

SiC Schottky Barrier Rectifier

Reverse Voltage -600 V

Forward Current - 20 A

FEATURES

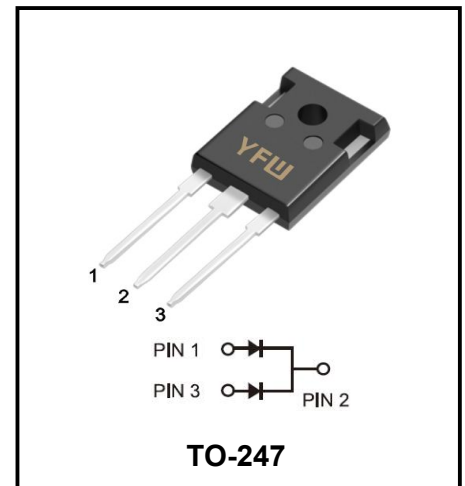
- ◆ Reverse withstand voltage 600V
- ◆ Zero reverse recovery current
- ◆ High working frequency
- ◆ Switch characteristics are not affected by temperature
- ◆ Fast switching speed
- ◆ Positive temperature coefficient of positive pressure drop

APPLICATIONS

- ◆ 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 ($T_c=25^{\circ}\text{C}$, unless otherwise specied)

Parameter	Symbol	Test conditions	Value	Unit
Peak repetitive reverse voltage	V_{RRM}		600	V
Working peak reverse voltage	V_{RWM}		600	V
DC blocking voltage	V_{DC}		600	V
Continuous forward current	$I_{F(AV)}$	$T_c=25^{\circ}\text{C}$ $T_c=125^{\circ}\text{C}$ $T_c=150^{\circ}\text{C}$	29.5/59 14/28 10/20	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	67/134 44/88	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	90/157 71/115	A
Power dissipation	P_{tot}	$T_c=25^{\circ}\text{C}$ $T_c=125^{\circ}\text{C}$	118 59	W
Junction temperature	T_j		-55 ~ +175	$^{\circ}\text{C}$
Storage temperature	T_{stg}		-55 ~ +175	$^{\circ}\text{C}$
Mounting trque	M_T	M3 Screw 6-32 Screw	1 8.8	Nm lbf-in

Thermal characteristics (Per Device)

Parameter	Symbol	Typ.	Unit
Thermal resistance - jnction to case	$R_{\theta JC}$	1.1** 0.55*	°C/ W

** Per leg, * Per Device

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

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Forward voltage	V_F	$I_F = 10A, T_J=25^{\circ}C$ $I_F = 10A, T_J=175^{\circ}C$		1.5 2.0	1.8 2.4	V
Reverse current	I_R	$V_R = 600V, T_J=25^{\circ}C$ $V_R = 600V, T_J=175^{\circ}C$		10 20	50 200	μA
Total capacitive charge	Q_C	$V_R = 600V, I_F = 10 A$ $di/dt=500A/\mu s, T_J=25^{\circ}C$		25		nC
Total capacitance	C	$V_R = 0V, T_J=25^{\circ}C, f=1MHz$ $V_R = 200V, T_J=25^{\circ}C, f=1MHz$ $V_R = 400V, T_J=25^{\circ}C, f=1MHz$		480 50 42		pF
Capacitance stored energy	E_C	$V_R = 400V$		4.9		μJ

Typical Characteristics (Per Leg)

