650V Silicon Carbide Schottky Diode

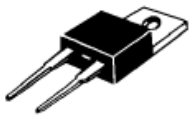
DESCRIPTION：

- Zero reverse recovery current
- Zero forward recovery voltage
- Temperature independent switching behavior
- Excellent Surge Current Capability
- Positive Temperature Coefficient on V_F
- High Frequency Operation
- RoHS Compliant

V_{RRM}	650V
I_F	8A (Tc=160℃)
Q_C	25nC

TYPICAL APPLICATIONS：

- Switch Mode Power Supplies, Power Factor Correction
- Uninterruptible Power Supplies
- Motor drives



TO-220AC

MAXIMUM RATINGS (at T_J = 25 °C, unless otherwise specified)

Characteristic	Condition	Symbol	Value	Unit
Repetitive Peak Reverse Voltage		V_{RRM}	650	V
Continuous Forward Current	Tc=25℃ Tc=160℃	I_F	30 8	A
Non-Repetitive Forward Surge Current	Tc=25℃ , t_P=10ms, Half sine pulse	I_{FSM}	80	A
i^2t value	Tc=25℃ , t_P=10ms	$\int i^2dt$	32	A^2S
Power dissipation	Tc=25℃ Tc=110℃	P_{tot}	103 44	W
Operation Junction temperature		Tj	-55~+175	℃
Storage temperature		T_{STG}	-55~+175	℃

THERMAL CHARACTERISTICS

Characteristic	Condition	Symbol	Typical	Unit
Thermal resistance, junction to case		$R_{th(j-C)}$	1.45	℃/W

ELECTRICAL CHARATERISTICS (at T_J = 25 °C, unless otherwise specified)

Characteristic	Symbol	Min.	Typ.	Max.	Unit
DC Blocking Voltage	V_{DC}	650			V
Forward Voltage IF = 8A, T_J =25℃ IF = 8A, T_J =135℃ IF = 8A, T_J =175℃	V_F		 1.28 1.40 1.44	 1.41 1.65 1.79	V
Reverse Current VR = 650V, T_J =25℃ VR = 650V, T_J =175℃	I_R		 1 10	 20 200	uA
Total Capacitive Charge VR = 400V	Q_C		25		nC
Total capacitance VR = 1V, f =1MHz VR = 400V, f =1MHz VR = 600V, f =1MHz	C		 342 37 36		pF
Capacitance Stored Energy VR = 400 V	Ec		3.2		uJ

Typical Performance

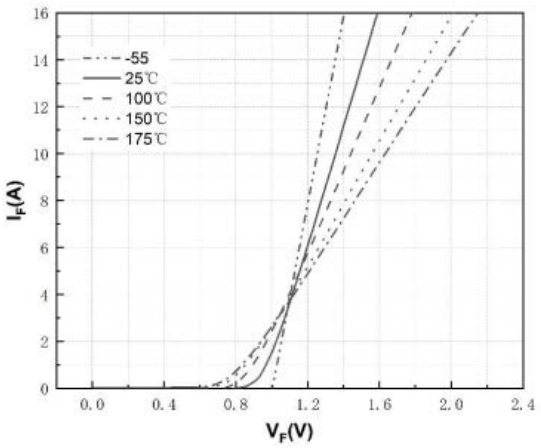


Figure 1. Forward characteristics

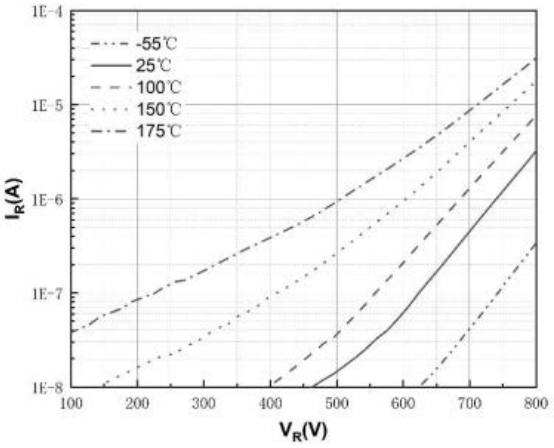


Figure 2. Reverse characteristics

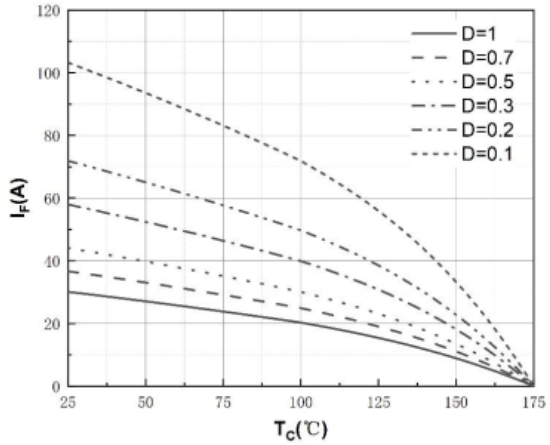


Figure 3. Diode forward current as function of temperature, D=duty cycle

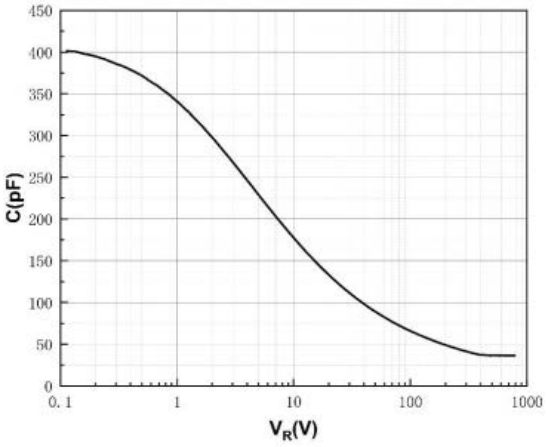


Figure 4. Typical capacitance as function of reverse voltage, C=f(VR); Tj=25°C; f=1 MHz

