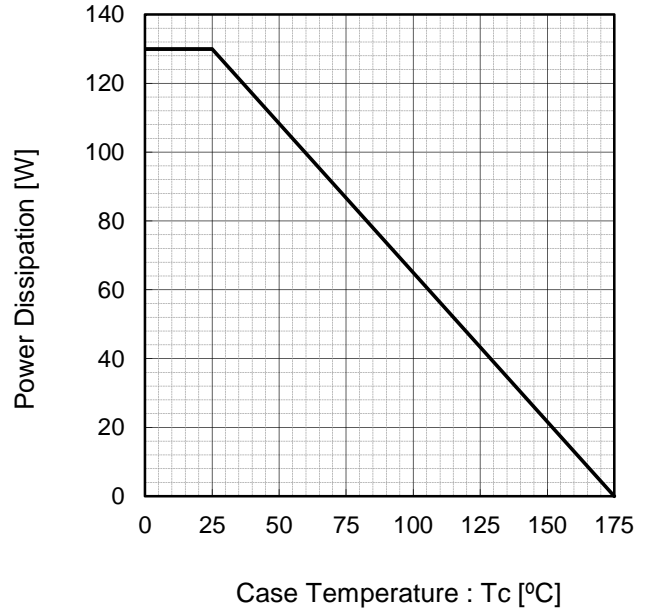


Fig.7 Ip-Tc Derating Curve

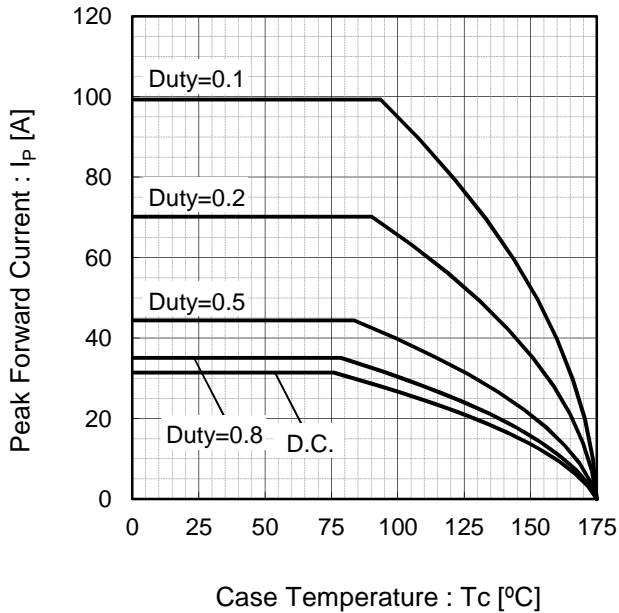
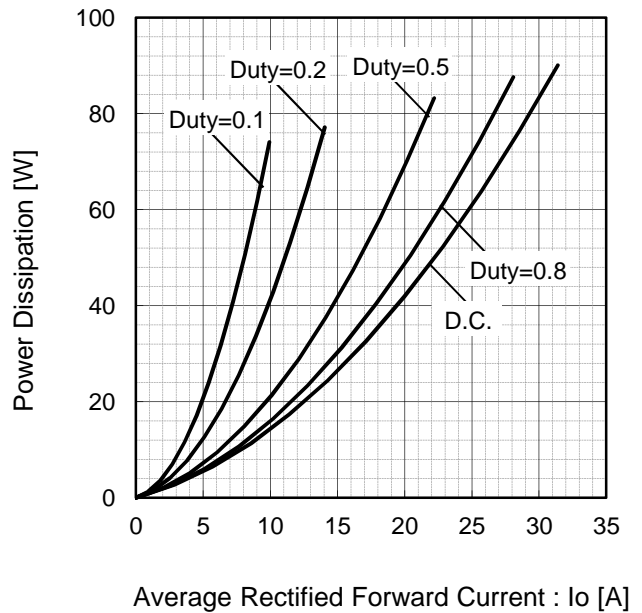
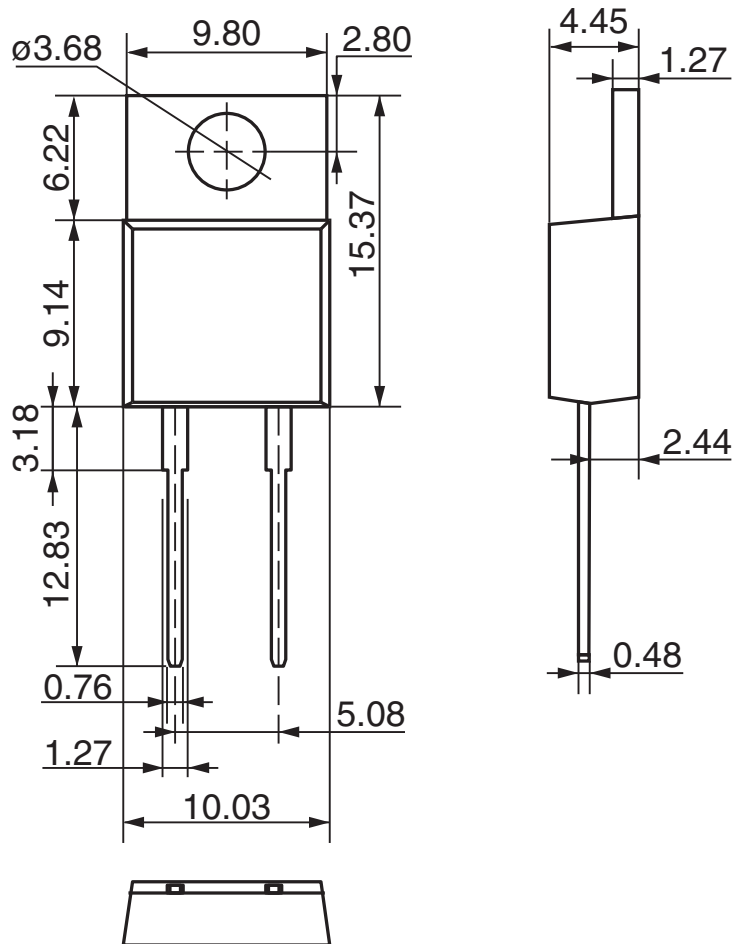


Fig.8 Io-Pf Characteristics



## ●Dimensions (Unit : mm)

## TO-220AC



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