

SiC Schottky Barrier Rectifier

Features

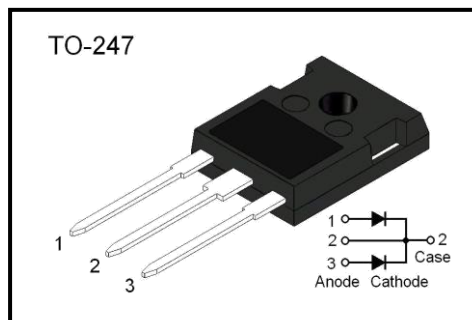
- Reverse withstand voltage 650V
- Zero reverse recovery current
- High working frequency
- Switch characteristics are not affected by temperature
- Fast switching speed
- Positive temperature coefficient of positive pressure drop

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, unless otherwise specified)

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	$I_{F(AV)}$	$T_c=25^{\circ}C$ $T_c=125^{\circ}C$ $T_c=150^{\circ}C$	23/46 11/22 8/16	A
Forward repetitive peak current	I_{FRM}	$T_C=25^{\circ}C, t_p=10ms, half\ sine\ wave$ $T_C=110^{\circ}C, t_p=10ms, half\ sine\ wave$	37.5/75 25.5/51	A
Forward surge current	I_{FSM}	$T_C=25^{\circ}C, t_p=10ms, half\ sine\ wave$ $T_C=110^{\circ}C, t_p=10ms, half\ sine\ wave$	71/142 60/120	A
Power dissipation	P_{tot}	$T_c = 25^{\circ}C$ $T_c = 125^{\circ}C$	100* 43*	W
Junction temperature	T_j		-55 ~ +175	°C
Storage temperature	T_{stg}		-55 ~ +175	°C
Mounting Torque	M_T	M3 Screw 6-32 Screw	1 8.8	Nm lbf-in

Thermal characteristics

Parameter	Symbol	Typ	Unit
Thermal resistance - junction to case	$R_{\theta JC}$	1.5** 0.75*	°C/W

*Per Leg, ** PerDevice

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

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Forward voltage	V_F	$I_F = 8\text{ A}$, $T_J=25^\circ\text{C}$ $I_F = 8\text{ A}$, $T_J=175^\circ\text{C}$		1.5 2.1	1.8 2.4	V
Reverse current	I_R	$V_R = 650\text{V}$, $T_J=25^\circ\text{C}$ $V_R = 650\text{V}$, $T_J=175^\circ\text{C}$		10 20	50 200	μA
Total capacitive charge	Q_C	$V_R=4000\text{V}$, $I_F = 8\text{ A}$ $di/dt=500\text{A}/\mu\text{s}$, $T_J=25^\circ\text{C}$		20		nC
Total capacitance	C	$V_R = 0\text{V}$, $T_J=25^\circ\text{C}$, $f=1\text{MHz}$ $V_R = 200\text{V}$, $T_J=25^\circ\text{C}$, $f=1\text{MHz}$ $V_R = 400\text{V}$, $T_J=25^\circ\text{C}$, $f=1\text{MHz}$		441 39 33		pF

