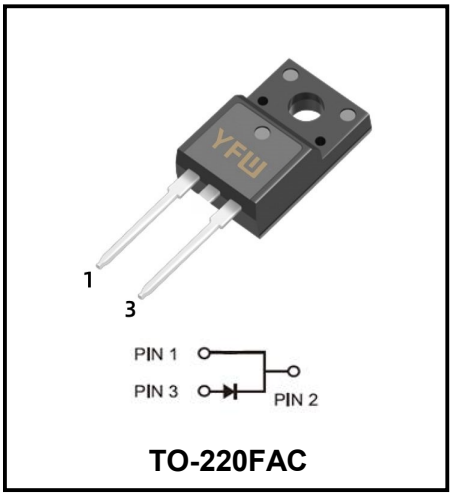
SIC SCHOTTKY BARRIER DIODE

Reverse Voltage - 650 V

Forward Current - 4 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

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	Test Conditions	Symbol	Value	Unit
Repetitive Peak Reverse Voltage	T_C = 25℃	V_{RRM}	650	V
Continuous Forward Current for Rth(j- c,max)	T_C = 25℃	I_F	12	A
	T_C = 110℃		8	
	T_C = 154℃		4	
Non-Repetitive Forward Surge Current, Sine Half-Wave	T_C = 25℃, tp = 10ms	I_{FSM}	32	A
	T_C = 110℃, tp = 10ms		27	
Repetitive Forward Surge Current, Sine Half-Wave	T_C = 25℃, tp = 10ms	I_{FRM}	30	A
	T_C = 110℃, tp = 10ms		26	
Single Pulse Avalanche Energy	T_C = 25℃, L= 0.5mH, V_{DD}= 50V, I_peak =6A	E_{AS}	9	mJ
Operating Temperature Range	-	T_J	175	°C
Storage Temperature Range	-	T_{STG}	-55 to +175	°C
Typical Thermal Resistance (Note1)	-	$R_{\theta JC}$	2.74	°C/W

Note1:Pulse test: 300 μs pulse width, 2 % duty cycle

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=4A	T_A=25°C	V_F	-	1.37	1.7	V
	T_A=175°C		-	1.66	-	
Maximum Reverse Current at V_R=650V	T_A=25°C	I_R	-	0.5	20	μA
	T_A=175°C		-	8.5	-	
Total capacitive charge	V_R = 400V	Q_C	-	12	-	nC
Total capacitance	V_R = 1V, f = 1MHz	C	-	155	-	pF
	V_R = 200V, f = 1MHz		-	23	-	
	V_R = 400V, f = 1MHz		-	17	-	
Capacitance stored energy	V_R = 400V	E_C	-	1.7	-	μJ

Note2:Pulse test: 300 μs pulse width, 1 % duty cycle

RATINGS AND CHARACTERISTIC CURVES

Figure 1. V_F Typical Forward Characteristics
I_F = 0~8A
T_{VJ} ranges from -55 ℃ to 175 ℃

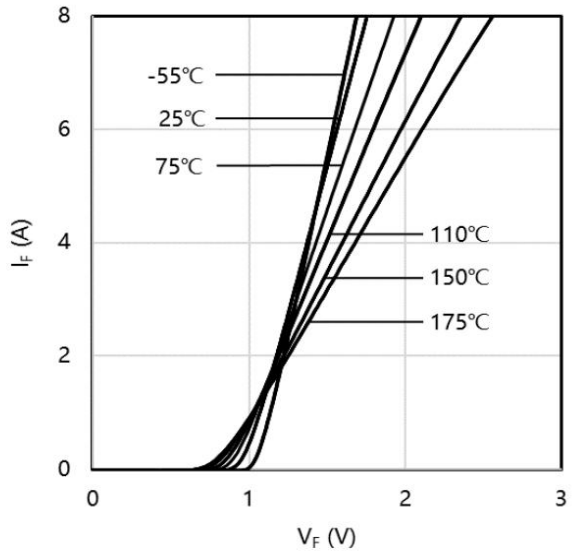


Figure 2. I_R Typical Reverse Characteristics
V_R = 300~700 V
T_{VJ} ranges from 25 ℃ to 175 ℃

