

SIC SCHOTTKY BARRIER DIODE

Reverse Voltage - 650 V

Forward Current - 8 A

FEATURES

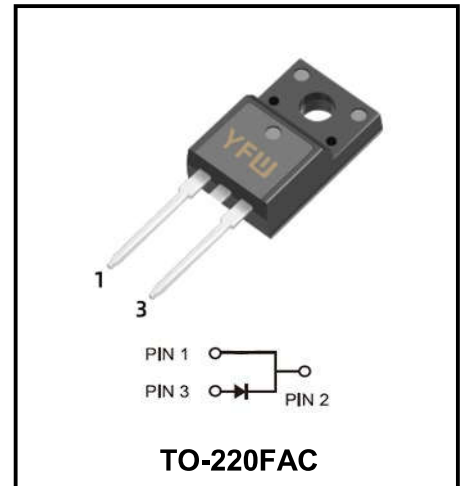
- ◆650-Volt SiC JBS Rectifier
- ◆Zero Reverse Recovery
- ◆Positive Temperature Coefficient on VF
- ◆Temperature-Independent Switching Behavior
- ◆Extremely Fast Switching
- ◆Extremely Low Leakage Current

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°C	V _{RRM}	650	V
Continuous Forward Current for Rth(j- c,max)	T _C = 25°C	I _F	23	A
	T _C = 110°C		14	
	T _C = 150°C		8	
Non-Repetitive Forward Surge Current, Sine Half-Wave	T _C = 25°C, tp = 10ms	I _{FSM}	58	A
	T _C = 110°C, tp = 10ms		51	
Repetitive Forward Surge Current, Sine Half-Wave	T _C = 25°C, tp = 10ms	I _{FRM}	54	A
	T _C = 110°C, tp = 10ms		46	
Single Pulse Avalanche Energy	T _C = 25°C, L= 0.5mH, V _{DD} = 50V, I _{peak} =8A	E _{AS}	16	mJ
Operating Temperature Range	-	T _J	175	°C
Storage Temperature Range	-	T _{STG}	-55 to +175	°C
Typical Thermal Resistance	-	R _{θJC}	1.68	°C/W

Electrical Characteristics unless otherwise specified

Parameter		Symbol	Value			Unit
Forward Voltage Drop			Min.	Typ.	Max.	
I _R = 100μA		V _{DC}	650		-	V
at I _F =8A	T _A =25°C	V _F	-	1.38	1.7	V
	T _A =175°C		-	1.7	-	
Maximum Reverse Current at V _R =650V	T _A =25°C	I _R	-	1	30	μA
	T _A =175°C		-	8	-	
Total capacitive charge	V _R = 400V	Q _C	-	23	-	nC
Total capacitance	V _R = 1V, f = 1MHz	C	-	312	-	pF
	V _R = 200V, f = 1MHz		-	45	-	
	V _R = 400V, f = 1MHz		-	33	-	
Capacitance stored energy	V _R = 400V	E _C	-	3.4	-	μJ

