

SiC Schottky Barrier Rectifier

Features

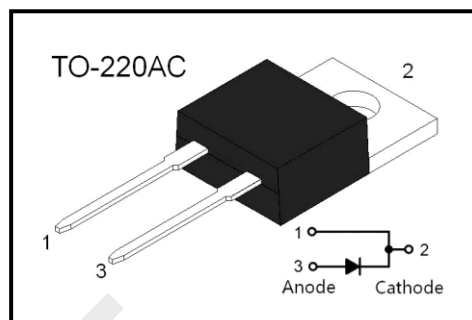
- Reverse withstand voltage 650V
- Zero reverse recovery current
- High working frequency
- Switch characteristics are not affected by temperature
- Fast switching speed
- Positive temperature coefficient of positive pressure drop

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



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	$I_{F(AV)}$	$T_C = 25^\circ\text{C}$ $T_C = 110^\circ\text{C}$ $T_C = 150^\circ\text{C}$	38 18 15	A
Forward repetitive peak current	I_{FRM}	$T_C = 25^\circ\text{C}$, $t_p = 10\text{ms}$, Half Sine Wave $T_C = 110^\circ\text{C}$, $t_p = 10\text{ms}$, Half Sine Wave	65 45	A
Forward surge current	I_{FSM}	$T_C = 25^\circ\text{C}$, $t_p = 10\text{ms}$, Half Sine Wave $T_C = 110^\circ\text{C}$, $t_p = 10\text{ms}$, Half Sine Wave	155 145	A
Power dissipation	P_{tot}	$T_C = 25^\circ\text{C}$ $T_C = 110^\circ\text{C}$	120 55	W
Junction temperature	T_j		-55 ~ +175	°C
Storage temperature	T_{stg}		-55 ~ +175	°C
Mounting Torque		M3 Screw 6-32 Screw	1 8.8	Nm lbf-in

Thermal characteristics

Parameter	Symbol	Vaule	Unit
Thermal resistance - junction to case	$R_{\theta JC}$	1.51	°C/W

Electrical Characteristics ($T_a=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Forward voltage	V_F	$I_F = 20\text{ A}$, $T_J=25^\circ\text{C}$ $I_F = 20\text{ A}$, $T_J=175^\circ\text{C}$		1.5 2.0	1.8 2.4	V
Reverse current	I_R	$V_R = 650\text{V}$, $T_J=25^\circ\text{C}$ $V_R = 650\text{V}$, $T_J=175^\circ\text{C}$			60 220	μA
Total capacitive charge	Q_C	$V_R = 400\text{V}$, $I_F = 10\text{A}$ $di/dt=500\text{A}/\mu\text{s}$, $T_J=25^\circ\text{C}$		45		nC
Total capacitance	C	$V_R = 0\text{V}$, $T_J=25^\circ\text{C}$, $f=1\text{MHz}$ $V_R = 200\text{V}$, $T_J=25^\circ\text{C}$, $f=1\text{MHz}$ $V_R = 400\text{V}$, $T_J=25^\circ\text{C}$, $f=1\text{MHz}$		877 85 65		pF

