

SiC Schottky Barrier Rectifier

Features

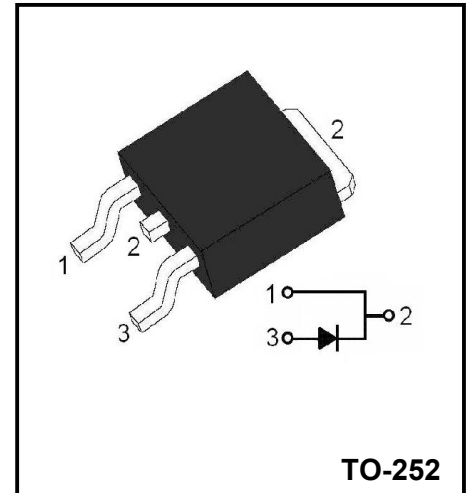
- ✦ Reverse withstand voltage 650V
- ✦ Zero reverse recovery current
- ✦ High working frequency
- ✦ Switch characteristics are not affected by temperature
- ✦ Fast switching speed
- ✦ Positive temperature coefficient of positive pressure drop

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 Ratings (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	$I_{F(AV)}$	Ta=25°C	35	A
		Ta=125°C	16	
		Ta=150°C	13	
Forward repetitive peak current	I_{FRM}	T _C =25°C, tp=10ms, Half Sine Wave	52	A
		T _C =110°C, tp=10ms, Half Sine Wave	34	
Forward surge current	I_{FSM}	T _C =25°C, tp=10ms, Half Sine Wave	104	A
		T _C =110°C, tp=10ms, Half Sine Wave	82	
Power dissipation	P_{tot}	Ta=25°C	166	W
		Ta=110°C	72	
Junction temperature	T_j		-55 ~ +175	°C
Storage temperature	T_{stg}		-55 ~ +175	°C

Thermal characteristics

Parameter	Symbol	Value	Unit
Thermal Resistance - Junction to Case	$R_{\theta JC}$	1.1	°C/W

Electrical Characteristics (Ta=25°C unless otherwise specified)

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Forward voltage	V_F	$I_F = 13\text{ A}, T_j = 25^\circ\text{C}$ $I_F = 13\text{ A}, T_j = 175^\circ\text{C}$		1.5 2.0	1.8 2.4	V
Reverse current	I_R	$V_R = 650\text{V}, T_j = 25^\circ\text{C}$ $V_R = 650\text{V}, T_j = 175^\circ\text{C}$		15 30	75 300	μA
Total capacitive charge	Q_C	$V_R = 400\text{V}, I_F = 10\text{A}$ $di/dt = 500\text{A}/\mu\text{s}, T_j = 25^\circ\text{C}$		39		nC
Total capacitance	C	$V_R = 0\text{V}, T_j = 25^\circ\text{C}, f = 1\text{MHz}$ $V_R = 200\text{V}, T_j = 25^\circ\text{C}, f = 1\text{MHz}$ $V_R = 400\text{V}, T_j = 25^\circ\text{C}, f = 1\text{MHz}$		650 57 47		pF
Capacitance stored energy	E_C	$V_R = 400\text{V}$		4.8		μJ