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

RATINGS AND CHARACTERISTIC CURVES

Figure 1. V_F Typical Forward Characteristics

$I_F = 0 \sim 16A$

T_{vj} ranges from $-55^{\circ}C$ to $175^{\circ}C$

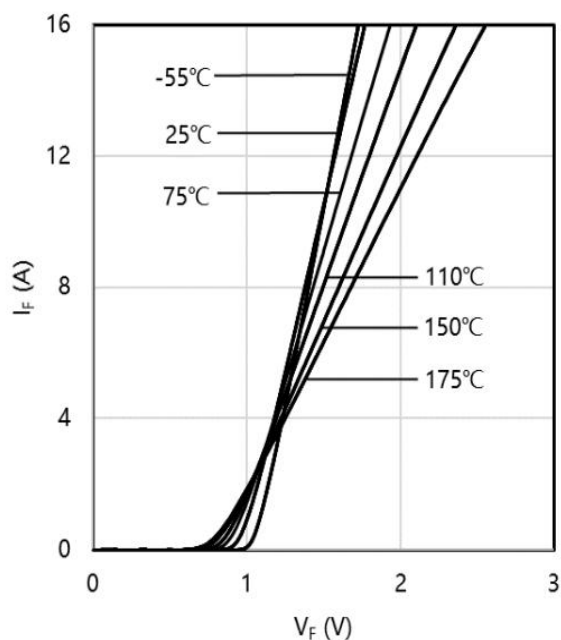


Figure 2. I_R Typical Reverse Characteristics

$V_R = 300 \sim 700V$

T_{vj} ranges from $25^{\circ}C$ to $175^{\circ}C$

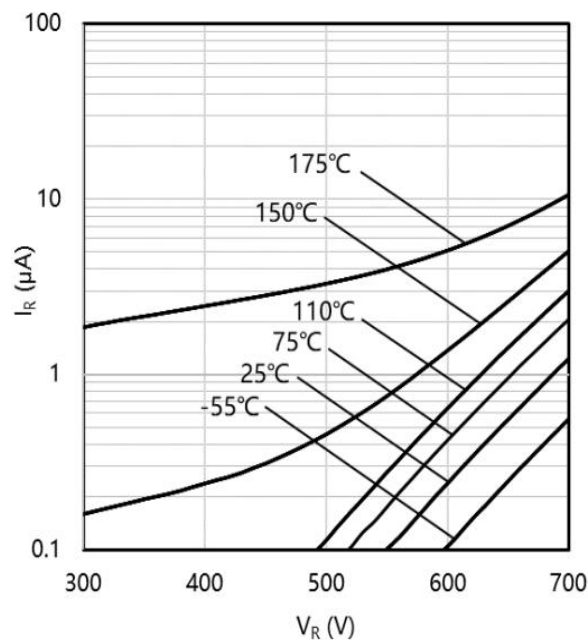


Figure 3. Total Capacitance Charge Characteristics

$V_R = 0 \sim 650V$

$T_{vj} = 25^{\circ}C$

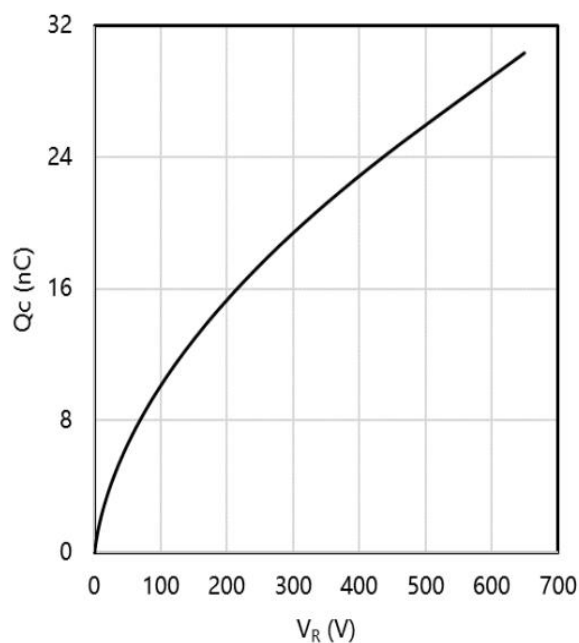
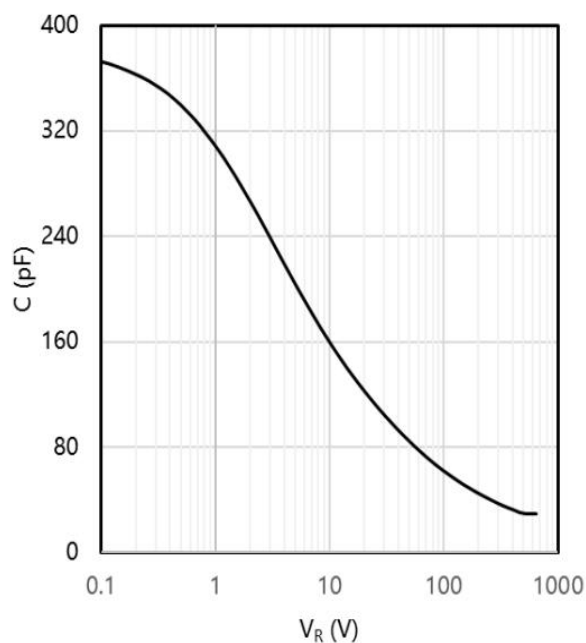


