

## 650V Silicon Carbide Schottky Diode

### DESCRIPTION :

- High surge current capability
- No reverse recover
- High Speed Switching
- Positive temperature Coefficient
- Easy to paralleling
- RoHS Compliant

$V_{RRM}$	650V
$I_F$	20A (TC=153°C)
$Q_C$	62nC

### TYPICAL APPLICATIONS :

- Switch mode power supplies
- Solar inverters
- Data Center
- Power factor correction



TO-263 (D2-PAK)

### MAXIMUM RATINGS (at $T_C = 25^\circ\text{C}$ , unless otherwise specified)

Characteristic	Condition	Symbol	Value	Unit
Repetitive Peak Reverse Voltage		$V_{RRM}$	650	V
Continuous Forward Current	$T_C=25^\circ\text{C}$ $T_C=135^\circ\text{C}$ $T_C=153^\circ\text{C}$	$I_F$	61 28 20	A
Non-Repetitive Forward Surge Current	$T_C=25^\circ\text{C}$ , $t_P=10\text{ms}$ , Half sine pulse $T_C=110^\circ\text{C}$ , $t_P=10\text{ms}$ , Half sine pulse	$I_{FSM}$	142 135	A
Repetitive Peak Forward Surge Current	$T_C=25^\circ\text{C}$ , $t_P=10\text{ms}$ , Half sine pulse	$I_{FRM}$	130	A
$i^2t$ value	$T_C=25^\circ\text{C}$ , $t_P=10\text{ms}$ $T_C=110^\circ\text{C}$ , $t_P=10\text{ms}$	$\int i^2 dt$	100 91	$\text{A}^2\text{S}$
Power dissipation	$T_C=25^\circ\text{C}$ $T_C=110^\circ\text{C}$ $T_C=150^\circ\text{C}$	$P_{tot}$	250 108 41	W
Operation Junction temperature		$T_J$	-55~+175	$^\circ\text{C}$
Storage temperature		$T_{STG}$	-55~+175	$^\circ\text{C}$

## THERMAL CHARACTERISTICS

Characteristic	Condition	Symbol	Typical	Unit
Thermal resistance, junction - case		$R_{th(j-c)}$	0.60	$^{\circ}\text{C}/\text{W}$

ELECTRICAL CHARACTERISTICS (at  $T_c = 25^{\circ}\text{C}$ , unless otherwise specified)

Characteristic	Symbol	Min.	Typ.	Max.	Unit
DC Blocking Voltage	$V_{DC}$	650			V
Forward Voltage IF = 10A IF = 20A, $T_c = 25^{\circ}\text{C}$ IF = 20A, $T_c = 175^{\circ}\text{C}$	$V_F$		1.16 1.35 1.70	1.6	V
Reverse Current VR = 650V, $T_c = 25^{\circ}\text{C}$ VR = 650V, $T_c = 175^{\circ}\text{C}$	$I_R$		6 15	100	$\mu\text{A}$
Total Capacitive Charge VR = 400V	$Q_C$		62		nC
Total capacitance VR = 1V, f = 1MHz VR = 200V, f = 1MHz VR = 400V, f = 1MHz	C		906 122 118		pF
Capacitance Stored Energy VR = 400 V	$E_C$		10		$\mu\text{J}$

