

SiC Schottky Barrier Rectifier

Features

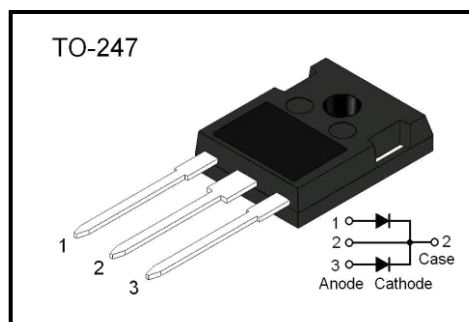
- Reverse withstand voltage 650V
- Zero reverse recovery current
- High working frequency
- Switch characteristics are not affected by temperature
- Fast switching speed
- Positive temperature coefficient of positive pressure drop

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 ($T_C=25^{\circ}\text{C}$, 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
Continuous forward current	$I_{F(AV)}$	$T_C=25^{\circ}\text{C}$ $T_C=125^{\circ}\text{C}$ $T_C=150^{\circ}\text{C}$	39/78 18/36 15/30	A
Repetitive peak forward surge 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	661/32 46/92	A
Non-repetitive peak 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	162/324 150/300	A
Power dissipation	P_{tot}	$T_C=25^{\circ}\text{C}$ $T_C=110^{\circ}\text{C}$	150* 65*	W
Junction temperature	T_j		$-55 \sim +175$	$^{\circ}\text{C}$
Storage temperature	T_{stg}		$-55 \sim +175$	$^{\circ}\text{C}$
Mounting torque	M_T	M3 Screw 6-32 Screw	1 8.8	Nm lbf-in

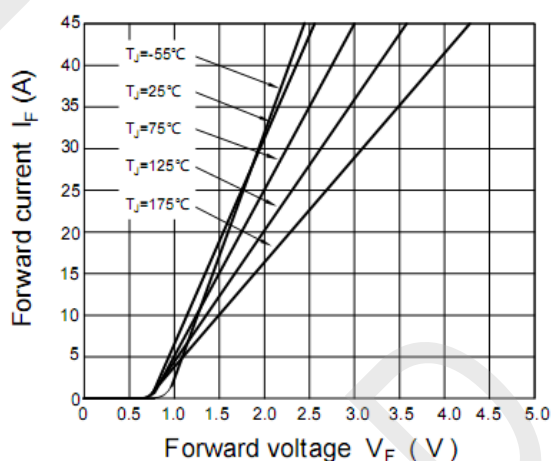
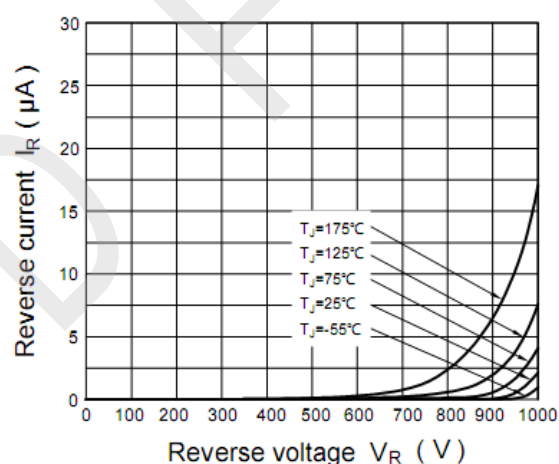
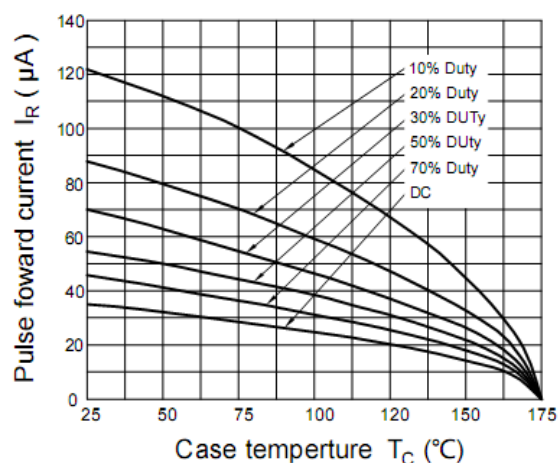
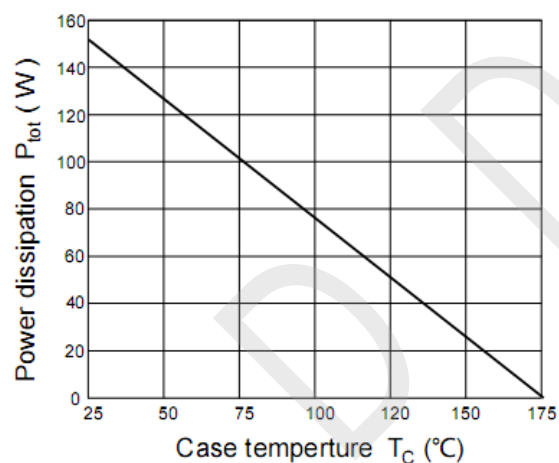
Thermal characteristics (Per Device)

