

V_R	650V
I_F	20A/40A*
Q_C	31nC

*(Per leg / Both legs)

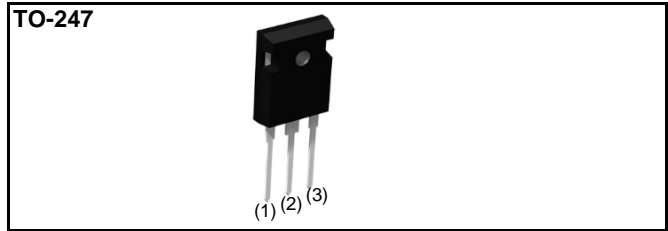
●Features

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

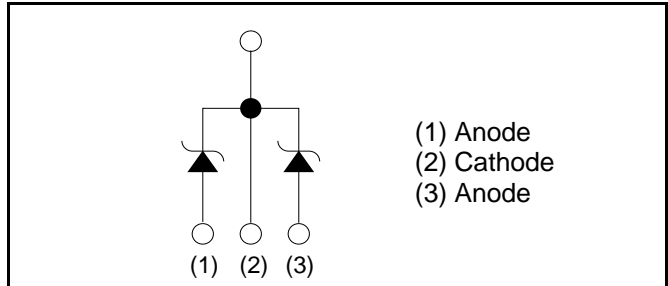
●Construction

Silicon carbide epitaxial planer type

●Outline



●Inner circuit



●Packaging specifications

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

●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 ^{*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°C) (Per leg)

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)}	Per Leg	-	0.92	1.1	°C/W
		Both Legs	-	0.46	0.54	°C/W

●Electrical characteristic curves

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

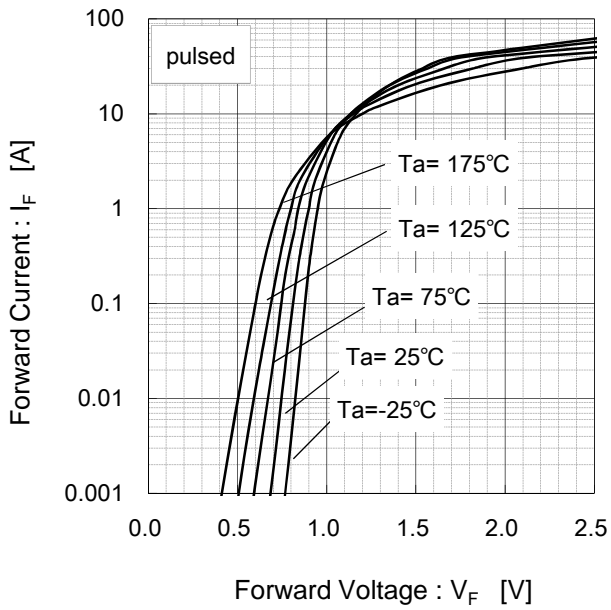


Fig.2 $V_F - I_F$ Characteristics (Per leg)

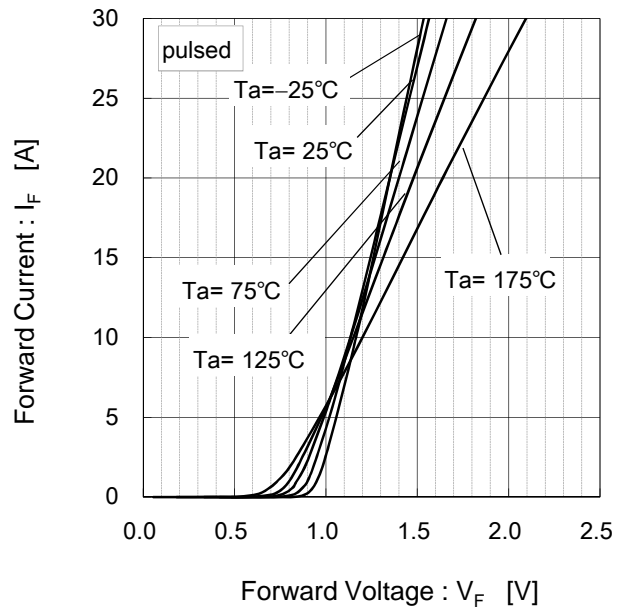


Fig.3 $V_R - I_R$ Characteristics (Per leg)

