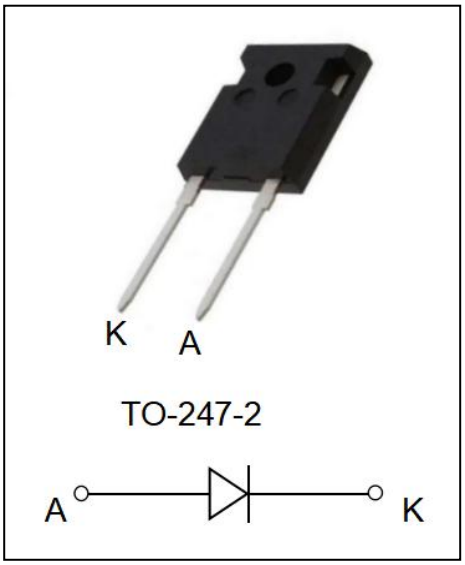
HIRN30E120-P

Silicon Carbide Schottky Diode

● Features：

■ New Thin Wafer Technology
■ Low Forward Voltage Drop (V_F)
■ Zero Reverse Recovery Current
■ Zero Forward Recovery Voltage
■ Positive Temperature Coefficient on V_F
■ Temperature-independent Switching

V_{RRM}	1200	V
I_F (T_C=150˚C)	30	A
$Q_{C(TYP)}$	159	nC



● Benefits：

■ Replace Bipolar with Unipolar Device
■ Reduction of Heat Sink Size
■ Parallel Devices Without Thermal Runaway
■ Essentially No Switching Losses

● Applications：

■ Switch Mode Power Supplies
■ Uninterruptible Power Supplies
■ Server/Telecom Power Supplies
■ Industrial Power Supplies

Maximum Ratings

Symbol	Parameter	Value	Unit	Test Conditions	Note
V_{RRM}	Repetitive Peak Reverse Voltage	1200	V	T_C = 25˚C	
I_F	Forward Current	73.5 42.4 30	A	T_C =25˚C T_C =125˚C T_C =150˚C	
I_{FSM}	Non-Repetitive Forward Surge Current	210	A	T_C = 25˚C , t_p = 8.3ms, Half Sine Wave	
P_{tot}	Power Dissipation	268	W	T_C = 25˚C	Fig.4
T_J, T_{STG}	Operating Junction and Storage Temperature	-55 to 175	˚C		
T_{sold}	Soldering Temperature	260	˚C		

Electrical Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions	Note
V_{RRM}	Repetitive Peak Reverse Voltage	1200	/	/	V	I_R=500μA, T_C=25˚C	
V_F	Forward Voltage	/	1.45 2.1	1.75	V	I_F = 30A, T_C = 25˚C I_F = 30A, T_C = 175˚C	Fig. 1
I_R	Reverse Current	/	3.0 30.0	50	μA	V_R = 1200V, T_C = 25˚C V_R = 1200V, T_C = 175˚C	Fig.2
C	Total Capacitance	/	3360 115 83	/	pF	V_R = 0V, T_C = 25˚C , f = 1MHz V_R = 400V, T_C = 25˚C, f = 1MHz V_R = 800V, T_C = 25˚C, f = 1MHz	Fig.3
Q_C	Total Capacitive Charge	/	159	/	nC	V_R = 1000V , T_C = 25˚C	

Thermal Characteristics

Symbol	Parameter	Typ.	Unit	Note
$R_{\theta JC}$	Thermal Resistance from Junction to Case	0.56	˚C/W	

