

SIC SCHOTTKY BARRIER DIODE

Reverse Voltage - 650 V

Forward Current - 20 A

FEATURES

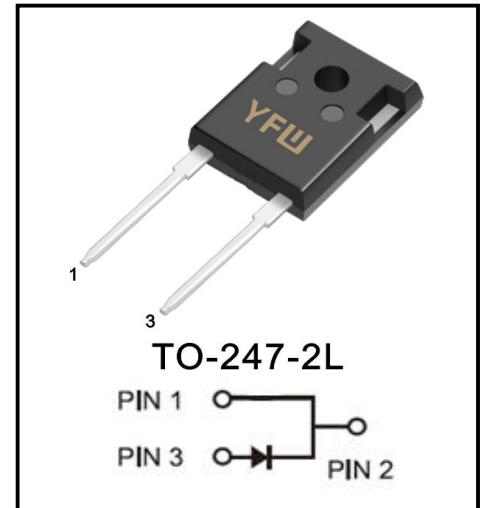
- ◆650-Volt SiC JBS Rectifier
- ◆Zero Reverse Recovery
- ◆Positive Temperature Coefficient on VF
- ◆Temperature-Independent Switching Behavior
- ◆Extremely Fast Switching
- ◆Extremely Low Leakage Current

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 T_C=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	51	A
Maximum Average Forward Rectified Current TC = 110°C			31	A
Maximum Average Forward Rectified Current TC = 143°C			20	A
Repetitive Forward Surge Current, Sine Half-Wave	TC = 25°C, tp = 10ms	I_{FSM}	130	A
	TC= 110°C, tp = 10ms		120	A
Repetitive Forward Surge Current, Sine Half-Wave	TC = 25°C, tp = 10ms	I_{FRM}	120	A
	TC = 110°C, tp = 10ms		100	A
Single Pulse Avalanche Energy TC = 25°C, L= 0.5mH,V _{DD} = 50V, I_peak=12.5A		E_{AS}	39	mJ
Operating Temperature Range		T_J	175	°C
Storage Temperature Range		T_{STG}	-55 to +175	°C
Typical Thermal Resistance		R_{θJC}	0.86	°C/W

Electrical Characteristics unless otherwise specified

Characteristics		Symbol	Value			Unit
Forward Voltage Drop(Note2)			Min	Typ	Max	
$I_R = 100\mu A$		VDC	650	-	-	V
at $I_F=20A$	$T_A=25^\circ C$	VF	-	1.34	1.65	V
	$T_A=175^\circ C$		-	1.61	-	
Maximum Reverse Current at $V_R=650V$	$T_A=25^\circ C$	I_R	-	1.5	60	μA
	$T_A=175^\circ C$		-	8	-	μA
Total capacitive charge	$V_R = 400V$	QC	-	62	-	nC
Total capacitance	$V_R = 1V, f = 1MHz$	C	-	844	-	pF
	$V_R = 200V, f = 1MHz$		-	118	-	
	$V_R = 400V, f = 1MHz$		-	86	-	
Capacitance stored energy	$V_R = 400V$	EC	-	10	-	μJ

