

V_R	600V
I_F	20A/40A*
Q_C	31nC

*(Per leg / Both legs)

●Features

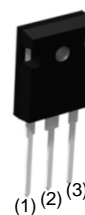
- 1) Shorter recovery time
- 2) Reduced temperature dependence
- 3) High-speed switching possible

●Construction

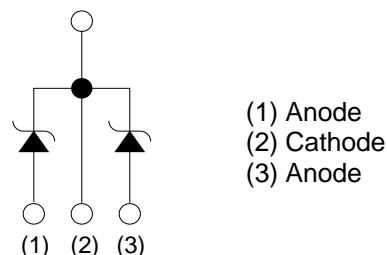
Silicon carbide epitaxial planer type

●Outline

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●Inner circuit



●Packaging specifications

Type	Packaging	Tube
	Reel size (mm)	-
	Tape width (mm)	-
	Basic ordering unit (pcs)	30
	Taping code	C
	Marking	SCS240AE2

●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 ^{*7}	I_F	20/40 ^{*1}	A
Surge no repetitive forward current ^{*7}	I_{FSM}	71/140 ^{*2}	A
		260/530 ^{*3}	A
		56/110 ^{*4}	A
Repetitive peak forward current ^{*7}	I_{FRM}	76/154 ^{*5}	A
Total power dissipation ^{*7}	P_D	130/270 ^{*6}	W
Junction temperature	T_j	175	$^\circ\text{C}$
Range of storage temperature	T_{stg}	-55 to +175	$^\circ\text{C}$

*1 $T_c=128^\circ\text{C}/T_c=129^\circ\text{C}$ *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 $T_c=25^\circ\text{C}$ *7 Per leg / Both legs

●Electrical characteristics ($T_j = 25^\circ\text{C}$) (Per leg)

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
DC blocking voltage	V_{DC}	$I_R=0.4\text{mA}$	600	-	-	V
Forward voltage	V_F	$I_F=20\text{A}, T_j=25^\circ\text{C}$	-	1.35	1.55	V
		$I_F=20\text{A}, T_j=150^\circ\text{C}$	-	1.55	-	V
		$I_F=20\text{A}, T_j=175^\circ\text{C}$	-	1.63	-	V
Reverse current	I_R	$V_R=600\text{V}, T_j=25^\circ\text{C}$	-	4	400	μA
		$V_R=600\text{V}, T_j=150^\circ\text{C}$	-	60	-	μA
		$V_R=600\text{V}, T_j=175^\circ\text{C}$	-	140	-	μA
Total capacitance	C	$V_R=1\text{V}, f=1\text{MHz}$	-	730	-	pF
		$V_R=600\text{V}, f=1\text{MHz}$	-	74	-	pF
Total capacitive charge	Qc	$V_R=400\text{V}, di/dt=350\text{A}/\mu\text{s}$	-	31	-	nC
Switching time	tc	$V_R=400\text{V}, di/dt=350\text{A}/\mu\text{s}$	-	19	-	ns

●Thermal characteristics

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Thermal resistance	$R_{th(j-c)}$	Per Leg	-	0.92	1.1	$^\circ\text{C}/\text{W}$
		Both Legs	-	0.46	0.54	$^\circ\text{C}/\text{W}$

●Electrical characteristic curves

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

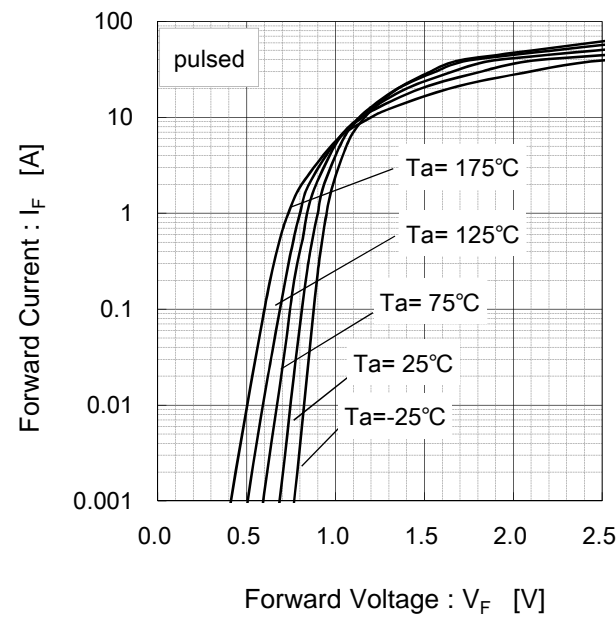


Fig.2 $V_F - I_F$ Characteristics (Per leg)

