

SiC Schottky Barrier Rectifier

Features

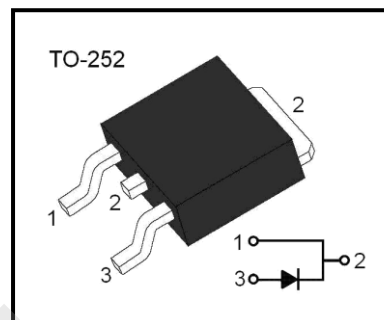
- Reverse withstand voltage 1200V
- Zero reverse recovery current
- High working frequency
- Switch characteristics are not affected by temperature
- Fast switching speed
- Positive temperature coefficient of positive pressure drop

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}		1200	V
Working peak reverse voltage	V_{RWM}		1200	V
DC blocking voltage	V_{DC}		1200	V
Average rectified output current	$I_{F(AV)}$	$T_C=25^{\circ}C$ $T_C=125^{\circ}C$ $T_C=150^{\circ}C$	33 16 10	A
Forward repetitive peak current	I_{FRM}	$T_C=25^{\circ}C$, tp=10ms, Half Sine Wave $T_C=110^{\circ}C$, tp=10ms, Half Sine Wave	47 31	A
Forward surge current	I_{FSM}	$T_C=25^{\circ}C$, tp=10ms, Half Sine Wave $T_C=110^{\circ}C$, tp=10ms, Half Sine Wave	71 59	A
Power dissipation	P_{tot}	$T_C=25^{\circ}C$ $T_C=110^{\circ}C$	120 50	W
Diode dV/dt ruggedness	dV/dt	$V_R=0\sim960V$	200	V/ns
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	$R_{\theta JC}$	1.02	°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	$I_F = 10\text{A}$, $T_J=25^{\circ}\text{C}$ $I_F = 10\text{A}$, $T_J=175^{\circ}\text{C}$		1.5 2.2	1.8 3	V
Reverse current	I_R	$V_R = 1200\text{V}$, $T_J=25^{\circ}\text{C}$ $V_R = 1200\text{V}$, $T_J=175^{\circ}\text{C}$		10 40	50 150	μA
Total capacitive charge	Q_C	$V_R = 800\text{V}$, $I_F = 5\text{A}$ $di/dt=200\text{A}/\mu\text{s}$, $T_J=25^{\circ}\text{C}$		52		nC
Total capacitance	C	$V_R = 0\text{V}$, $T_J=25^{\circ}\text{C}$, $f=1\text{MHz}$ $V_R = 400\text{V}$, $T_J=25^{\circ}\text{C}$, $f=1\text{MHz}$ $V_R = 800\text{V}$, $T_J=25^{\circ}\text{C}$, $f=1\text{MHz}$		750 45 38		pF
Capacitance stored energy	E_C	$V_R = 800\text{V}$		14.5		μJ

