

SIC SCHOTTKY BARRIER DIODE

Reverse Voltage - 650 V

Forward Current - 6 A

FEATURES

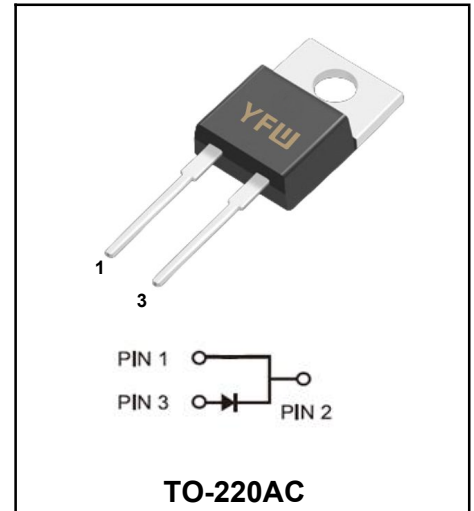
- ◆650-Volt SiC JBS Rectifier
- ◆Zero Reverse Recovery
- ◆Positive Temperature Coefficient on VF
- ◆Temperature-Independent Switching Behavior
- ◆Extremely Fast Switching
- ◆Extremely Low Leakage Current

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

Characteristics	Symbol	Value	Unit
Maximum Repetitive Peak Reverse Voltage	V_{RRM}	650	V
Working Peak Reverse Voltage	V_{RWM}	650	V
Maximum DC Blocking Voltage	V_{DC}	650	V
Maximum Average Forward Rectified Current TC = 25°C	I_F	18	A
Maximum Average Forward Rectified Current TC = 110°C		11	A
Maximum Average Forward Rectified Current TC = 151°C		6	A
Peak Forward Surge Current, 8.3 ms Single Half Sine-wave Superimposed on Rated Load (JEDEC method)	I_{FSM}	48	A
Operating Temperature Range	T_J	175	°C
Storage Temperature Range	T_{STG}	-55 to +175	°C
Typical Thermal Resistance (Note1)	$R_{\theta JC}$	2.08	°C/W

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

Electrical Characteristics unless otherwise specified

Characteristics		Symbol	Value		Unit
Forward Voltage Drop(Note2)			Typ	Max	
$I_R = 100\mu A$		VDC	650	-	V
at $I_F=6A$	$T_A=25^{\circ}C$	VF	1.37	1.65	V
	$T_A=175^{\circ}C$		1.70	-	
Maximum Reverse Current at $V_R=650V$	$T_A=25^{\circ}C$	I_R	0.5	25	μA
	$T_A=175^{\circ}C$		7	-	μA
Total capacitive charge	$V_R = 400V$	QC	17	-	nC
Total capacitance	$V_R = 1V, f = 1MHz$	C	227	-	pF
	$V_R = 200V, f = 1MHz$		34	-	
	$V_R = 400V, f = 1MHz$		25	-	
Capacitance stored energy	$V_R = 400V$	EC	2.5	-	μJ

