

**SiC Schottky Barrier Rectifier**

**Reverse Voltage - 650V**

**Forward Current - 10A**

**Features**

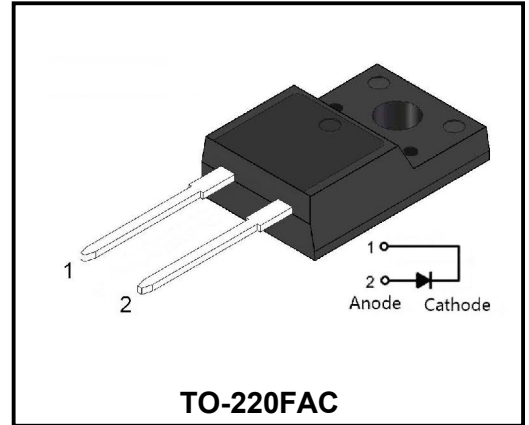
- ◆ Reverse withstand voltage 650V
- ◆ Zero reverse recovery current
- ◆ High working frequency
- ◆ Switch characteristics are not affected by temperature
- ◆ Fast switching speed
- ◆ Positive temperature coefficient of positive pressure drop

**Advantages**

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

**Application**

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



**TO-220FAC**

**Absolute Maximum Rating (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	$I_{F(AV)}$	Ta=25°C Ta=125°C Ta=150°C	22 17.5 10	A
Forward repetitive peak current	$I_{FRM}$	T <sub>C</sub> =25°C, tp=10ms, Half Sine Wave T <sub>C</sub> =110°C, tp=10ms, Half Sine Wave	51 46	A
Forward surge current	$I_{FSM}$	T <sub>C</sub> =25°C, tp=10ms, Half Sine Wave T <sub>C</sub> =110°C, tp=10ms, Half Sine Wave	67 61	A
Power dissipation	$P_{tot}$	Ta=25°C Ta=110°C	60 26	W
Junction temperature	T <sub>j</sub>		-55 ~ +175	°C
Storage temperature	T <sub>stg</sub>		-55 ~ +175	°C

**Thermal characteristics**

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal Resistance - Junction to Case	$R_{\theta JC}$		2.5		$^{\circ}C/W$

**Electrical Characteristics (Ta=25°C unless otherwise specified)**

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Forward voltage	$V_F$	$I_F = 10\text{ A}, T_j = 25^{\circ}C$ $I_F = 10\text{ A}, T_j = 175^{\circ}C$		1.4 1.66	1.6 2.0	V
Reverse current	$I_R$	$V_R = 650V, T_j = 25^{\circ}C$ $V_R = 650V, T_j = 175^{\circ}C$		2 10	50 200	$\mu A$
Total capacitive charge	$Q_C$	$V_R = 400V, I_F = 10A$ $di/dt = 500A/\mu s, T_j = 25^{\circ}C$		38		nC
Total capacitance	C	$V_R = 0V, T_j = 25^{\circ}C, f = 1MHz$ $V_R = 200V, T_j = 25^{\circ}C, f = 1MHz$ $V_R = 400V, T_j = 25^{\circ}C, f = 1MHz$		683 88 82		pF

