

SiC Schottky Diodes

FEATURES

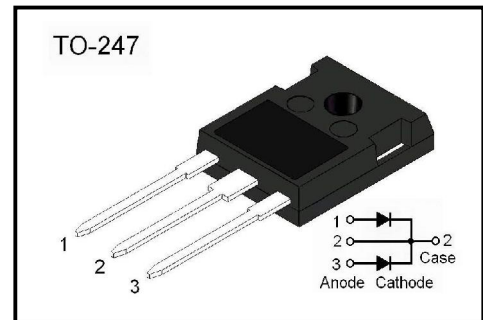
- ◆ Reverse withstand voltage 650V
- ◆ Zero reverse recovery current
- ◆ High working frequency
- ◆ Switch characteristics are not affected by temperature
- ◆ Fast switching speed
- ◆ Positive temperature coefficient of positive pressure drop

Application

- ◆ Switching mode power supply, AC/DC converter
- ◆ Power factor correction
- ◆ Motor drive
- ◆ PV inverter and wind turbine

Advantages

- ◆ Very low switching loss
- ◆ Higher efficiency
- ◆ Low dependence of the system on the heat sink
- ◆ No thermal collapse in parallel devices



Absolute Maximum Rating (Per Leg, 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
Continuous Forward Current	$I_{F(AV)}$	Ta=25°C Ta=125°C Ta=150°C	30 15 10	A
Repetitive Peak Forward Surge Current	I_{FRM}	T _C =25°C, tp=10ms, Half Sine Wave T _C =110°C, tp=10ms, Half Sine Wave	46 31	A
Non-Repetitive Peak Forward Surge Current	I_{FSM}	T _C =25°C, tp=10ms, Half Sine Wave T _C =110°C, tp=10ms, Half Sine Wave	90 71	A
Power dissipation	P_{tot}	Ta=25°C Ta=110°C	115 50	W
Junction temperature	T_j		-55 ~ +175	°C
Storage temperature	T_{stg}		-55 ~ +175	°C
Mounting Torque	T_M	M3 Screw 6-32 Screw	1 8.8	Nm lbf-in

Thermal characteristics (Per Device)

Parameter	Symbol	Value	Unit
Thermal Resistance - Junction to Case	$R_{\theta JC}$	0.75	°C/W

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	$I_F = 10\text{A}$, $T_J=25^\circ\text{C}$ $I_F = 10\text{A}$, $T_J=175^\circ\text{C}$		1.4 1.7	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	60 200	μA
Total capacitive charge	Q_C	$V_R = 650\text{V}$, $I_F = 10\text{A}$ $di/dt=500\text{A}/\mu\text{s}$, $T_J=25^\circ\text{C}$		30		nC
Total capacitance	C	$V_R = 0\text{V}$, $T_J=25^\circ\text{C}$, $f=1\text{MHz}$ $V_R = 200\text{V}$, $T_J=25^\circ\text{C}$, $f=1\text{MHz}$ $V_R = 400\text{V}$, $T_J=25^\circ\text{C}$, $f=1\text{MHz}$		460 50 48		pF
Capacitance Stored Energy	E_C	$V_R = 400\text{V}$		4.9		μJ

Typical Characteristics (Per Leg)

