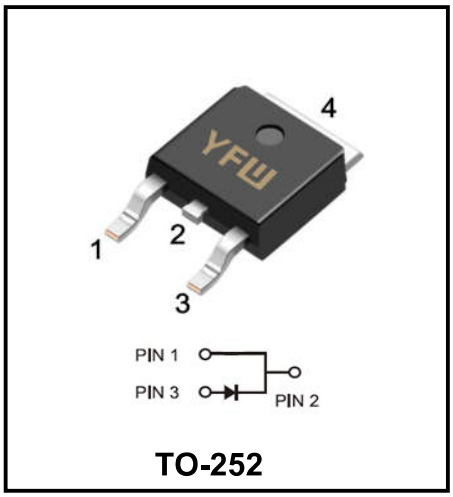
Silicon Carbide Schottky Barrier Diode

Reverse Voltage - 650 V

Forward Current - 10 A



TO-252

Description

- 650V Schottky diode
- Zero reverse recovery current
- Zero forward recovery voltage
- High frequency operation
- Switching characteristics independent of temperature
  Fast switch
- Positive temperature coefficient of forward voltage (V_F)

Application

- Switch mode power supplies(SMPS)
- Boost diodes in PFC or DC/DC stages
- Free wheeling diodes in inverter stages
  AC/DC converters

Absolute Maximum Ratings

(Rating at 25℃ junction temperature unless otherwise specified.)

Parameter		Symbol	Value	Unit
Maximum repetitive peak reverse voltage		V_{RRM}	650	V
Maximum DC blocking voltage		V_{DC}	650	V
Average forward current	T_C=135℃	$I_{F(AV)}$	10	A
Repetitive peak forward surge current	t_P=10ms,T_C=25℃	I_{FRM}	70	A
Non-repetitive peak forward surge current	t_P=10ms,T_C=25℃	I_{FSM}	92	A
Non-repetitive peak forward surge current	T_C=25℃, t_P=10μs, Pulse	I_{FMax}	270	A
Power dissipation	T_C=25℃ T_C=110℃	P_{tot}	71 30	W
Operating junction temperature range		T_j	-55 to+175	℃
Storage temperature range		T_{stg}	-55 to+175	℃

Thermal Characteristics

Parameter	Symbol	Value	Unit
Junction to case	$R_{th(j-c)}$	4.5	℃/W

Electrical Characteristics

(Rating at 25℃ junction temperature unless otherwise specified.)

Parameter	Conditions	Symbol	Min.	Typ.	Max.	Unit
Forward voltage	I_F=10A,T_j=25℃	V_F	-	1.4	1.7	V
	I_F=10A,T_j=175℃		-	1.7	2.0	
Reverse current	V_R=650V,T_j=25℃	I_R	-	5	20	μA
	V_R=650V,T_j=175℃		-	80	200	
Total capacitance	V_R=0V,f=1MHz	C	-	608	-	pF
	V_R=200V,f=1MHz		-	58	-	
	V_R=400V,f=1MHz		-	48	-	
Total capacitance charge	V_R=400V,T_j=25℃	Q_C	-	35	-	nC
Capacitance stored energy	V_R=400V	Ec	-	7.5	-	μJ

Typical Characteristics

FIG.1: Forward characteristics

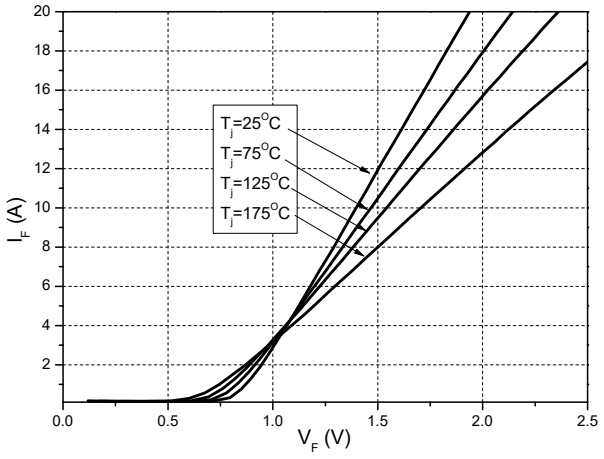
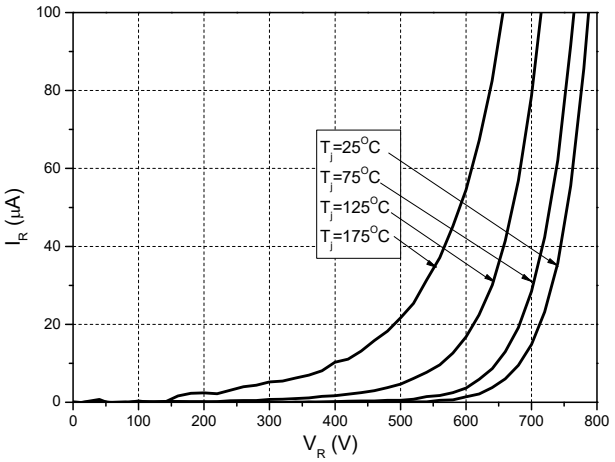


