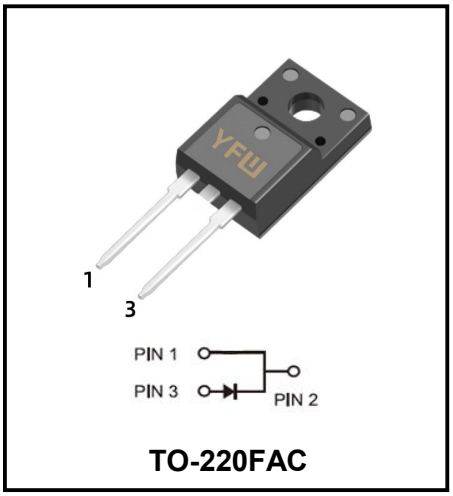
SIC SCHOTTKY BARRIER DIODE

Reverse Voltage - 650 V

Forward Current - 10 A



TO-220FAC

FEATURES

- 650-Volt SiC JBS Rectifier
- Zero Reverse Recovery
- Positive Temperature Coefficient on VF
- Temperature-Independent Switching Behavior
- Extremely Fast Switching
- Extremely Low Leakage Current

TYPICAL APPLICATIONS

- Uninterruptible power supply
- Switch mode power supply
- Power factor correction
- Solar inverter

BENEFITS

- High-speed switching
- Low heat dissipation requirements
- Reduced EMI
- High-reliability

Maximum Ratings at Ta=25°C unless otherwise specified

Parameter		Symbol	Value	Unit
Maximum Repetitive Peak Reverse Voltage		V_{RRM}	650	V
Continuous Forward Current for Rth(j- c,max)	T_C = 25℃	I_F	27	A
	T_C = 110℃		17	
	T_C = 147℃		10	
Peak Forward Surge Current,8.3 ms Single Half Sine-wave Superimposed on Rated Load (JEDEC method)		I_{FSM}	75	A
Operating Temperature Range		T_J	175	°C
Storage Temperature Range		T_{STG}	-55 to +175	°C
Typical Thermal Resistance(Note1)		$R_{\theta JC}$	1.55	°C/W

Note1: Thermal resistance from Junction to case per leg mounted on heatsink.

Electrical Characteristics unless otherwise specified

Parameter		Symbol	Value			Unit
Forward Voltage Drop(Note2)			Min	Typ	Max	
I_R = 100μA		V_{DC}	-	650	-	V
at I_F=10A	T_A=25°C	V_F	-	1.36	1.65	V
	T_A=175°C		-	1.66	-	
Maximum Reverse Current at V_R=650V	T_A=25°C	I_R	-	1	40	μA
	T_A=175°C		-	8.5	-	
Total capacitive charge	V_R = 400V	Q_C	-	29	-	nC
Total capacitance	V_R = 1V, f = 1MHz	C	-	390	-	pF
	V_R = 200V, f = 1MHz		-	56	-	
	V_R = 400V, f = 1MHz		-	41	-	
Capacitance stored energy	V_R = 400V	E_C	-	4.2	-	μJ

Note:Pulse test: 300 μs pulse width, 1 % duty cycle

RATINGS AND CHARACTERISTIC CURVES

Figure 1. V_F Typical Forward Characteristics
I_F = 0~16A
T_{VJ} ranges from -55 ℃ to 175 ℃