Typical Characteristics

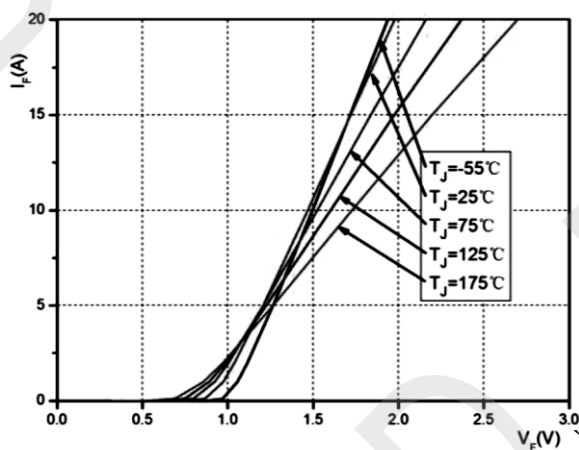


Figure 1. Forward Characteristics

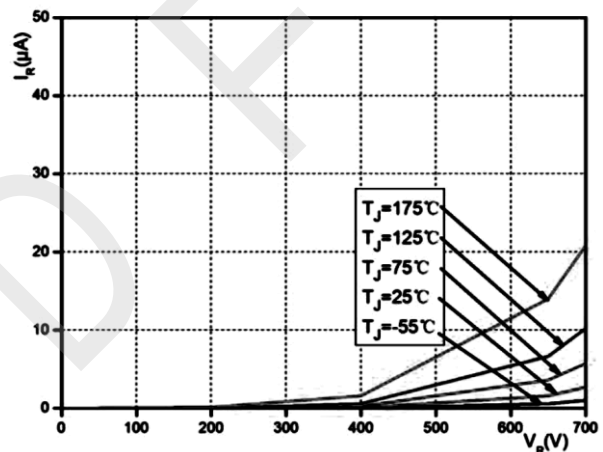


Figure 2. Reverse Characteristics

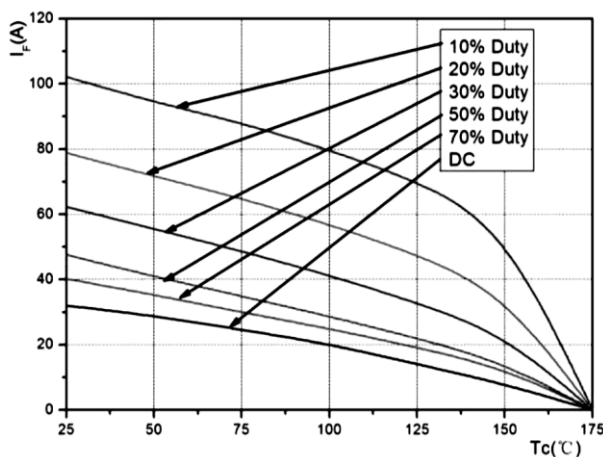


Figure 3. Load current

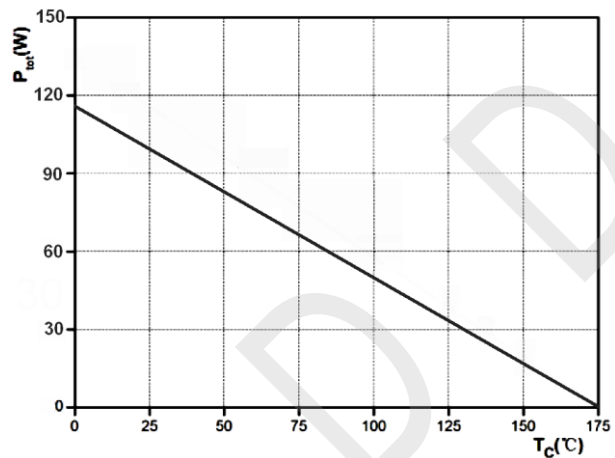


Figure 4. Dissipated power curve

Typical Characteristics

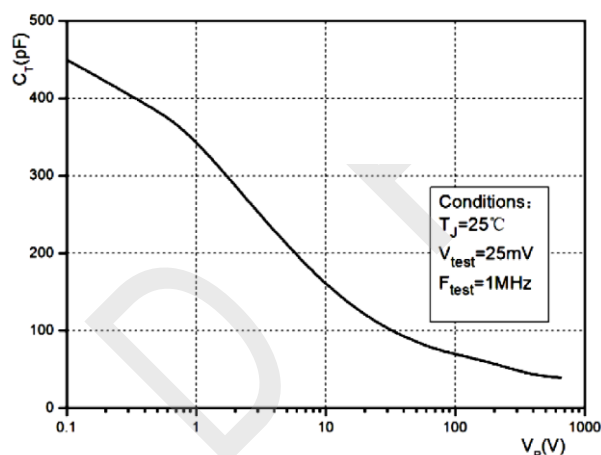


Figure 5. Capacitance vs reverse voltage

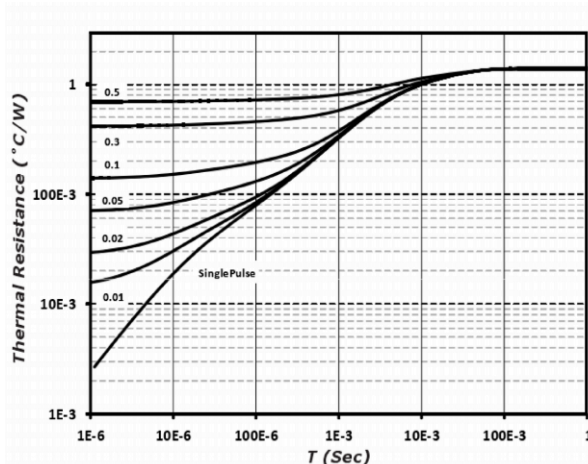
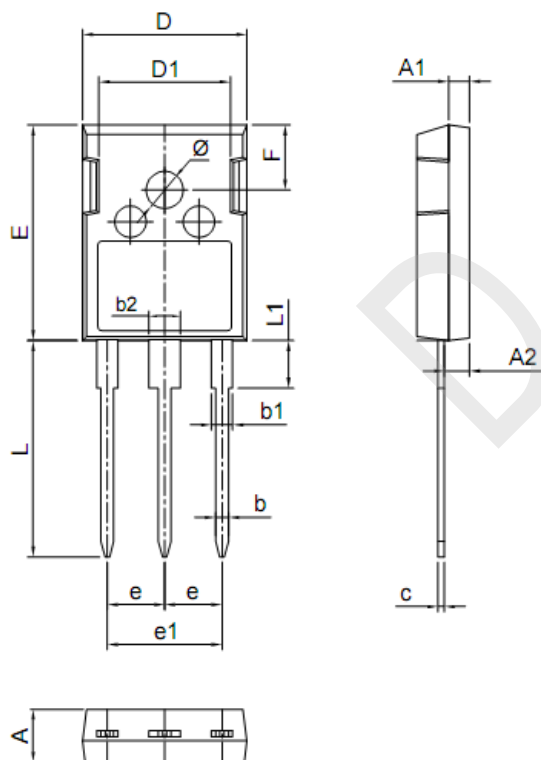


Figure 6. Thermal Impedance Junction-to-Case

Package Dimensions



Dim	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.90	5.10	0.193	0.201
A1	1.90	2.10	0.075	0.083
A2	2.20	2.40	0.087	0.094
b	1.07	1.33	0.042	0.052
b1	1.90	2.30	0.075	0.091
b2	2.90	3.30	0.114	0.130
c	0.55	0.68	0.022	0.027
D	15.75	16.05	0.620	0.632
D1	11.60	12.00	0.457	0.472
E	20.20	20.80	0.795	0.819
e	5.45 (BSC)		0.215 (BSC)	
e1	10.90 (BSC)		0.429 (BSC)	
F	6.05	6.25	0.238	0.246
L	20.10	20.40	0.791	0.803
L1	4.05	4.35	0.159	0.171
Φ	3.50	3.80	0.138	0.150