

SiC Schottky Barrier Diode

SCS120KE2

●Applications

General rectification

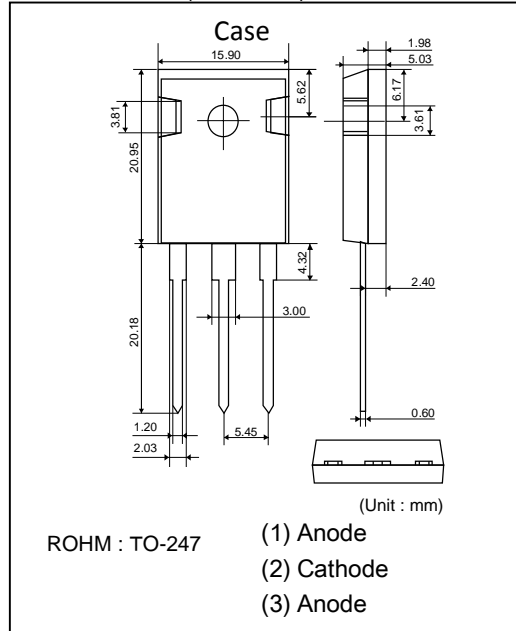
●Features

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

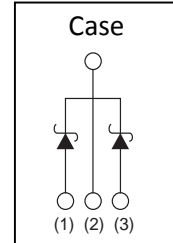
●Construction

Silicon carbide epitaxial planer type

●Dimensions (Unit : mm)



●Structure



●Absolute maximum ratings (Tj=25°C)

Parameter	Symbol	Limits	Unit
Reverse voltage (repetitive peak)	V_{RM}	1200	V
Reverse voltage (DC)	V_R	1200	V
Continuous forward current *6	I_F	10 / 20 *1	A
Surge no repetitive forward current *6	I_{FSM}	45 / 90 *2	A
		190 / 380*3	A
Repetitive peak forward current *6	I_{FRM}	30 / 58*4	A
Total power dissipation *6	P_D	115 / 210*5	W
Junction temperature	T_j	175	°C
Range of storage temperature	T_{stg}	-55 to +175	°C
Junction to case *6	$R_{th(j-c)}$	1.3 / 0.70	°C / W

(*1) $T_c=135^\circ\text{C} / 132^\circ\text{C}$ (*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) $T_c=120^\circ\text{C}$, $T_j=150^\circ\text{C}$, Duty cycle=10% (*5) $T_c=25^\circ\text{C}$ (*6) Per Leg / Per Device

●Electrical characteristics (Tj=25°C) [Per Leg]

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
DC blocking voltage	V_{DC}	1200	-	-	V	$I_R=0.2\text{mA}$
Forward voltage	V_F	-	1.50	1.70	V	$I_F=10\text{A}$, $T_j=25^\circ\text{C}$
		-	2.00	-	V	$I_F=10\text{A}$, $T_j=175^\circ\text{C}$
Reverse current	I_R	-	10	200	μA	$V_R=1200\text{V}$, $T_j=25^\circ\text{C}$
		-	120	-	μA	$V_R=1200\text{V}$, $T_j=175^\circ\text{C}$
Total capacitance	C	-	650	-	pF	$V_R=1\text{V}$, $f=1\text{MHz}$
		-	50	-	pF	$V_R=800\text{V}$, $f=1\text{MHz}$
Total capacitive charge	Q_c	-	34	-	nC	$V_R=800\text{V}$, $di/dt=500\text{A}/\mu\text{s}$
Switching time	t_c	-	16	-	ns	$V_R=800\text{V}$, $di/dt=500\text{A}/\mu\text{s}$

●Electrical characteristic curves (Ta=25°C)

Fig.1 V_F - I_F Characteristics [Per Leg]

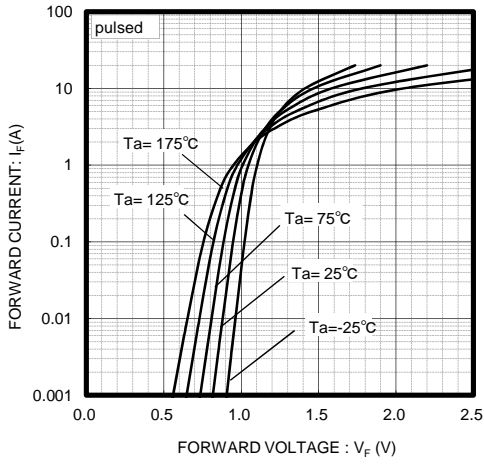


Fig.2 V_F - I_F Characteristics [Per Leg]

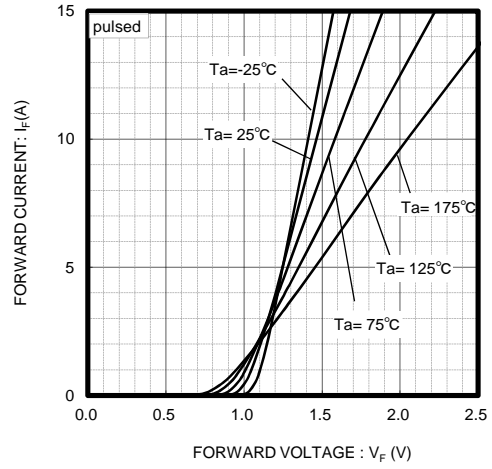


Fig.3 V_R - I_R Characteristics [Per Leg]

