

**SiC Schottky Barrier Rectifier**

**Reverse Voltage - 1200V**

**Forward Current - 20A**

**FEATURES**

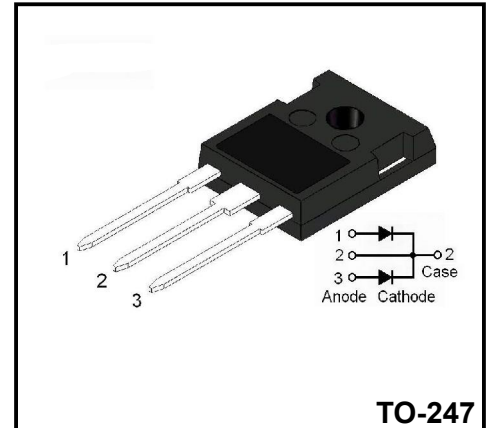
- ◆ Reverse withstand voltage 1200V
- ◆ Zero reverse recovery current
- ◆ High working frequency
- ◆ Switch characteristics are not affected by temperature
- ◆ Fast switching speed
- ◆ Positive temperature coefficient of positive pressure drop

**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



**TO-247**

**Absolute Maximum Rating (Ta=25°C unless otherwise specified)**

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 (Per Leg / Device)	$I_{F(AV)}$	Ta=25°C Ta=125°C Ta=150°C	34/68 16.5/33 1/200	A
Forward repetitive peak current	$I_{FRM}$	T <sub>C</sub> =25°C, tp=10ms, Half Sine Wave T <sub>C</sub> =110°C, tp=10ms, Half Sine Wave	47* 31.5*	A
Forward surge current	$I_{FSM}$	T <sub>C</sub> =25°C, tp=10ms, Half Sine Wave T <sub>C</sub> =110°C, tp=10ms, Half Sine Wave	71* 59.5*	A
Power dissipation	$P_{tot}$	Ta=25°C Ta=110°C	176/352 76/152	W
Junction temperature	T <sub>j</sub>		-55 ~ +175	°C
Storage temperature	T <sub>stg</sub>		-55 ~ +175	°C
Mounting Torque		M3 Screw 6-32 Screw	1 8.8	Nm lbf-in

**Thermal characteristics**

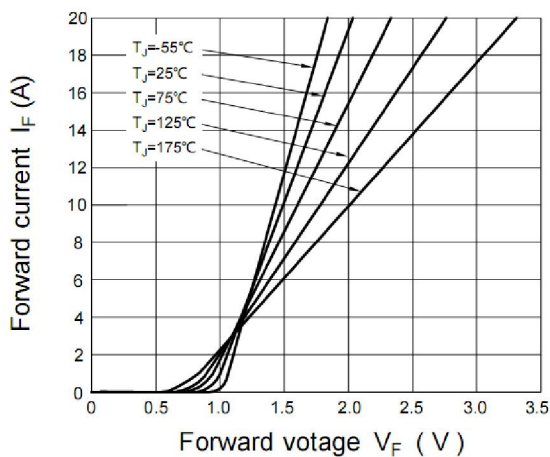
Parameter	Symbol	Value	Unit
Thermal Resistance - Junction to Case	$R_{\theta JC}$	0.85* 0.43**	°C/W

\*Per Leg, \*\* Device

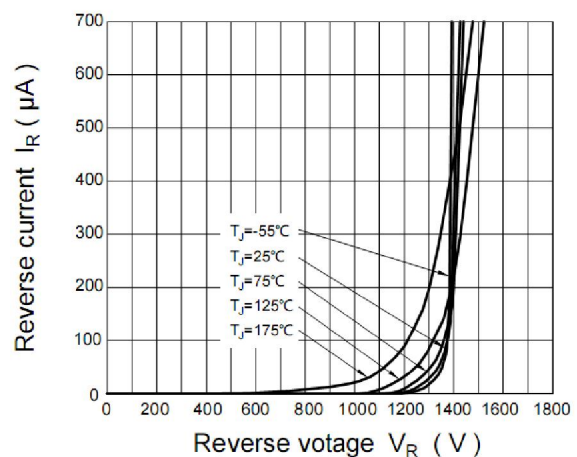
**Electrical Characteristics (Per Leg,  $T_a=25^\circ\text{C}$  unless otherwise specified)**

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 2.2	1.8 3.0	V
Reverse current	$I_R$	$V_R = 1200\text{V}, T_j = 25^\circ\text{C}$ $V_R = 1200\text{V}, T_j = 175^\circ\text{C}$		30 55	250 350	$\mu\text{A}$
Total capacitive charge	$Q_C$	$V_R = 800\text{V}, I_F = 10\text{ A}$ $di/dt = 200\text{A}/\mu\text{s}, T_j = 25^\circ\text{C}$		52		nC
Total capacitance	C	$V_R = 0\text{V}, T_j = 25^\circ\text{C}, f = 1\text{MHz}$ $V_R = 400\text{V}, T_j = 25^\circ\text{C}, f = 1\text{MHz}$ $V_R = 800\text{V}, T_j = 25^\circ\text{C}, f = 1\text{MHz}$		754 45 38		pF
Capacitance stored energy	$E_C$	$V_R = 800\text{V}$		14.5		$\mu\text{J}$

