

SiC Schottky Barrier Diode

SCS120AE2

●Applications

Switching power supply

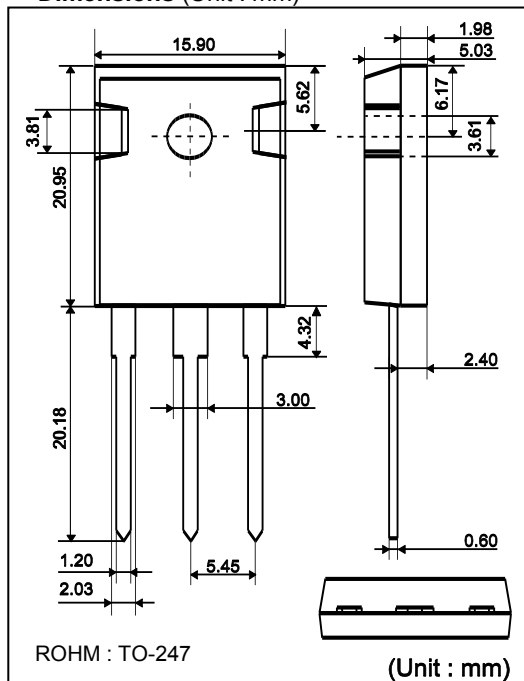
●Features

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

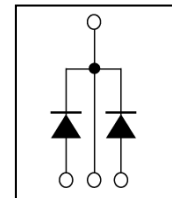
●Construction

Silicon carbide epitaxial planer type

●Dimensions (Unit : mm)



●Structure



●Absolute maximum ratings (Tj=25°C)

Parameter	Symbol	Limits	Unit
Reverse voltage (repetitive)	V_{RM}	600	V
Reverse voltage (DC)	V_R	600	V
Continuous forward current* ⁶	I_F	10 / 20* ¹	A
Surge no repetitive forward current* ⁶	I_{FSM}	40 / 80* ²	A
		160 / 320* ³	A
Repetitive peak forward current* ⁶	I_{FRM}	42 / 82* ⁴	A
Total power dissipation* ⁶	P_D	83 / 160* ⁵	W
Junction temperature	T_j	175	°C
Storage temperature	T_{stg}	-55 to +175	°C
Junction to case* ⁶	$R_{th(j-c)}$	1.8 / 0.93	°C / W

(*1) $T_c=134^{\circ}\text{C}$ / $T_c=133^{\circ}\text{C}$ (*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) $T_c=100^{\circ}\text{C}$, $T_j=150^{\circ}\text{C}$, 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}	600	-	-	V	$I_R=0.2\text{mA}$
Forward voltage	V_F	-	1.5	1.7	V	$I_F=10\text{A}$, $T_j=25^{\circ}\text{C}$
		-	1.82	-	V	$I_F=10\text{A}$, $T_j=175^{\circ}\text{C}$
Reverse current	I_R	-	2	200	μA	$V_R=600\text{V}$, $T_j=25^{\circ}\text{C}$
		-	40	-	μA	$V_R=600\text{V}$, $T_j=175^{\circ}\text{C}$
Total capacitance	C	-	430	-	pF	$V_R=1\text{V}$, $f=1\text{MHz}$
		-	47	-	pF	$V_R=600\text{V}$, $f=1\text{MHz}$
Total capacitive charge	Q_c	-	16	-	nC	$V_R=400\text{V}$, $di/dt=350\text{A}/\mu\text{s}$
Switching time	t_c	-	15	-	ns	$V_R=400\text{V}$, $di/dt=350\text{A}/\mu\text{s}$

Fig.1 V_F - I_F Characteristics (Per Leg)

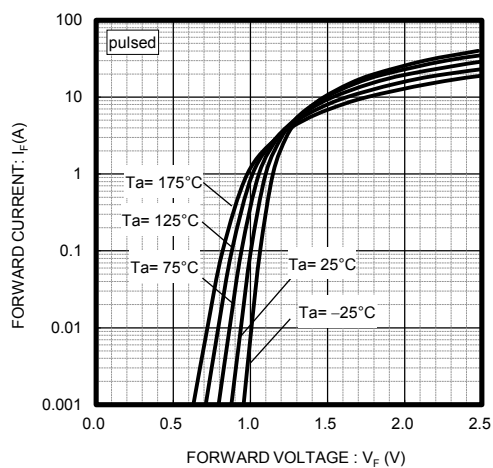


Fig.2 V_F - I_F Characteristics (Per Leg)

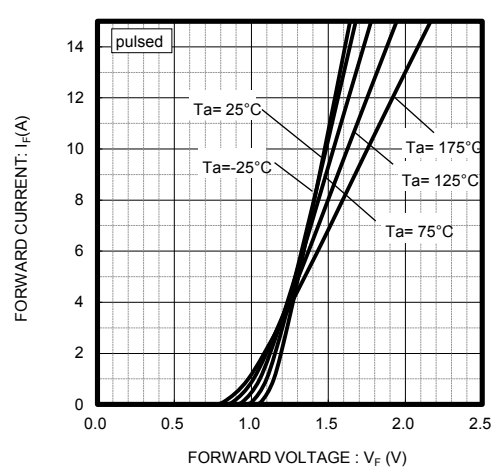


Fig.3 V_R - I_R Characteristics (Per Leg)

