

$V_R$	650V
$I_F$	10A/20A*
$Q_C$	15nC

\*(Per leg / Both legs)

## ●Features

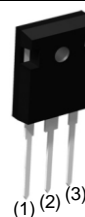
- 1) Shorter recovery time
- 2) Reduced temperature dependence
- 3) High-speed switching possible

## ●Construction

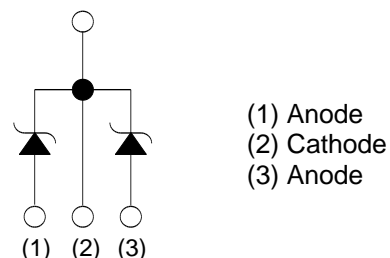
Silicon carbide epitaxial planer type

## ●Outline

TO-247



## ●Inner circuit



## ●Packaging specifications

Type	Packaging	Tube
	Reel size (mm)	-
	Tape width (mm)	-
	Basic ordering unit (pcs)	30
	Taping code	C
	Marking	SCS220AE2

## ●Absolute maximum ratings (Tj = 25°C)

Parameter	Symbol	Value	Unit
Reverse voltage (repetitive peak)	$V_{RM}$	650	V
Reverse voltage (DC)	$V_R$	650	V
Continuous forward current <sup>*7</sup>	$I_F$	10/20 <sup>*1</sup>	A
Surge no repetitive forward current <sup>*7</sup>	$I_{FSM}$	40/80 <sup>*2</sup>	A
		150/300 <sup>*3</sup>	A
		31/63 <sup>*4</sup>	A
Repetitive peak forward current <sup>*7</sup>	$I_{FRM}$	42/85 <sup>*5</sup>	A
Total power dissipation <sup>*7</sup>	$P_D$	83/160 <sup>*6</sup>	W
Junction temperature	Tj	175	°C
Range of storage temperature	Tstg	-55 to +175	°C

\*1 Tc=137°C/Tc=137°C \*2 PW=8.3ms sinusoidal, Tj=25°C \*3 PW=10μs square, Tj=25°C

\*4 PW=8.3ms sinusoidal, Tj=150°C \*5 Tc=100°C, Tj=150°C, Duty cycle=10%

\*6 Tc=25°C \*7 Per leg / Both legs

**●Electrical characteristics** (T<sub>j</sub> = 25°C) (Per leg)

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
DC blocking voltage	V <sub>DC</sub>	I <sub>R</sub> =0.2mA	600	-	-	V
Forward voltage	V <sub>F</sub>	I <sub>F</sub> =10A, T <sub>j</sub> =25°C	-	1.35	1.55	V
		I <sub>F</sub> =10A, T <sub>j</sub> =150°C	-	1.55	-	V
		I <sub>F</sub> =10A, 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	-	2	200	μA
		V <sub>R</sub> =600V, T <sub>j</sub> =150°C	-	30	-	μA
		V <sub>R</sub> =600V, T <sub>j</sub> =175°C	-	70	-	μA
Total capacitance	C	V <sub>R</sub> =1V, f=1MHz	-	365	-	pF
		V <sub>R</sub> =600V, f=1MHz	-	37	-	pF
Total capacitive charge	Q <sub>C</sub>	V <sub>R</sub> =400V, di/dt=350A/μs	-	15	-	nC
Switching time	t <sub>c</sub>	V <sub>R</sub> =400V, di/dt=350A/μs	-	15	-	ns

**●Thermal characteristics**

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Thermal resistance	R <sub>th(j-c)</sub>	Per Leg	-	1.6	1.8	°C/W
		Both Legs	-	0.8	0.9	°C/W

●Electrical characteristic curves

Fig.1  $V_F - I_F$  Characteristics (Per leg)

