

SIC SCHOTTKY BARRIER DIODE

Reverse Voltage - 650 V

Forward Current - 15 A

FEATURES

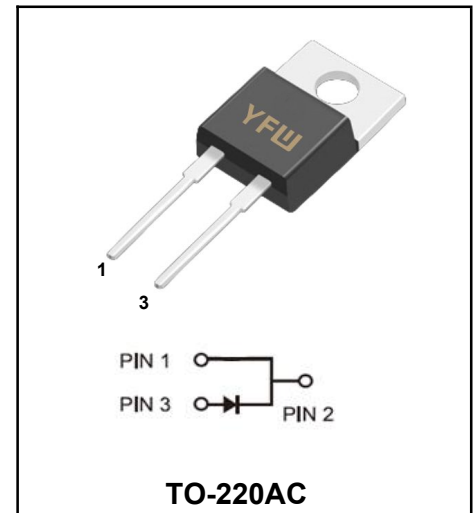
- ◆650-Volt SiC JBS Rectifier
- ◆Zero Reverse Recovery
- ◆Positive Temperature Coefficient on VF
- ◆Temperature-Independent Switching Behavior
- ◆Extremely Fast Switching
- ◆Extremely Low Leakage Current

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 $R_{th(j-c,max)}$	$T_C = 25^{\circ}C$	I_F	42	A
	$T_C = 110^{\circ}C$		26	
	$T_C = 147^{\circ}C$		15	
Peak Forward Surge Current, 8.3 ms Single Half Sine-wave Superimposed on Rated Load (JEDEC method)		I_{FSM}	93	A
Operating Temperature Range		T_J	175	$^{\circ}C$
Storage Temperature Range		T_{STG}	-55 to +175	$^{\circ}C$
Typical Thermal Resistance		$R_{\theta JC}$	1.09	$^{\circ}C/W$

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 =15A	T _A =25°C	V _F	-	1.34	1.6	V
	T _A =175°C		-	1.61	-	
Maximum Reverse Current at V _R =650V	T _A =25°C	I _R	-	1	50	μA
	T _A =175°C		-	8.5	-	
Total capacitive charge	V _R = 400V	Q _C	-	42	-	nC
Total capacitance	V _R = 1V, f = 1MHz	C	-	567	-	pF
	V _R = 200V, f = 1MHz		-	82	-	
	V _R = 400V, f = 1MHz		-	61	-	
Capacitance stored energy	V _R = 400V	E _C	-	6.2	-	μJ

