

SiC Schottky Barrier Rectifier

Reverse Voltage - 650V

Forward Current - 6A

FEATURES

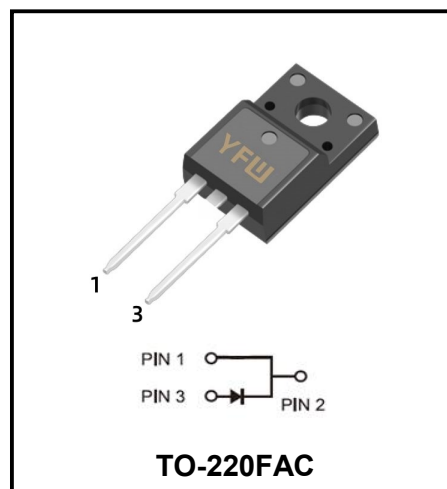
- ♦ Reverse withstand voltage 650V
- ♦ Zero reverse recovery current
- ♦ High working frequency
- ♦ Switch characteristics are not affected by temperature
- ♦ Fast switching speed
- ♦ Positive temperature coefficient of positive pressure drop

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 Rating (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	$I_{F(AV)}$	$T_C=25^{\circ}C$ $T_C=125^{\circ}C$ $T_C=150^{\circ}C$	20 9.5 6	A
Forward repetitive peak current	I_{FRM}	$T_C=25^{\circ}C, t_p=10ms, \text{Half Sine Wave}$ $T_C=110^{\circ}C, t_p=10ms, \text{Half Sine Wave}$	28 19	A
Forward surge current	I_{FSM}	$T_C=25^{\circ}C, t_p=10ms, \text{Half Sine Wave}$ $T_C=110^{\circ}C, t_p=10ms, \text{Half Sine Wave}$	63 49	A
Power dissipation	P_{tot}	$T_C=25^{\circ}C$ $T_C=110^{\circ}C$	60 24	W
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	$R_{\theta JC}$	3.6	°C/W

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

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Forward voltage	V_F	$I_F = 6A, T_j = 25^\circ C$ $I_F = 6A, T_j = 175^\circ C$		1.5 2.0	1.7 2.4	V
Reverse current	I_R	$V_R = 650V, T_j = 25^\circ C$ $V_R = 650V, T_j = 175^\circ C$		1 15	20 160	μA
Total capacitive charge	Q_C	$V_R = 400V, I_F = 6A$ $di/dt = 500A/\mu s, T_j = 25^\circ C$		15		nC
Total capacitance	C	$V_R = 0V, T_j = 25^\circ C, f = 1MHz$ $V_R = 200V, T_j = 25^\circ C, f = 1MHz$ $V_R = 400V, T_j = 25^\circ C, f = 1MHz$		295 28.5 25.5		pF
Capacitance stored energy	E_C	$V_R = 400V$		2.3		μJ