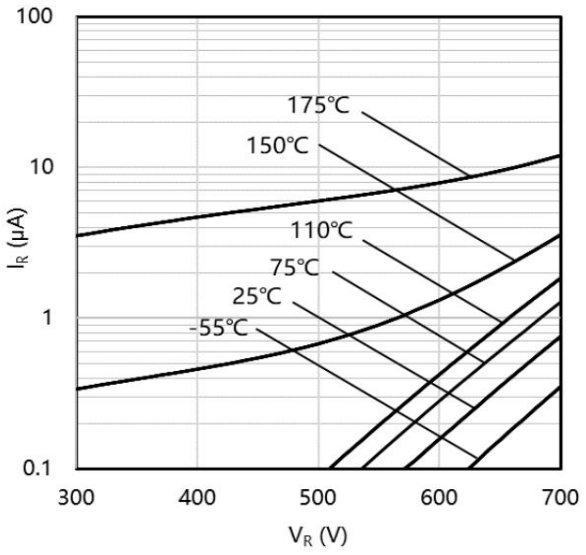


Figure 3. Total Capacitance Charge Characteristics
V_R = 0~650 V
T_{VJ} = 25 ℃

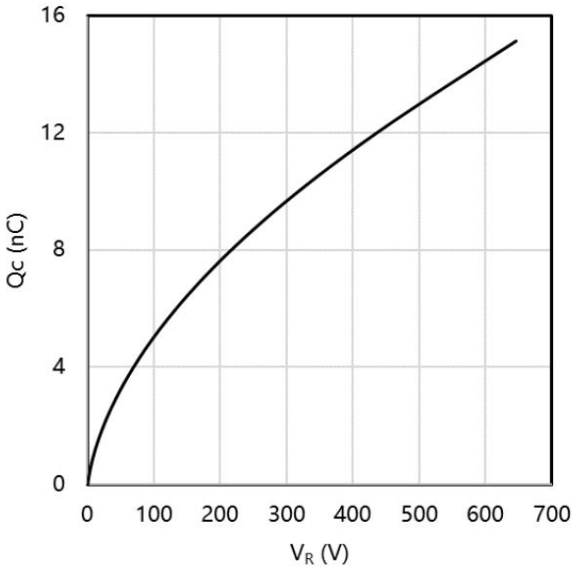
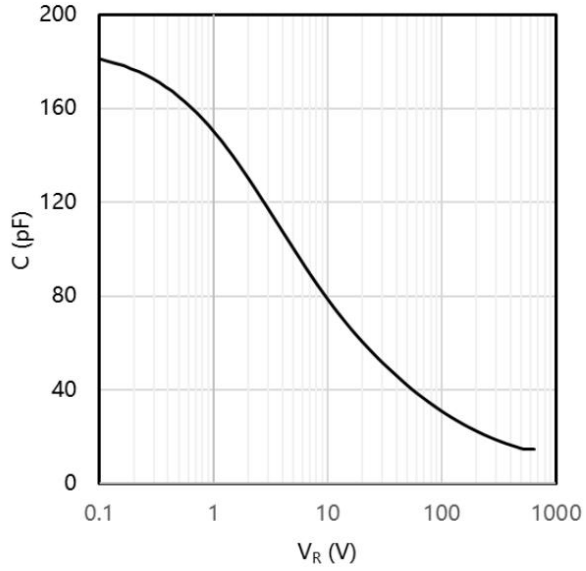