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

RATINGS AND CHARACTERISTIC CURVES

Figure 1. V_F Typical Forward Characteristics

$I_F = 0 \sim 12A$

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

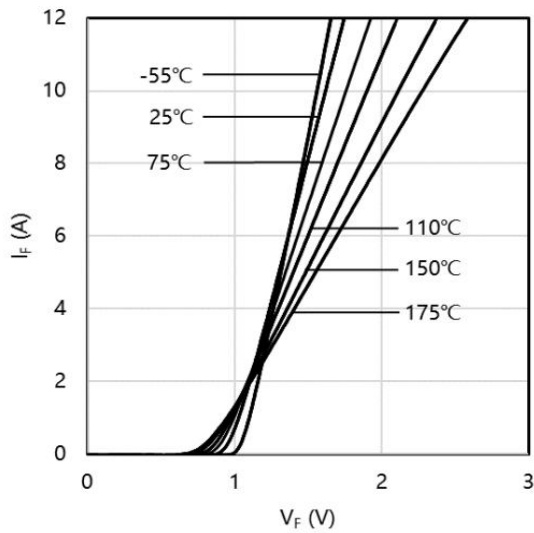


Figure 2. I_R Typical Reverse Characteristics

$V_R = 300 \sim 700 V$

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

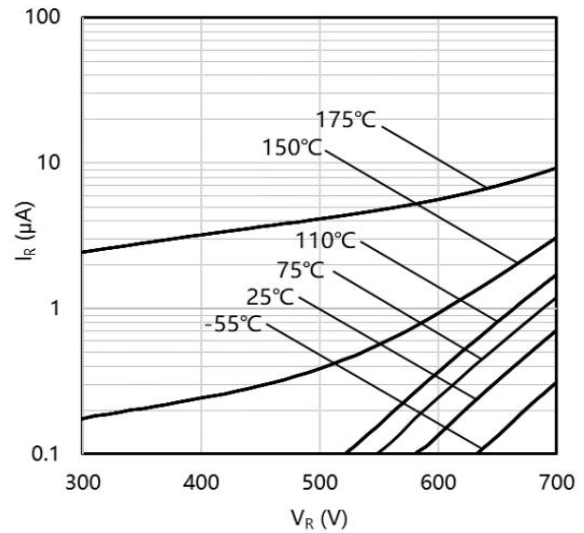


Figure 3. Total Capacitance Charge Characteristics

$V_R = 0 \sim 650 V$

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

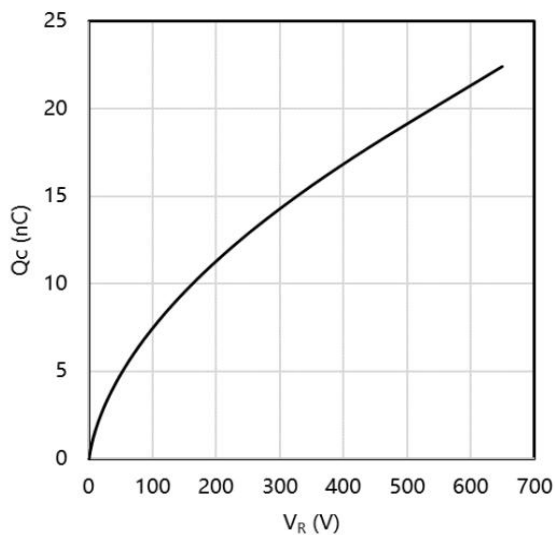
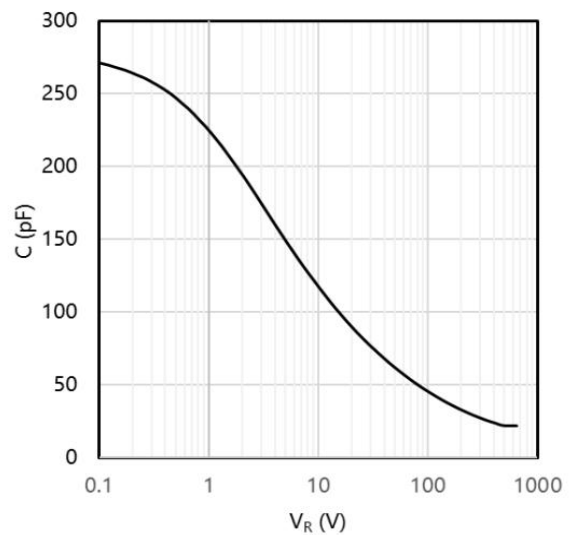