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

RATINGS AND CHARACTERISTIC CURVES

Figure 1. V_F Typical Forward Characteristics

$I_F = 0 \sim 40A$

T_{VJ} ranges from 25 °C to 175 °C

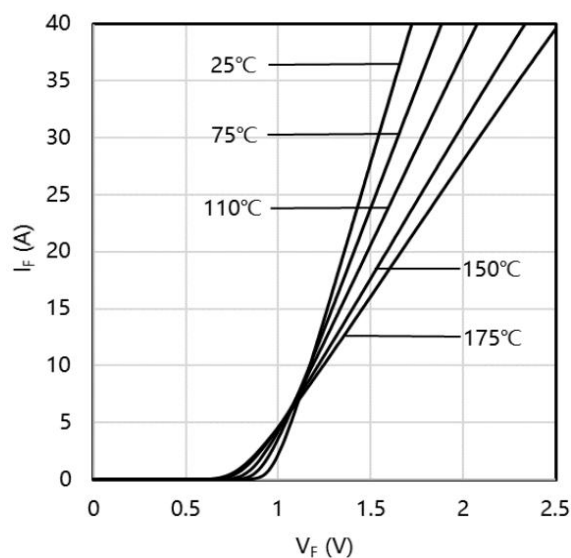


Figure 2. I_R Typical Reverse Characteristics

$V_R = 300 \sim 700 V$

T_{VJ} ranges from 25 °C to 175 °C

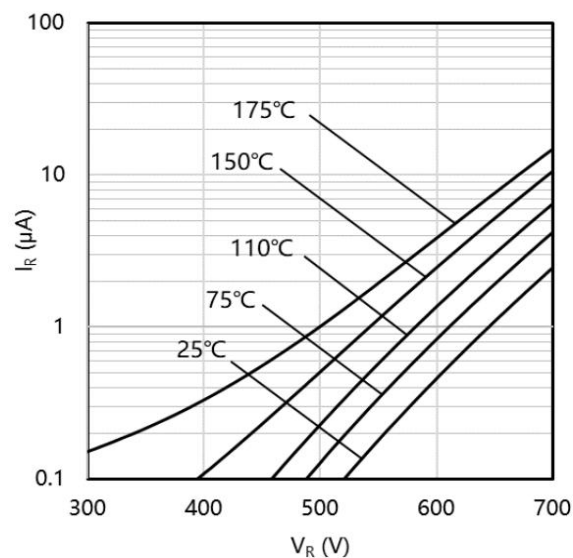


Figure 3. Total Capacitance Charge Characteristics

$V_R = 0 \sim 650 V$

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

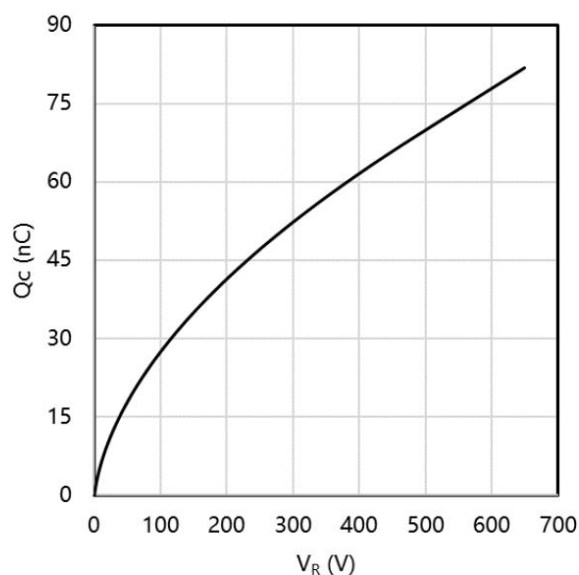
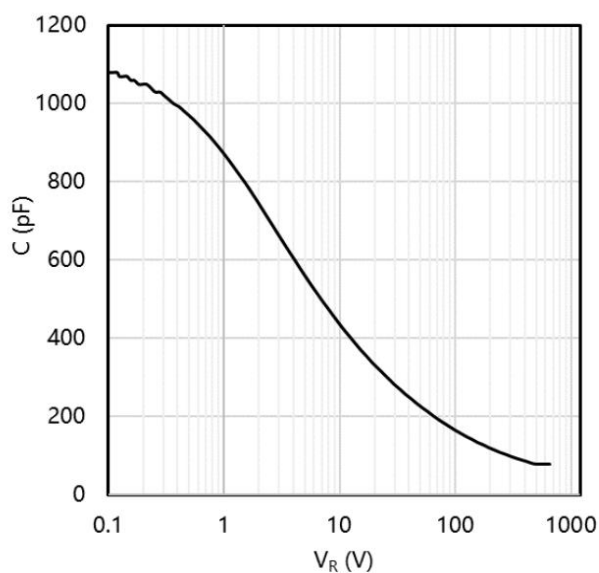


