



HIRF20E65-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

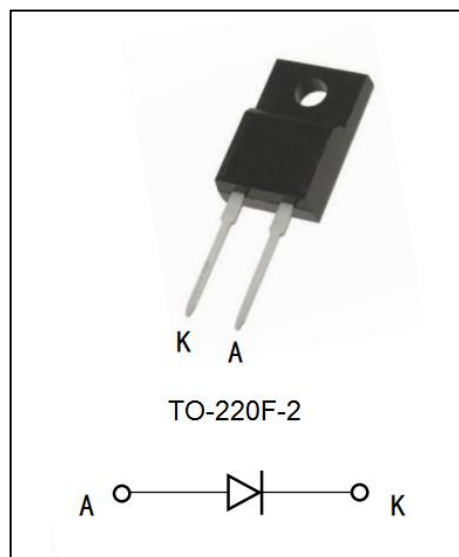
●Benefits:

- 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

V_{RRM}	650	V
I_F ($T_C=125^\circ\text{C}$)	20	A
$Q_C(\text{TYP})$	59	nC



Maximum Ratings

Symbol	Parameter	Value	Unit	Test Conditions	Note
V_{RRM}	Repetitive Peak Reverse Voltage	650	V	$T_C = 25^\circ\text{C}$	
I_F	Forward Current	34.6 20.0	A	$T_C = 25^\circ\text{C}$ $T_C = 125^\circ\text{C}$	
I_{FSM}	Non-Repetitive Forward Surge Current	140	A	$T_C = 25^\circ\text{C}$, $t_p = 8.3\text{ms}$, Half Sine Wave	
P_{tot}	Power Dissipation	60	W	$T_C = 25^\circ\text{C}$	Fig.4
T_J, T_{STG}	Operating Junction and Storage Temperature	-55 to 175	$^\circ\text{C}$		
T_{sold}	Soldering Temperature	260	$^\circ\text{C}$		



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Electrical Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions	Note
V_{RRM}	Repetitive Peak Reverse Voltage	650	/	/	V	$I_R=500\mu A$, $T_C=25^\circ C$	
V_F	Forward Voltage	/	1.3 1.5	1.65	V	$I_F=20A$, $T_C=25^\circ C$ $I_F=20A$, $T_C=175^\circ C$	Fig. 1
I_R	Reverse Current	/	2.0 20	50	μA	$V_R=650V$, $T_C=25^\circ C$ $V_R=650V$, $T_C=175^\circ C$	Fig.2
C	Total Capacitance	/	1310 118 83	/	pF	$V_R=0V$, $T_C=25^\circ C$, $f=1MHz$ $V_R=200V$, $T_C=25^\circ C$, $f=1MHz$ $V_R=400V$, $T_C=25^\circ C$, $f=1MHz$	Fig.3
Q_C	Total Capacitive Charge	/	59	/	nC	$V_R=400V$, $T_C=25^\circ C$	

Thermal Characteristics

Symbol	Parameter	Typ.	Unit	Note
$R_{\theta JC}$	Thermal Resistance from Junction to Case	2.5	$^\circ C/W$	

