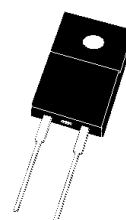


## 650V Silicon Carbide Schottky Diode

### DESCRIPTION :

- Zero reverse recovery current
- Zero forward recovery voltage
- Temperature independent switching behavior
- High frequency operation
- High temperature operation
- RoHS Compliant

$V_{RRM}$	650V
$I_F (T_c = 146^\circ\text{C})$	8A
$Q_c$	28nC



ITO-220AC

### TYPICAL APPLICATIONS :

- Solar application, UPS, EV/HEV
- PFC
- Switch mode power supplies (SMPS)
- Motor drives, Wind turbine, Rail traction

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

Characteristic	Condition	Symbol	Value	Unit
Repetitive Peak Reverse Voltage		$V_{RRM}$	650	V
Surge Peak Reverse Voltage		$V_{RSM}$	650	V
Continuous Forward Current	$T_c=25^\circ\text{C}$ $T_c=135^\circ\text{C}$ $T_c=146^\circ\text{C}$	$I_F$	22.2 9.9 8.0	A
Repetitive Peak Forward Surge Current	$T_c=25^\circ\text{C}$ , $t_p=10\text{ms}$ , Half sine pulse	$I_{FRM}$	40	A
Non-Repetitive Forward Surge Current	$T_c=25^\circ\text{C}$ , $t_p=10\text{ms}$ , Half sine pulse	$I_{FSM}$	80	A
$i^2t$ value	$T_c=25^\circ\text{C}$ , $t_p=10\text{ms}$ , Half sine pulse	$\int i^2 dt$	32	$\text{A}^2\text{S}$
Power dissipation	$T_c=25^\circ\text{C}$ $T_c=110^\circ\text{C}$	$P_{tot}$	63 27	W
Operation Junction temperature		$T_J$	-55~+175	$^\circ\text{C}$
Storage temperature		$T_{STG}$	-55~+175	$^\circ\text{C}$
Mounting torque	M3 screw	M	1	Nm

## THERMAL CHARACTERISTICS

Characteristic	Condition	Symbol	Typical	Unit
Thermal resistance, junction - case		$R_{th(j-c)}$	2.37	$^{\circ}\text{C}/\text{W}$

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

Characteristic	Symbol	Min.	Typ.	Max.	Unit
DC Blocking Voltage	$V_{DC}$	650			V
Forward Voltage IF = 8A, Tc = 25 $^{\circ}\text{C}$ IF = 8A, Tc = 175 $^{\circ}\text{C}$	$V_F$		1.30 1.56	1.5 1.8	V
Reverse Current VR = 650V, Tc = 25 $^{\circ}\text{C}$ VR = 650V, Tc = 175 $^{\circ}\text{C}$	$I_R$		0.2 2.0	50 100	$\mu\text{A}$
Total Capacitive Charge VR = 400V	$Q_C$		28		nC
Total capacitance VR = 0V, f = 1MHz VR = 200V, f = 1MHz VR = 400V, f = 1MHz	C		536 55 53		pF
Capacitance Stored Energy VR = 400 V	$E_c$		6.8		$\mu\text{J}$

