

SiC Schottky Barrier Rectifier

Features

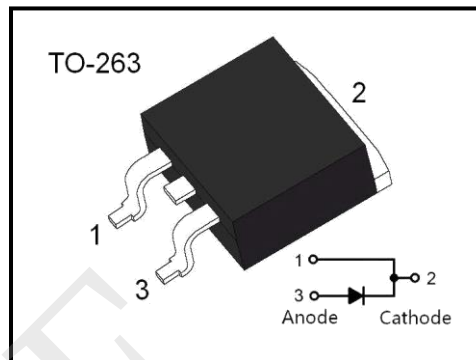
- Reverse withstand voltage 650V
- Zero reverse recovery current
- High working frequency
- Switch characteristics are not affected by temperature
- Fast switching speed
- Positive temperature coefficient of positive pressure drop

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)

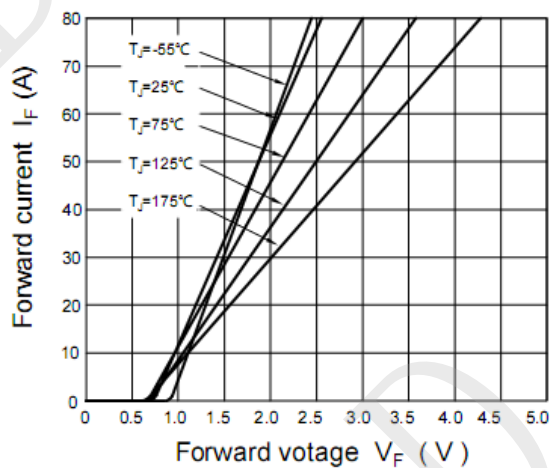
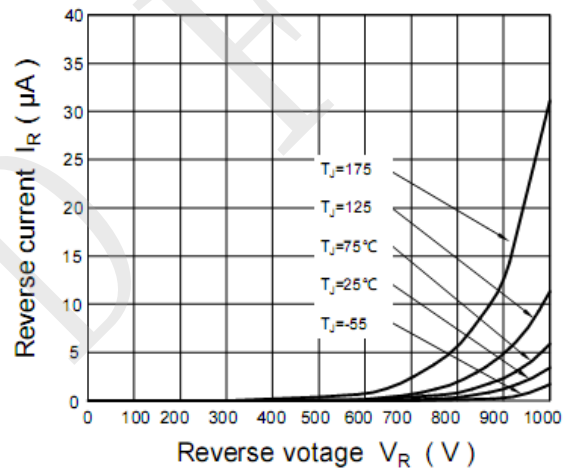
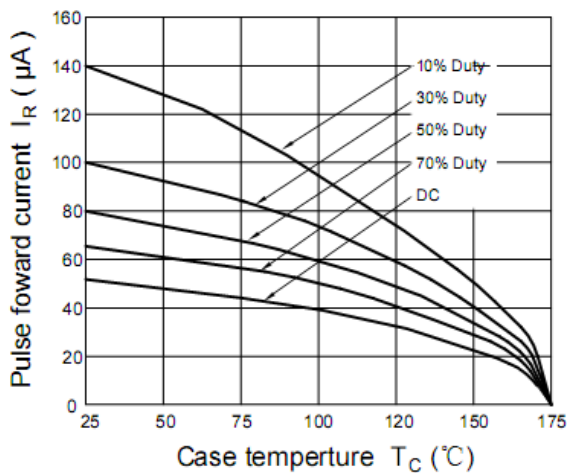
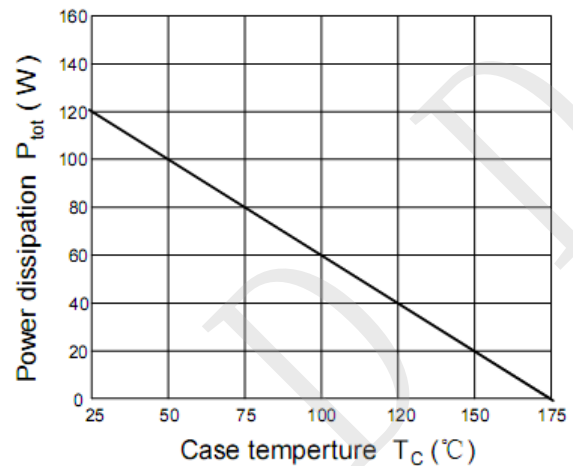
Parameter	Symbol	Test conditions	Value	Unit
Peak repetitive reverse voltage	V_{RRM}		650	V
Working peak reverse voltage	V_{RWM}		650	V
DC blocking voltage	V_{DC}		650	V
Average rectified output current	$I_{F(AV)}$	$T_C = 25^\circ\text{C}$	38	A
		$T_C = 110^\circ\text{C}$	18	
		$T_C = 150^\circ\text{C}$	15	
Forward repetitive peak current	I_{FRM}	$T_C = 25^\circ\text{C}$, tp=10ms, Half Sine Wave	65	A
		$T_C = 110^\circ\text{C}$, tp=10ms, Half Sine Wave	45	
Forward surge current	I_{FSM}	$T_C = 25^\circ\text{C}$, tp=10ms, Half Sine Wave	155	A
		$T_C = 110^\circ\text{C}$, tp=10ms, Half Sine Wave	145	
Power dissipation	P_{tot}	$T_C = 25^\circ\text{C}$	120	W
		$T_C = 110^\circ\text{C}$	55	
Junction temperature	T_j		-55 ~ +175	°C
Storage temperature	T_{stg}		-55 ~ +175	°C