Figure 4. Total Capacitance Characteristics

$V_R = 0 \sim 650V$

$T_{vj} = 25^{\circ}C$



RATINGS AND CHARACTERISTIC CURVES

Figure 5. Power dissipation as function of case temperature

T_{vj} ranges from 25 °C to 175 °C

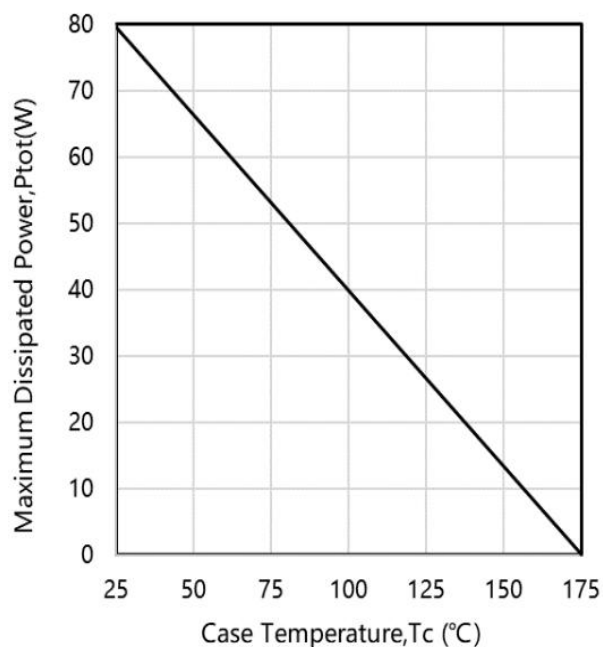


Figure 6. Capacitance Stored Energy

$V_R = 0 \sim 650$ V

$T_{vj} = 25$ °C

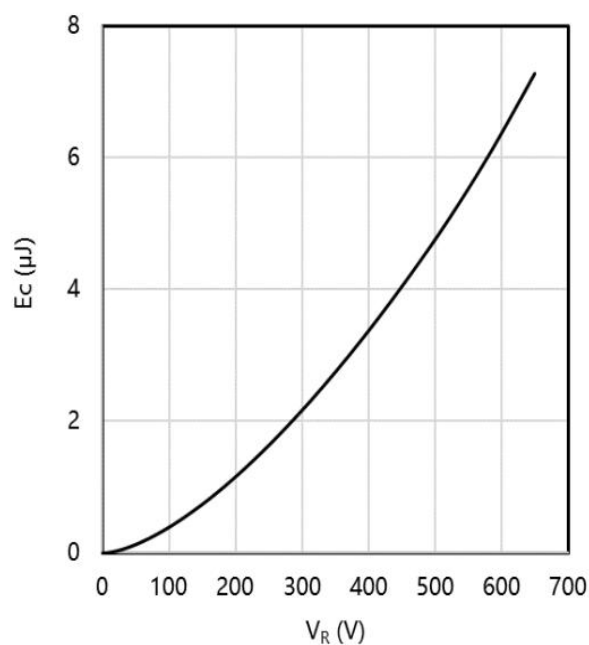