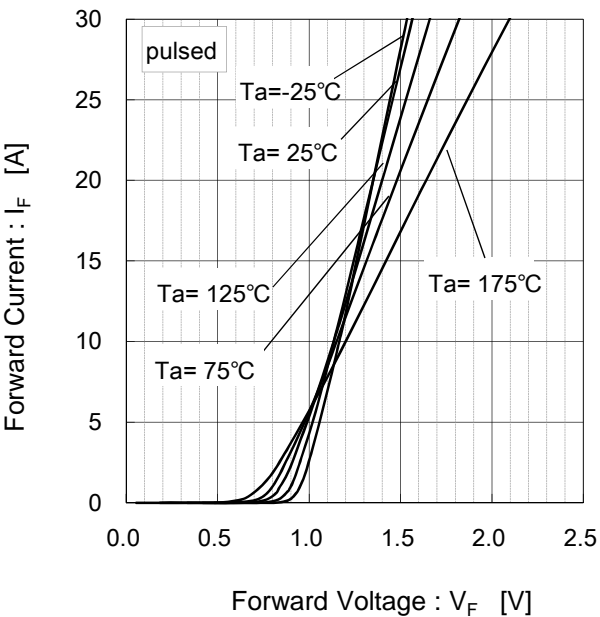


Fig.3 $V_R - I_R$ Characteristics (Per leg)

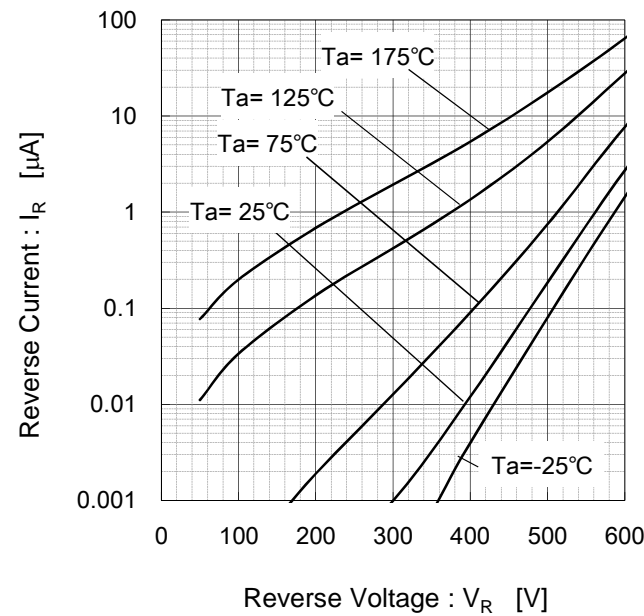
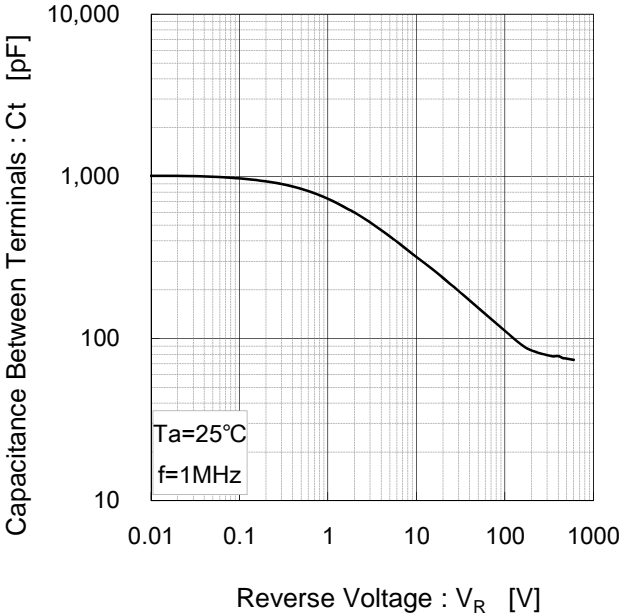