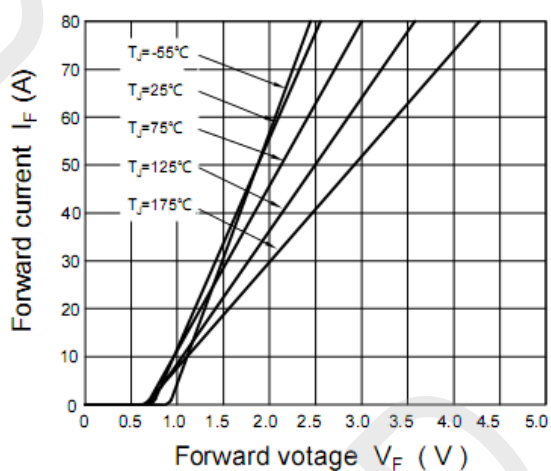
Typical Characteristics


Figure 1. Forward Characteristics

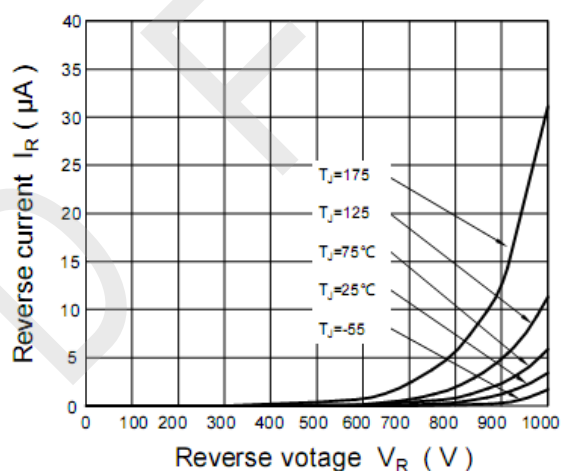


Figure 2. Reverse Characteristics

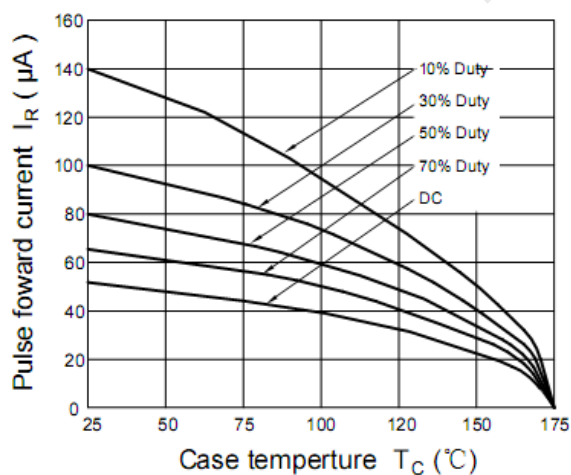


Figure 3. Current Derating

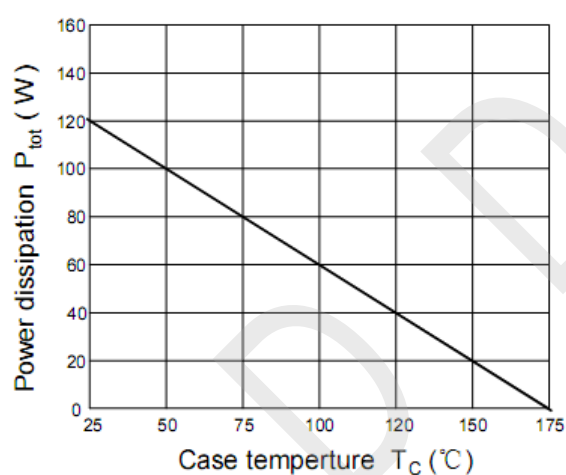


Figure 4. Power Derating

Typical Characteristics

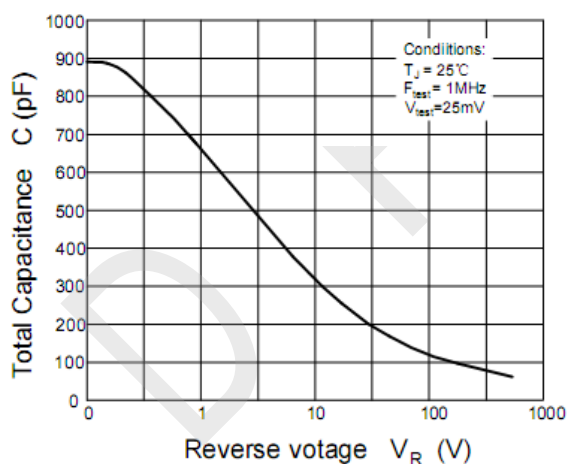


Figure 5. Capacitance vs reverse voltage

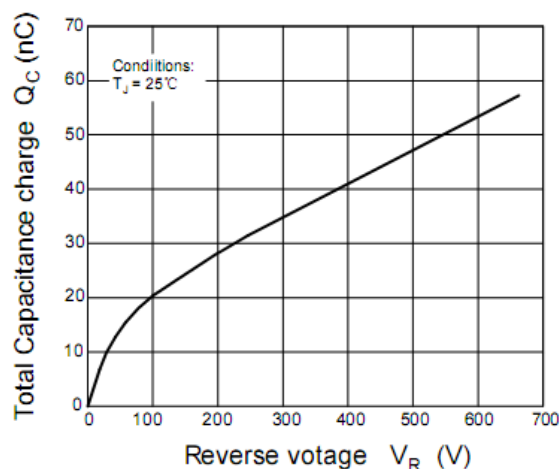
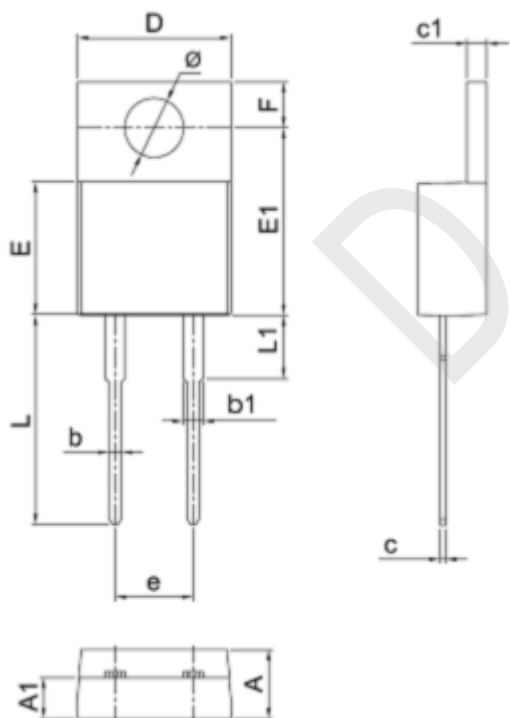


Figure 6. Total Capacitance charge vs. reverse voltage

Package Dimensions



Dim	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.34	4.67	0.171	0.184
A1	2.52	2.82	0.099	0.111
b	0.71	0.91	0.028	0.036
b1	1.17	1.37	0.046	0.054
c	0.30	0.50	0.012	0.020
c1	1.17	1.37	0.046	0.054
D	9.90	10.20	0.390	0.402
E	8.50	8.90	0.335	0.350
E1	12.00	12.50	0.472	0.492
e	2.44	2.64	0.096	0.104
e1	4.88	5.28	0.192	0.208
F	2.60	2.80	0.102	0.110
L	13.20	13.80	0.520	0.543
L1	3.80	4.20	0.150	0.165
Φ	3.60	3.96	0.142	0.156