**Typical Characteristics**

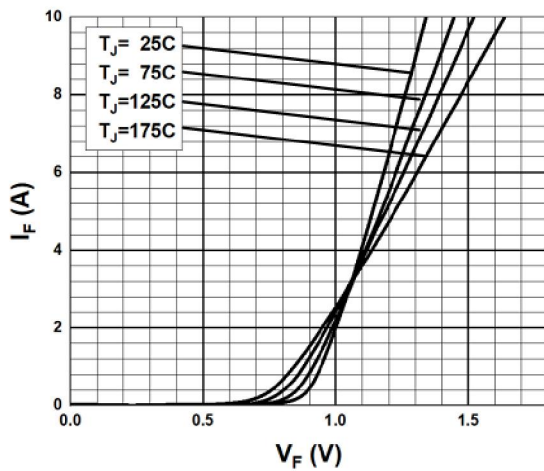


Figure 1. Forward Characteristics

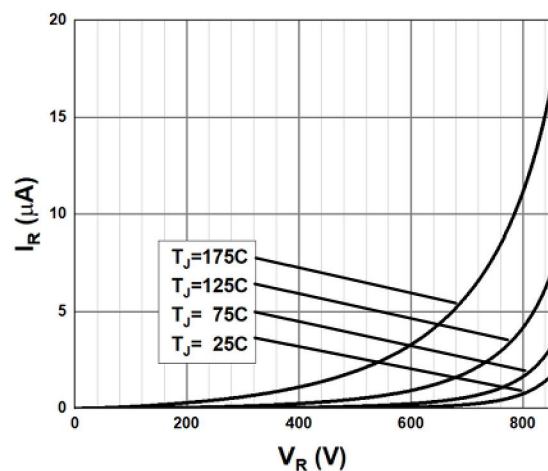


Figure 2. Reverse Characteristics

Typical Characteristics

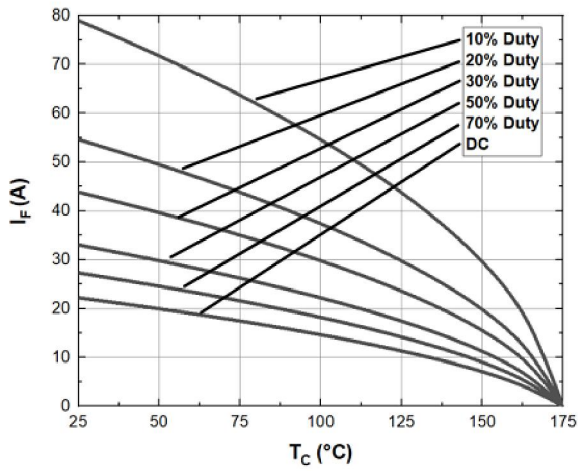


Figure 3. Current Derating

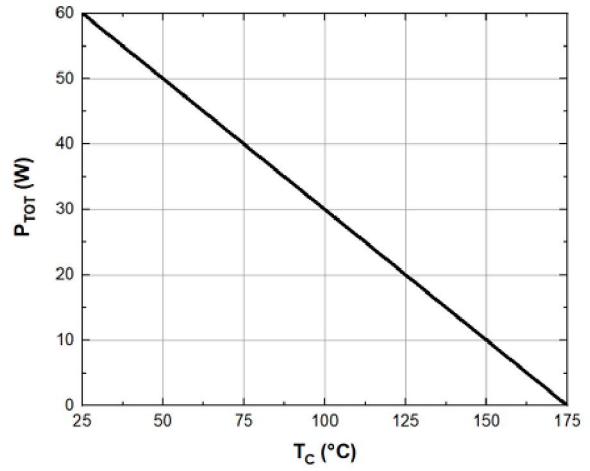


Figure 4. Power Derating

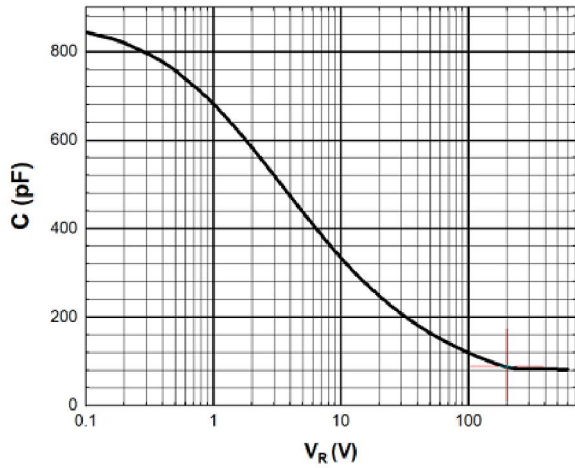


Figure 5. Capacitance vs reverse voltage

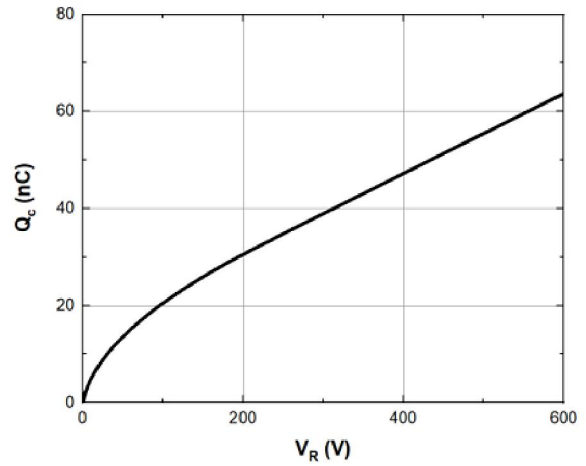


Figure 6. Recovery Charge vs Reverse Voltage

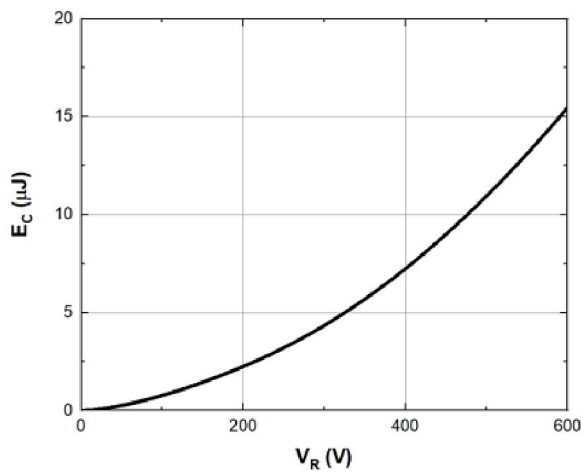


Figure 7. Capacitance stored Energy

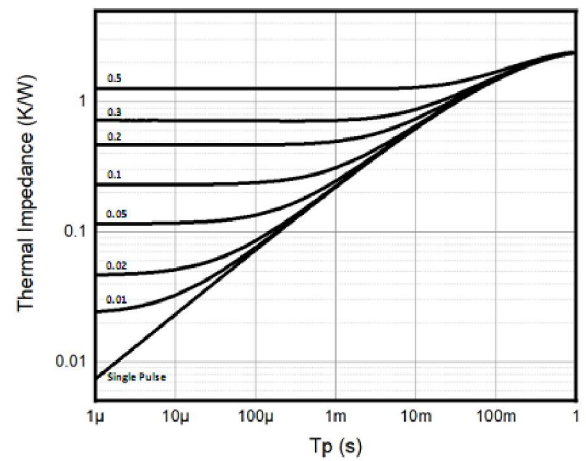


Figure 8. Thermal Impedance

Package Dimensions

TO-220FAC

Symbol	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.50	4.90	0.177	0.193
A1	2.34	2.74	0.092	0.108
A2	2.66	2.86	0.105	0.113
b	0.75	0.85	0.030	0.033
b1	1.24	1.44	0.049	0.057
c	0.40	0.60	0.016	0.024
D	10.00	10.32	0.394	0.406
E	15.75	16.05	0.620	0.632
e	4.88	5.28	0.192	0.208
F	3.10	3.5	0.122	0.138
L	12.90	13.50	0.508	0.531
L1	2.90	3.30	0.114	0.130
Φ	3.10	3.30	0.122	0.130

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