650V Silicon Carbide Schottky Diode

V_{RRM}	650V
I_F	6A (Tc=155℃)
Q_C	21nC

DESCRIPTION：

·Zero reverse recovery current

·Zero forward recovery voltage

·Temperature independent switching

·Excellent Surge Current Capability

·Positive Temperature Coefficient on V_F

·High Frequency Operation

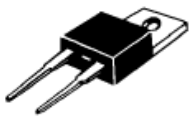
·Increased Power Density

·Essentially no Switching Losses

·Reduction of Heat Sink Requirements

·Higher Efficiency

·Reduced EMI



TO-220AC

TYPICAL APPLICATIONS：

·Switch Mode Power Supplies

·Power Factor Correction

·Uninterruptible Power Supplies

·Motor drives

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=135℃ Tc=160℃	I_F	24 11 6	A
Repetitive Forward Surge Current	Tc=25℃, t_P=10ms, Half sine pulse	I_{FRM}	42	A
Non-Repetitive Forward Surge Current	Tc=25℃, t_P=10ms, Half sine pulse Tc=150℃, t_P=10ms, Half sine pulse	I_{FSM}	57 43	A
i^2t value	Tc=25℃, t_P=10ms Tc=150℃, t_P=10ms	$\int i^2dt$	16 9	A^2S
Power dissipation	Tc=25℃ Tc=110℃	P_{tot}	84 36	W
Operation Junction temperature		Tj	-40~+175	℃
Storage temperature		T_{STG}	-40~+150	℃

THERMAL CHARACTERISTICS

Characteristic	Condition	Symbol	Typical	Unit
Thermal resistance, junction to case		$R_{th(j-C)}$	1.77	℃/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 = 6A,T_J =25℃ IF = 6A, T_J =135℃ IF = 6A, T_J =175℃	V_F		1.25 1.35 1.44	1.56 1.81 2.07	V
Reverse Current VR = 650V, T_J =25℃ VR = 650V, T_J =175℃	I_R		1 19	50 200	uA
Total Capacitive Charge VR = 400V	Q_C		21		nC
Total capacitance VR = 1V, f =1MHz VR = 300V, f =1MHz VR = 600V, f =1MHz	C		285 33 28		pF
Capacitance Stored Energy VR = 400 V	Ec		2.6		uJ