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

RATINGS AND CHARACTERISTIC CURVES

Figure 1. V_F Typical Forward Characteristics

$I_F = 0 \sim 30A$

T_{VJ} ranges from 25 °C to 175 °C

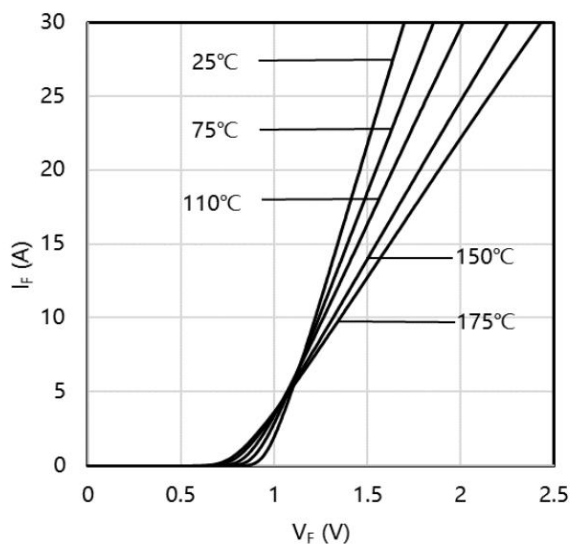


Figure 2. I_R Typical Reverse Characteristics

$V_R = 300 \sim 700 V$

T_{VJ} ranges from 25 °C to 175 °C

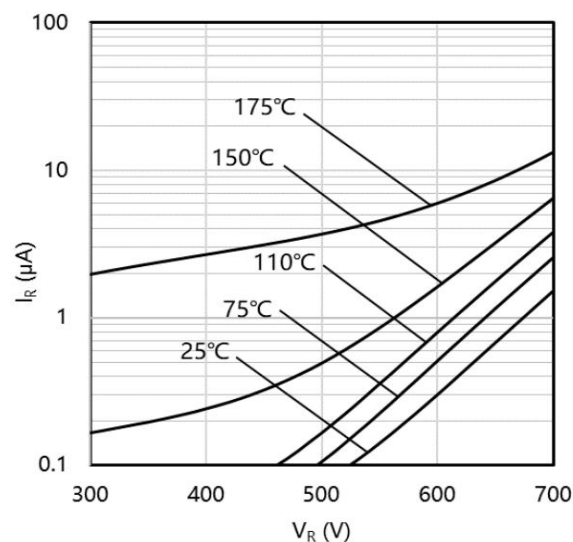


Figure 3. Total Capacitance Charge Characteristics

$V_R = 0 \sim 650 V$

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

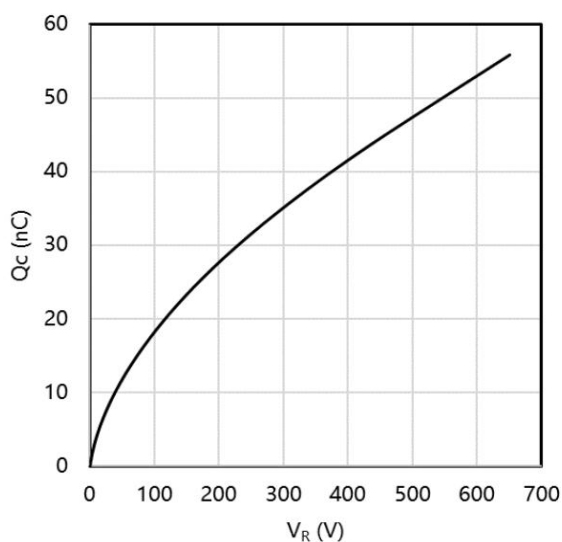
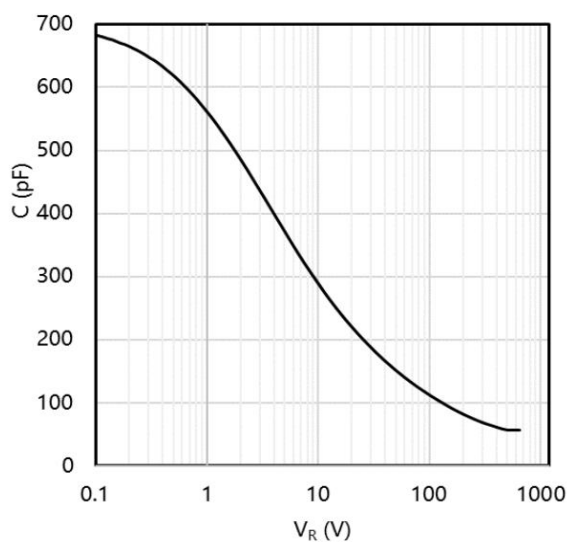