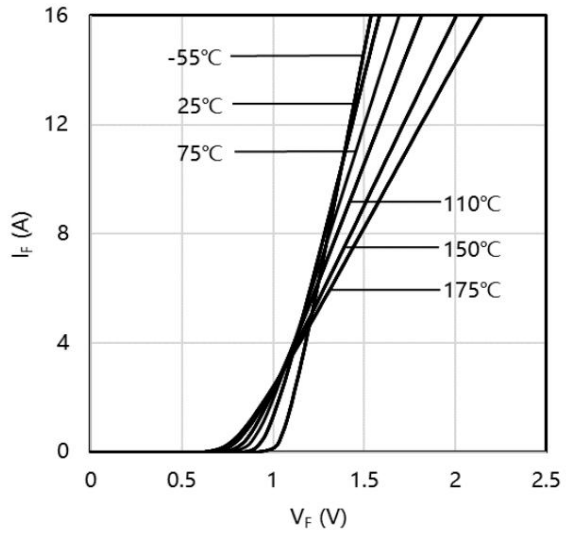


Figure 2. I_R Typical Reverse Characteristics
V_R = 300~700 V
T_{VJ} ranges from 25 ℃ to 175 ℃

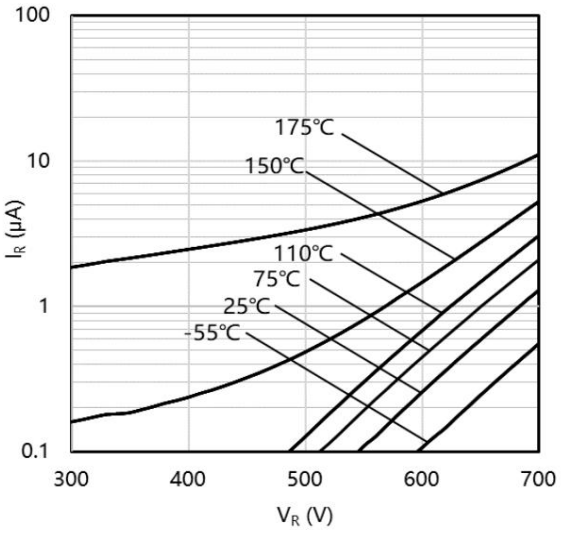


Figure 3. Total Capacitance Charge Characteristics
V_R = 0~650 V
T_{VJ} = 25 ℃

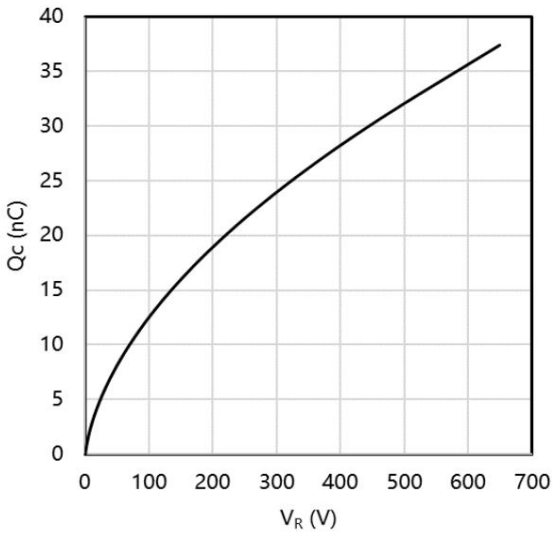
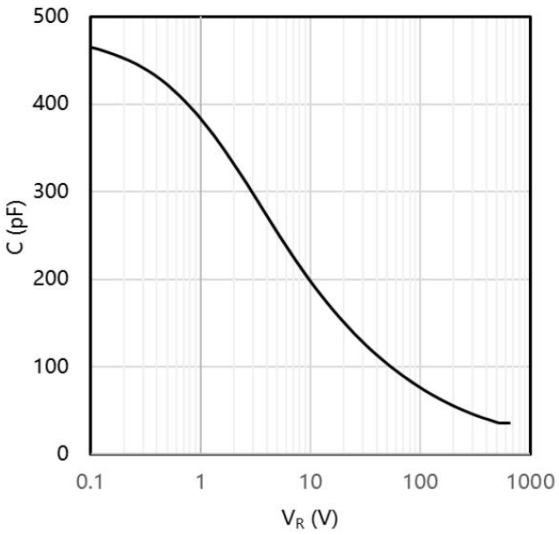