Typical Characteristics

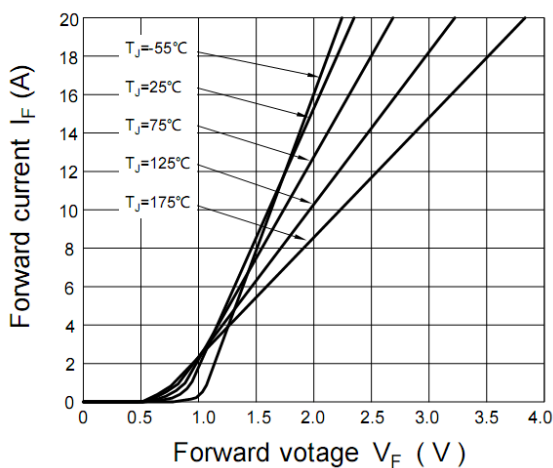


Figure 1. Forward Characteristics

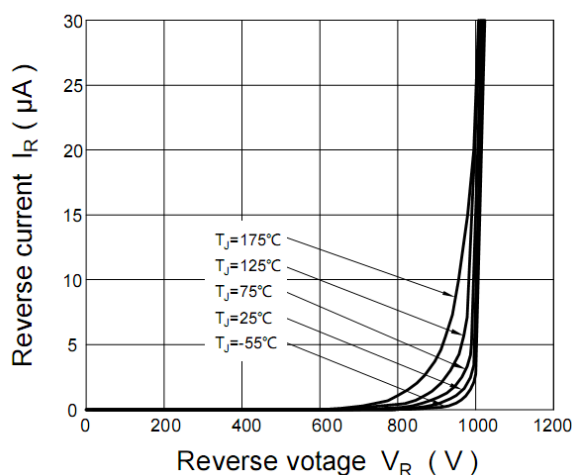


Figure 2. Reverse Characteristics

Typical Characteristics

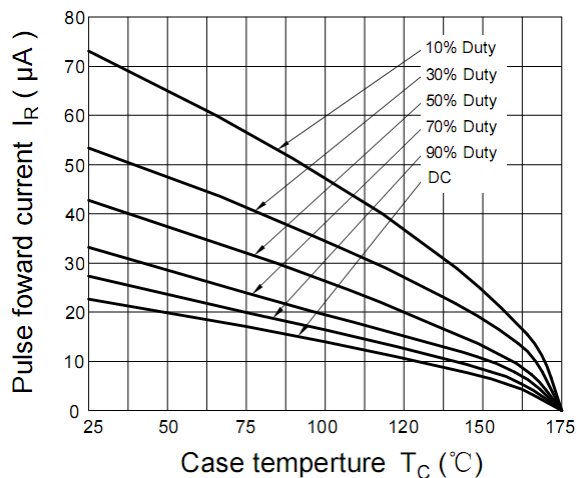


Figure 3. Current Derating

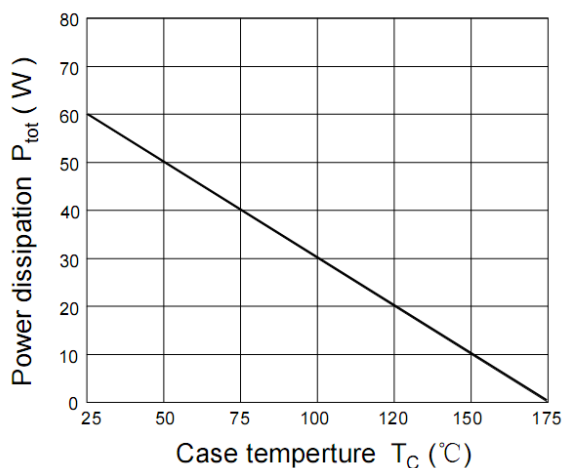


Figure 4. Power Derating

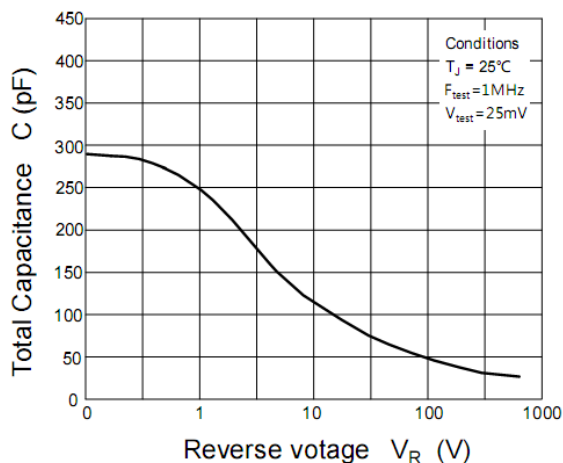


Figure 5. Capacitance vs reverse voltage

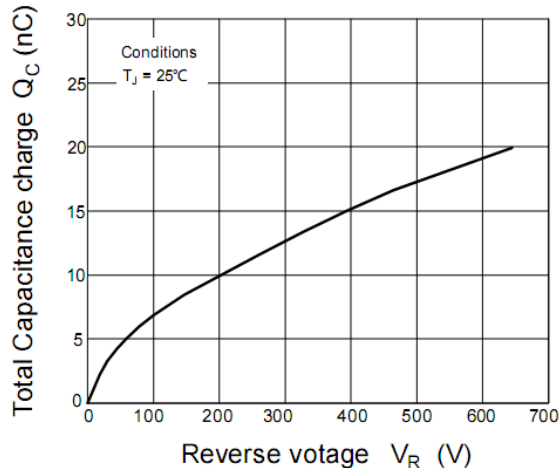


Figure 6. Recovery Charge vs Reverse Voltage

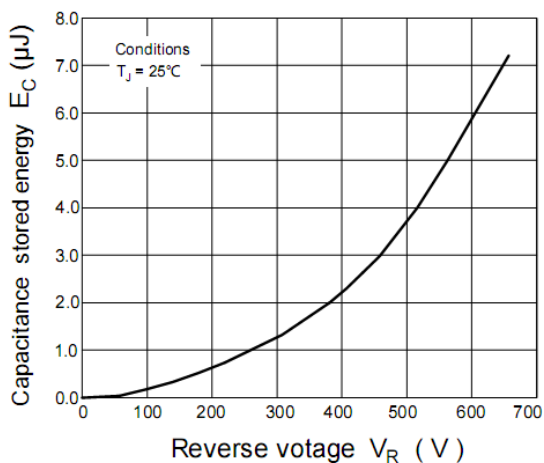


Figure 7. Capacitance stored Energy

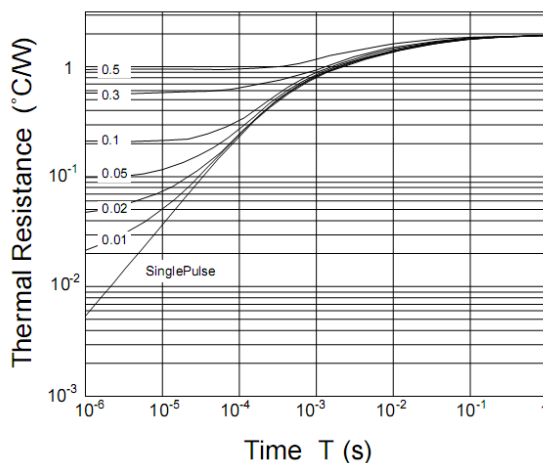
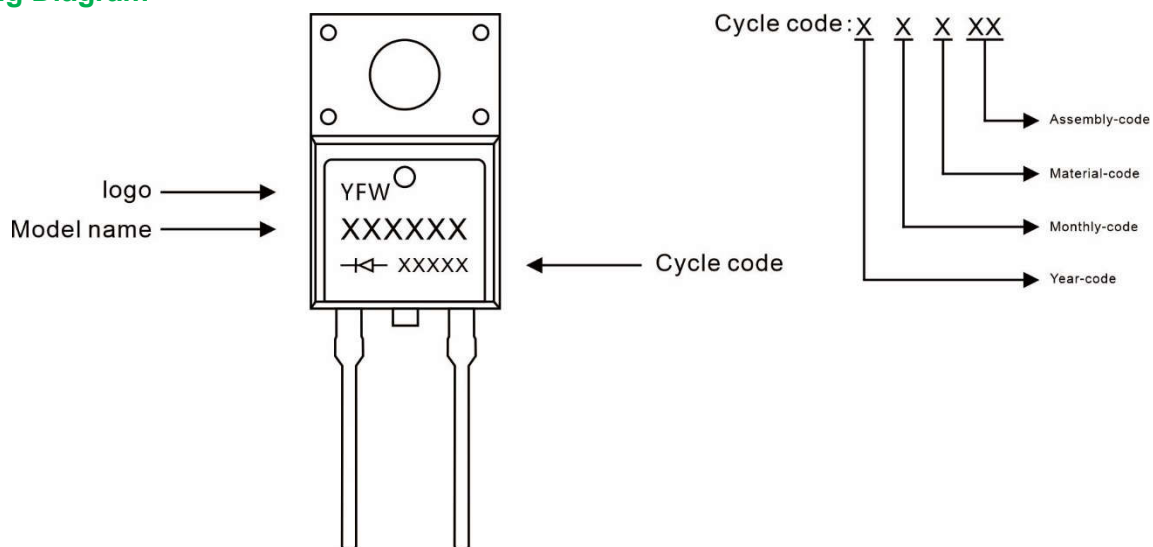


Figure 8. Thermal Impedance

Marking Diagram



Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFWD306065FAC	TO-220FAC	0.06oz(1.7g)	50pcs/tube	1000PCS/Box 5000PCS/Carton

Package Dimensions

TO-220FAC

Symbol	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	9.95	10.25	0.392	0.404
B	2.95	3.25	0.116	0.128
C	1.25	1.45	0.049	0.057
E	12.95	13.25	0.51	0.52
F	0.40	0.60	0.016	0.024
G	1.30	1.45	0.051	0.057
H	TYP2.54		TYP 0.1	
I	TYP5.08		TYP 0.2	
J	4.60	4.75	0.181	0.187
K	2.45	2.65	0.097	0.104
L	6.5	6.8	0.256	0.268
M	15.4	16.0	0.606	0.630
N	2.75	3.05	0.108	0.120
O	0.45	0.55	0.018	0.022
P	0.6	0.8	0.024	0.032
Q	0.76	0.84	0.030	0.033

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