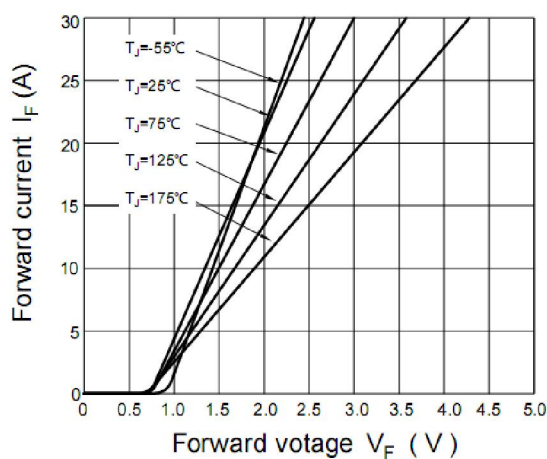


Figure 1. Forward Characteristics

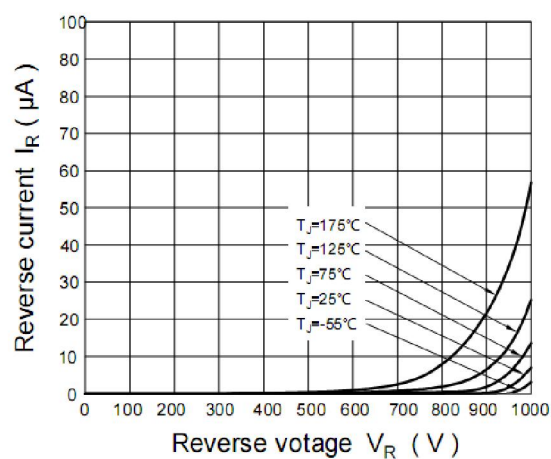


Figure 2. Reverse Characteristics

Typical Characteristics (Per Leg)