Figure 4. Total Capacitance Characteristics

$V_R = 0 \sim 650 V$

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



RATINGS AND CHARACTERISTIC CURVES

Figure 5. Power dissipation as function of case temperature

T_{vj} ranges from 25 °C to 175 °C

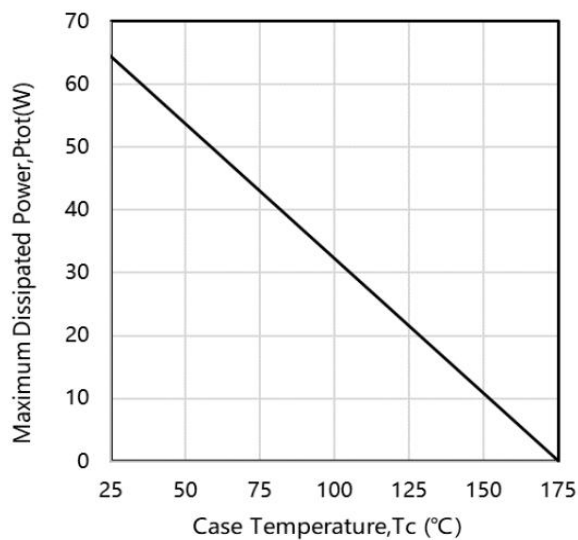


Figure 6. Capacitance Stored Energy

$V_R = 0 \sim 650$ V

$T_{vj} = 25$ °C

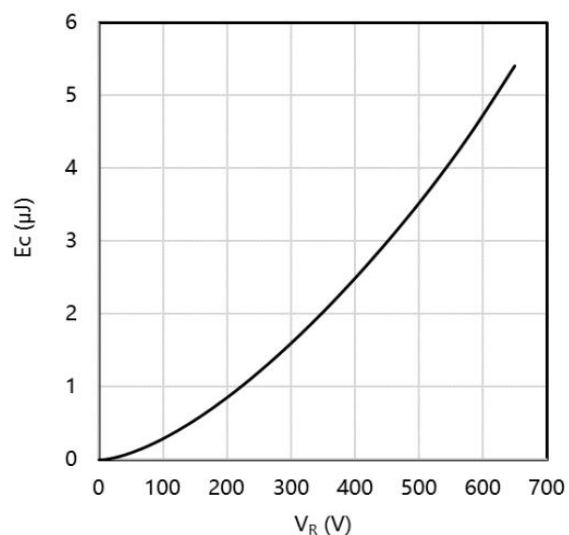
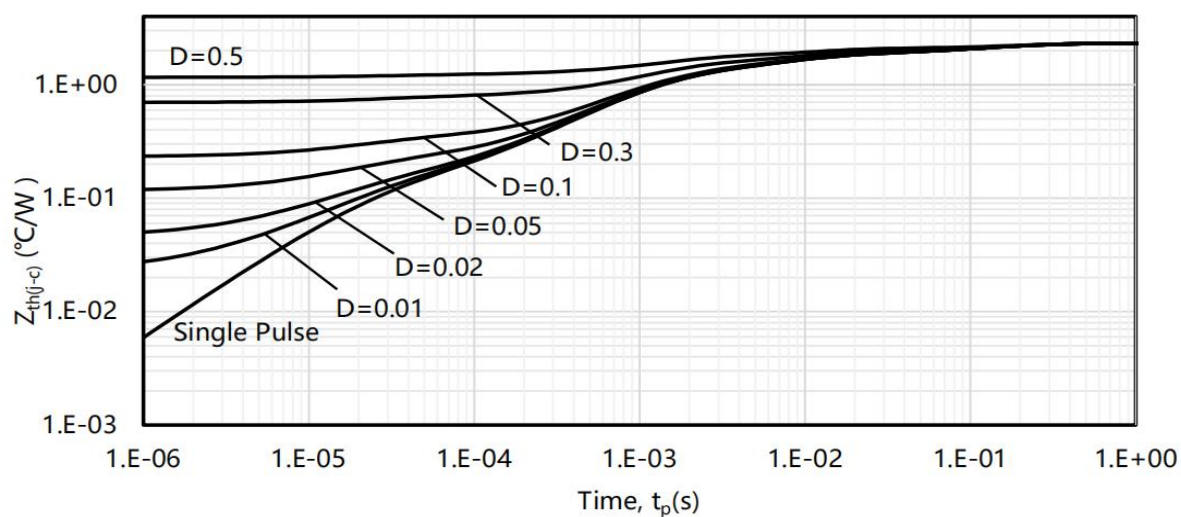
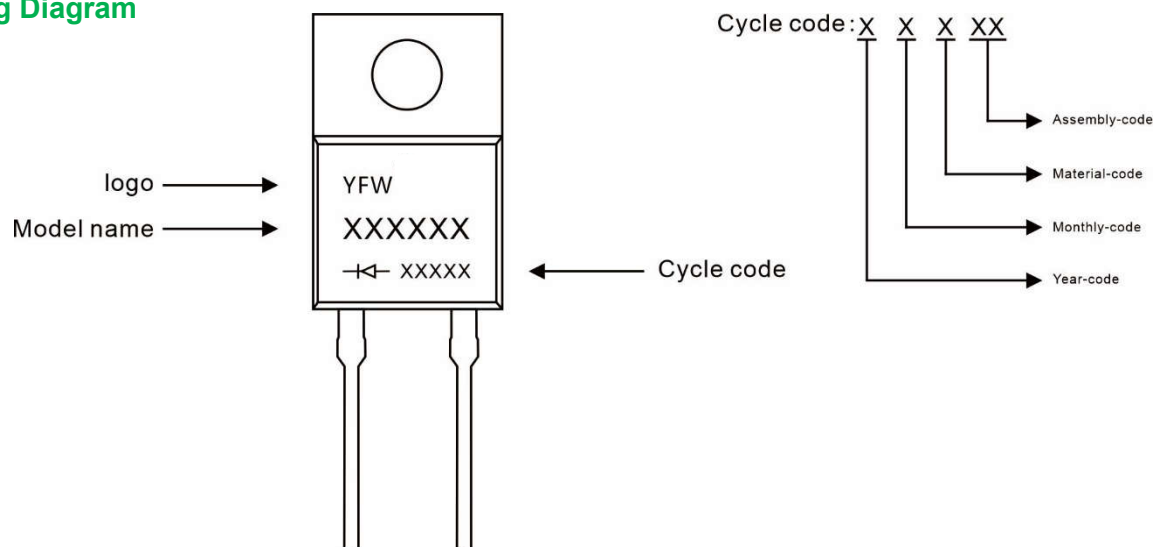


Figure 7. Max. transient thermal impedance, $Z_{th,j-c}=f(t_p)$, parameter: $D=t_p/T$



Marking Diagram



Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFWD306065AC	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

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 which 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.