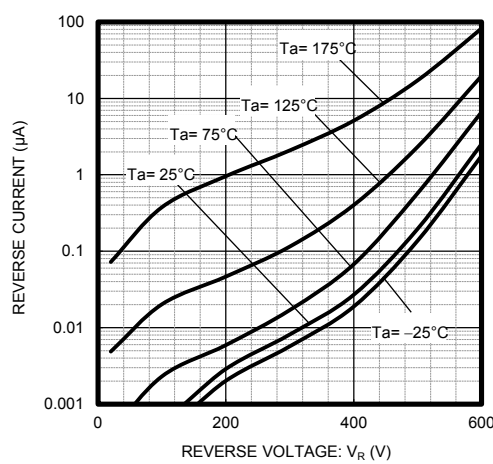


Fig.4 V_R - C_t Characteristics (Per Leg)

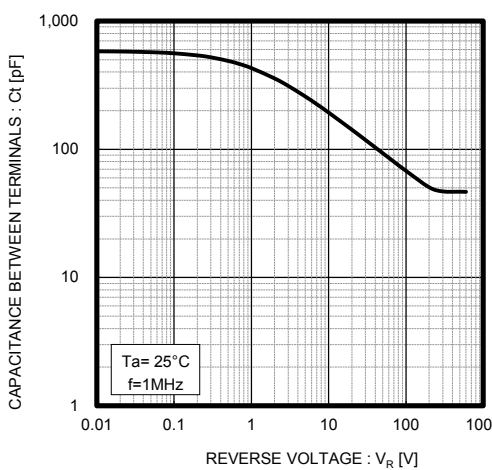


Fig.5 Thermal Resistance vs. Pulse Width

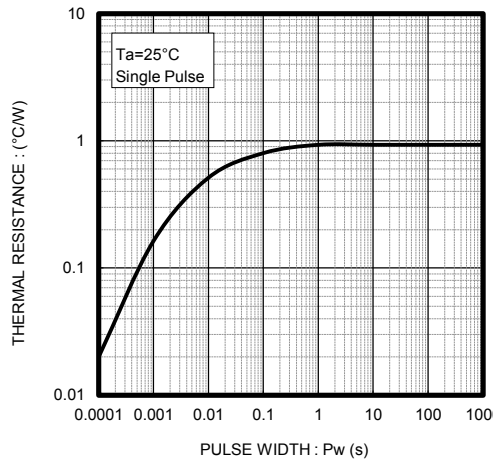
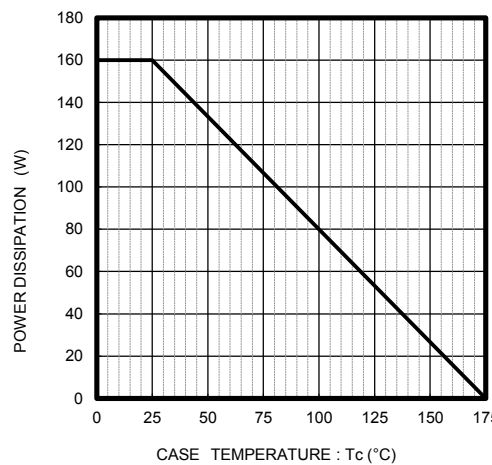
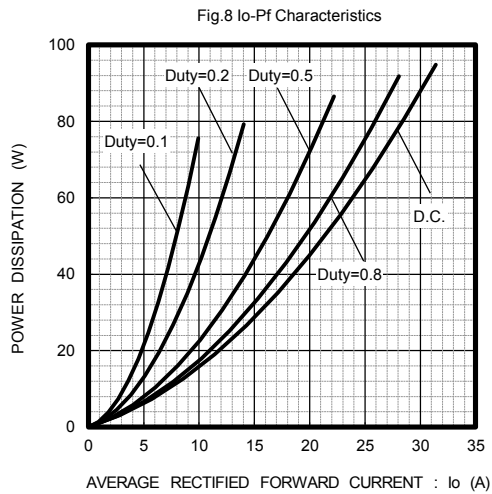
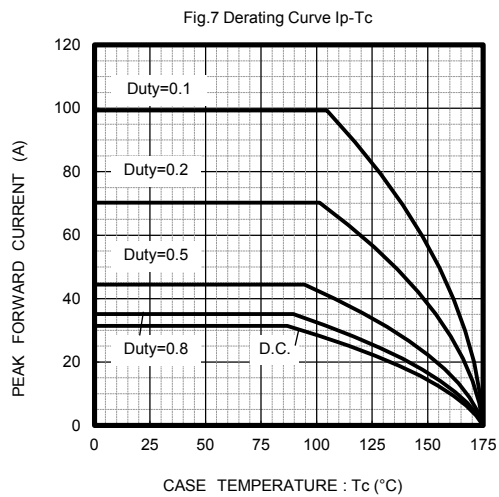


Fig.6 Power Dissipation





Notes

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