Typical Performance Characteristics

Figure 1. Forward Current Characteristics

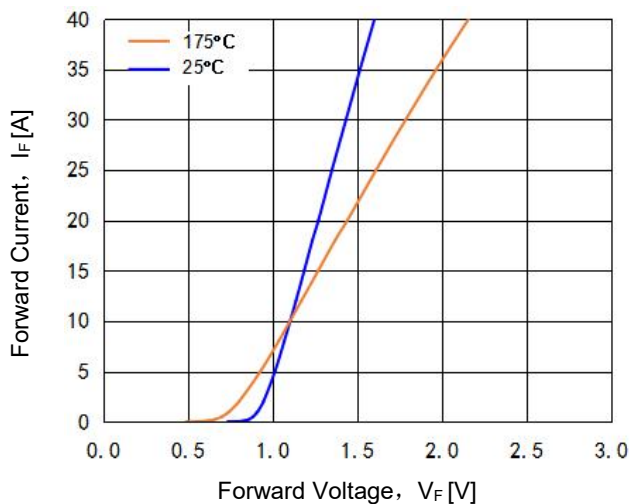


Figure 2. Reverse Leakage Current

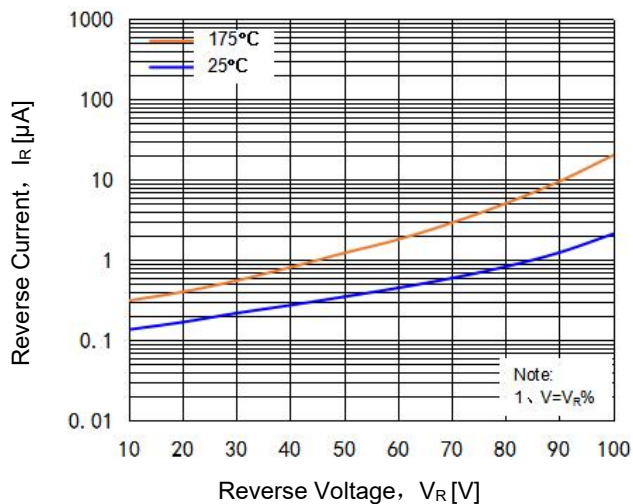


Figure 3. Junction Capacitance

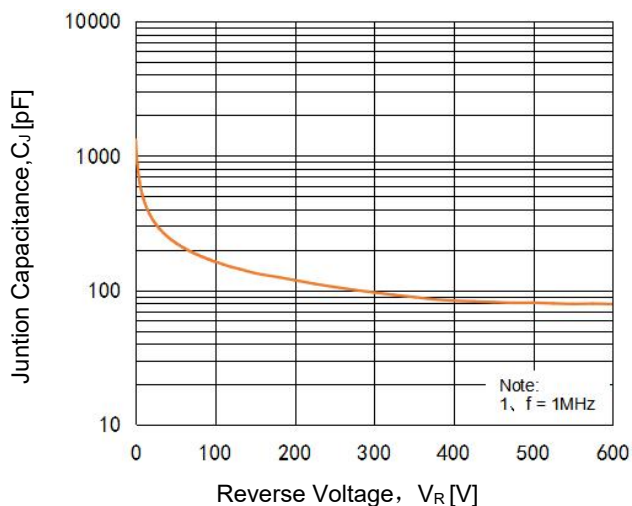
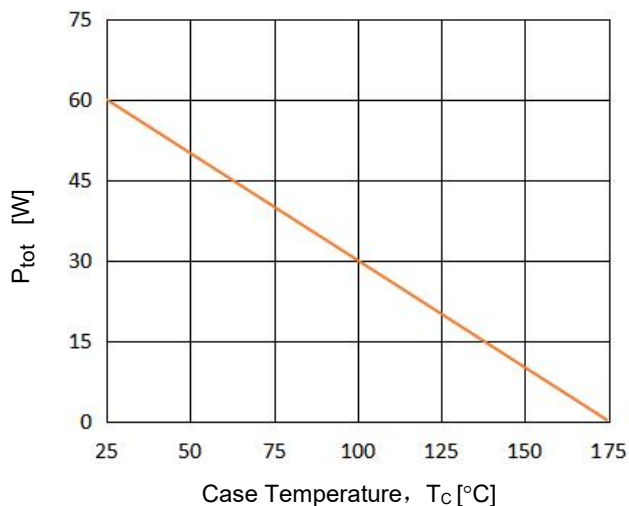


Figure 4. Power Derating Curve



TO-220F-2 Package Dimensions

UNIT: mm

SYMBOL	min	nom	max	SYMBOL	min	nom	max
A	9.80		10.60	D		5.08	
A1		7.00		D1	1.15		1.47
A2	2.90		3.40	D2	0.60		0.90
A3	9.10		9.90	D3	0.20		0.50
B1	15.40		16.40	E	2.24		2.84
B2	4.35		4.95	E1		0.70	
B3	6.00		7.40	E2		1.0×45°	
C	3.00		3.70	E3	0.35		0.65
C1	12.00		14.00	E4	2.30		3.30
C2	2.60		3.60	α (度)		30°	