Figure 4. Total Capacitance Characteristics

$V_R = 0 \sim 650 V$

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



RATINGS AND CHARACTERISTIC CURVES

Figure 5. Power dissipation as function of case temperature

T_{VJ} ranges from 25 °C to 175 °C

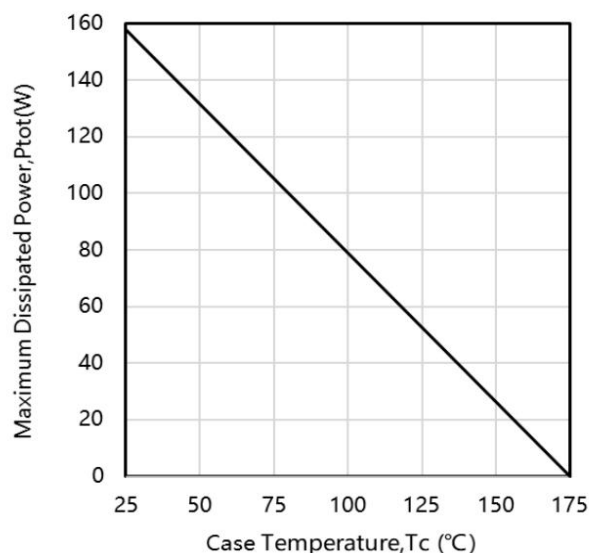


Figure 6. Capacitance Stored Energy

$V_R = 0 \sim 650$ V

$T_{VJ} = 25$ °C

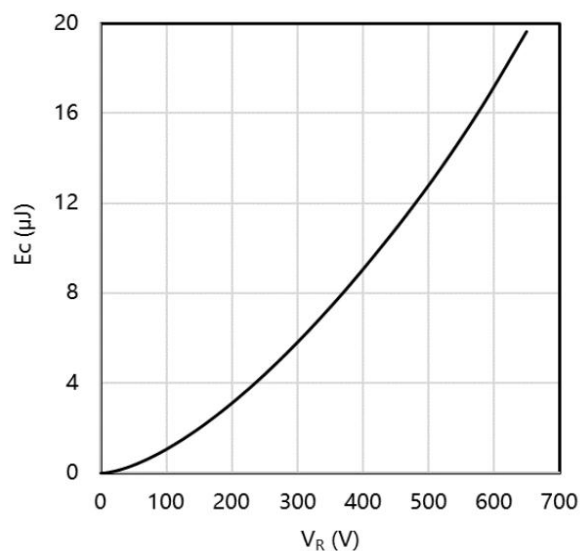
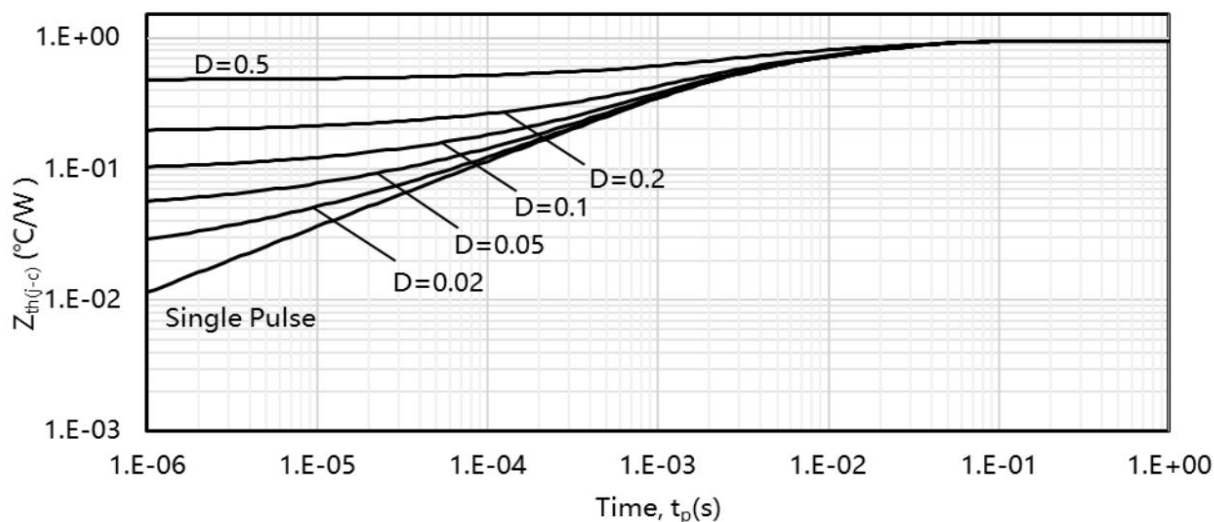
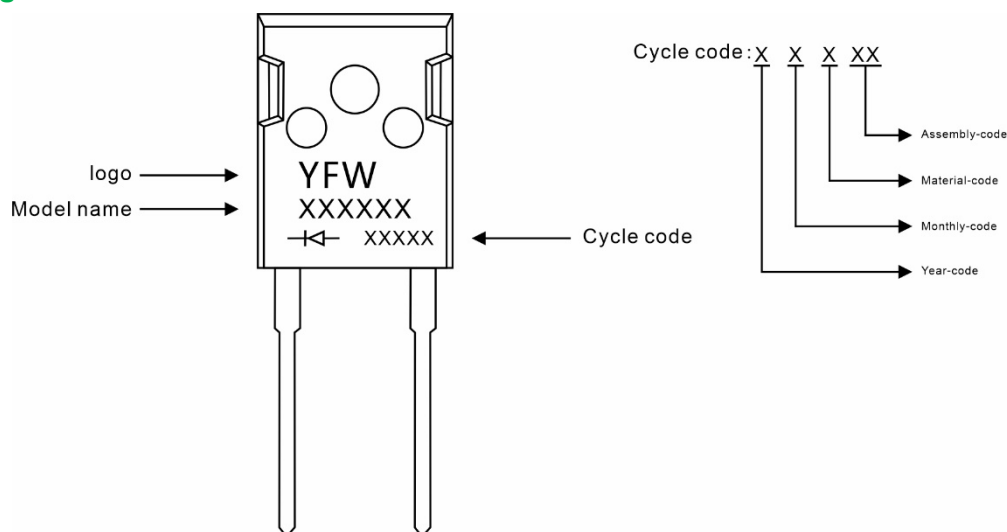


Figure 7. Max. transient thermal impedance, $Z_{th,j-c}=f(t_p)$, parameter: $D=t_p/T$



Marking Diagram



Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFWD320065W	TO-247-2L	0.209oz(5.93g)	30pcs/tube	600PCS/Box 3000PCS/Carton

Package Dimensions

TO-247-2L

Symbol	Dimensions in mm		Dimensions in Inch	
	Min.	Max.	Min.	Max.
A	4.90	5.10	0.193	0.201
A1	1.90	2.10	0.075	0.083
A2	2.29	2.54	0.090	0.100
b	1.00	1.40	0.039	0.055
b1	2.00	2.20	0.079	0.087
c	0.50	0.70	0.020	0.028
D	15.75	16.05	0.620	0.632
E	20.20	20.80	0.795	0.819
e1	10.90 (BSC)		0.429 (BSC)	
F	6.05	6.25	0.238	0.246
F1	5.80	6.00	0.228	0.236
L	20.10	20.40	0.791	0.803
L1	4.05	4.35	0.159	0.171
Φ	3.50	3.70	0.138	0.146

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