Figure 4. Total Capacitance Characteristics
V_R = 0~650 V
T_{VJ} = 25℃



RATINGS AND CHARACTERISTIC CURVES

Figure 5. Power dissipation as function of case temperature

T_{VJ} ranges from 25 ℃ to 175 ℃

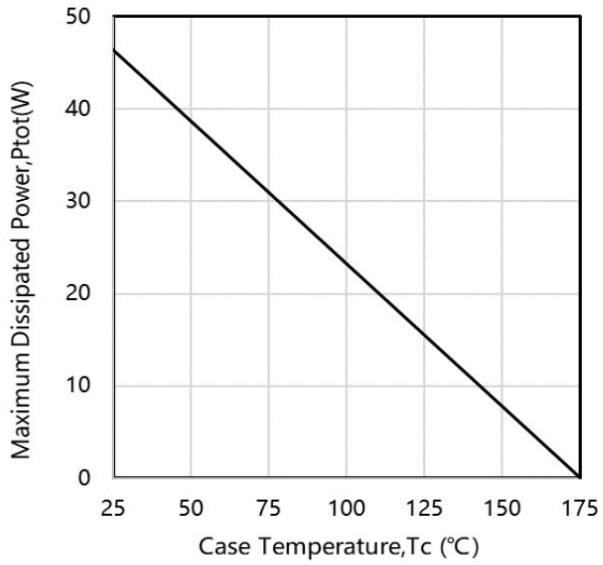


Figure 6. Capacitance Stored Energy

V_R = 0~650 V

T_{VJ} = 25 ℃

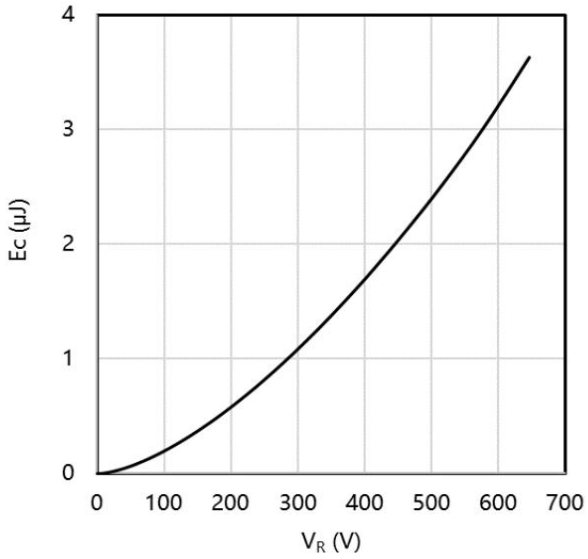
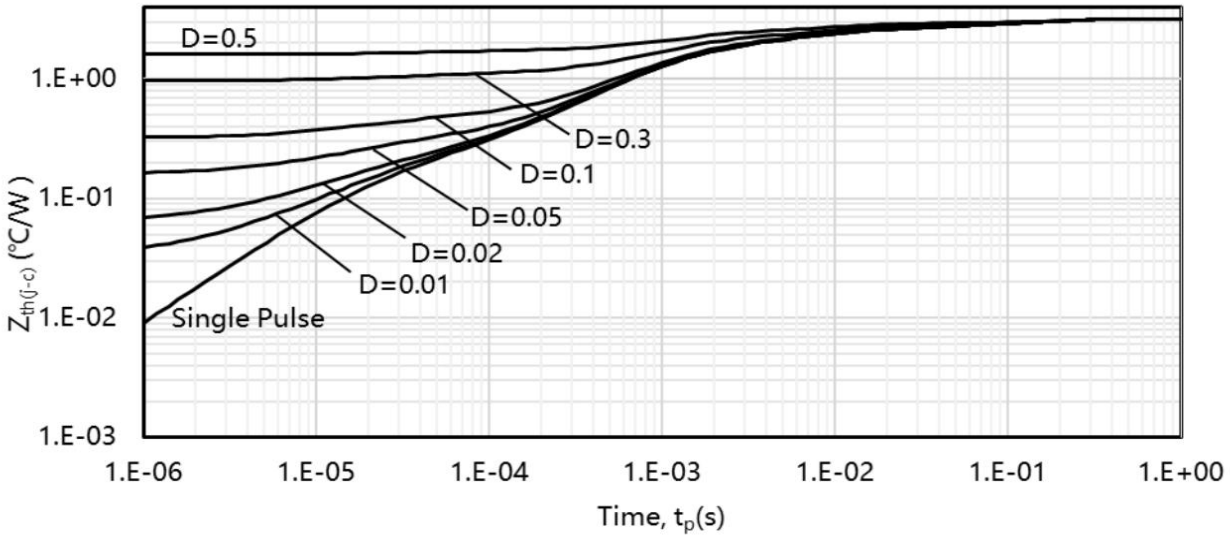
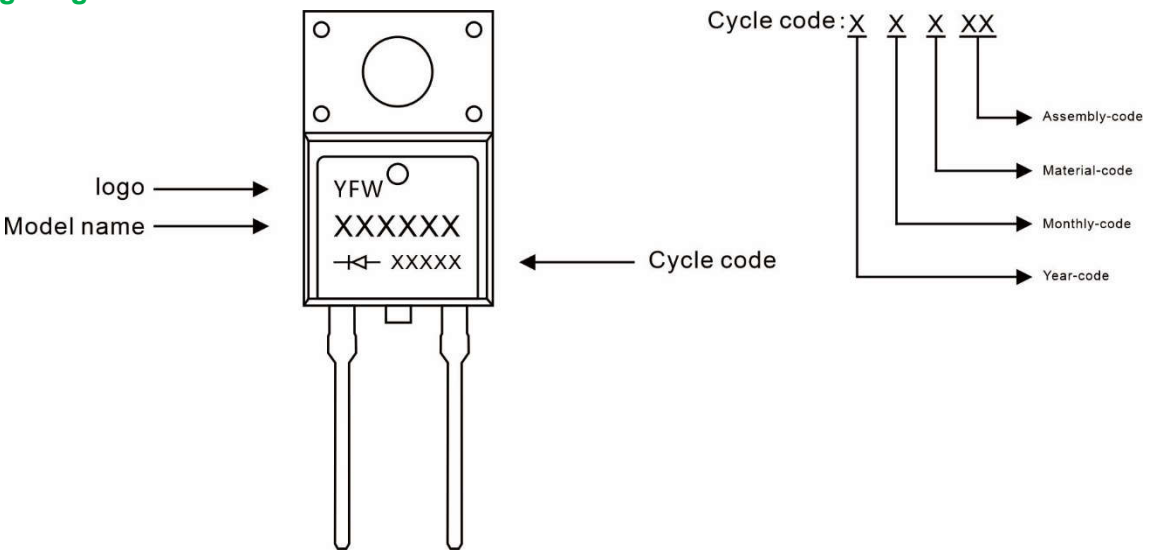


