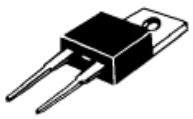
650V Silicon Carbide Schottky Diode

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

V_{RRM}	650V
I_F	4A (Tc=155℃)
Q_C	12nC



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=155℃	I_F	16 4	A
Non-Repetitive Forward Surge Current	Tc=25℃, t_P=10m s, Half sine pulse	I_{FSM}	32	A
i^2t value	Tc=25℃, t_P=10ms	$\int i^2dt$	5.1	A^2S
Power dissipation	Tc=25℃ Tc=110℃	P_{tot}	66 28	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		$R_{th(j-C)}$	2.25	℃/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 = 4A,T_J =25℃ IF = 4A, T_J =175℃	V_F		1.39 1.68		V
Reverse Current VR = 650V, T_J =25℃ VR = 650V, T_J =175℃	I_R		1 9		uA
Total Capacitive Charge VR = 400V	Q_C		12		nC
Total capacitance VR = 1V, f =1MHz VR = 300V, f =1MHz VR = 600V, f =1MHz	C		176 20.9 19.3		pF
Capacitance Stored Energy VR = 400 V	Ec		3		uJ

Typical Performance

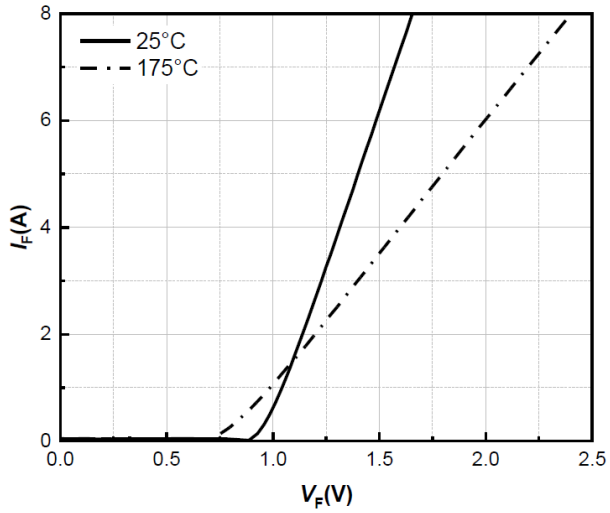


Figure 1. Typical forward characteristics

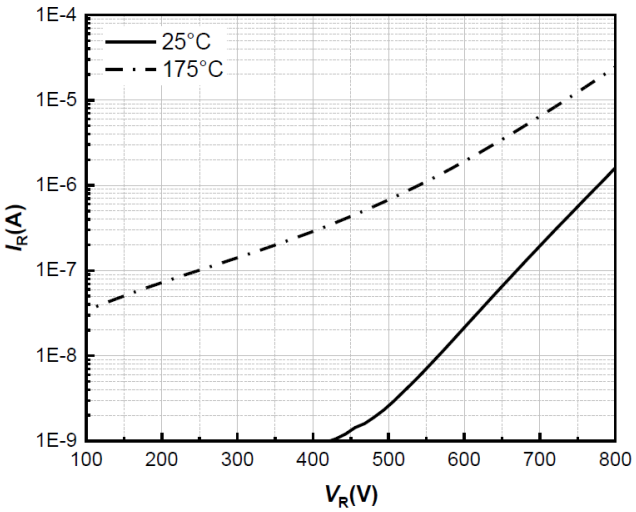


Figure 2. Typical reverse current as function of reverse voltage

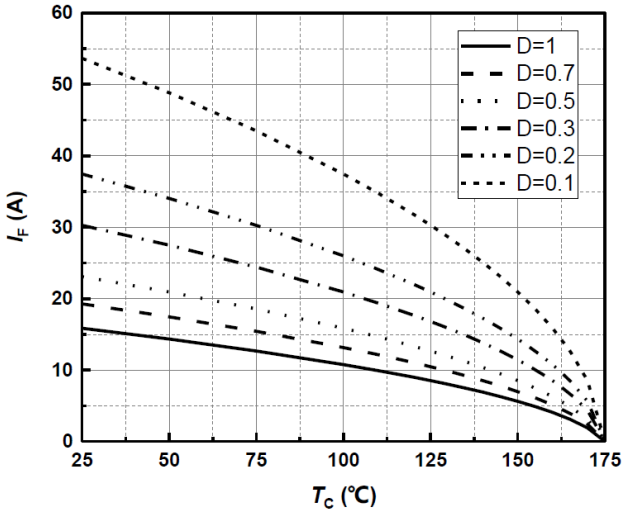


Figure 3. Diode forward current as function of temperature, D=duty cycle

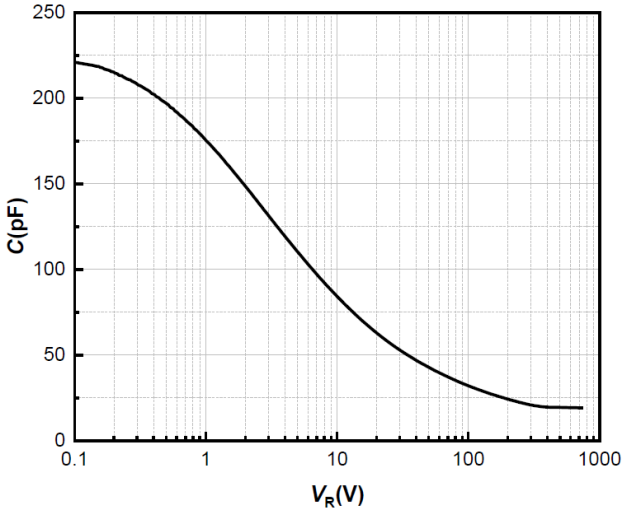


Figure 4. Typical capacitance as function of reverse voltage, C=f(V_R); Tj=25°C; f=1 MHz