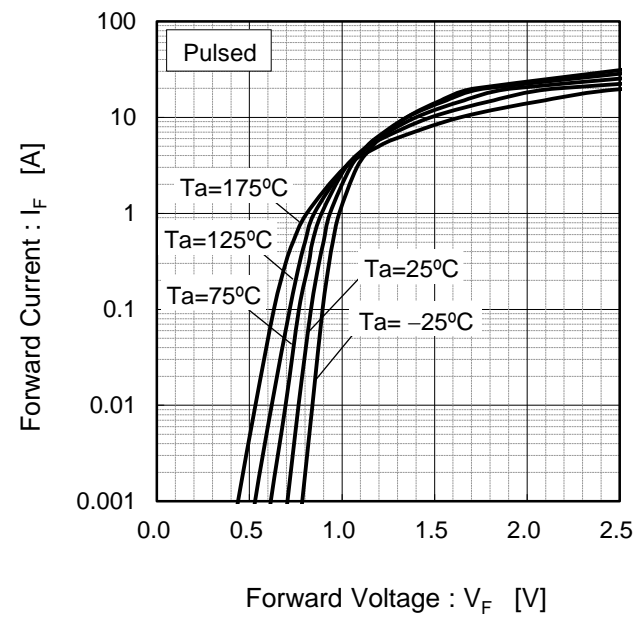


Fig.2  $V_F - I_F$  Characteristics (Per leg)

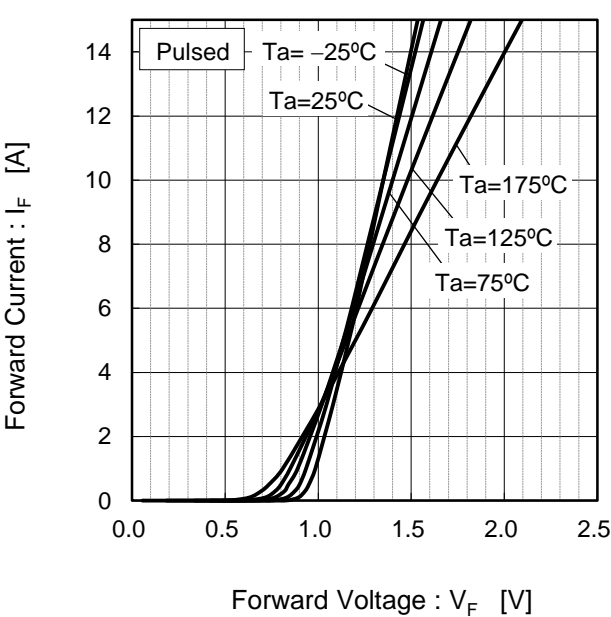


Fig.3  $V_R - I_R$  Characteristics (Per leg)

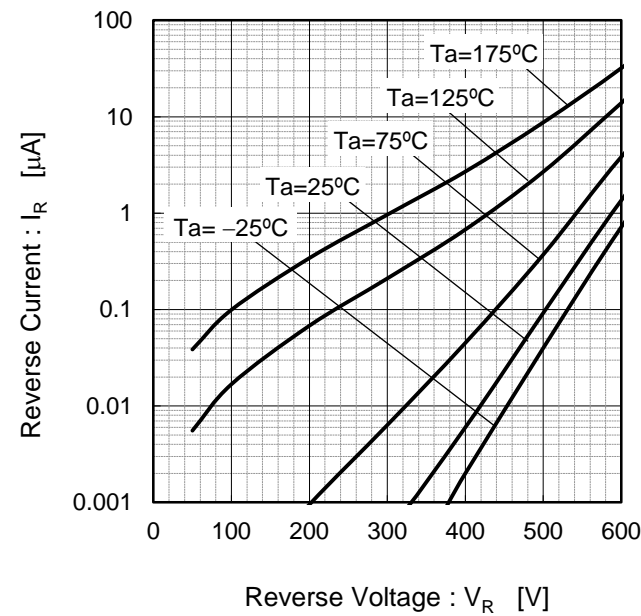
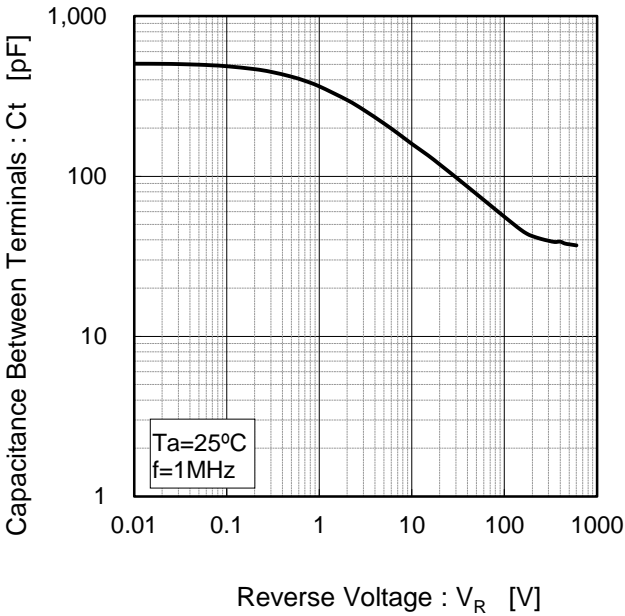


