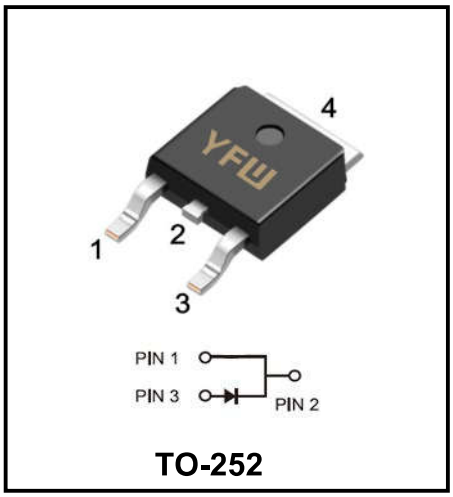
SIC SCHOTTKY BARRIER DIODE

Reverse Voltage - 650 V

Forward Current - 4 A



TO-252

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 ℃

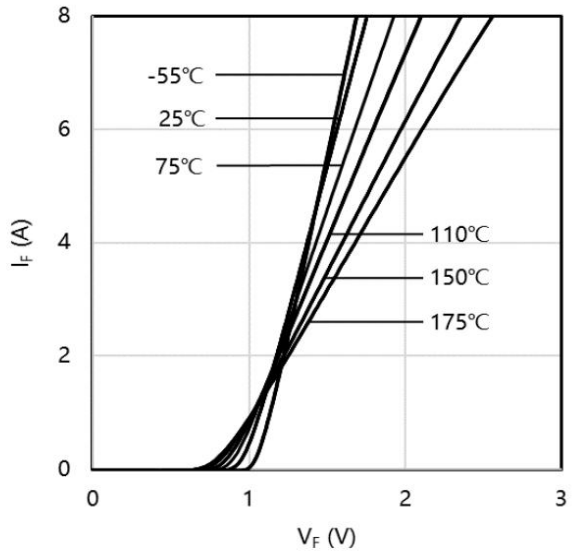


Figure 2. I_R Typical Reverse Characteristics
V_R = 300~700 V
T_{VJ} ranges from 25 ℃ to 175 ℃

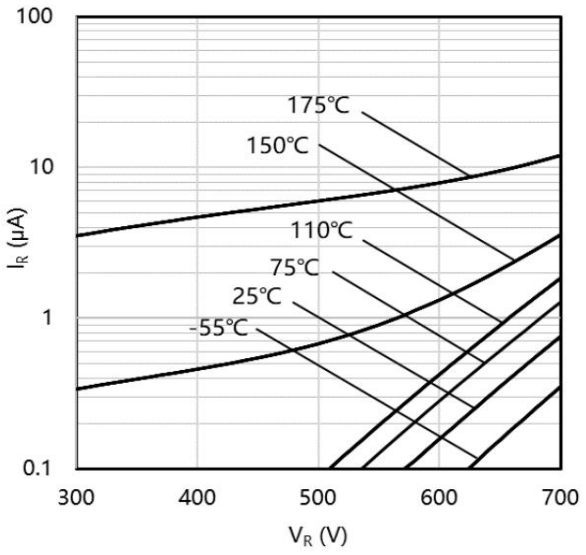


Figure 3. Total Capacitance Charge Characteristics
V_R = 0~650 V
T_{VJ} = 25 ℃

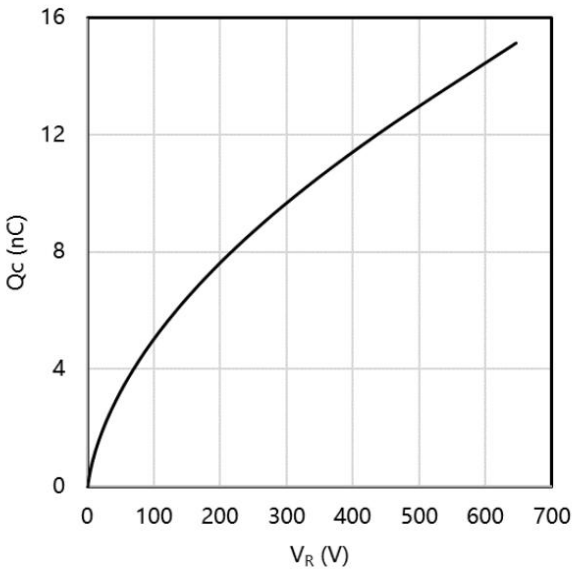
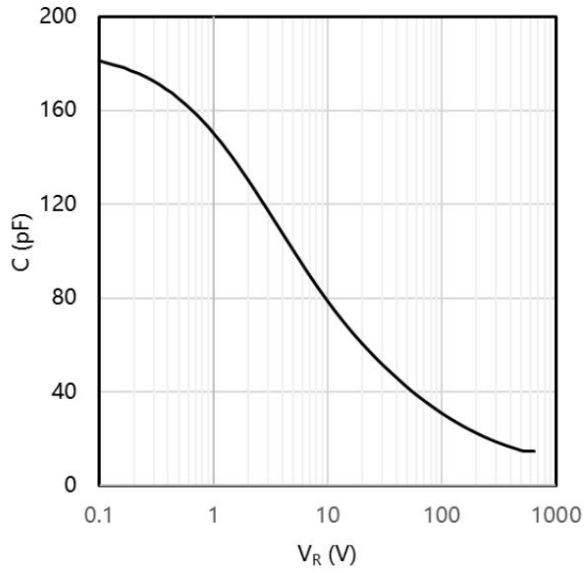