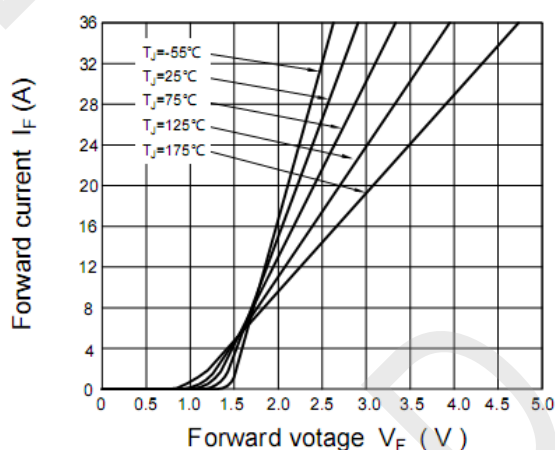
Typical Characteristics


Figure 1. Forward Characteristics

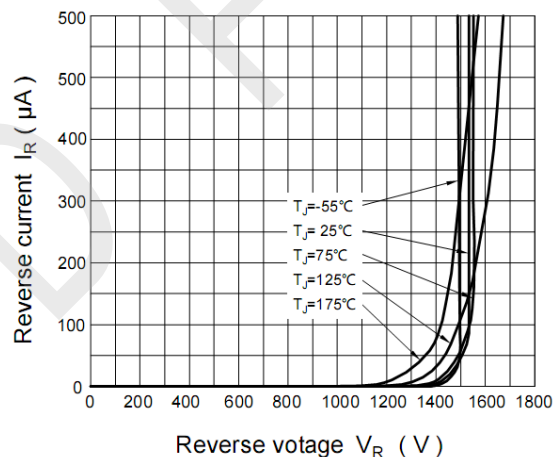


Figure 2. Reverse Characteristics

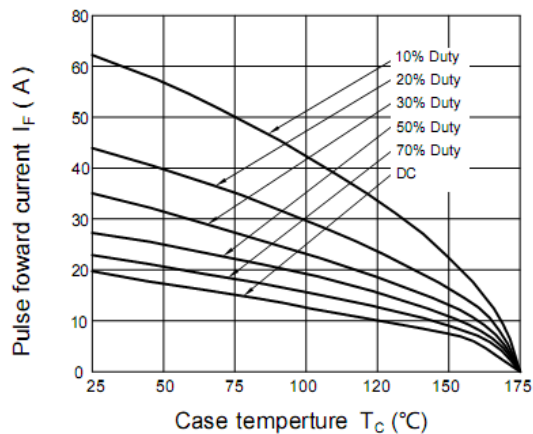


Figure 3. Current Derating

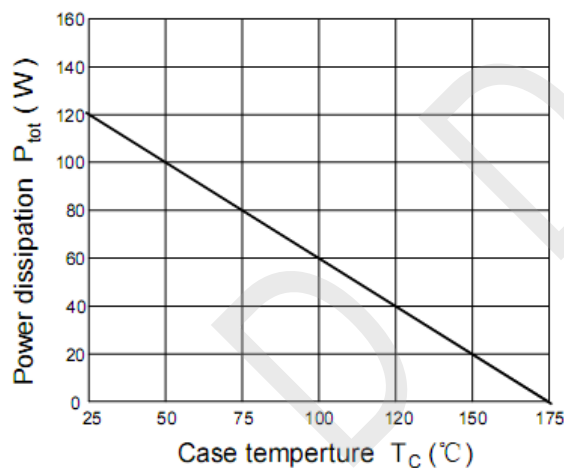


Figure 4. Power Derating

Typical Characteristics

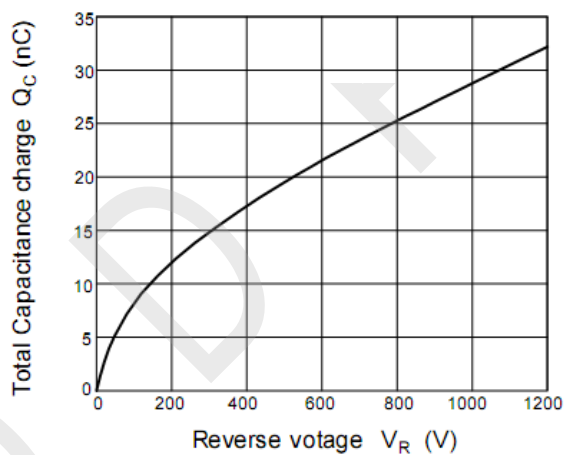


Figure 5. Total Capacitance charge vs. reverse voltage

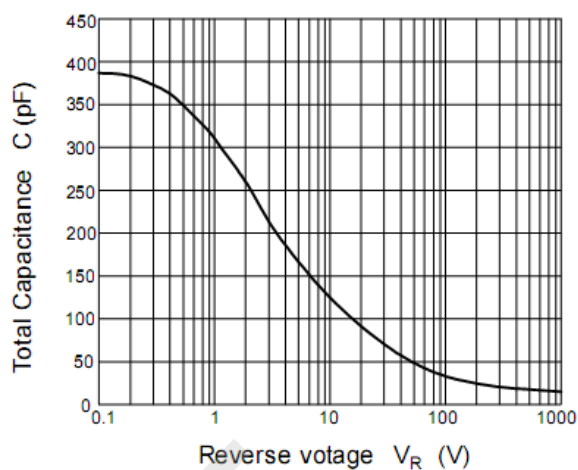


Figure 6. Capacitance vs. reverse voltage

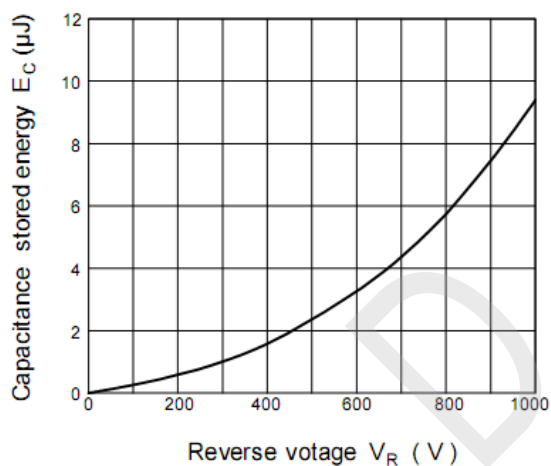


Figure 7. Capacitance stored energy

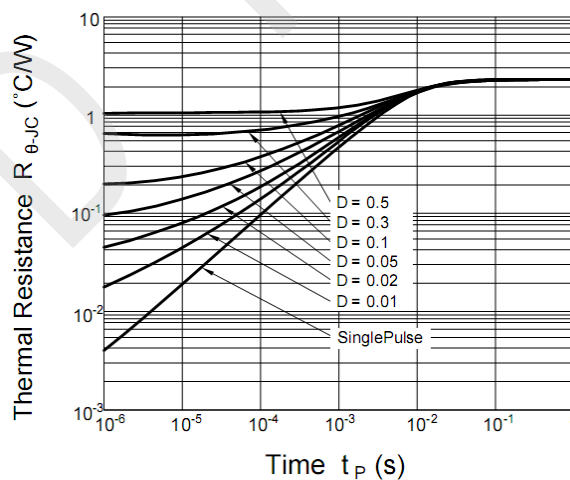


Figure 8. Transient Thermal Impedance

DDF3D10120E

TO-252 SiC Schottky Diodes

Package Dimensions

Dim	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	2.20	2.50	0.087	0.098
A1	0.00	0.12	0.000	0.005
A2	2.20	2.40	0.087	0.094
B	1.20	1.60	0.047	0.063
b	0.50	0.70	0.020	0.028
b1	0.70	0.90	0.028	0.035
c	0.40	0.60	0.016	0.024
c1	0.40	0.60	0.016	0.024
D	6.35	6.65	0.250	0.262
D1	5.20	5.40	0.205	0.213
E	5.40	5.70	0.213	0.224
e	2.20	2.40	0.087	0.094
e1	4.40	4.80	0.173	0.189
L	9.60	10.20	0.378	0.402
L1	2.70	3.10	0.106	0.122
L2	1.40	1.80	0.055	0.071
L3	0.90	1.50	0.035	0.059