

SiC Schottky Barrier Diode

VOLTAGE RANGE: 1200V

Features

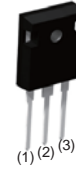
- Shorter recovery time
- Reduced temperature dependence
- High-speed switching possible

MECHANICAL DATA

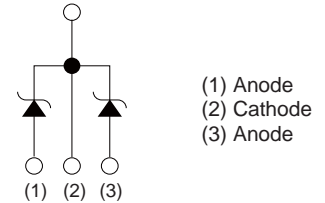
- Case style: TO-247 molded plastic
- Mounting position: any

●AEC-Q101 Qualified

TO-247



●Inner circuit



MAXIMUM RATINGS AND CHARACTERISTICS

@ 25°C Ambient Temperature (unless otherwise noted)

Parameter	Symbol	Value	Unit
Reverse voltage (repetitive peak)	V_{RM}	1200	V
Reverse voltage (DC)	V_R	1200	V
Continuous forward current ⁷	I_F	5/10 ^{*1}	A
Surge no repetitive forward current ⁷	I_{FSM}	23/46 ^{*2}	A
		87/170 ^{*3}	A
		18/36 ^{*4}	A
Repetitive peak forward current ⁷	I_{FRM}	24/49 ^{*5}	A
Total power dissipation ⁷	P_D	80/170 ^{*6}	W
Junction temperature	T_j	175	°C
Range of storage temperature	T_{stg}	-55 to +175	°C

*1 $T_c=148^\circ\text{C}/T_c=150^\circ\text{C}$ *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}	$I_R=0.1\text{mA}$	1200	-	-	V
Forward voltage	V_F	$I_F=5\text{A}, T_j=25^\circ\text{C}$	-	1.4	1.6	V
		$I_F=5\text{A}, T_j=150^\circ\text{C}$	-	1.8	-	V
		$I_F=5\text{A}, T_j=175^\circ\text{C}$	-	1.9	-	V
Reverse current	I_R	$V_R=1200\text{V}, T_j=25^\circ\text{C}$	-	5	100	μA
		$V_R=1200\text{V}, T_j=150^\circ\text{C}$	-	40	-	μA
		$V_R=1200\text{V}, T_j=175^\circ\text{C}$	-	65	-	μA
Total capacitance	C	$V_R=1\text{V}, f=1\text{MHz}$	-	270	-	pF
		$V_R=800\text{V}, f=1\text{MHz}$	-	21	-	pF
Total capacitive charge	Q_C	$V_R=800\text{V}, di/dt=500\text{A}/\mu\text{s}$	-	17	-	nC
Switching time	t_c	$V_R=800\text{V}, di/dt=500\text{A}/\mu\text{s}$	-	15	-	ns

●Thermal characteristics

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Thermal resistance	$R_{th(j-c)}$	Per Leg	-	1.5	1.8	°C/W
		Both Legs	-	0.75	0.86	°C/W

RATINGS AND CHARACTERISTIC CURVES

Electrical characteristic curves

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

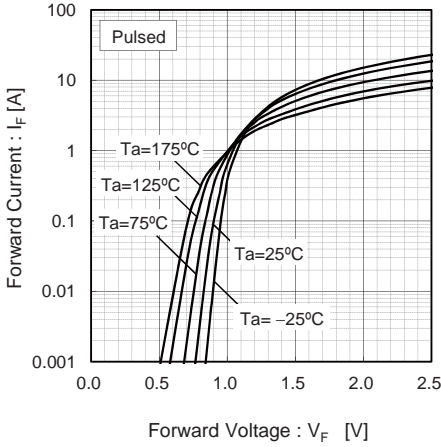


Fig.2 $V_F - I_F$ Characteristics (Per leg)

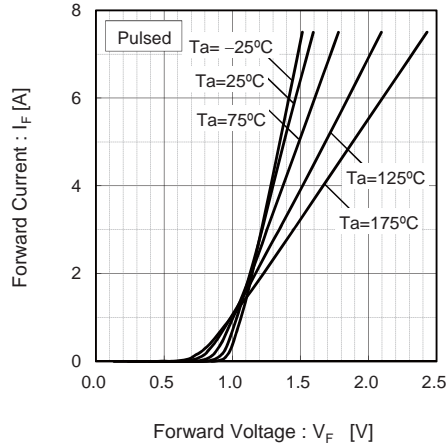


Fig.3 $V_R - I_R$ Characteristics (Per leg)