Figure 7. Max. transient thermal impedance, Zth,j-c=f(t_p), parameter: D=t_p/T



Marking Diagram

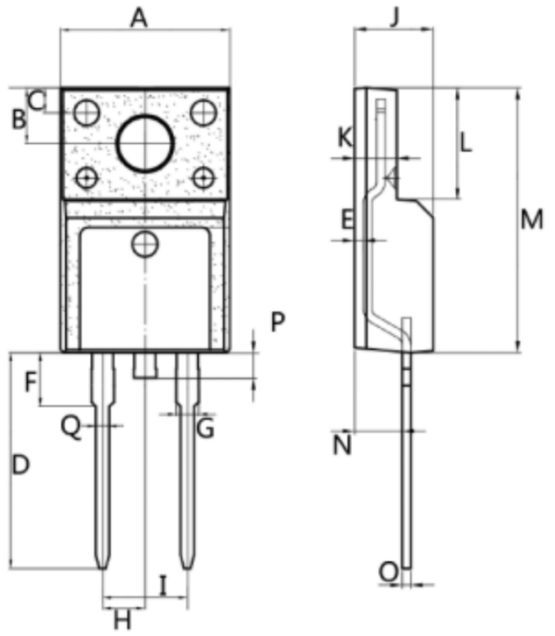


Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFWD304065FAC	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

Disclaimer

The information presented in this document is for reference only. GuangDong Youfeng Microelectronics Co.,Ltd. reserves the right to make changes without notice for the specification of the products displayed herein to improve reliability, function or design or otherwise. The product listed herein is designed to be used with ordinary electronic equipment or devices, and not designed to be used with equipment or devices which require high level of reliability and the malfunction of with would directly endanger human life (such as medical instruments, transportation equipment, aerospace machinery, nuclear-reactor controllers, fuel controllers and other safety devices),YFW or anyone on its behalf, assumes no responsibility or liability for any damages resulting from such improper use of sale. This publication supersedes & replaces all information previously supplied. For additional information, please visit our website https://www.yfwdiode.com, or consult YFW sales office for further assistance.