

# SiC Schottky Barrier Diode

## SCS120AE2

### ● Applications

Switching power supply

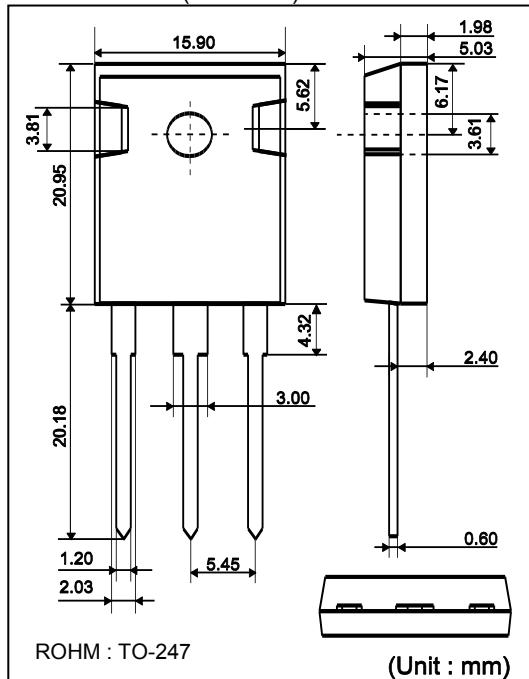
### ● Features

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

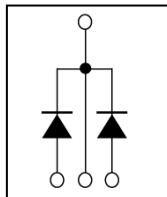
### ● Construction

Silicon carbide epitaxial planer type

### ● Dimensions (Unit : mm)



### ● Structure



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

Parameter	Symbol	Limits	Unit
Reverse voltage (repetitive)	V <sub>RM</sub>	600	V
Reverse voltage (DC)	V <sub>R</sub>	600	V
Continuous forward current <sup>*6</sup>	I <sub>F</sub>	10 / 20 <sup>*1</sup>	A
Surge no repetitive forward current <sup>*6</sup>	I <sub>FSM</sub>	40 / 80 <sup>*2</sup> 160 / 320 <sup>*3</sup>	A
Repetitive peak forward current <sup>*6</sup>	I <sub>FRM</sub>	42 / 82 <sup>*4</sup>	A
Total power dissipation <sup>*6</sup>	P <sub>D</sub>	83 / 160 <sup>*5</sup>	W
Junction temperature	T <sub>j</sub>	175	°C
Storage temperature	T <sub>stg</sub>	-55 to +175	°C
Junction to case <sup>*6</sup>	R <sub>th(j-c)</sub>	1.8 / 0.93	°C / W

(\*1)Tc=134°C / Tc=133°C (\*2)PW=8.3ms sinusoidal,Tj=25°C

(\*3)PW=10μs square,Tj=25°C (\*4)Tc=100°C,Tj=150°C,Duty cycle=10% (\*5)Tc=25°C (\*6)Per Leg / Per Device

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
DC blocking voltage	V <sub>DC</sub>	600	-	-	V	I <sub>R</sub> =0.2mA
Forward voltage	V <sub>F</sub>	-	1.5	1.7	V	I <sub>F</sub> =10A,Tj=25°C
		-	1.82	-	V	I <sub>F</sub> =10A,Tj=175°C
Reverse current	I <sub>R</sub>	-	2	200	μA	V <sub>R</sub> =600V,Tj=25°C
		-	40	-	μA	V <sub>R</sub> =600V,Tj=175°C
Total capacitance	C	-	430	-	pF	V <sub>R</sub> =1V,f=1MHz
		-	47	-	pF	V <sub>R</sub> =600V,f=1MHz
Total capacitive charge	Q <sub>c</sub>	-	16	-	nC	V <sub>R</sub> =400V,di/dt=350A/μs
Switching time	t <sub>c</sub>	-	15	-	ns	V <sub>R</sub> =400V,di/dt=350A/μs