FIG.2: Reverse characteristics



Typical Characteristics

FIG.3: Capacitance vs. reverse voltage

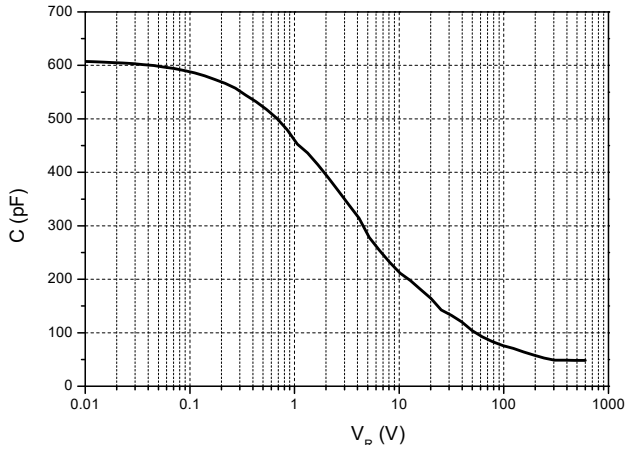


FIG.4: Transient thermal impedance

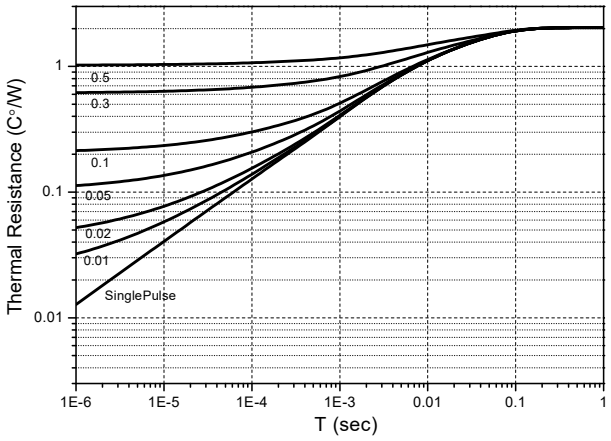


FIG.5: Capacitance charge vs. reverse voltage

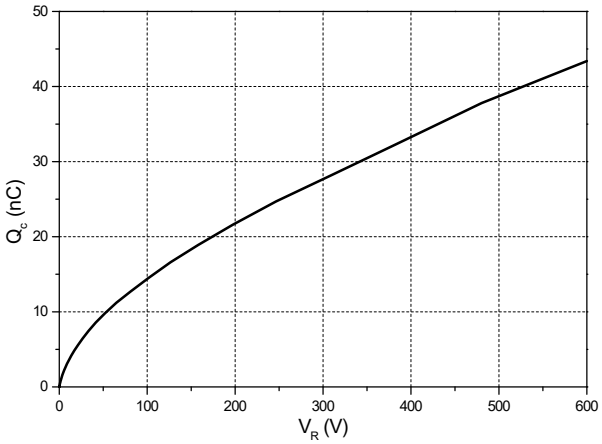


FIG.6: Capacitance stored energy

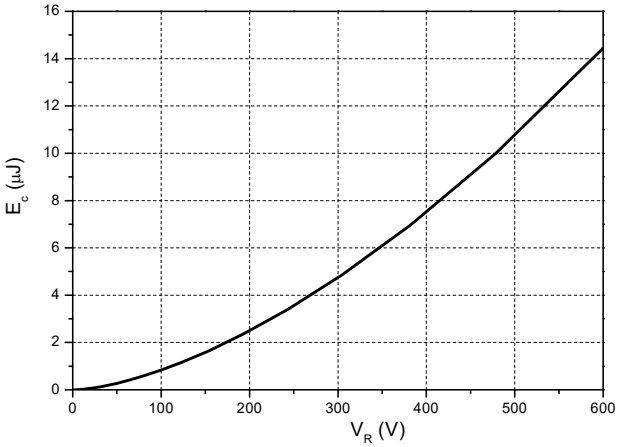