## Typical Characteristics Curves

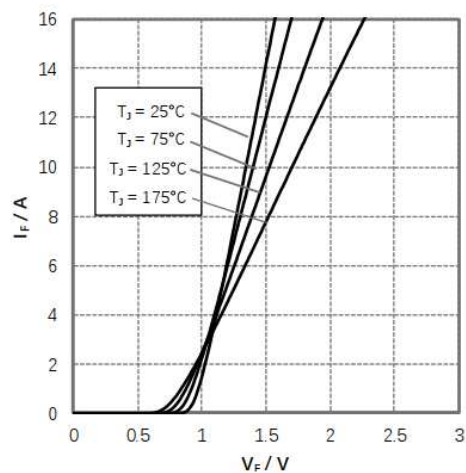


Figure 1. Forward characteristics

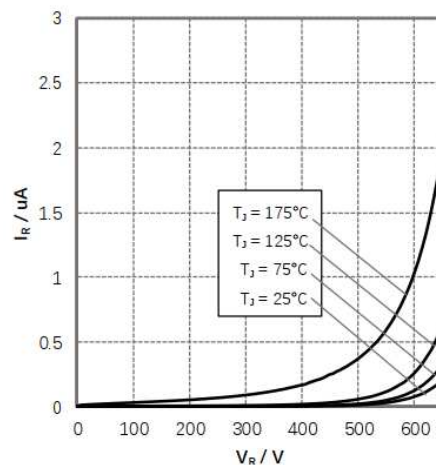


Figure 2. Reverse characteristics

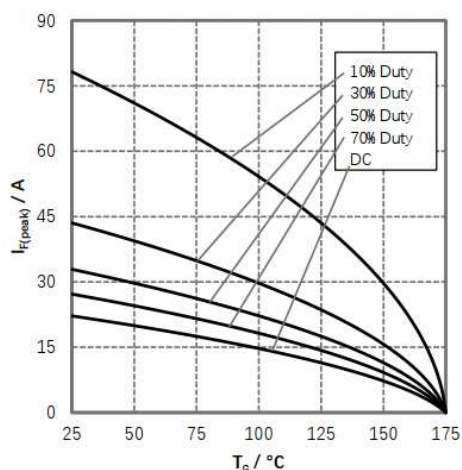


Figure 3. Current Derating

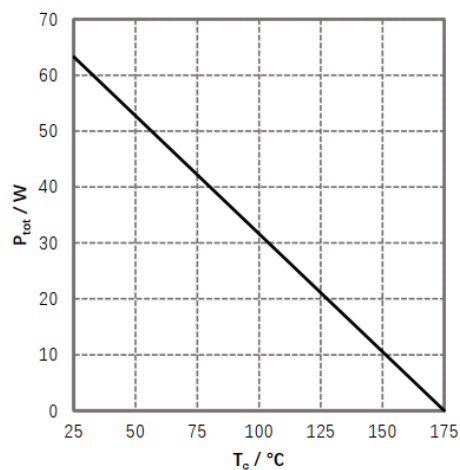


Figure 4. Power Dissipation

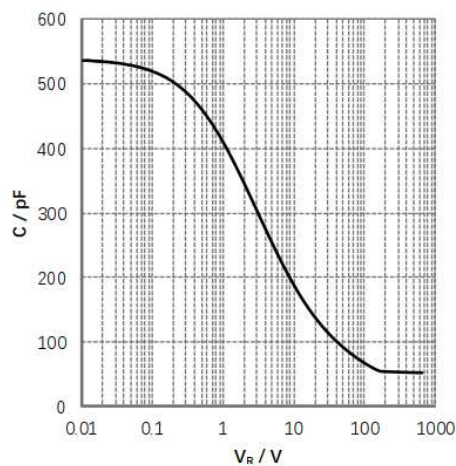


Figure 5. Capacitance vs. Reverse Voltage