Figure 4. Total Capacitance Characteristics
V_R = 0~650 V
T_{VJ} = 25℃



RATINGS AND CHARACTERISTIC CURVES

Figure 5. Power dissipation as function of case temperature

T_{VJ} ranges from 25 ℃ to 175 ℃

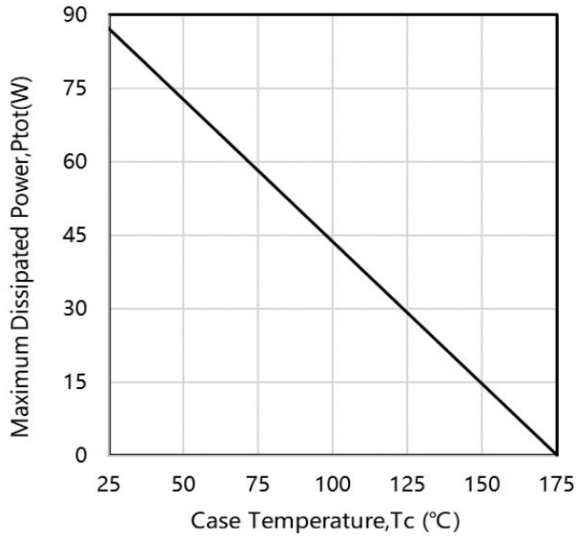


Figure 6. Capacitance Stored Energy

V_R = 0~650 V

T_{VJ} = 25 ℃

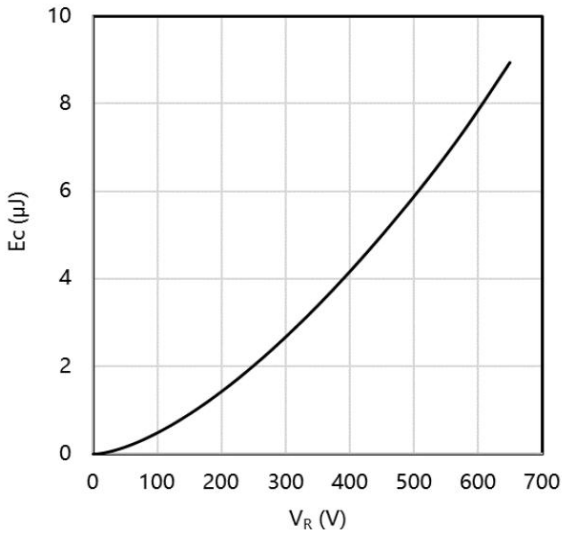