Typical Performance

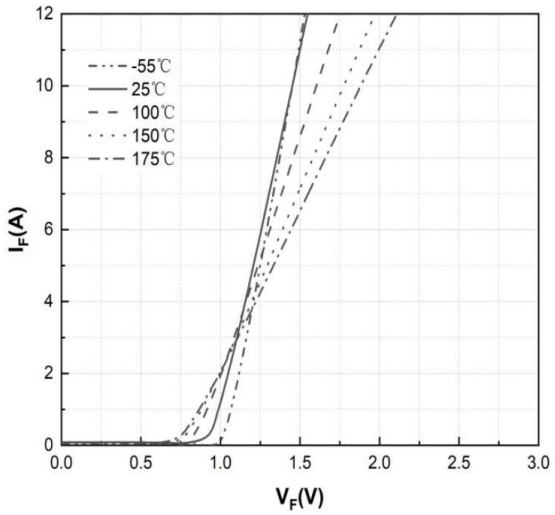


Figure 1. Typical forward characteristics

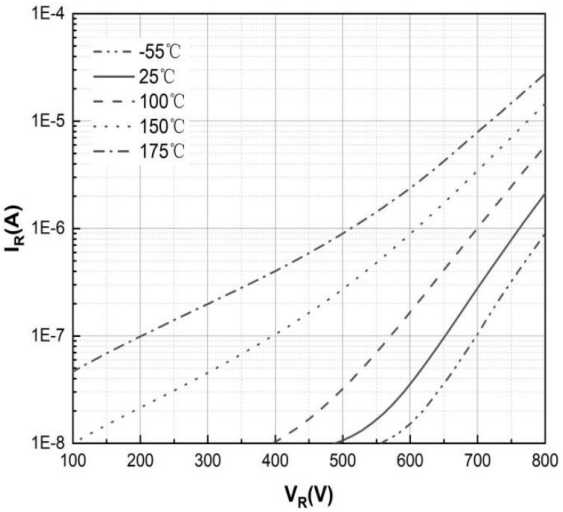


Figure 2. Typical reverse current as function of reverse voltage

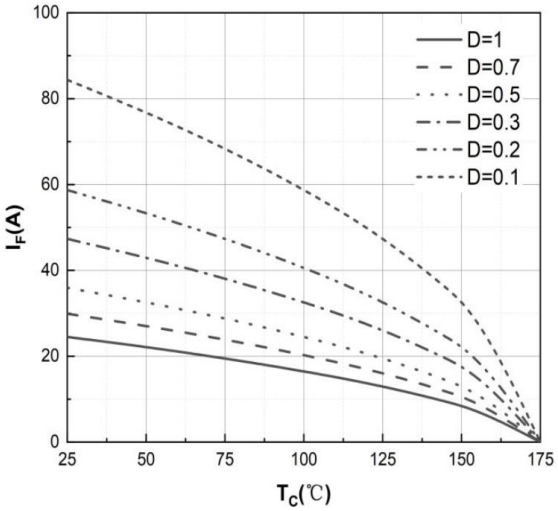


Figure 3. Diode forward current as function of temperature, D=duty cycle

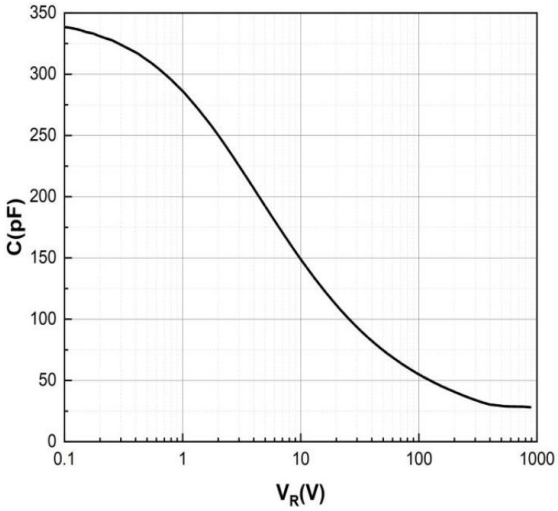


Figure 4. Typical capacitance as function of reverse voltage, C=f(V_R); Tj=25°C; f=1 MHz

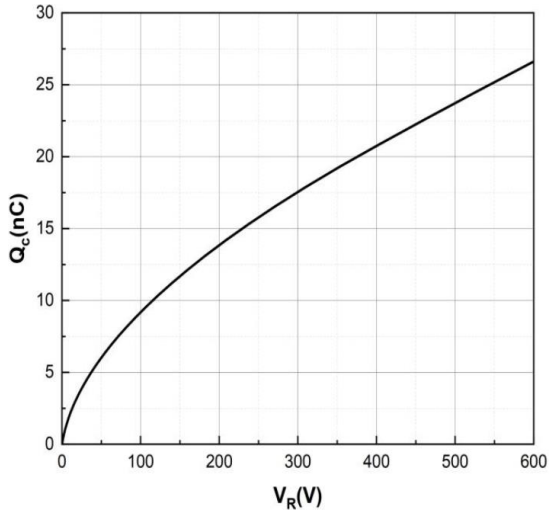


Figure 5. Typical reverse charge as function of reverse voltage

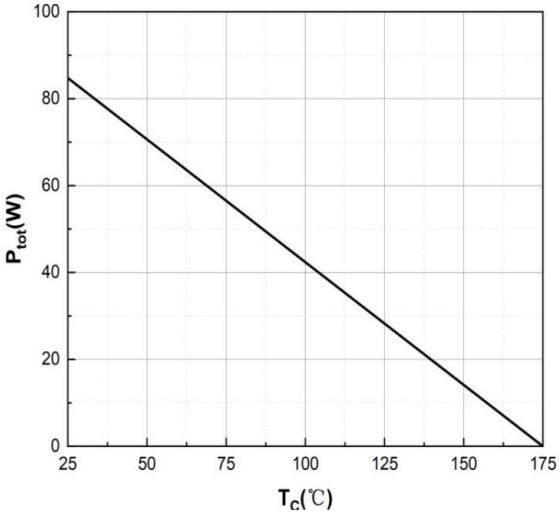


Figure 6. Power dissipation as function of case temperature

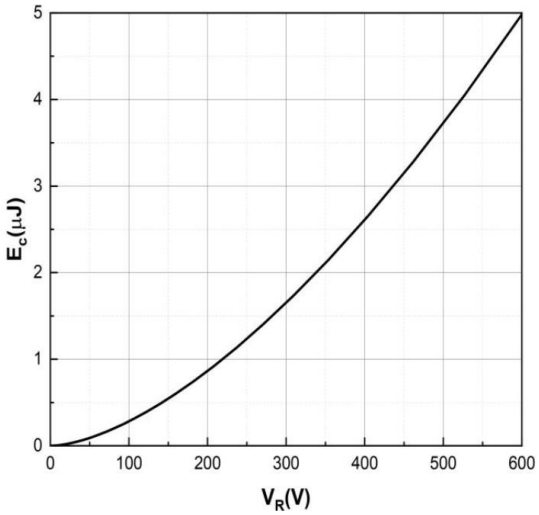


Figure 7. Capacitance Stored Energy

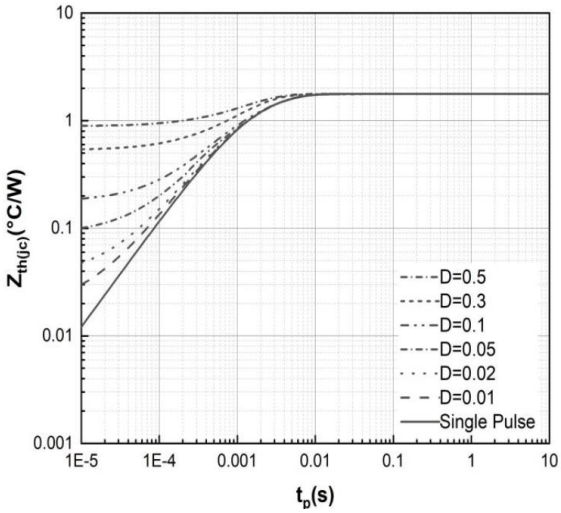
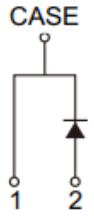
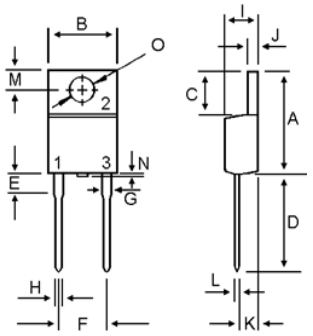


Figure 8. Max. transient thermal impedance, Zth(jc)= f(tp), parameter: D =tp/T

·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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