**Typical Characteristics (Per leg)**

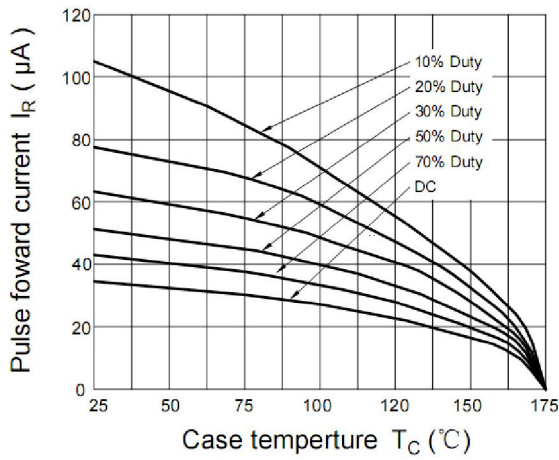


**Figure 1. Forward Characteristics**

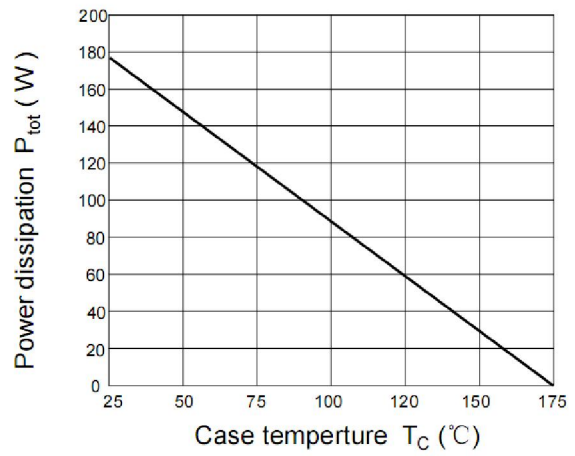


**Figure 2. Reverse Characteristics**

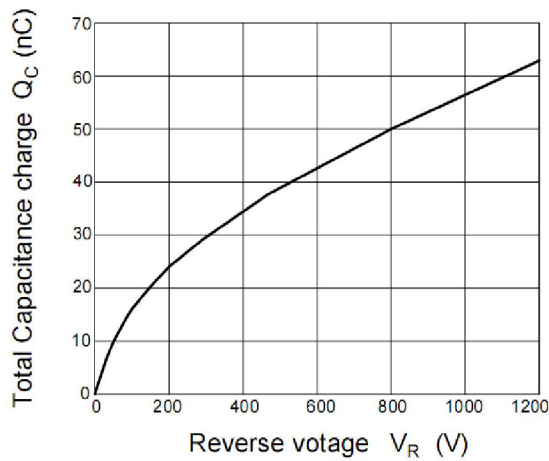
**Typical Characteristics**



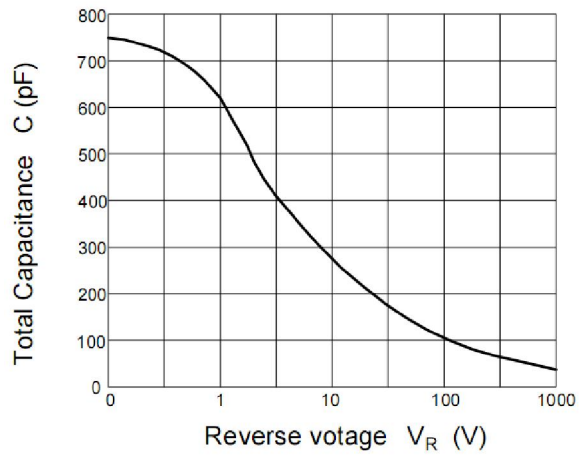
**Figure 3. Load current**



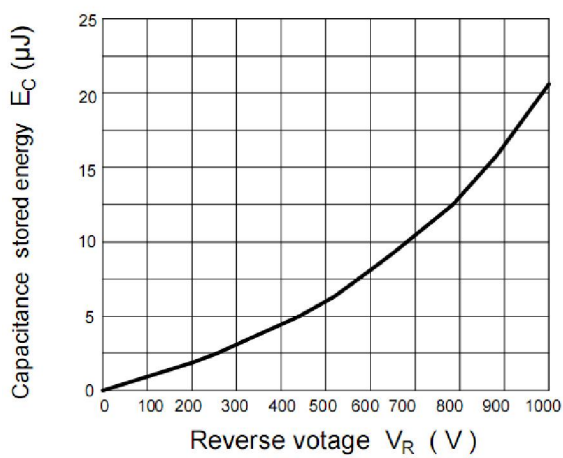
**Figure 4. Dissipated power curve**



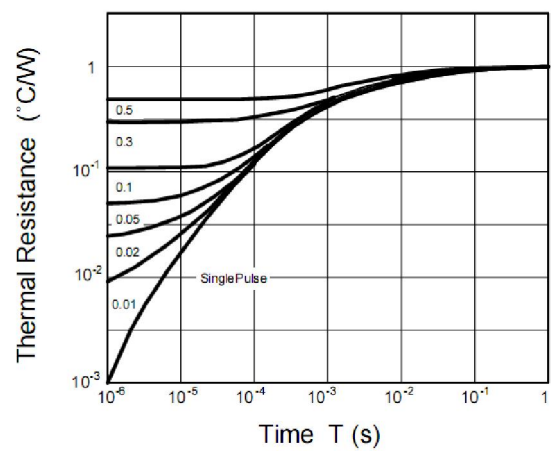
**Figure 5. Capacitance vs. reverse voltage**



**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
YFWD320120PT	TO-247	YFW D320120PT XXXXX	600pcs/box