

SiC Schottky Barrier Rectifier

Applications

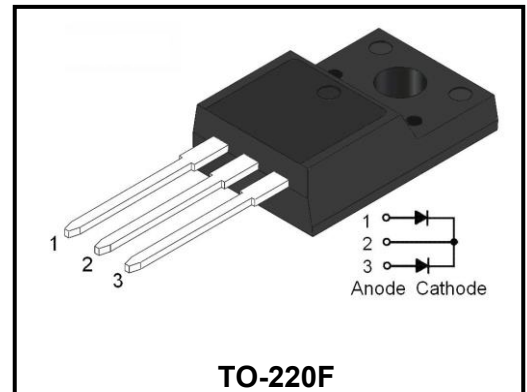
- ◆ Switching mode power supply, AC/DC converter
- ◆ Power factor correction
- ◆ Motor drive
- ◆ PV inverter and wind turbine

Features

- ◆ Reverse withstand voltage 650V
- ◆ Zero reverse recovery current
- ◆ High working frequency
- ◆ Switch characteristics are not affected by temperature
- ◆ Fast switching speed
- ◆ Positive temperature coefficient of positive pressure drop

Advantages

- ◆ Very low switching loss
- ◆ Higher efficiency
- ◆ Low dependence of the system on the heat sink
- ◆ No thermal collapse in parallel devices



Absolute Maximum Rating (Per leg , Ta=25°C)

Parameter	Symbol	Test conditions	Value	Unit
Peak repetitive reverse voltage	V_{RRM}		650	V
Working Peak Reverse voltage	V_{RWM}		650	V
DC Blocking Voltage	V_{DC}		650	V
Average rectified output current	$I_{F(AV)}$	$T_C = 25^\circ C$ $T_C = 125^\circ C$ $T_C = 150^\circ C$	13.5 6 4	A
Forward repetitive peak current	I_{FRM}	$T_C = 25^\circ C, t_p = 10ms, \text{Half Sine Wave}$ $T_C = 110^\circ C, t_p = 10ms, \text{Half Sine Wave}$	17 12	A
Forward surge current	I_{FSM}	$T_C = 25^\circ C, t_p = 10ms, \text{Half Sine Wave}$ $T_C = 110^\circ C, t_p = 10ms, \text{Half Sine Wave}$	30.5 20	A
Power dissipation	P_{tot}	$T_C = 25^\circ C$ $T_C = 110^\circ C$	60 24	W
Junction temperature	T_j		-55 ~ +175	°C
Storage temperature	T_{stg}		-55 ~ +175	°C

Thermal characteristics

Parameter	Symbol	Value	Unit
Thermal Resistance - Junction to Case	$R_{\theta JC}$	3.6	°C/W

Electrical Characteristics (Per leg ,Ta=25°C, unless otherwise specified)

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Forward voltage	V_F	$I_F = 4\text{ A}, T_J = 25^\circ\text{C}$ $I_F = 4\text{ A}, T_J = 175^\circ\text{C}$		1.4 1.57	1.7 2.4	V
Reverse current	I_R	$V_R = 650\text{V}, T_J = 25^\circ\text{C}$ $V_R = 650\text{V}, T_J = 175^\circ\text{C}$		6 12	30 120	μA
Total capacitive charge	Q_C	$V_R = 400\text{V}, I_F = 8\text{ A}$ $di/dt = 500\text{A}/\mu\text{s}, T_J = 25^\circ\text{C}$		10		nC
Total capacitance	C	$V_R = 0\text{V}, T_J = 25^\circ\text{C}, f = 1\text{MHz}$ $V_R = 200\text{V}, T_J = 25^\circ\text{C}, f = 1\text{MHz}$ $V_R = 400\text{V}, T_J = 25^\circ\text{C}, f = 1\text{MHz}$		231 18.5 15		pF
Capacitance stored energy	E_C	$V_R = 400\text{V}$		1.4		μJ