FIG.7: Power derating

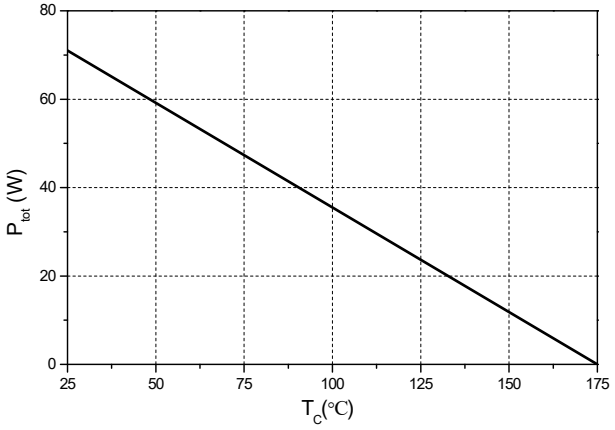
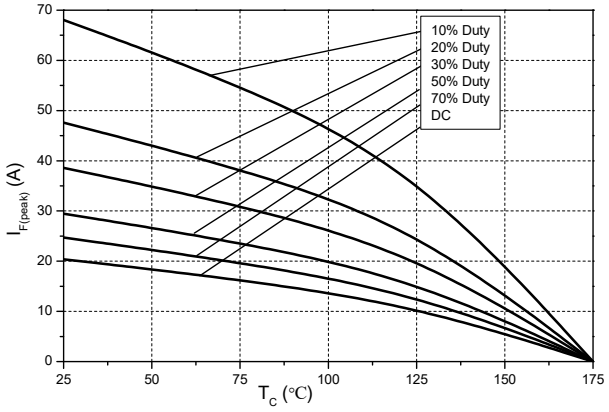
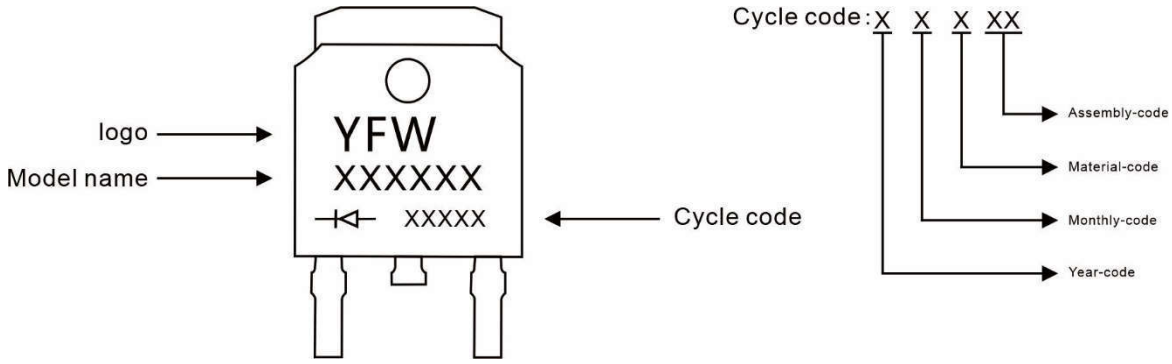


FIG.8: Current derating



Marking Diagram

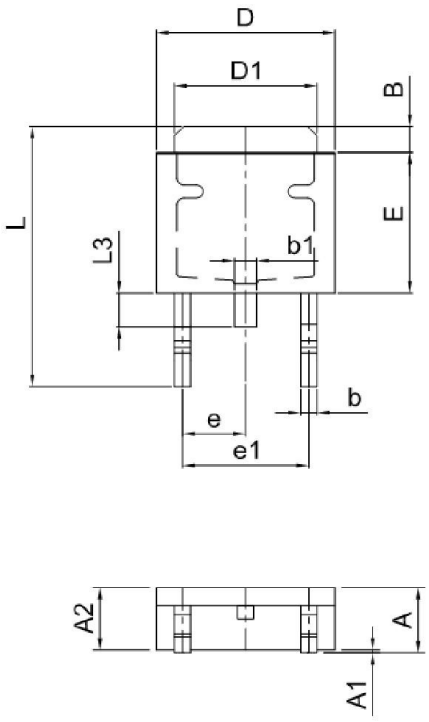


Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFWD310065CS	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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