



JCD12SL170A SiC Schottky Diode

Rev.1.3

DESCRIPTION

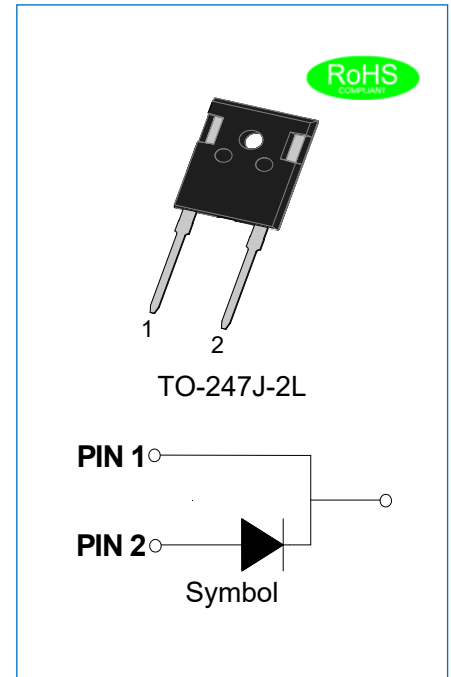
- ✧ 1700V Schottky diode
- ✧ Zero reverse recovery current
- ✧ Zero forward recovery voltage
- ✧ High frequency operation
- ✧ Switching characteristics independent of temperature
- ✧ Fast switch
- ✧ Positive temperature coefficient of forward voltage (V_F)

BENEFIT

- ✧ Lower switching loss
- ✧ No thermal runaway in parallel devices
- ✧ Lower heatsink dependent

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 RATING (Rating at 25°C junction temperature unless otherwise specified.)

Parameter		Symbol	Value	Unit
Maximum repetitive peak reverse voltage		V_{RRM}	1700	V
Maximum DC blocking voltage		V_{DC}	1700	V
Average forward current	$T_C=150^{\circ}\text{C}$	$I_{F(AV)}$	12	A
Repetitive peak forward surge current	$t_P=10\text{ms}, T_C=25^{\circ}\text{C}$	I_{FRM}	60	A
Non-repetitive peak forward surge current	$t_P=10\text{ms}, T_C=25^{\circ}\text{C}$	I_{FSM}	72	A
Power dissipation	$T_C=25^{\circ}\text{C}$ $T_C=110^{\circ}\text{C}$	P_{tot}	192 83	W
Operating junction temperature range		T_j	-55 to +175	$^{\circ}\text{C}$
Storage temperature range		T_{stg}	-55 to +175	$^{\circ}\text{C}$

ELECTRICAL CHARACTERISTICS(Rating at 25°C junction temperature unless otherwise specified.)

Parameter	Conditions	Symbol	Value			Unit
			Min.	Typ.	Max.	
Forward voltage	$I_F=12A, T_J=25^{\circ}C$	V_F	-	1.45	1.8	V
	$I_F=12A, T_J=175^{\circ}C$		-	2.2	2.5	
Reverse current	$V_R=1700V, T_J=25^{\circ}C$	I_R	-	10	100	μA
	$V_R=1700V, T_J=175^{\circ}C$		-	20	200	
Total capacitance	$V_R=0V, f=1MHz$	C	-	1090	-	pF
	$V_R=800V, f=1MHz$		-	51	-	
	$V_R=1700V, f=1MHz$		-	50	-	
Total capacitance charge	$V_R=1700V, T_J=25^{\circ}C$	Q_C	-	122	-	nC
Capacitance stored energy	$V_R=1700V$	E_C	-	128	-	μJ

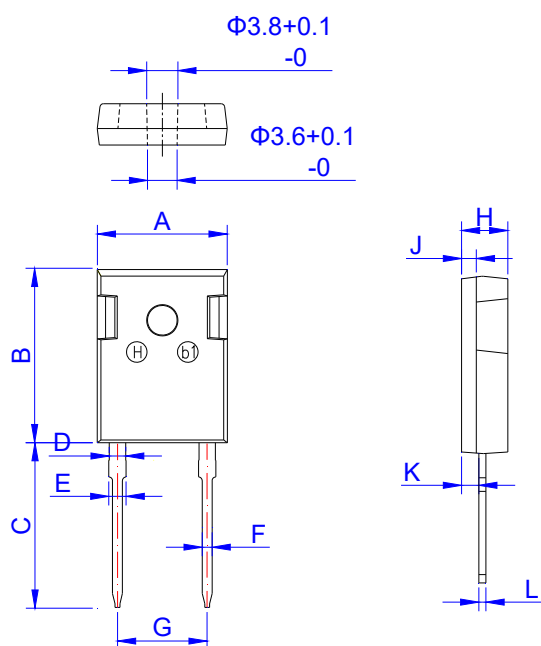
THERMAL CHARACTERISTICS

Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	Junction to case	0.78	$^{\circ}C/W$