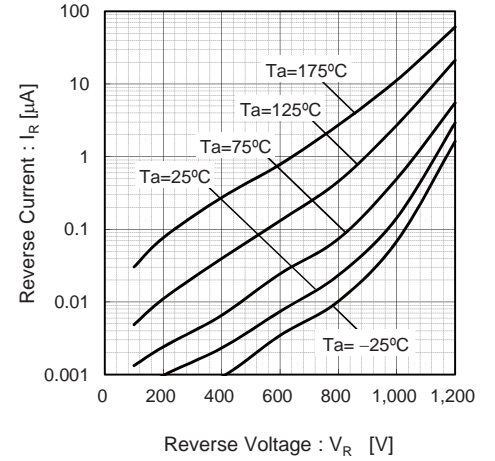


Fig.4 $V_R - C_t$ Characteristics (Per leg)

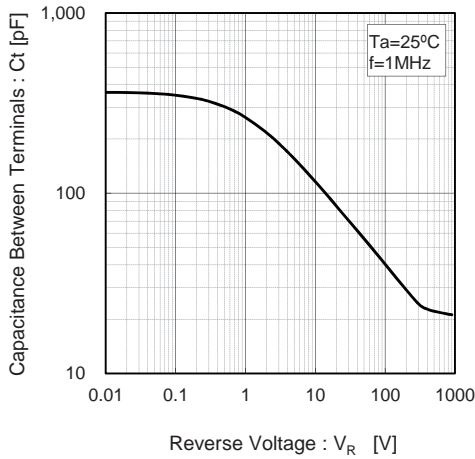


Fig.5 Thermal Resistance vs. Pulse Width (Per leg)

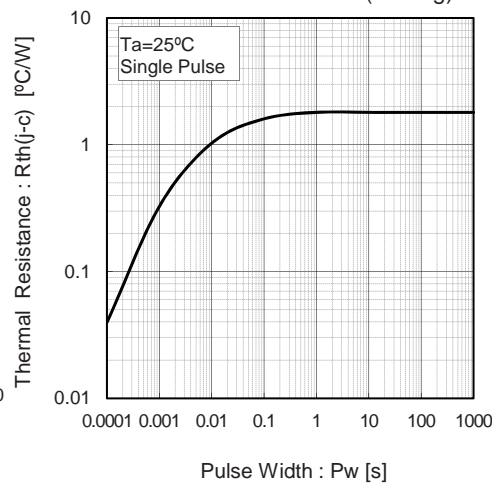


Fig.6 Power Dissipation (Per leg)

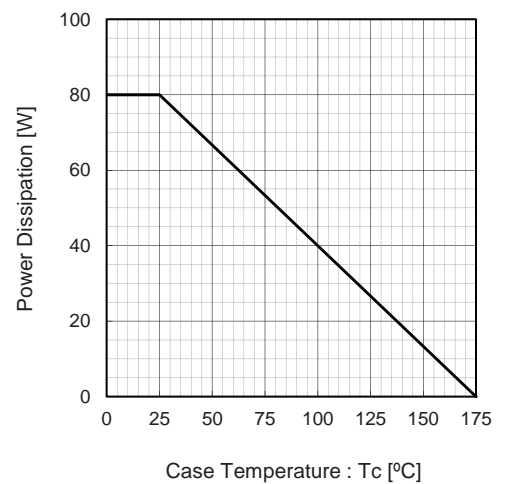


Fig.7 $I_p - T_c$ Derating Curve (Per leg)

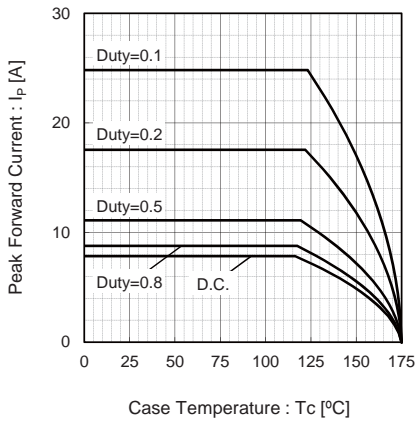


Fig.8 $I_o - P_f$ Characteristics (Per leg)