Figure 4. Total Capacitance Characteristics
V_R = 0~650 V
T_{VJ} = 25℃



RATINGS AND CHARACTERISTIC CURVES

Figure 5. Power dissipation as function of case temperature

T_{VJ} ranges from 25 ℃ to 175 ℃

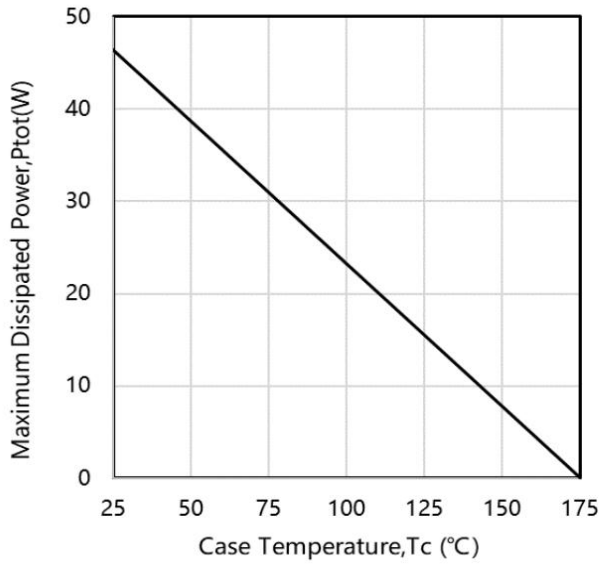


Figure 6. Capacitance Stored Energy

V_R = 0~650 V

T_{VJ} = 25 ℃

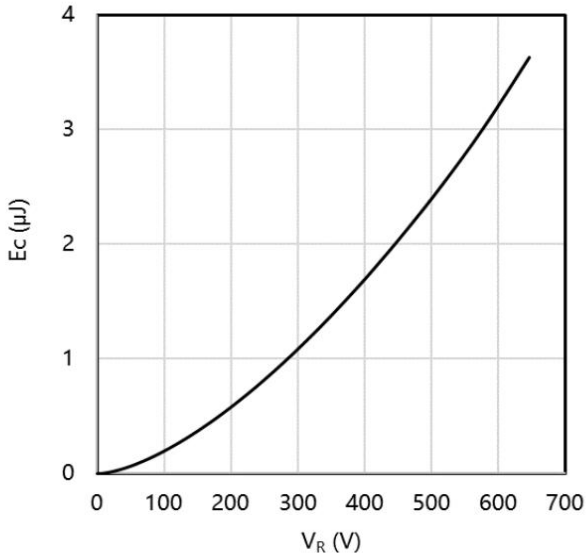
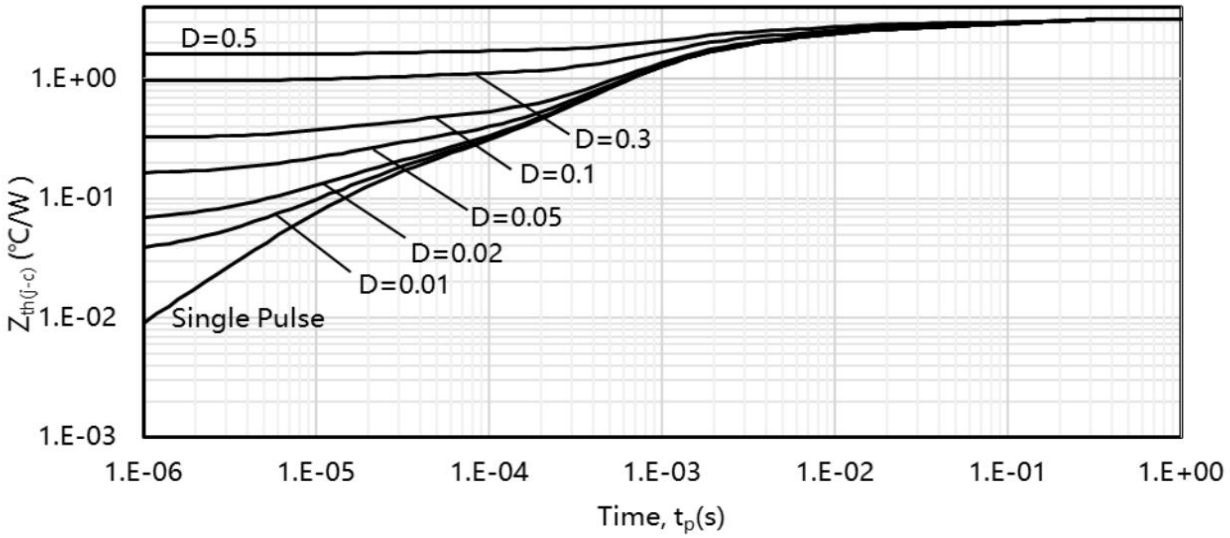
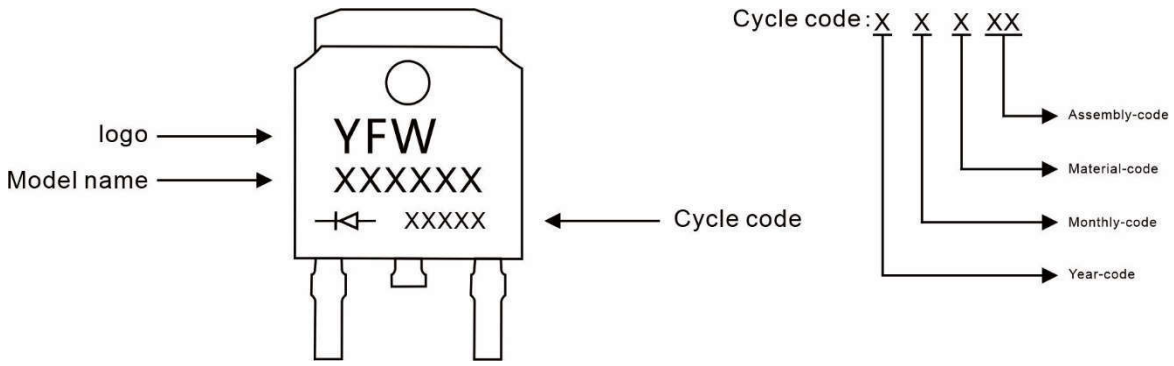


Figure 7. Max. transient thermal impedance, Zth,j-c=f(t_p), parameter: D=t_p/T



Marking Diagram

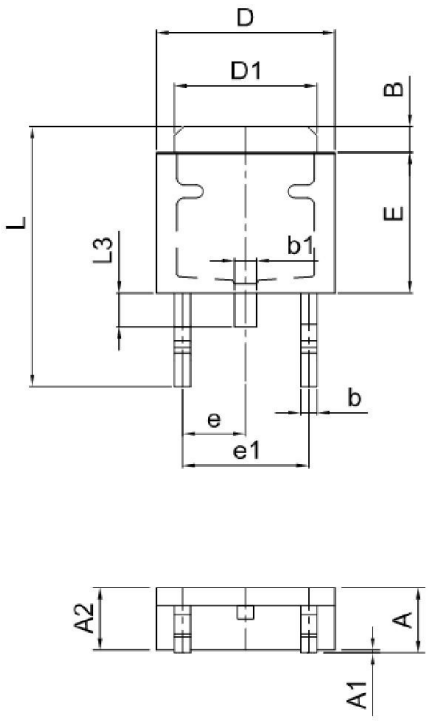


Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFWD304065CS	TO-252	0.011oz(0.32g)	2500pcs/reel	5000pcs/box 25000pcs/Carton

Package Dimensions

TO-252



Dim	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	2.20	2.50	0.087	0.098
A1	0.00	0.12	0.000	0.005
A2	2.20	2.40	0.087	0.094
B	1.20	1.60	0.047	0.063
b	0.50	0.70	0.020	0.028
b1	0.70	0.90	0.028	0.035
c	0.40	0.60	0.016	0.024
c1	0.40	0.60	0.016	0.024
D	6.35	6.65	0.250	0.262
D1	5.20	5.40	0.205	0.213
E	5.40	5.70	0.213	0.224
e	2.20	2.40	0.087	0.094
e1	4.40	4.80	0.173	0.189
L	10.00	11.00	0.393	0.433
L1	2.70	3.10	0.106	0.122
L2	1.40	1.80	0.055	0.071
L3	0.90	1.50	0.035	0.059

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