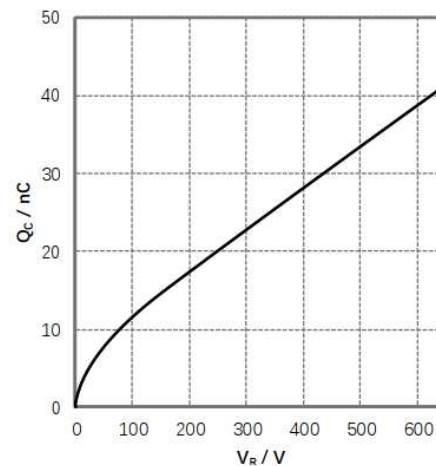


Figure 6. Capacitance Charge vs. Reverse Voltage

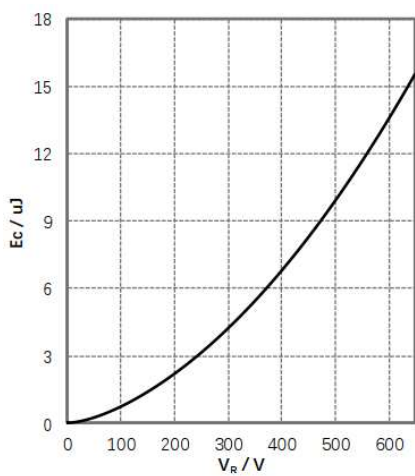


Figure 7. Capacitance Stored Energy

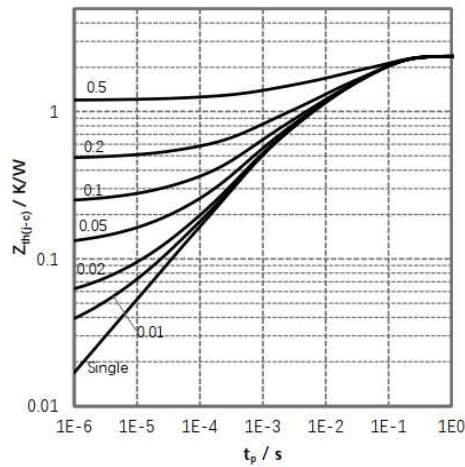
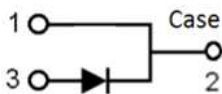
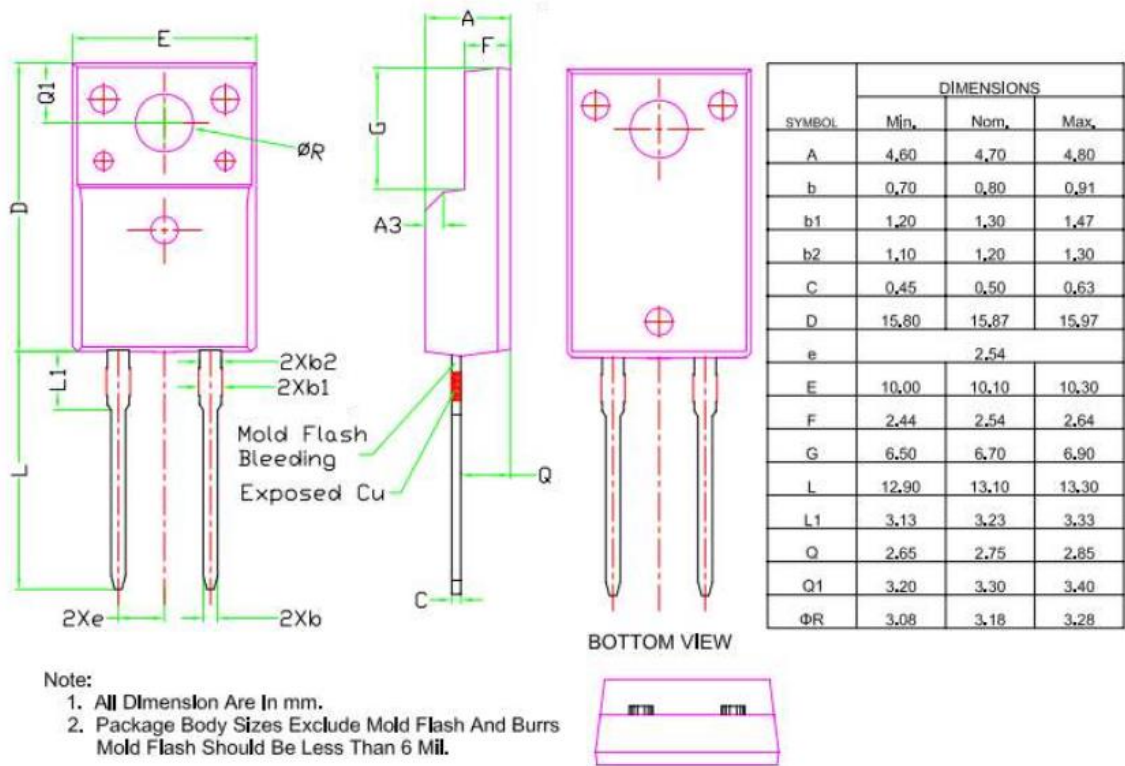


Figure 8. Transient Thermal Impedance

• Circuit diagram



• TO-220AC Package outlines : Dimensions in (mm)



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