Fig.4  $V_R - C_t$  Characteristics (Per leg)



●Electrical characteristic curves

Fig.5 Thermal Resistance vs. Pulse Width (Per leg)

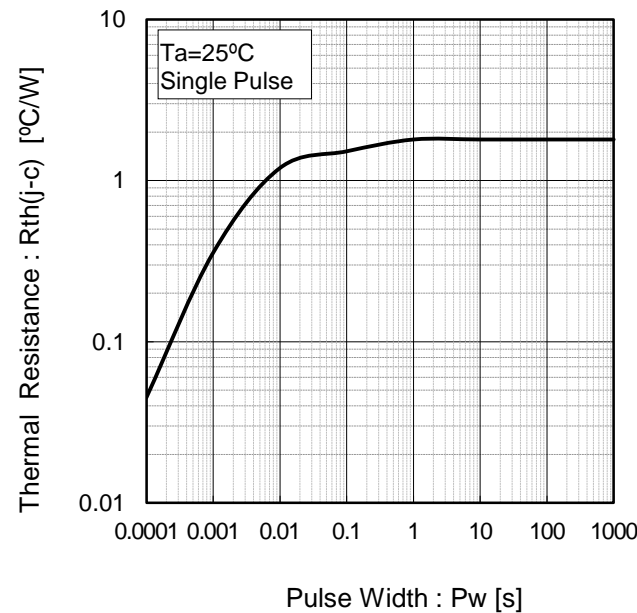


Fig.6 Power Dissipation (Per leg)

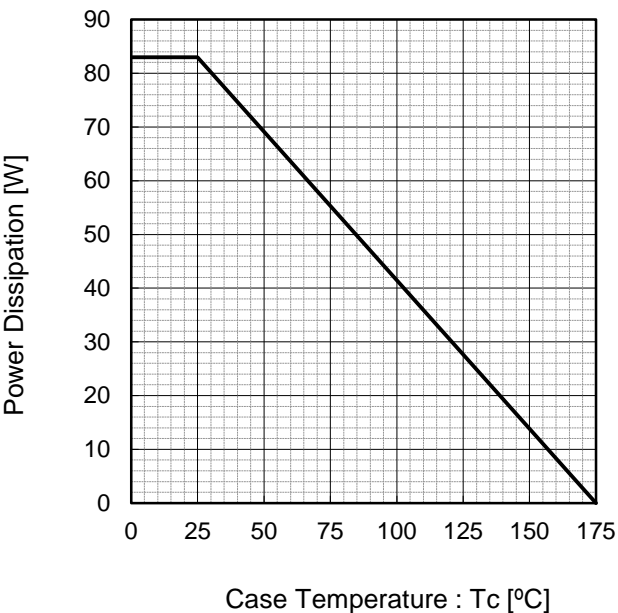


Fig.7 Derating Curve  $I_p$ - $T_c$  (Per leg)