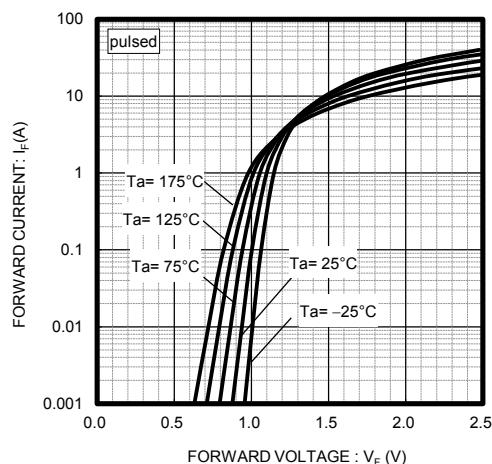
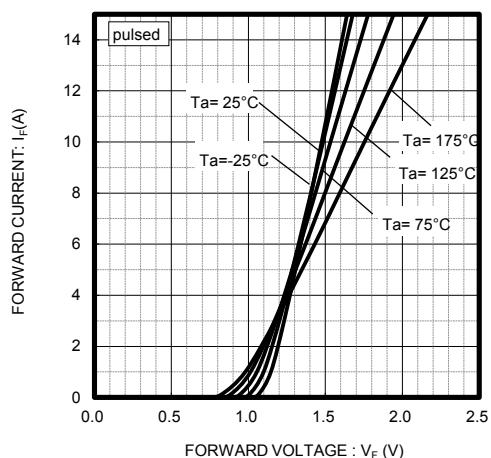
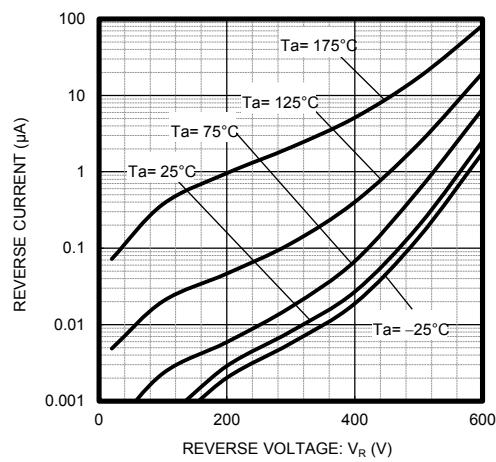
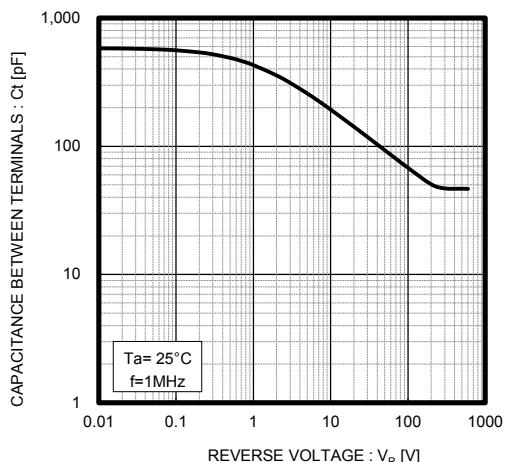
Fig.1  $V_F$ - $I_F$  Characteristics (Per Leg)Fig.2  $V_F$ - $I_F$  Characteristics (Per Leg)Fig.3  $V_R$ - $I_R$  Characteristics (Per Leg)Fig.4  $V_R$ - $C_t$  Characteristics (Per Leg)

Fig.5 Thermal Resistance vs. Pulse Width

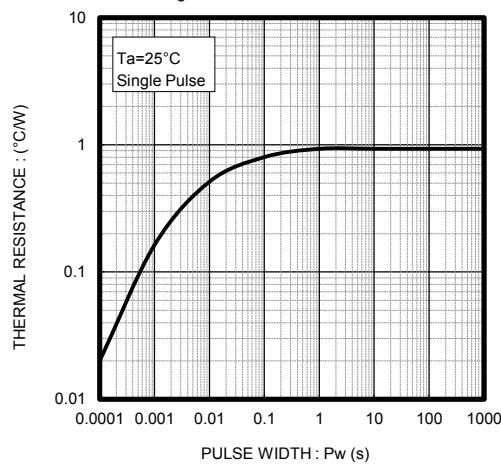
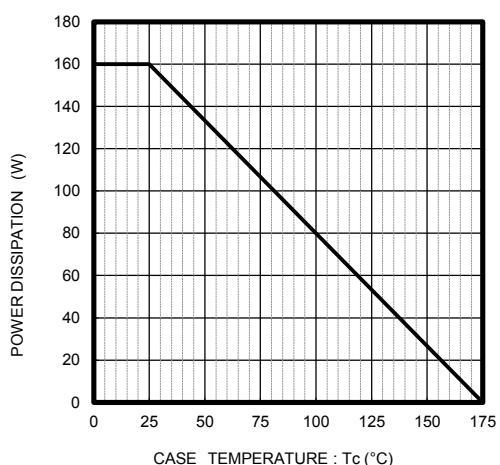
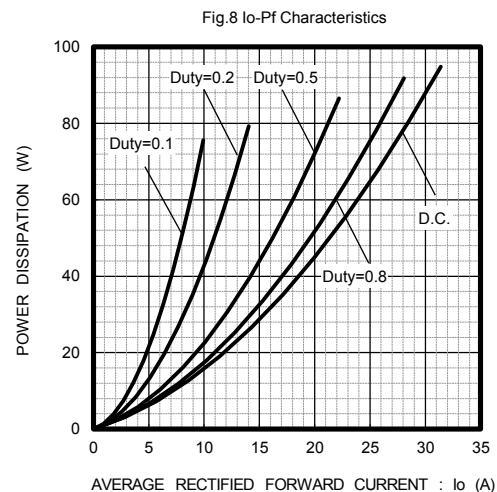
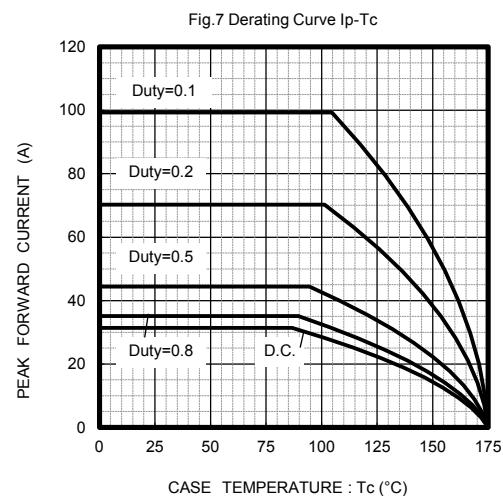


Fig.6 Power Dissipation





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