Typical Characteristic

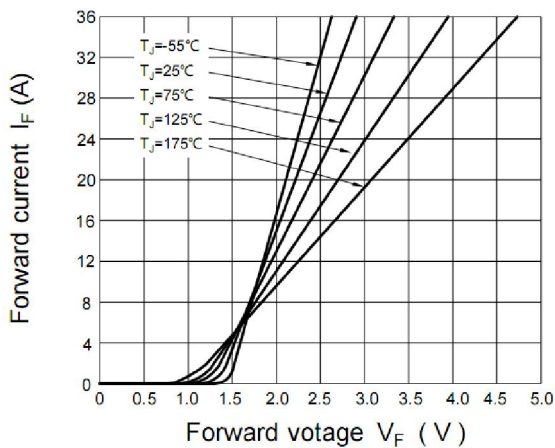


Figure 1. Forward Characteristics

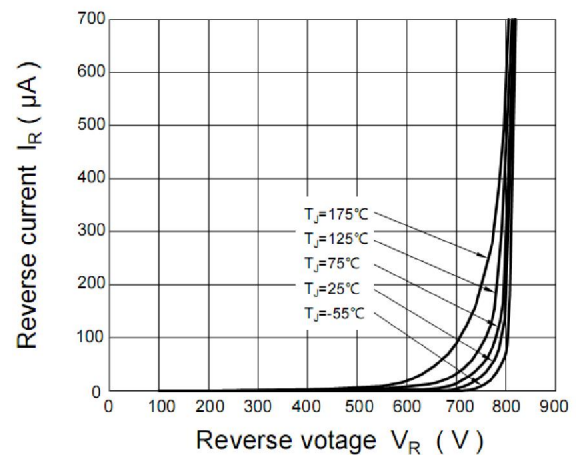


Figure 2. Reverse Characteristics

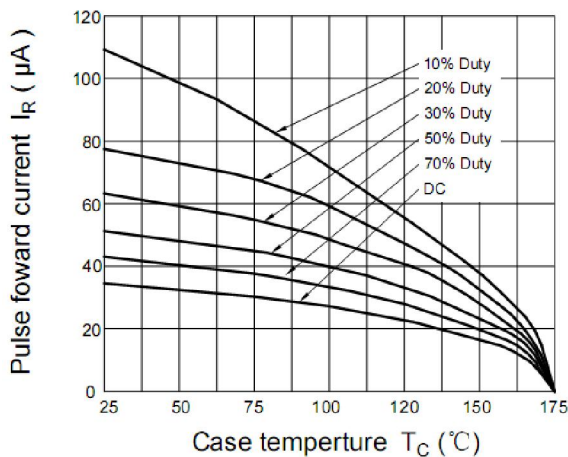


Figure 3. Current Derating

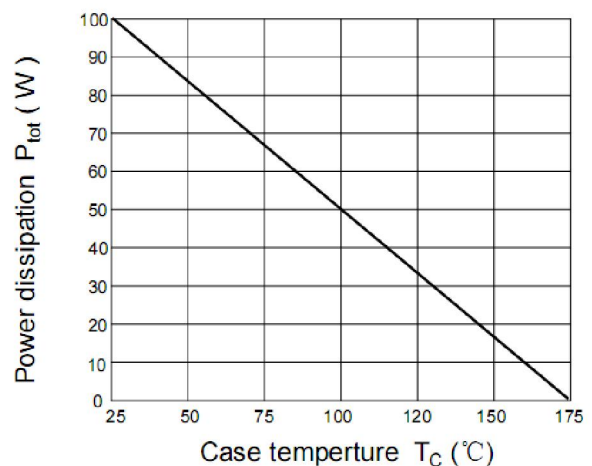


Figure 4. Power Derating

Typical Characteristic

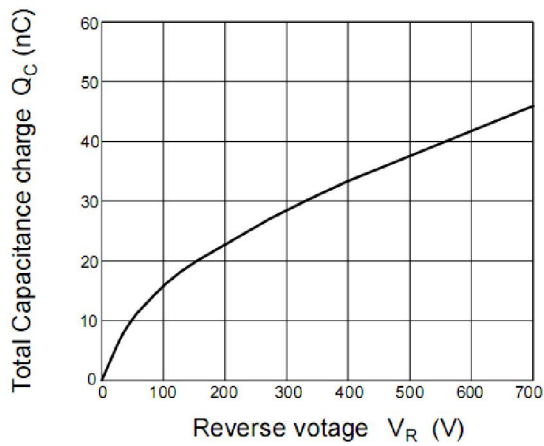


Figure 5. Total Capacitance charge vs. reverse voltage