Fig.4 $V_R - C_t$ Characteristics (Per leg)



●Electrical characteristic curves

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

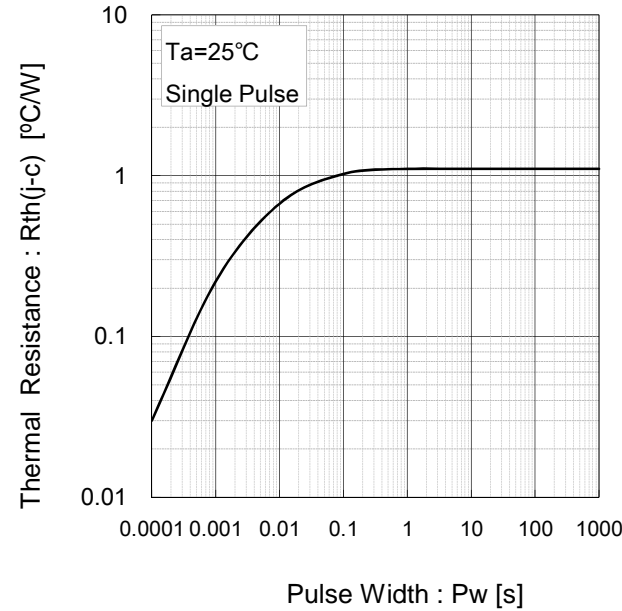


Fig.6 Power Dissipation (Per leg)

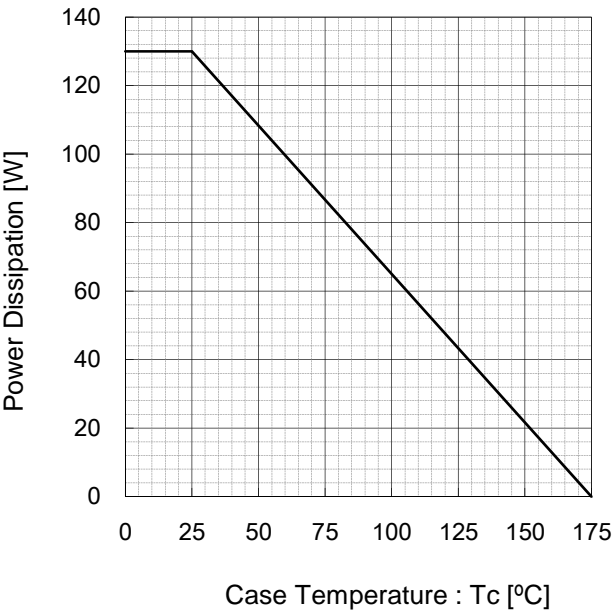


Fig.7 Derating Curve I_p - T_c (Per leg)