Figure 4. Total Capacitance Characteristics

$V_R = 0 \sim 650 V$

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



RATINGS AND CHARACTERISTIC CURVES

Figure 5. Power dissipation as function of case temperature

T_{VJ} ranges from 25 °C to 175 °C

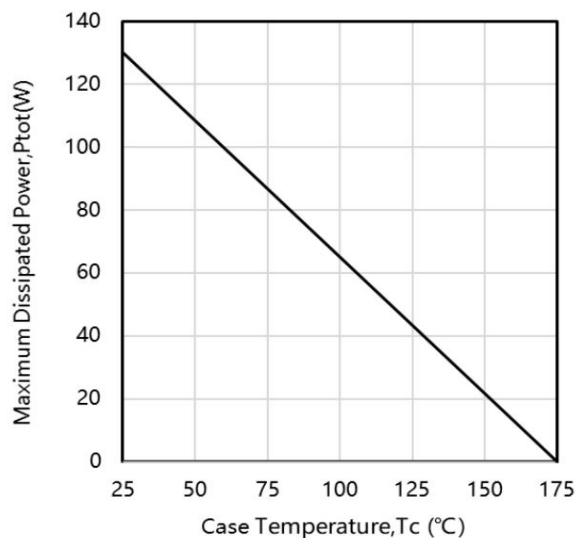


Figure 6. Capacitance Stored Energy

$V_R = 0 \sim 650$ V

$T_{VJ} = 25$ °C

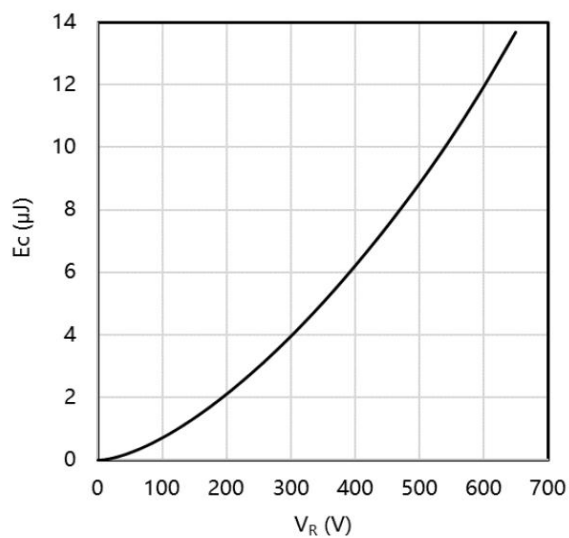
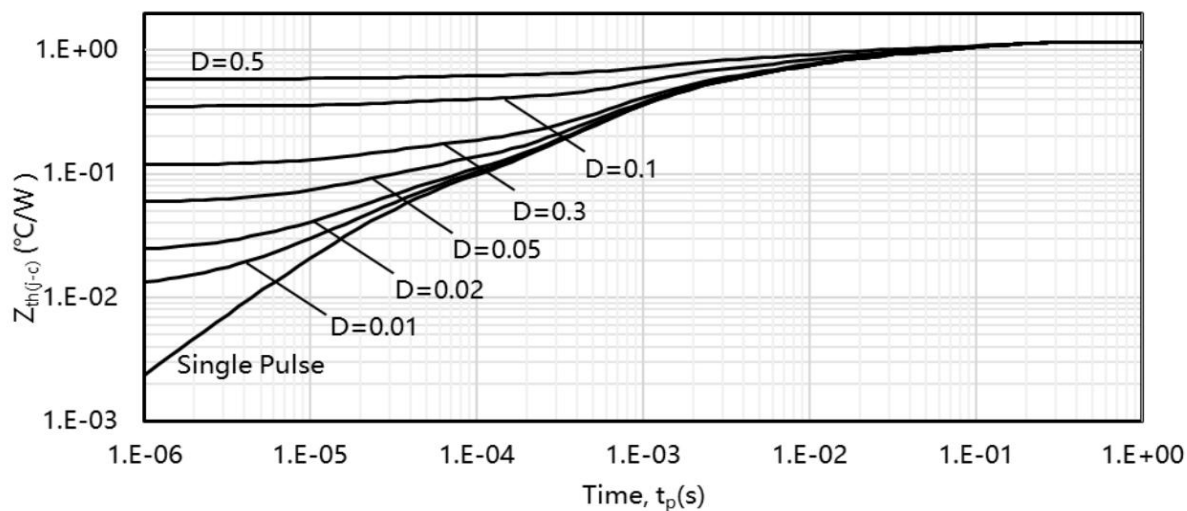
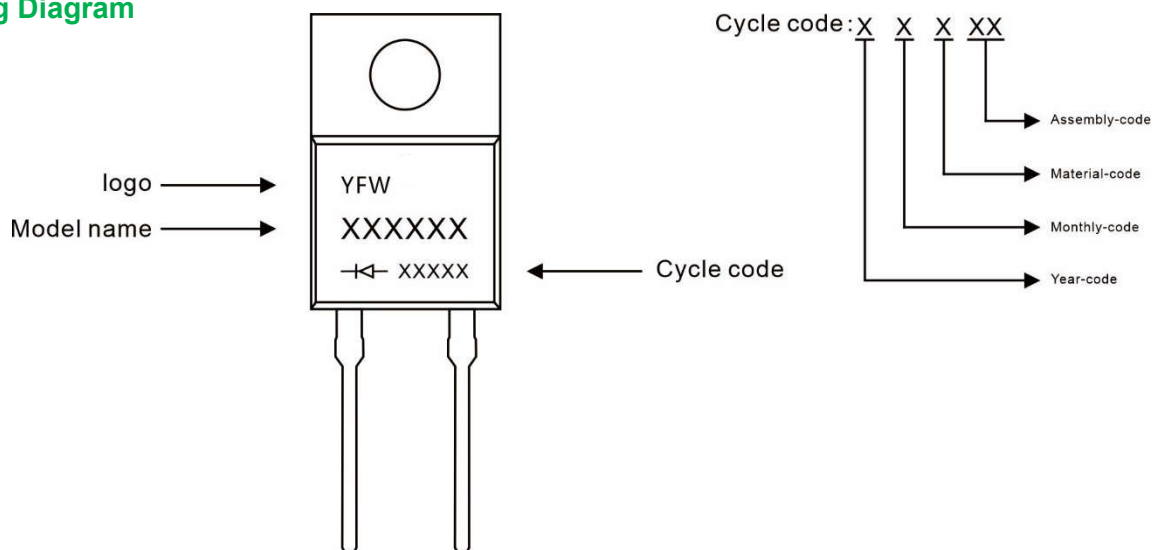


Figure 7. Max. transient thermal impedance, $Z_{th(j-c)} = f(t_p)$, parameter: $D = t_p/T$



Marking Diagram



Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFWD315065AC	TO-220AC	0.067oz(1.9g)	50pcs/tube	1000PCS/Box 5000PCS/Carton

Package Dimensions

TO-220AC

Dim	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.34	4.67	0.171	0.184
A1	2.52	2.82	0.099	0.111
b	0.71	0.91	0.028	0.036
b1	1.17	1.37	0.046	0.054
c	0.30	0.50	0.012	0.020
c1	1.17	1.37	0.046	0.054
D	9.90	10.20	0.390	0.402
E	8.50	8.90	0.335	0.350
E1	12.00	12.50	0.472	0.492
e	4.88	5.28	0.192	0.208
F	2.60	2.80	0.102	0.110
L	13.20	13.80	0.520	0.543
L1	3.80	4.20	0.150	0.165
Φ	3.60	3.96	0.142	0.156

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