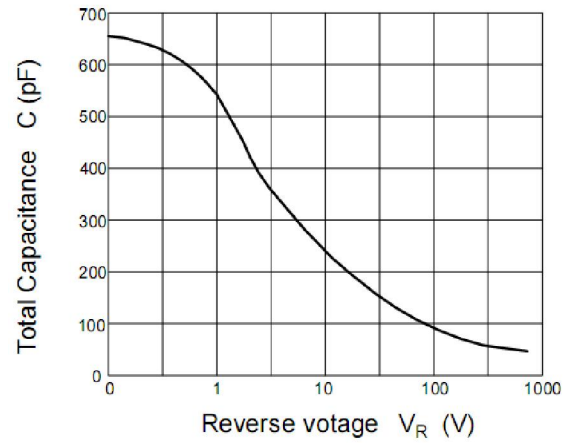


Figure 6. Capacitance vs reverse voltage

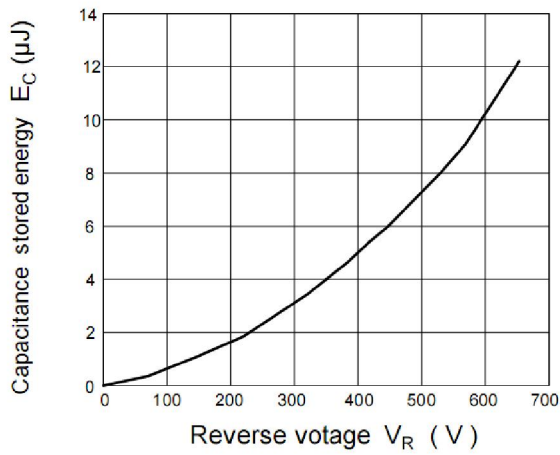


Figure 7. Capacitance stored energy

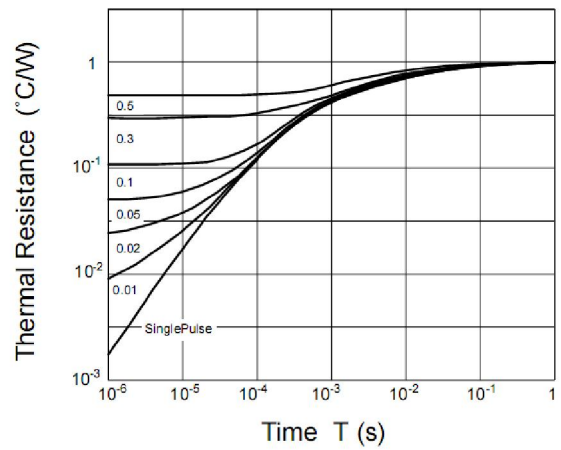
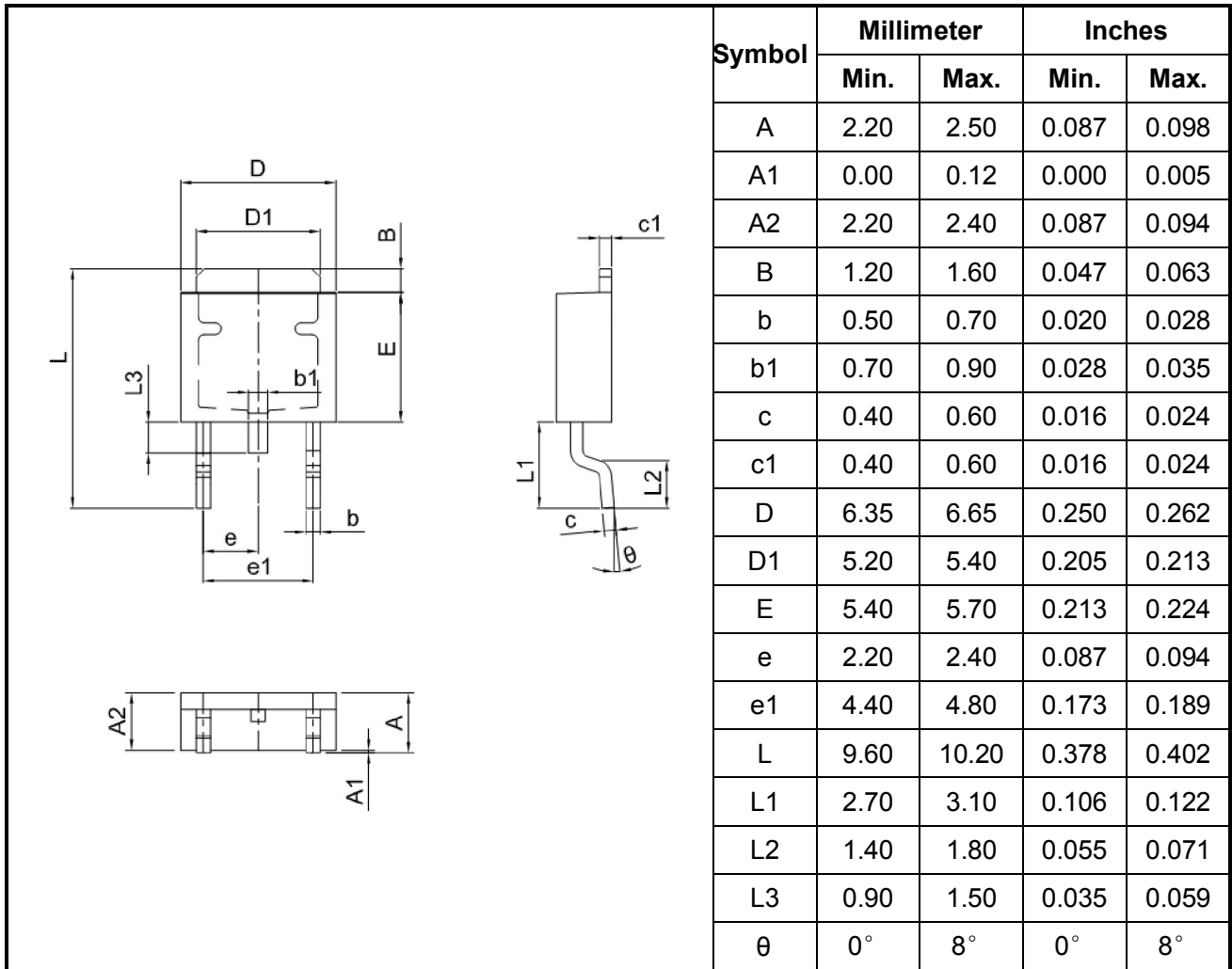


Figure 8. Transient Thermal Impedance

Package Dimensions

TO-252



Product Specification Classification

Part Number	Package	Marking	Pack
YFWD313065CS	TO-252	YFW D313065CS XXXXX	200PCS/Tape