Typical Performance Characteristics

Figure 1. Forward Current Characteristics

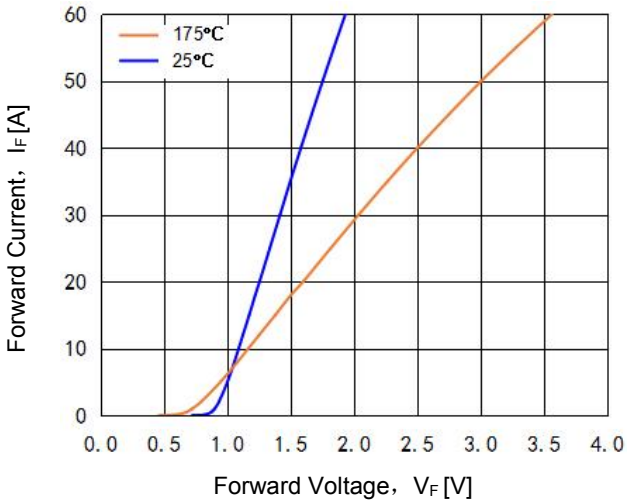


Figure 2. Reverse Leakage Current

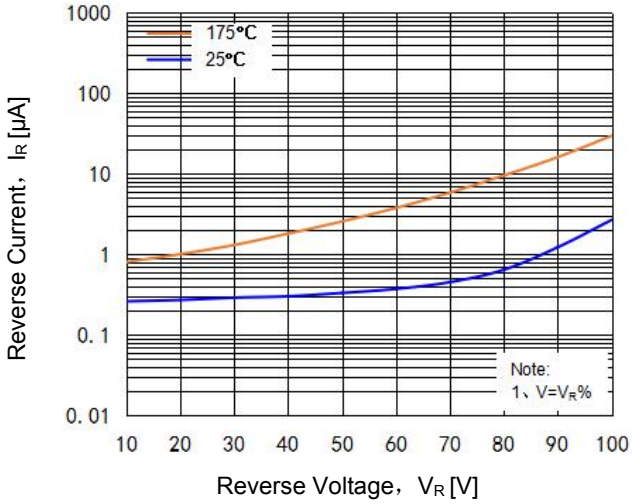


Figure 3. Junction Capacitance

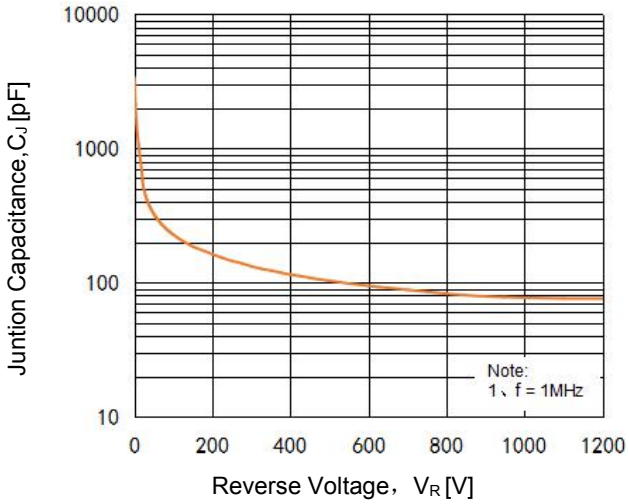
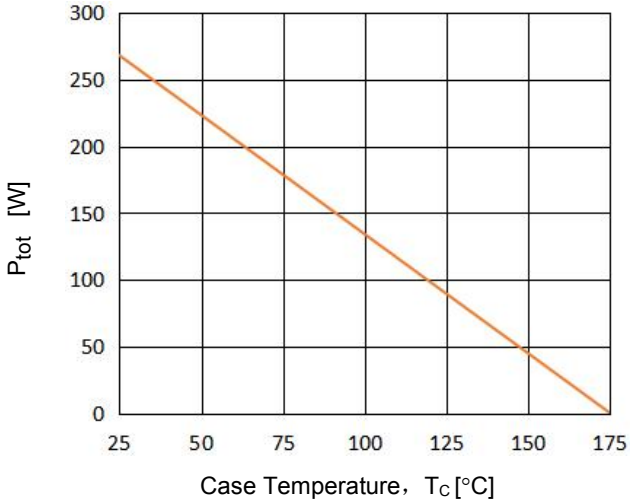


Figure 4. Power Derating Curve



TO-247-2 Package Dimensions

UNIT：mm

SYMBOL	min	nom	max	SYMBOL	min	nom	max
A	4.70	5.00	5.30	L	19.00	20.00	21.00
A1	2.20	2.40	2.60	L1	3.90	4.30	4.70
A2	1.80	2.00	2.20	ΦP	3.40	3.60	3.80
b	1.10	1.20	1.40	ΦP1	3.30	3.50	3.70
b1	1.90	2.10	2.30	ΦP2	6.88	7.18	7.48
c	0.50	0.60	0.70	ΦP3	2.20	2.50	2.80
D	20.50	21.00	21.50	Q	5.30	5.80	6.30
D1	15.50	16.50	17.50	S	5.65	6.15	6.65
D2	0.90	1.20	1.50	T	9.00	10.00	11.00
E	15.30	15.80	16.30	U	5.20	6.20	7.20
E1	12.75	13.25	13.70	θ1	5°	7°	9°
E2	4.70	5.00	5.30	θ2	1°	3°	5°
E3	2.20	2.50	2.80	θ3	13°	15°	17°
e	--	10.88	--