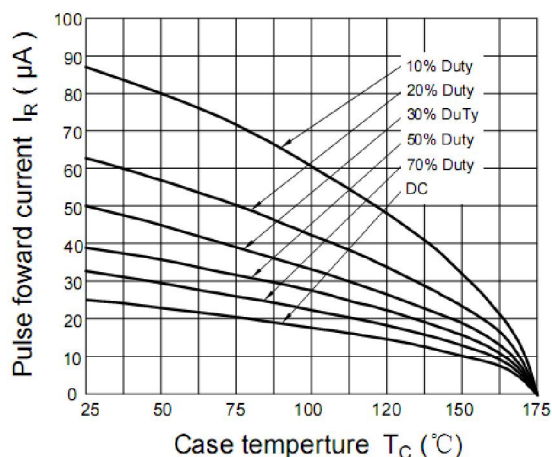


Figure 3. Load current

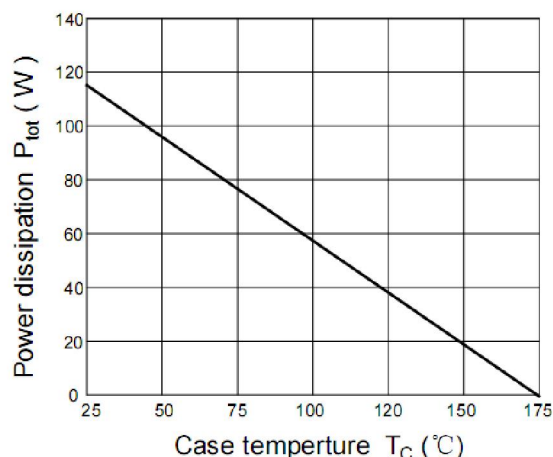


Figure 4. Dissipated power curve

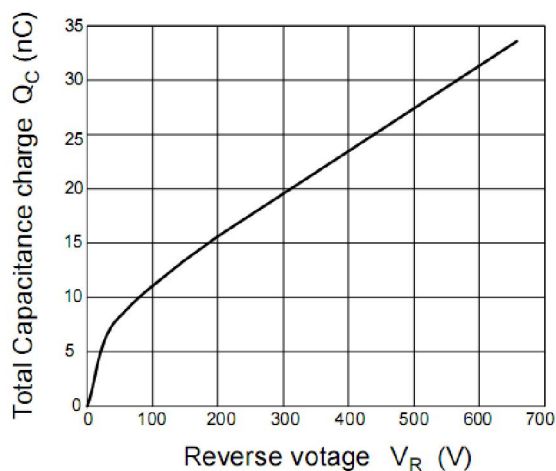


Figure 5. Capacitance vs reverse voltage

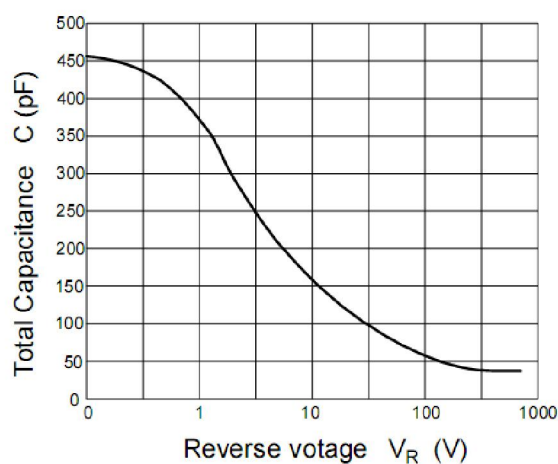


Figure 6. Capacitance vs. reverse voltage

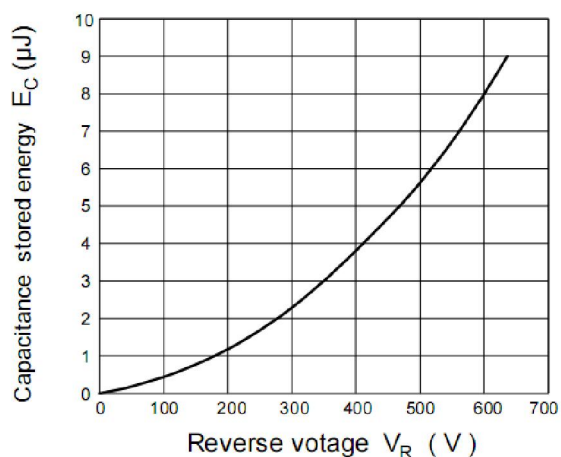


Figure 7. Capacitance stored energy

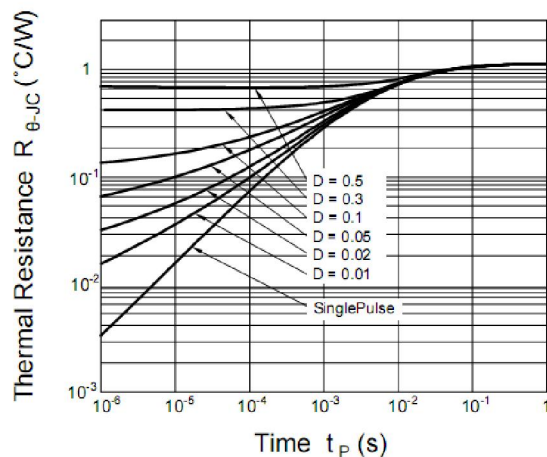
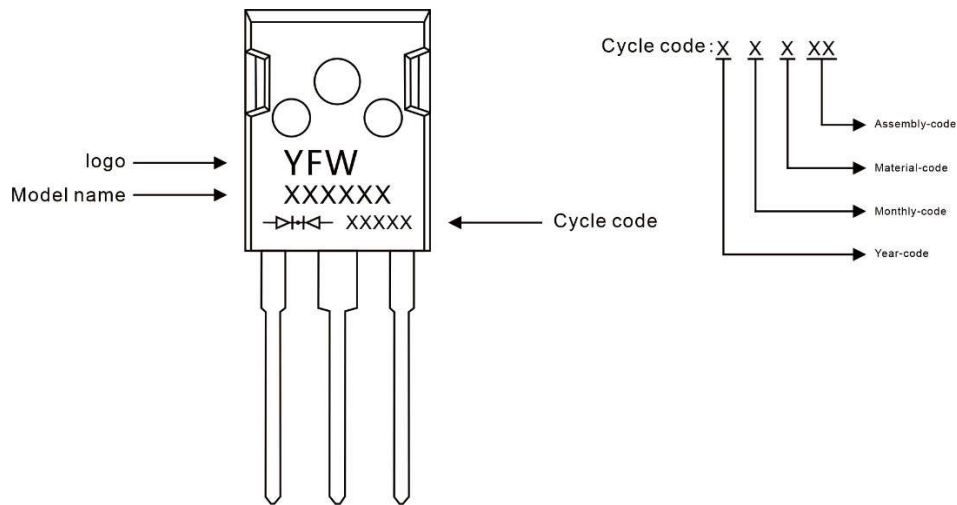


Figure 8. Transient Thermal Impedance

Marking Diagram



Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFWD320060PT	TO-247	0.209oz(5.93g)	30pcs/tube	600PCS/Box 2400PCS/Carton

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

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