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

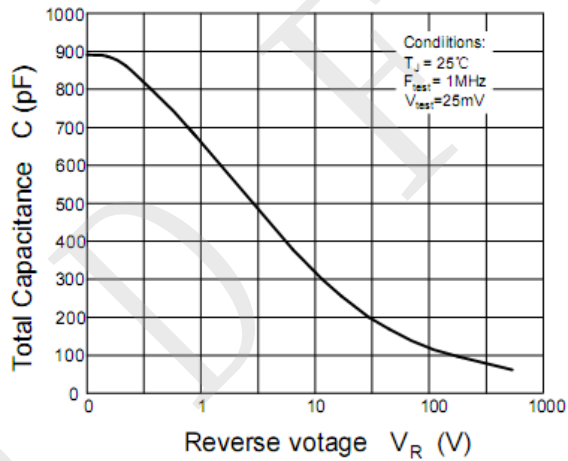


Figure 5. Capacitance vs reverse voltage

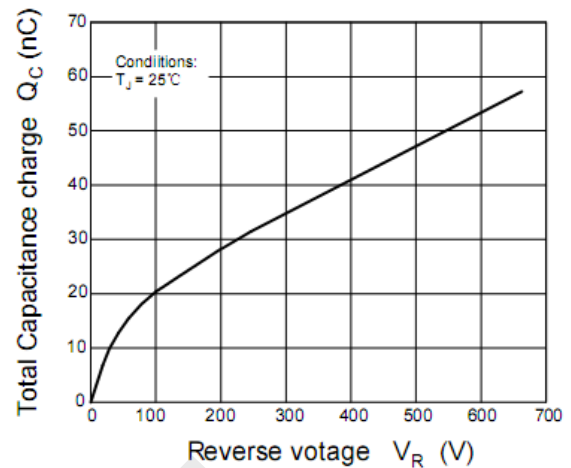


Figure 6. Total Capacitance charge vs. reverse voltage

Package Dimensions

Dim	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.30	4.70	0.169	0.185
A1	0.00	0.15	0.000	0.006
A2	4.30	4.55	0.169	0.179
B	1.10	1.50	0.043	0.059
b	0.70	0.90	0.028	0.035
b1	1.20	1.50	0.047	0.059
c	0.30	0.60	0.012	0.024
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
e	2.44	2.64	0.096	0.104
e1	4.88	5.28	0.192	0.208
L	15.00	15.30	0.591	0.602
L1	5.20	5.40	0.205	0.213
L2	2.40	2.60	0.094	0.102
L3	1.60	1.80	0.063	0.071