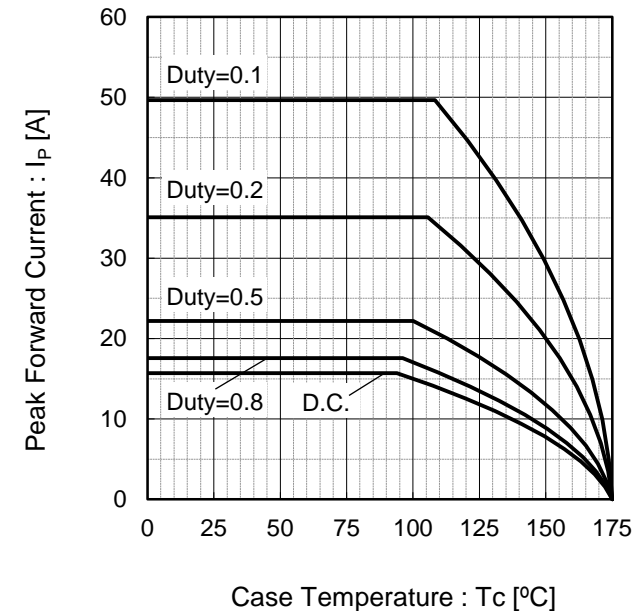
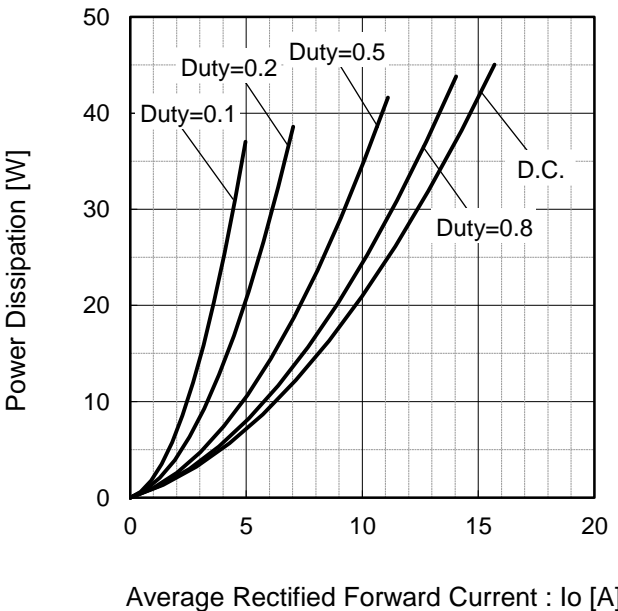
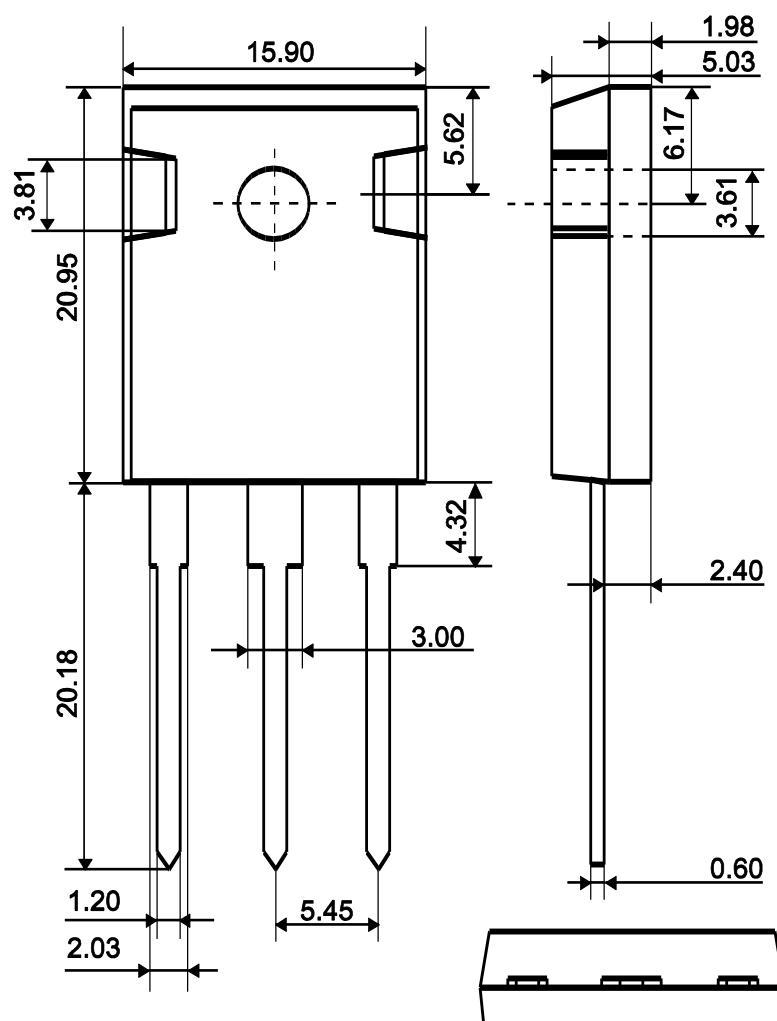


Fig.8  $I_o$ - $P_f$  Characteristics (Per leg)



## ●Dimensions (Unit : mm)

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