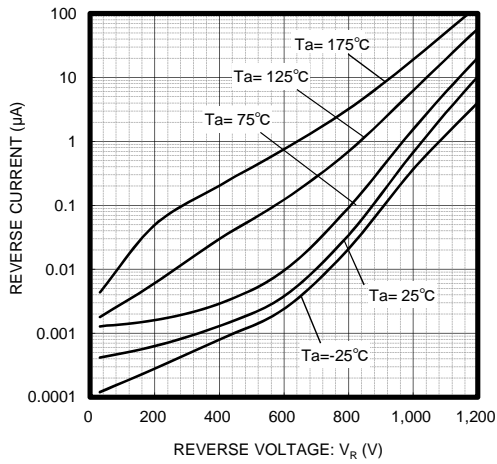


Fig.4 V_R - C_t Characteristics [Per Leg]

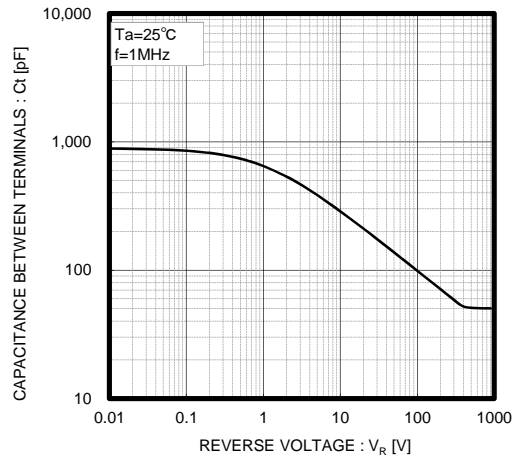


Fig.5 Thermal Resistance vs Pulse Width

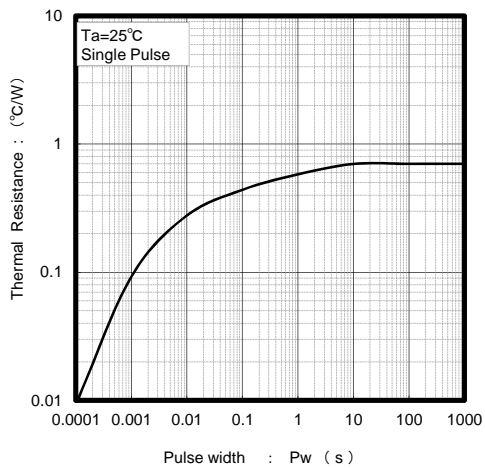


Fig.6 Power Dissipation

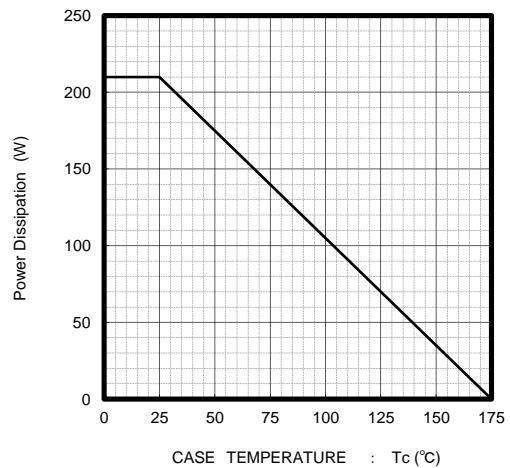


Fig.7 Derating Curve I_p - T_c

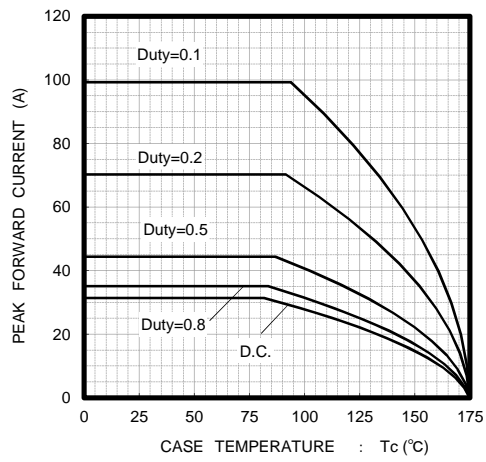
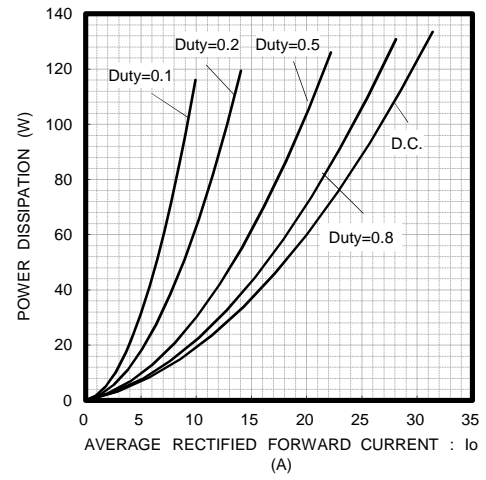


Fig.8 I_o - P_f Characteristics



Notes

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