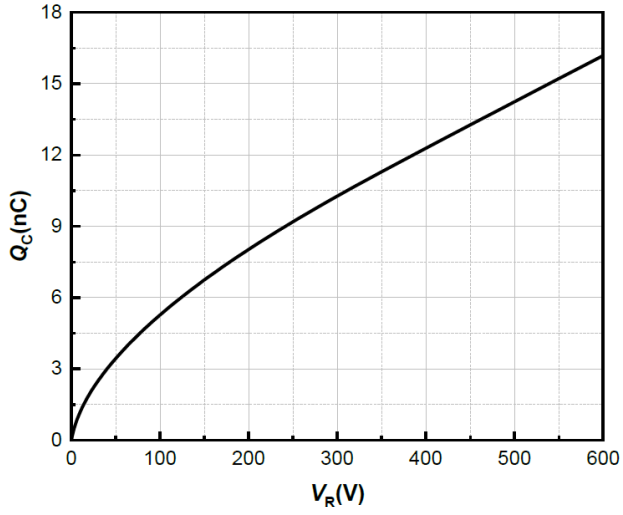


Figure 5. Typical reverse charge as function of reverse voltage

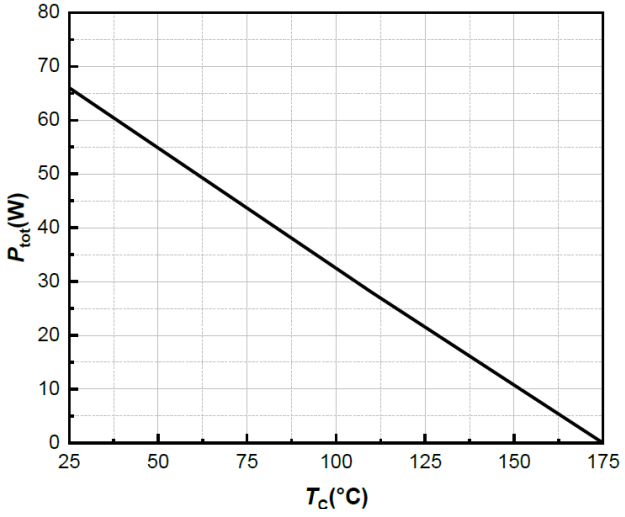


Figure 6. Power dissipation as function of case temperature

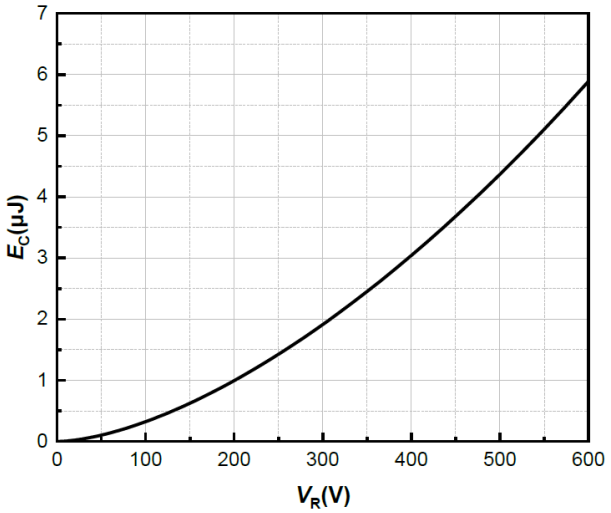


Figure 7. Capacitance Stored Energy

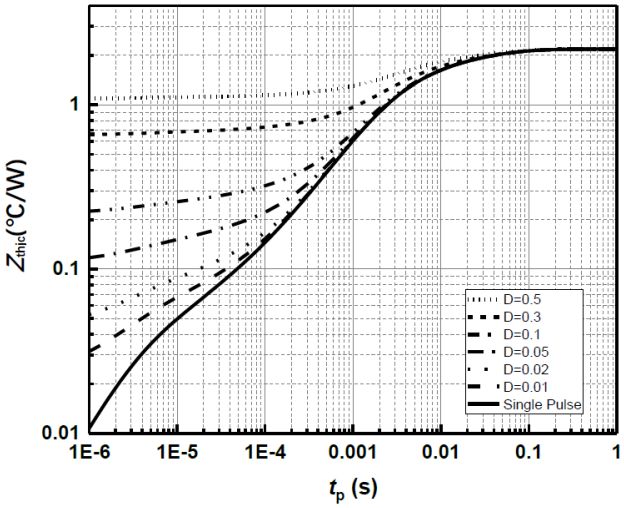
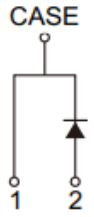
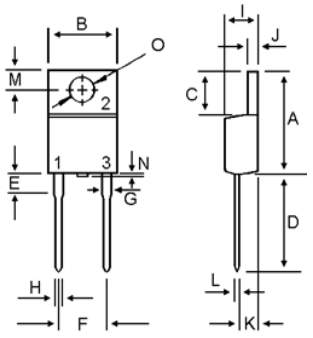


Figure 8. Max. transient thermal impedance, Zth(jc)= f(tp), parameter: D =tp/T

·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

Notice

MOSPEC reserves the rights to make changes of the content herein the document anytime without notification. MOSPEC or anyone on its behalf, assumes no responsibility or liability for any errors or inaccuracies. Please refer to MOSPEC website for the last document.

MOSPEC disclaims any and all liability arising out of the application or use of any product including damages incidentally and consequentially incurred.

Application shown on the herein document are examples of standard use and operation. Customers are responsible for comprehending suitable use in particular applications. MOSPEC makes no representation or warranty that such application will be suitable for the specified use without further testing or modification.

The information contained herein is presented only as a guide for the applications of our products. No responsibility is assumed by MOSPEC for any infringements of patents or other rights of the third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of MOSPEC or others.

These MOSPEC products are intended for usage in general electronic equipment. Please make sure to consult with MOSPEC before you use these MOSPEC products in equipment which require specialized quality and/or reliability, and in equipment which could have major impact to the welfare of human life (atomic energy control, aeronautics , traffic control, combustion control, safety devices etc.)