Parameter	Symbol	Typ.	Unit
Thermal resistance - junction to case	$R_{\theta JC}$	1* 0.5**	$^{\circ}\text{C/W}$

** Per leg, * Per Device

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	$I_F = 10\text{A}, T_J=25^\circ\text{C}$ $I_F = 10\text{A}, T_J=175^\circ\text{C}$		1.5 2.0	1.8 2.4	V
Reverse current	I_R	$V_R = 600\text{V}, T_J=25^\circ\text{C}$ $V_R = 600\text{V}, T_J=175^\circ\text{C}$		20 40	100 400	μA
Total capacitive charge	Q_C	$V_R = 600\text{V}, I_F = 15\text{A}$ $di/dt=500\text{A}/\mu\text{s}, T_J=25^\circ\text{C}$		44.5		nC
Total capacitance	C	$V_R = 0\text{V}, T_J=25^\circ\text{C}, f=1\text{MHz}$ $V_R = 200\text{V}, T_J=25^\circ\text{C}, f=1\text{MHz}$ $V_R = 400\text{V}, T_J=25^\circ\text{C}, f=1\text{MHz}$		877.5 80 64		pF
Capacitance stored energy	E_C	$V_R = 400\text{V}$		6.2		μJ

Typical Characteristics (Per Leg)

Figure 1. Forward Characteristics

Figure 2. Reverse Characteristics

Figure 3. Current Derating

Figure 4. Dissipated power curve

Typical Characteristics (Per Leg)

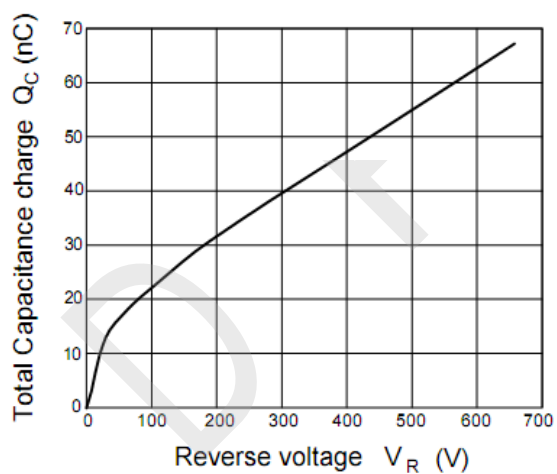


Figure 5. Capacitance vs reverse voltage

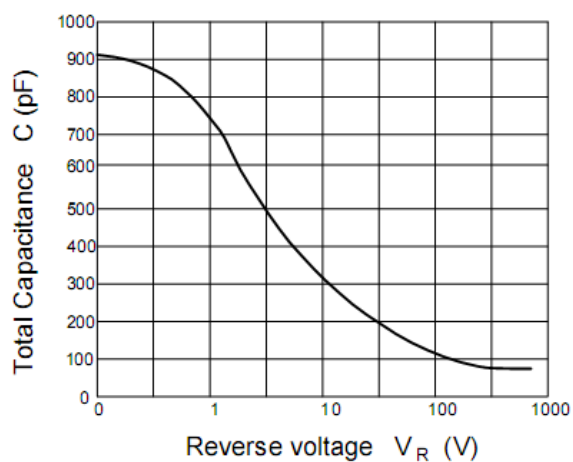


Figure 6. Capacitance vs. reverse voltage

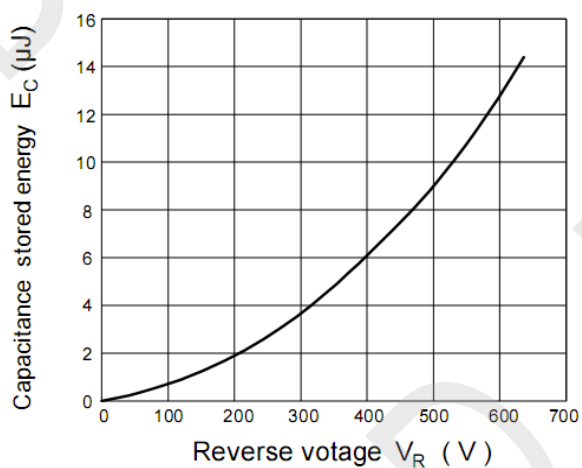


Figure 7. Capacitance stored energy

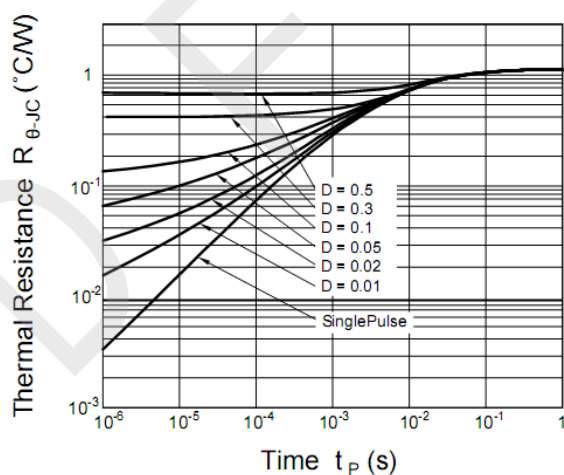


Figure 8. Transient Thermal Impedance

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