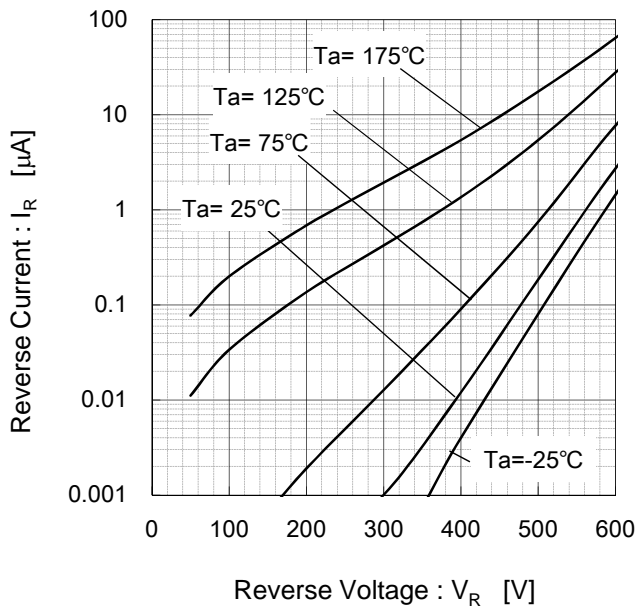
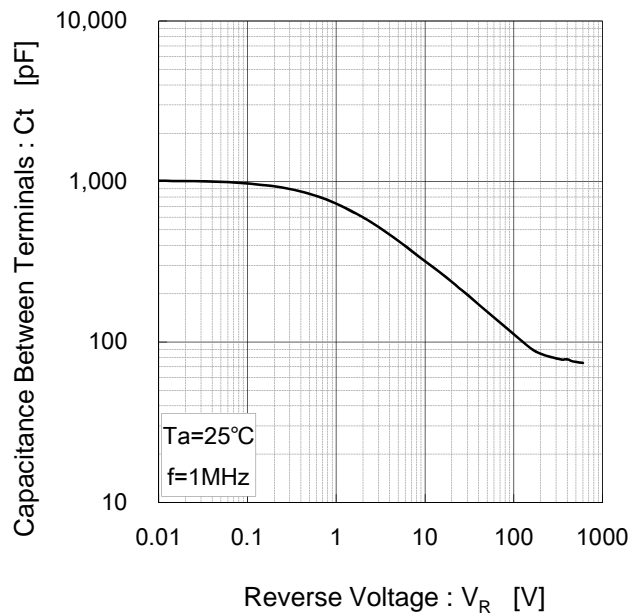


Fig.4 $V_R - C_t$ Characteristics (Per leg)



●Electrical characteristic curves

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

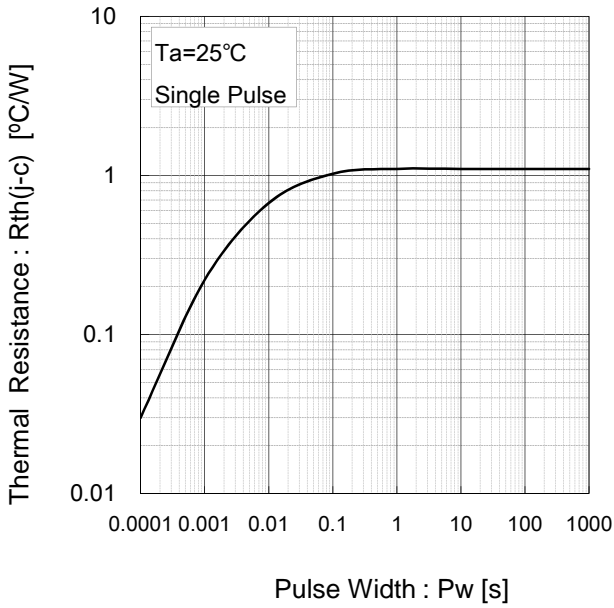


Fig.6 Power Dissipation (Per leg)