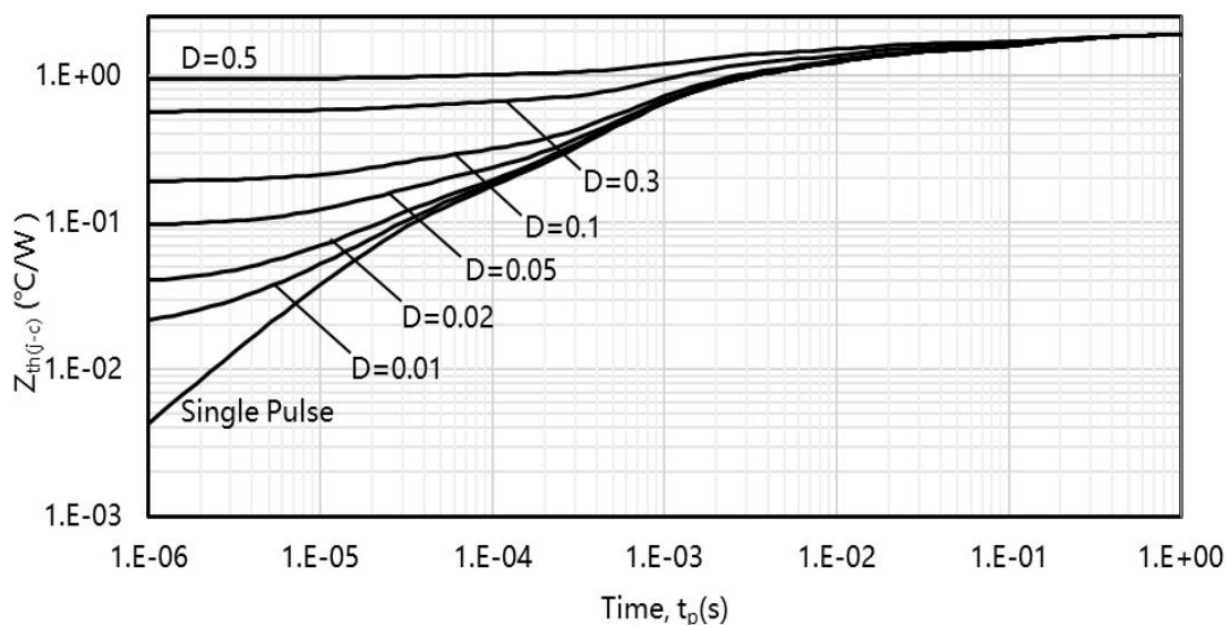
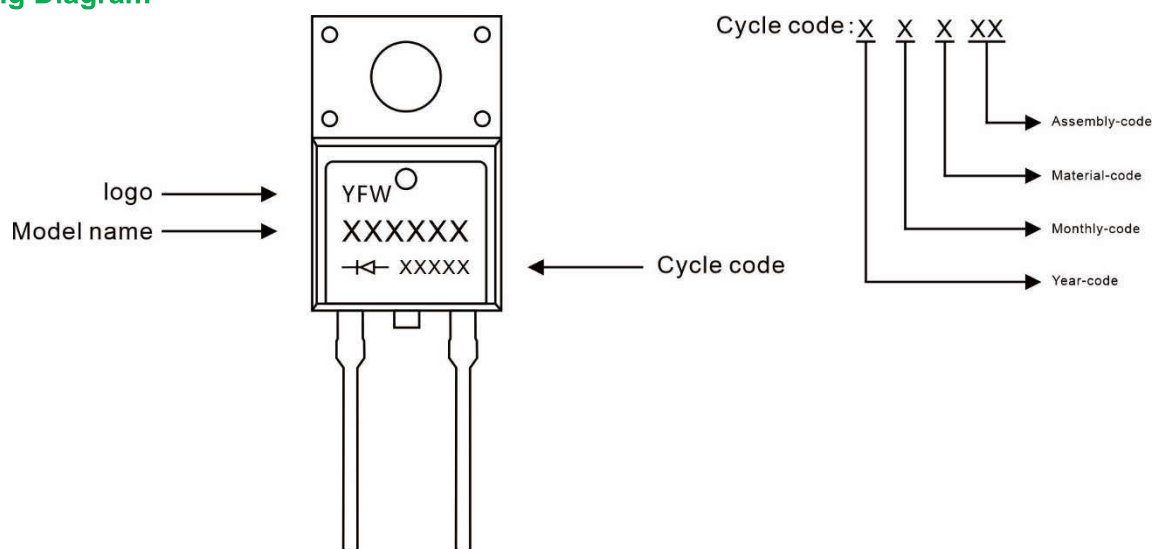


Figure 7. Max. transient thermal impedance, $Z_{th,j-c}=f(t_p)$, parameter: $D=t_p/T$



Marking Diagram



Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFWD308065FAC	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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