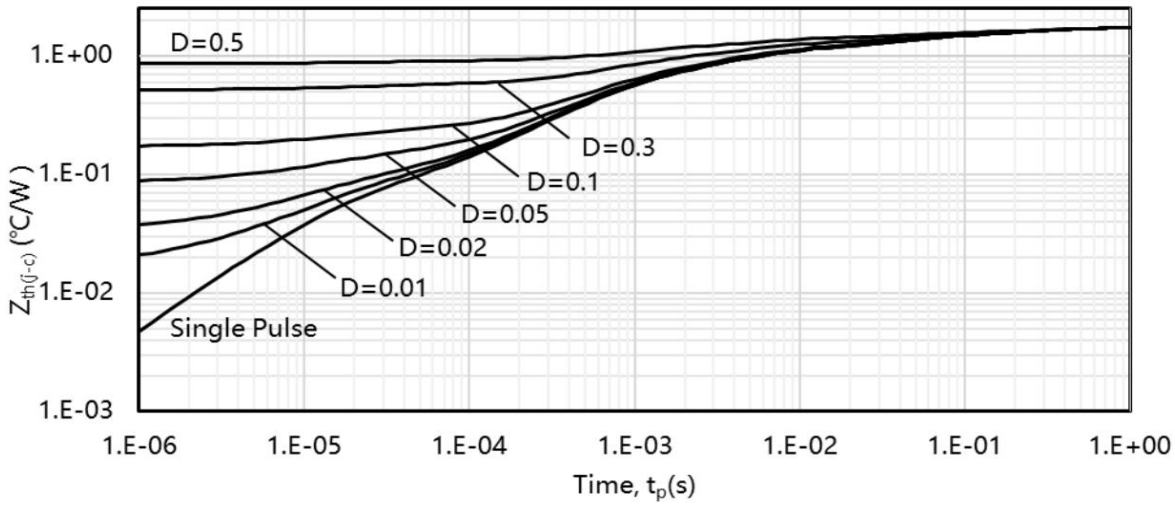
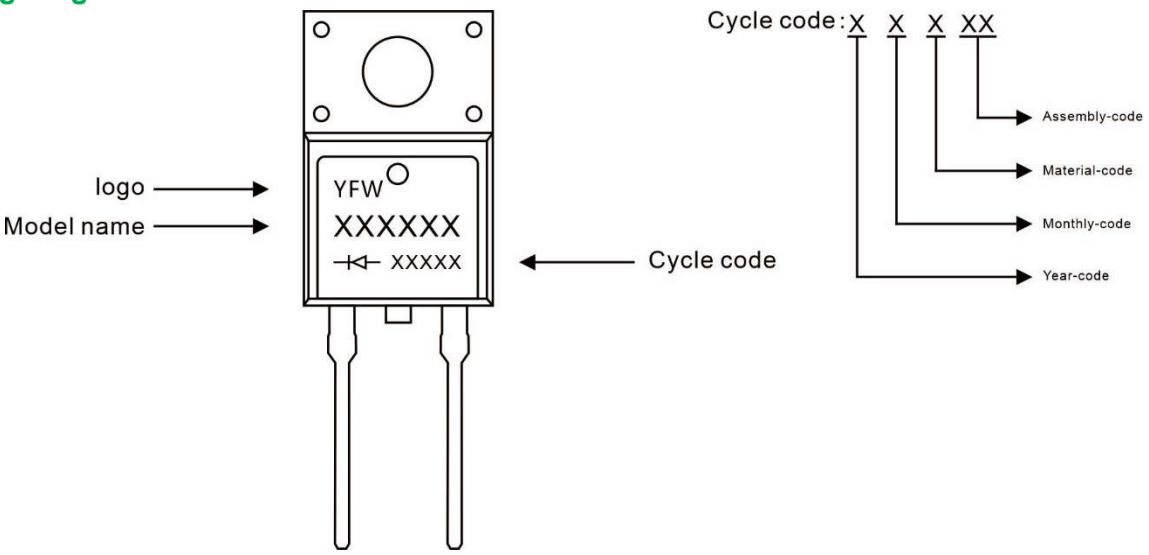


Figure 7. Max. transient thermal impedance, Zth,j-c=f(tp), parameter: D=tp/T



Marking Diagram

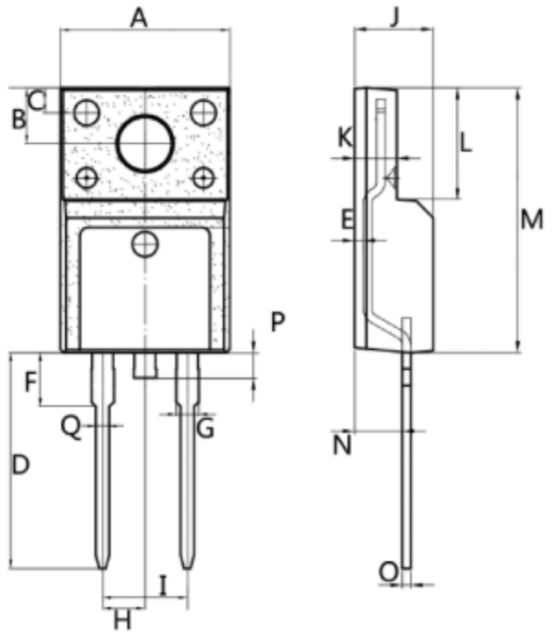


Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFWD310065FAC	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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