Typical Characteristics

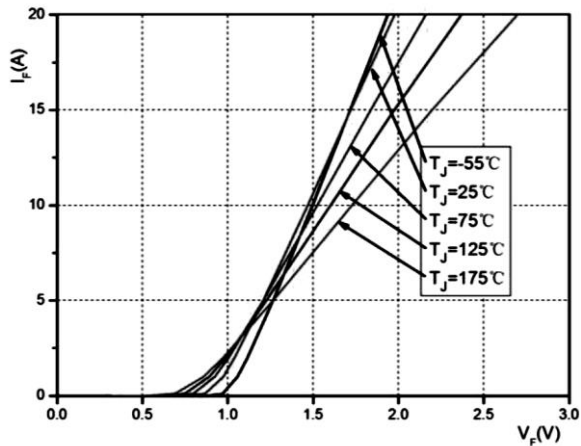


Figure 1. Forward Characteristics

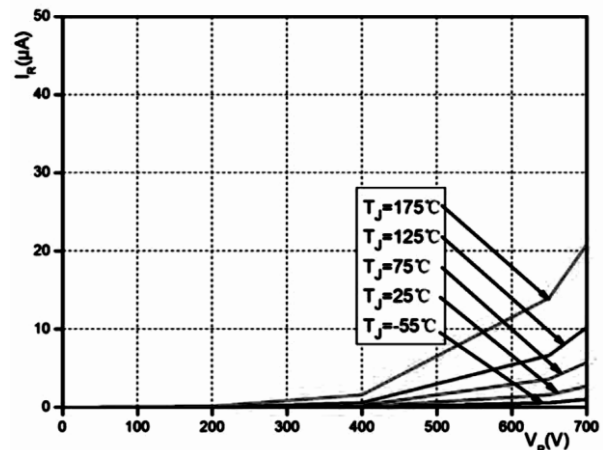


Figure 2. Reverse Characteristics

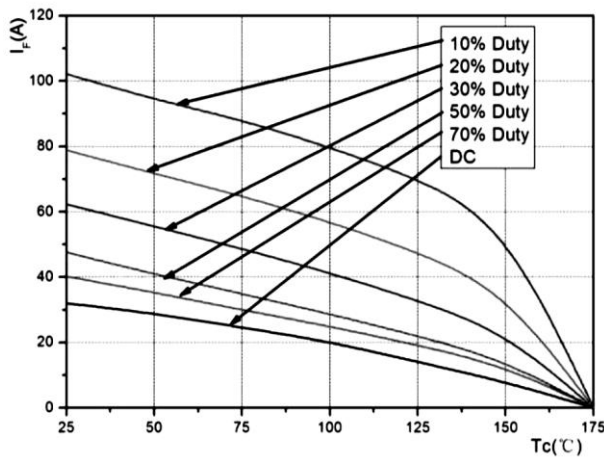


Figure 3. Load current

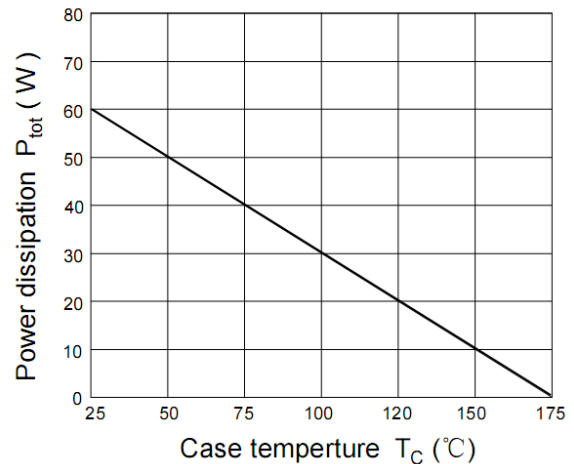


Figure 4. Dissipated power curve

Typical Characteristics

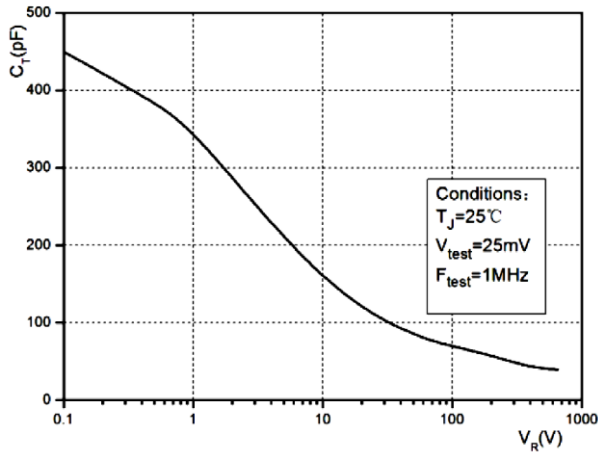


Figure 5. Capacitance vs reverse voltage

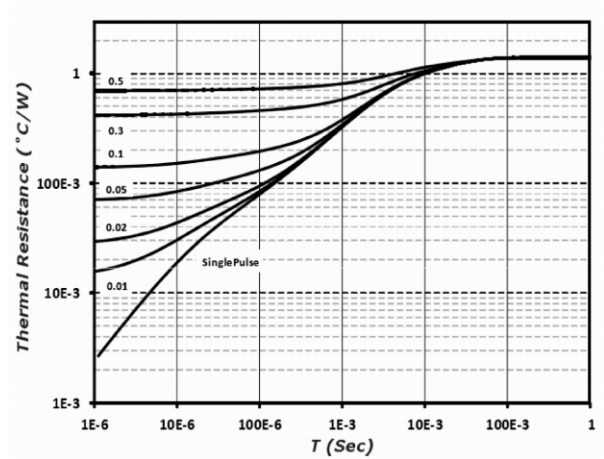


Figure 6. Thermal Impedance Junction-to-Case

Package Dimensions

TO-220F