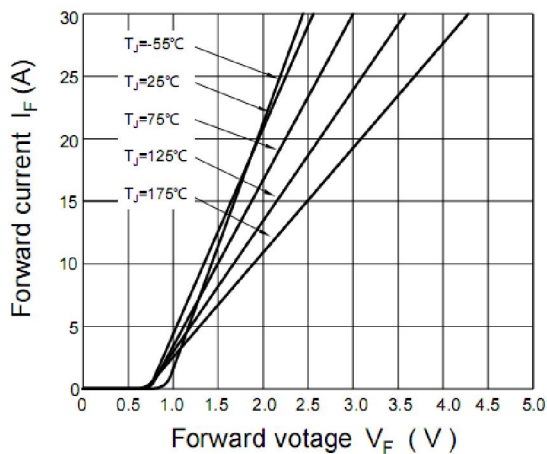


Figure 1. Forward Characteristics

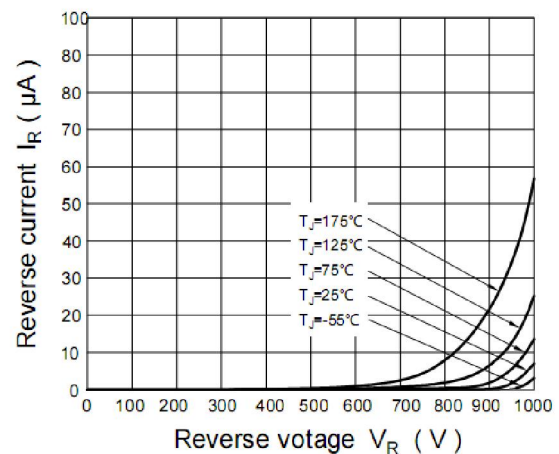


Figure 2. Reverse Characteristics

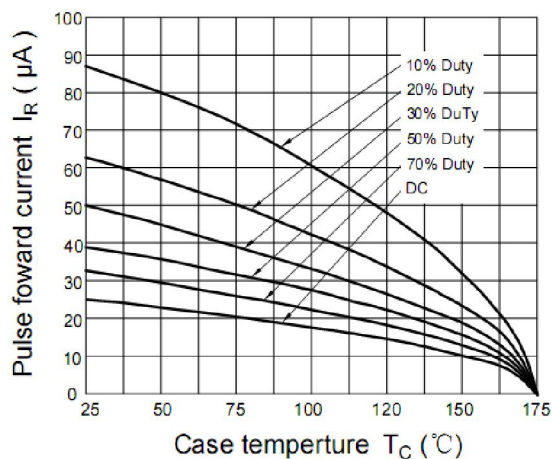


Figure 3. Load current

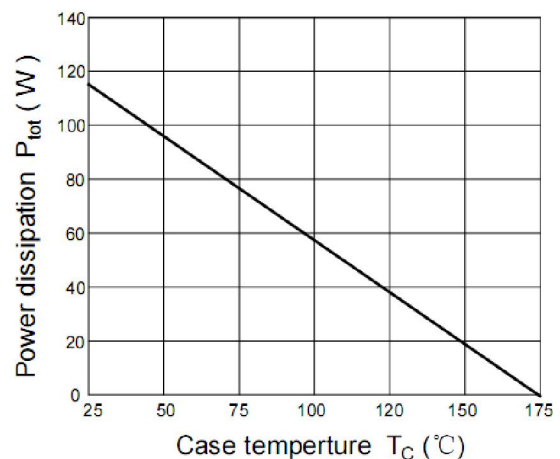


Figure 4. Dissipated power curve

Typical Characteristics (Per Leg)

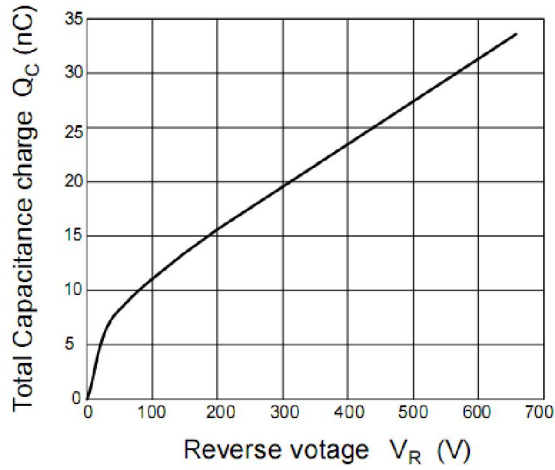


Figure 5. Capacitance vs reverse voltage

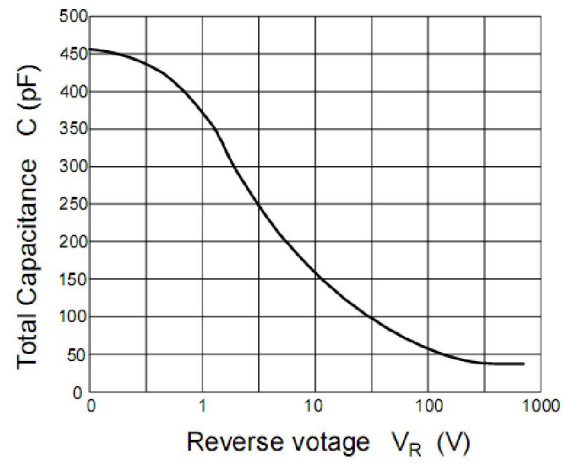


Figure 6. Capacitance vs. reverse voltage

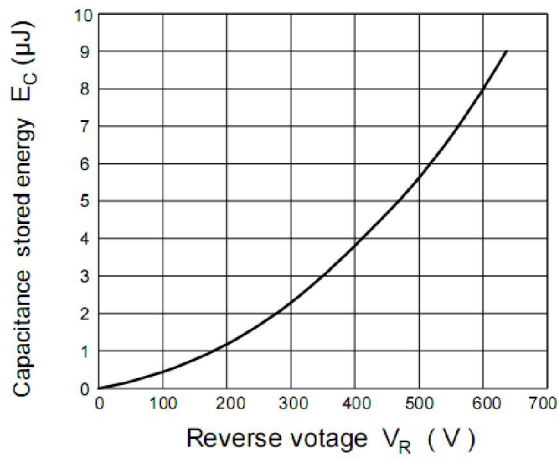


Figure 7. Capacitance stored energy

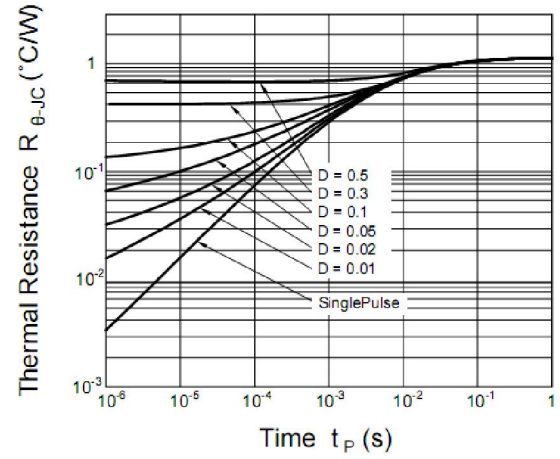


Figure 8. Transient Thermal Impedance

Package Dimensions

TO-247

Symbol	Dimensions in mm		Dimensions in Inch	
	Min.	Max.	Min.	Max.
A	4.90	5.10	0.193	0.201
A1	1.90	2.10	0.075	0.083
A2	2.29	2.54	0.090	0.100
b	1.00	1.40	0.039	0.055
b1	2.00	2.20	0.079	0.087
b2	3.00	3.20	0.118	0.126
c	0.50	0.70	0.020	0.028
D	15.75	16.05	0.620	0.632
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
F1	5.80	6.00	0.228	0.236
L	20.10	20.40	0.791	0.803
L1	4.05	4.35	0.159	0.171
Φ	3.50	3.70	0.138	0.146

ORDERING INFORMATION

Part Number	Package	Marking	Pack
YFWD320065PT	TO-247	YFW D320065PT X X X X X	600pcs/box

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