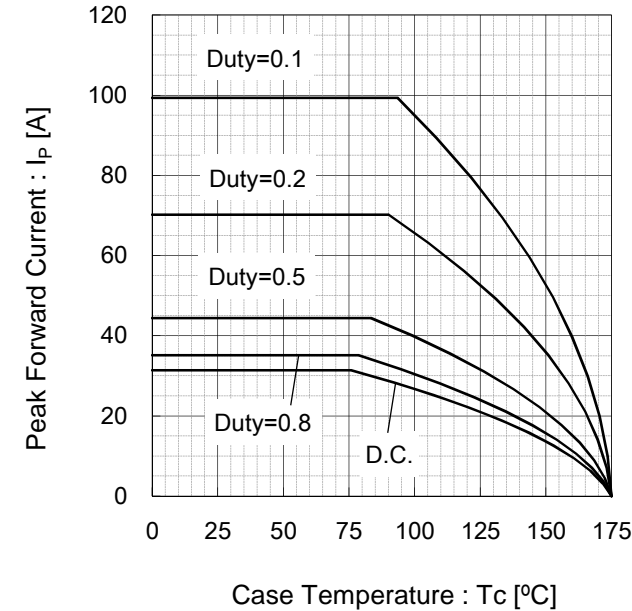
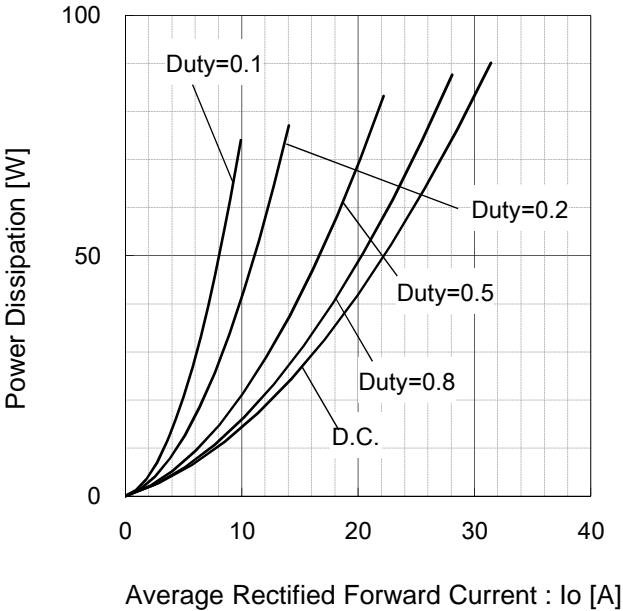
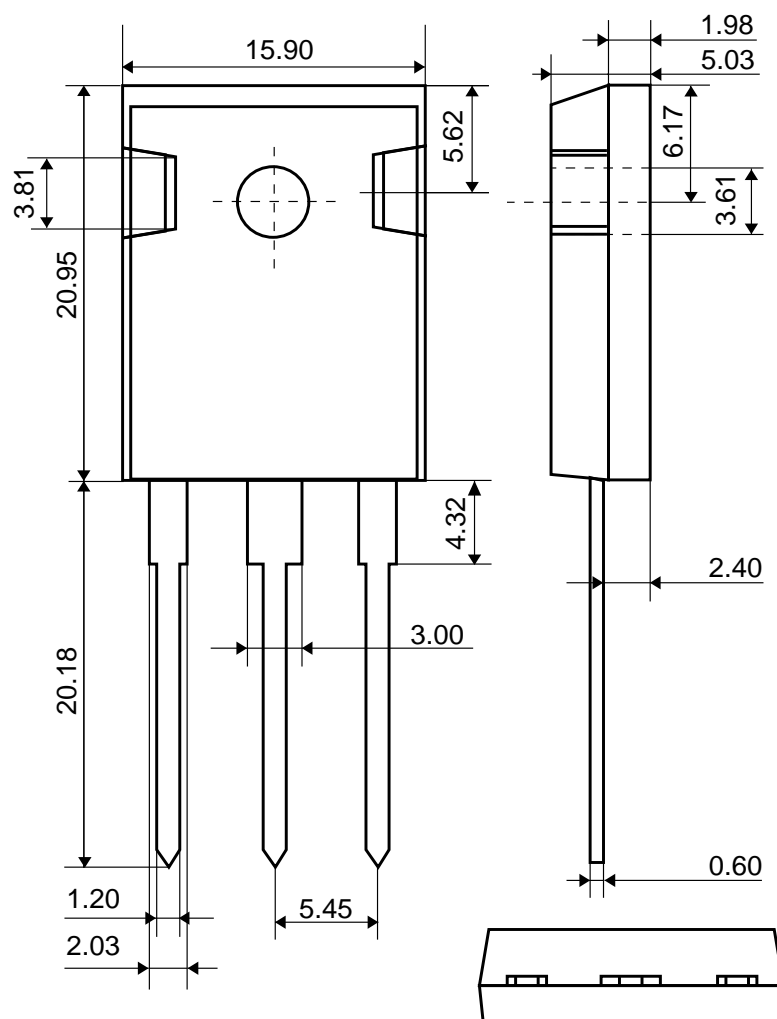


Fig.8 I_o - P_f Characteristics (Per leg)



●Dimensions (Unit : mm)

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