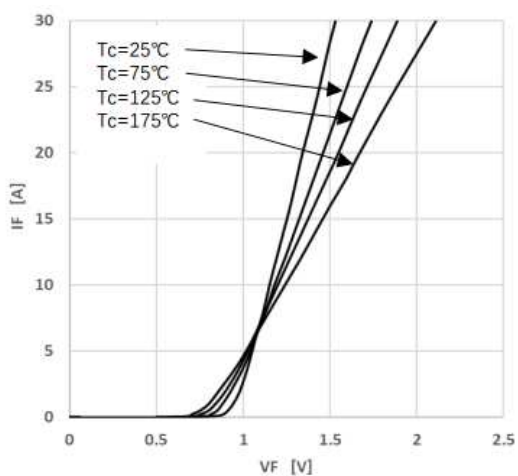


Figure 1. Forward characteristics

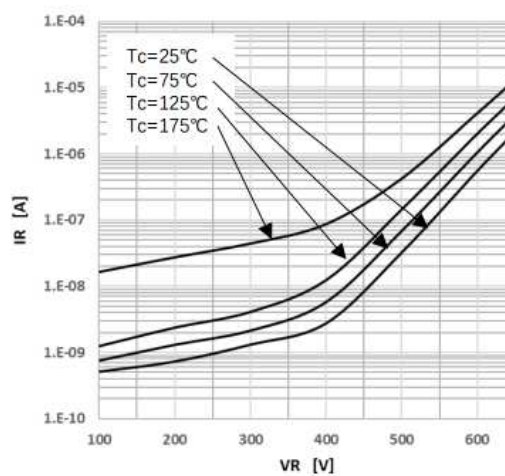


Figure 2. Reverse characteristics

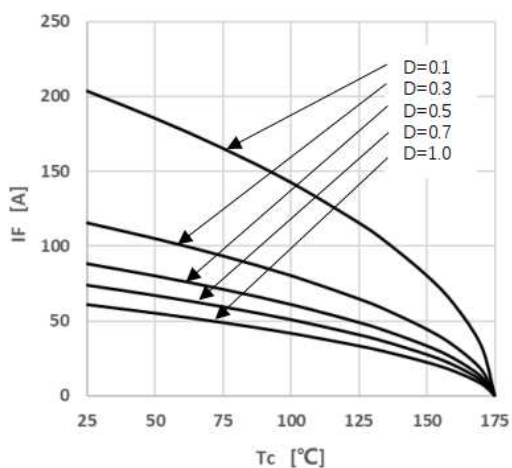


Figure 3. Peak Forward Current Derating

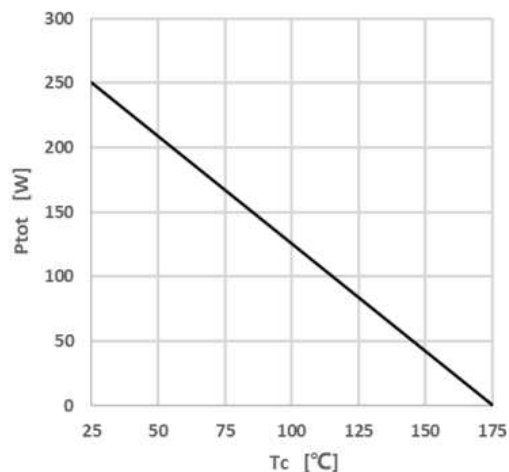


Figure 4. Power Dissipation

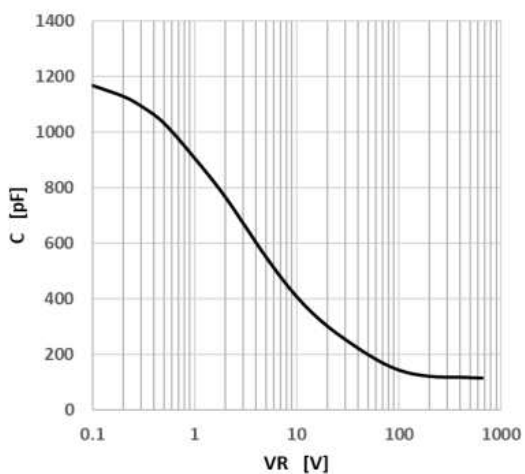


Figure 5. Capacitance vs. Reverse Voltage

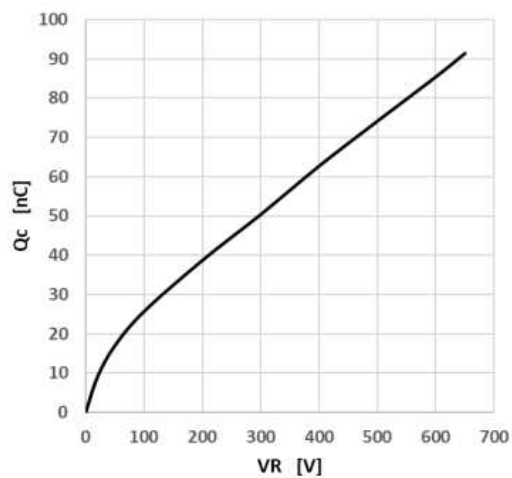


Figure 6. Capacitance Charge vs. Reverse Voltage

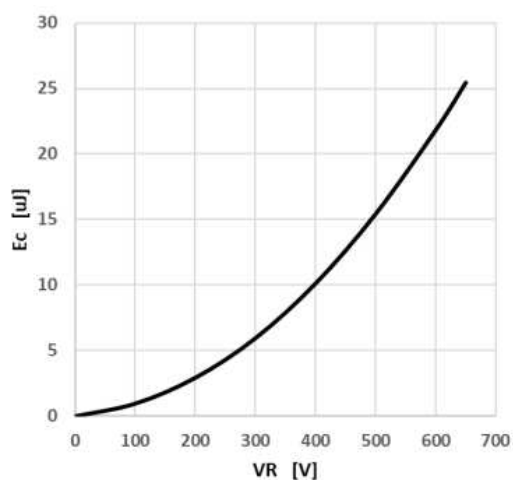


Figure 7. Capacitance Stored Energy

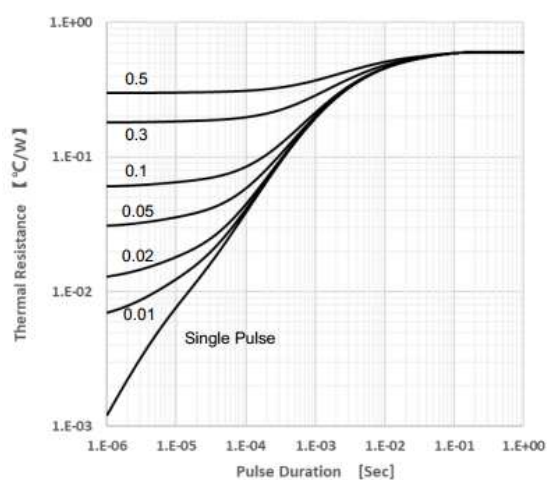
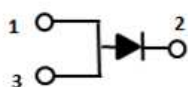
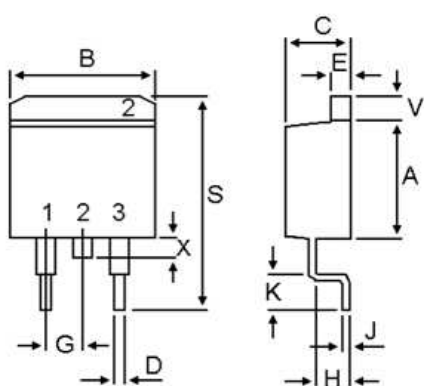


Figure 8. Transient Thermal Impedance

- Circuit diagram



- TO-263 Package outlines : Dimensions in (mm)



DIM	MILLIMETERS	
	MIN	MAX
A	8.30	9.20
B	9.80	10.40
C	4.30	4.80
D	0.65	0.95
E	1.17	1.43
G	2.39	2.69
H	2.68	3.32
J	0.35	0.65
K	2.29	2.90
S	14.60	15.88
V	1.10	1.50
X	---	2.00

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