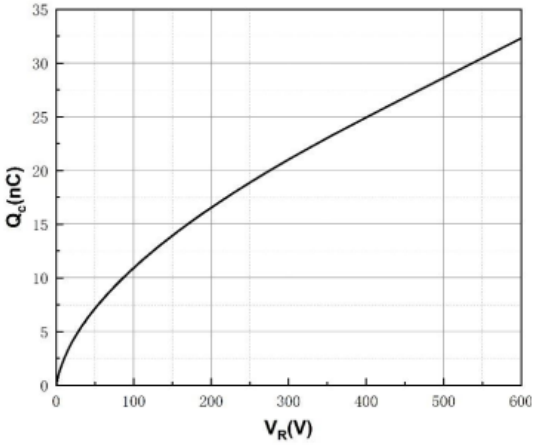


Figure 5. Typical reverse charge as function of reverse voltage

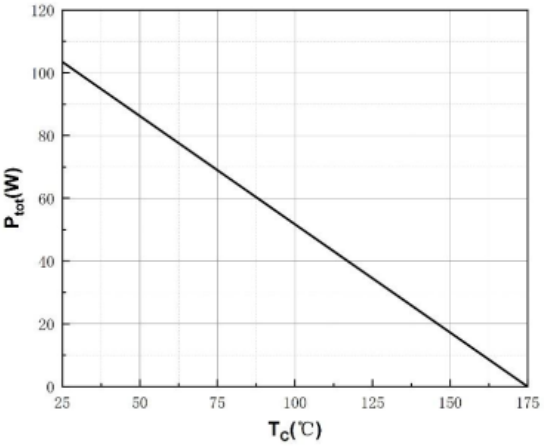


Figure 6. Power dissipation as function of case temperature

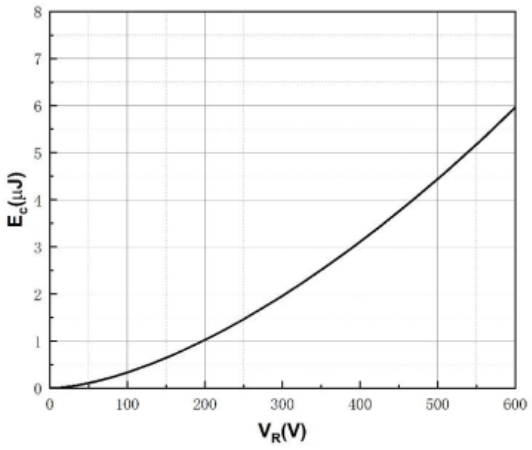


Figure 7. Capacitance Stored Energy

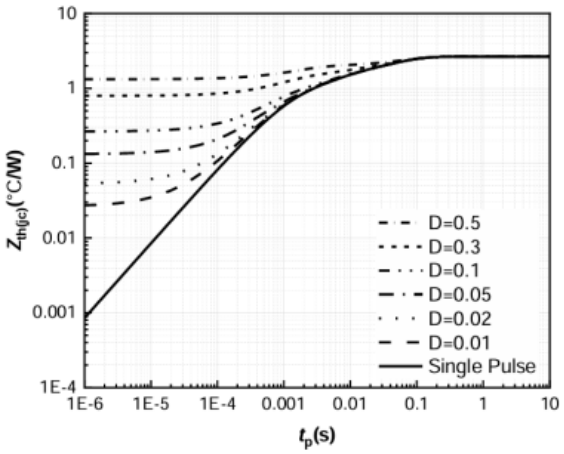
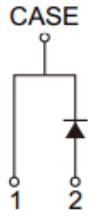
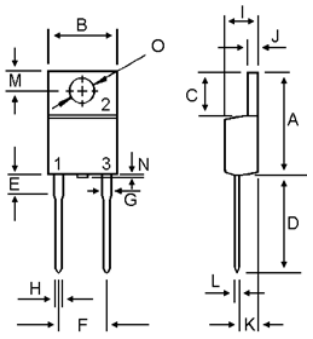


Figure 8. Max. transient thermal impedance, Zth(jc)= f(tp), parameter: D =tp/T

- Circuit diagram



- Package outlines : Dimensions in (mm)



DIM	MILLIMETERS	
	MIN	MAX
A	14.68	16.00
B	9.78	10.42
C	5.02	6.60
D	13.00	14.62
E	3.10	4.19
F	4.82	5.34
G	1.10	1.67
H	0.69	1.01
I	4.22	4.98
J	1.14	1.40
K	2.20	3.30
L	0.28	0.61
M	2.48	3.00
N	---	2.00
O	3.50	4.00

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