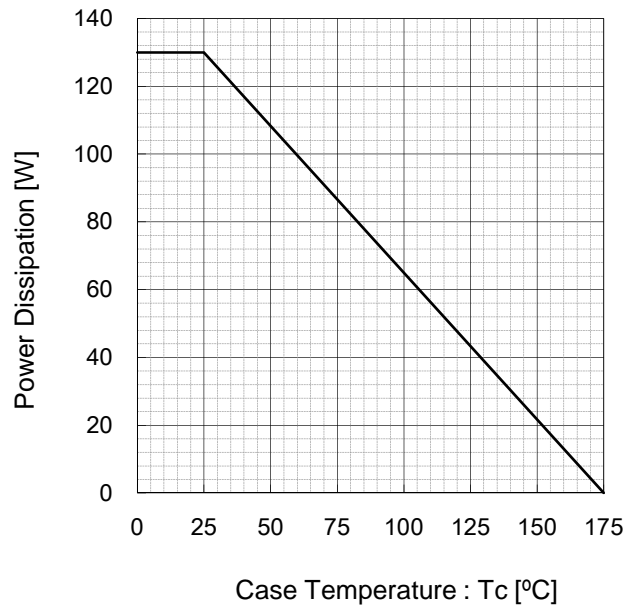


Fig.7 Derating Curve I_p - T_c (Per leg)

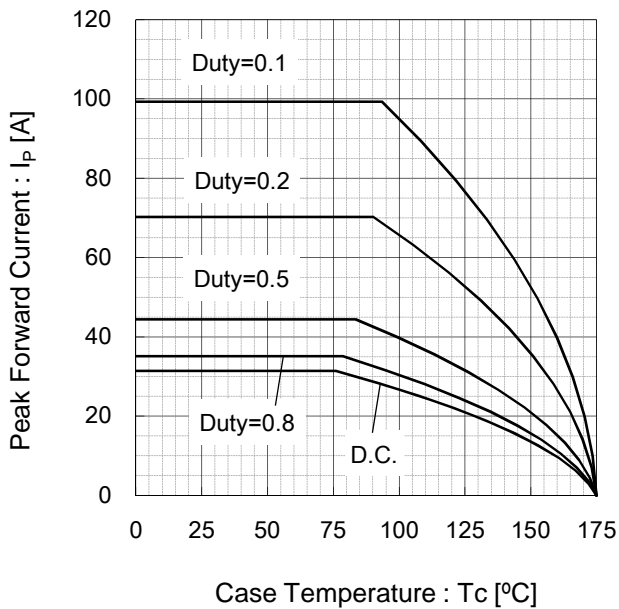
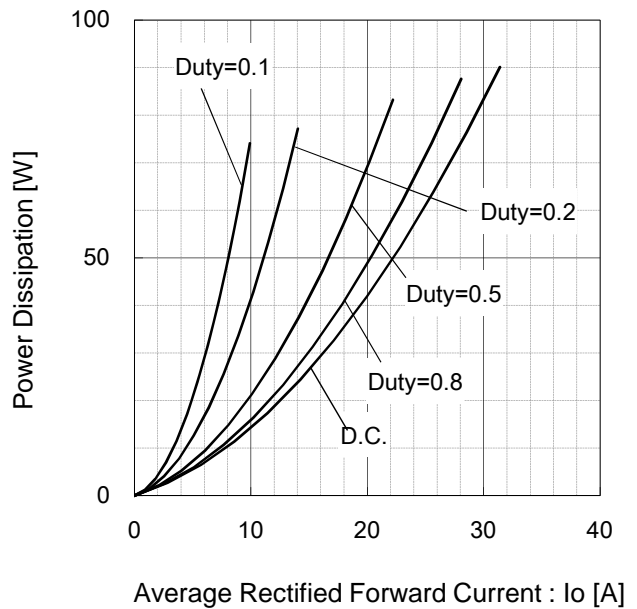


Fig.8 I_o - P_f Characteristics (Per leg)



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