

General Description

This product family offers state of the art performance. It is designed for high frequency applications where high efficiency and high reliability are required.

Features

- Low conduction loss due to low V_F
- Extremely low switching loss by tiny Q_C
- Highly rugged due to better surge current
- Industrial standard quality and reliability

Applications

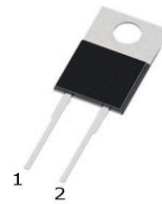
- UPS
- Power Inverter
- High performance SMPS
- Power factor correction

Product Summary

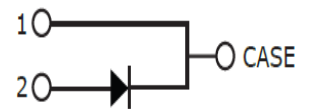
V_{RRM}	650 V
$I_F (T_C 158^\circ\text{C})$	10 A
$V_F (T_j 25^\circ\text{C})$	1.4 V



TO-220



Equivalent circuit



Maximum Ratings (at $T_C = 25^\circ\text{C}$, unless otherwise specified)

Parameter	Symbol	Value	Unit
Repetitive Peak Reverse Voltage	V_{RRM}	650	V
Surge Peak Reverse Voltage	V_{RSM}	650	V
DC Peak Reverse Voltage	V_R	650	V
Continuous Forward Current $T_C = 25^\circ\text{C}$ $T_C = 135^\circ\text{C}$ $T_C = 158^\circ\text{C}$	I_F	34 17 10	A
Repetitive Peak Forward Surge Current $T_C = 25^\circ\text{C}, t_p=10\text{ms}, \text{Half Sine Pulse}$ $T_C = 110^\circ\text{C}, t_p=10\text{ms}, \text{Half Sine Pulse}$	I_{FRM}	45 27	A
Non-Repetitive Forward Surge Current $T_C = 25^\circ\text{C}, t_p=10\text{ms}, \text{Half Sine Pulse}$ $T_C = 110^\circ\text{C}, t_p=10\text{ms}, \text{Half Sine Pulse}$	I_{FSM}	80 70	A
i^2dt value $T_C = 25^\circ\text{C}, t_p=10\text{ms}, \text{Half Sine Pulse}$ $T_C = 110^\circ\text{C}, t_p=10\text{ms}, \text{Half Sine Pulse}$	$\int i^2 dt$	31.7 24.3	A^2s
Power dissipation $T_C = 25^\circ\text{C}$ $T_C = 110^\circ\text{C}$	P_{tot}	93 40	W
Operating junction Range	T_j	-55 to +175	$^\circ\text{C}$
Storage temperature Range	T_{stg}	-55 to +150	$^\circ\text{C}$

Silicon Carbide Schottky Diode 650 V, 10 A

Thermal Resistance

Parameter	Symbol	Typ.	Unit
Thermal resistance, junction – case.	R_{thJC}	1.60	°C/W

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

Parameter	Symbol	Value			Unit	Test Condition
		min.	typ.	max.		
Forward Voltage	V_F	-	1.4	1.5	V	$I_F=10\text{A}$ $T_j=25^{\circ}\text{C}$ $T_j=175^{\circ}\text{C}$
Reverse Current	I_R	-	-	50	μA	$V_R=650\text{V}$ $T_j=25^{\circ}\text{C}$ $T_j=175^{\circ}\text{C}$
Total Capacitive Charge	Q_C	-	27	-	nC	$V_R=400\text{V}, T_j=25^{\circ}\text{C}$ $Q_C = \int_0^{V_R} C(V) dV$
Total Capacitance	C	-	561	-	pF	$T_j=25^{\circ}\text{C}, f=1\text{MHz}$ $V_R=0\text{V}$ $V_R=200\text{V}$ $V_R=400\text{V}$

Silicon Carbide Schottky Diode 650 V, 10 A

Characteristics Curve:

Fig 1: Forward Characteristics

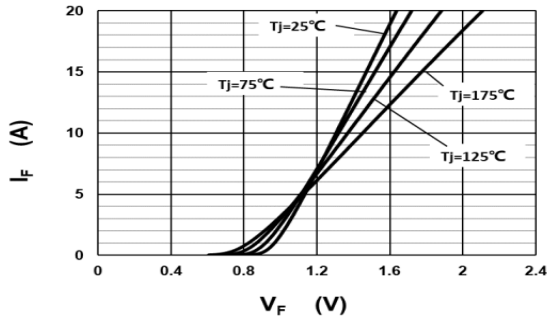


Fig 2: Reverse Characteristics

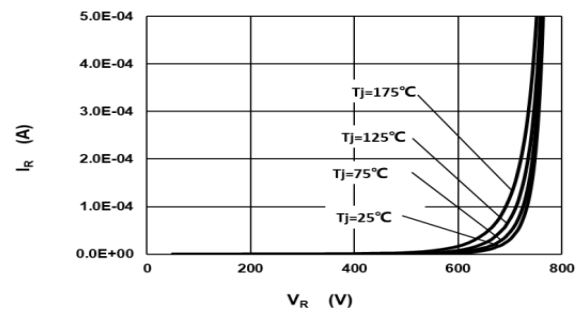


Fig 3: Current Derating

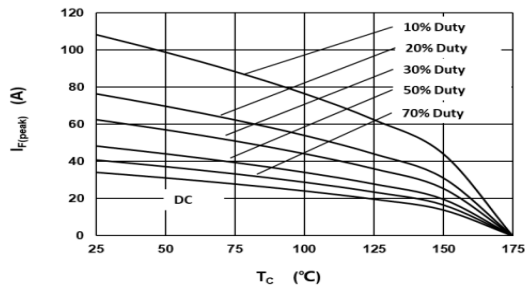


Fig 4: Power Derating

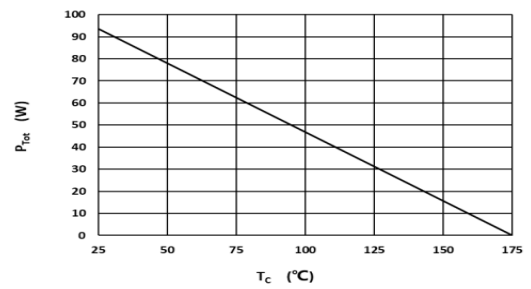


Fig 5: Capacitance vs. Reverse Voltage

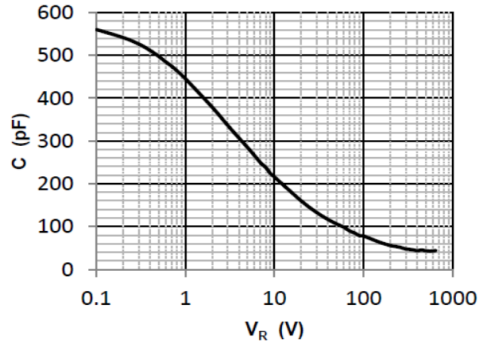


Fig 6: Reverse Charge vs. Reverse Voltage

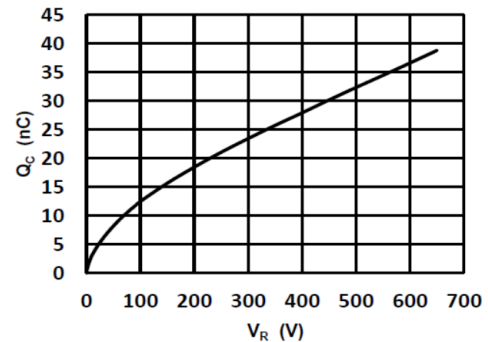


Fig 7: Typical Capacitance Stored Energy

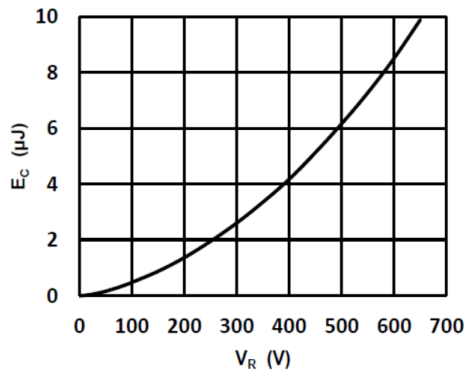


Fig 8: Transient Thermal Impedance