ORDERING INFORMATION

J	CD	12	SL	170	A
JieJie Microelectronics Co., Ltd	SiC Schottky Diode	$I_F(AV)=12A$	SL: TO-247J-2L	$V_{RRM}:1700V$	Version A

PACKAGE MECHANICAL DATA



TO-247J-2L

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	15.50	15.80	16.10	0.610	0.622	0.634
B	20.80	21.00	21.20	0.819	0.827	0.835
C	19.70	20.00	20.30	0.776	0.787	0.799
D	1.80	2.00	2.20	0.071	0.079	0.087
E	1.90	2.10	2.30	0.075	0.083	0.091
F	1.00	1.20	1.40	0.039	0.047	0.055
G	10.50		11.30	0.413		0.445
H	4.80	5.00	5.20	0.189	0.197	0.205
J	1.90	2.00	2.10	0.075	0.079	0.083
K	2.20	2.35	2.50	0.087	0.093	0.098
L	0.41	0.60	0.79	0.016	0.024	0.031

CHARACTERISTICS CURVE

FIG.1: Forward characteristics

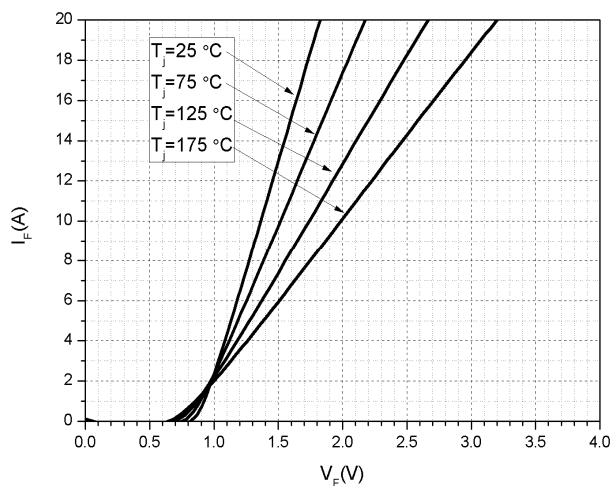
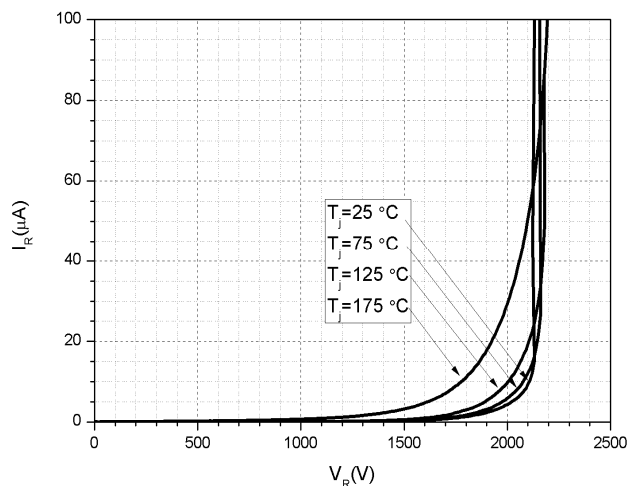


FIG.2: Reverse characteristics



CHARACTERISTICS CURVE

FIG.3: Capacitance vs. reverse voltage

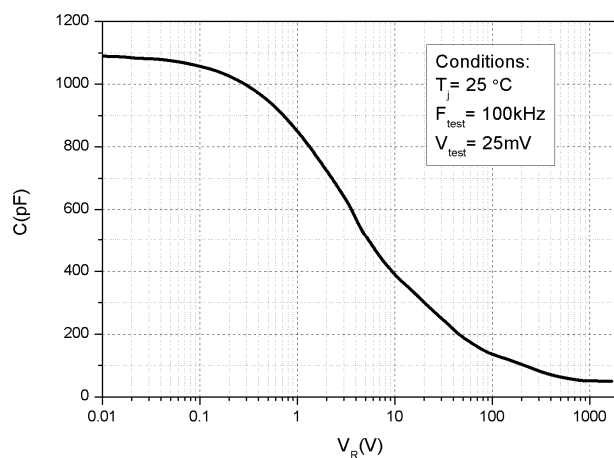


FIG.4: Transient thermal impedance

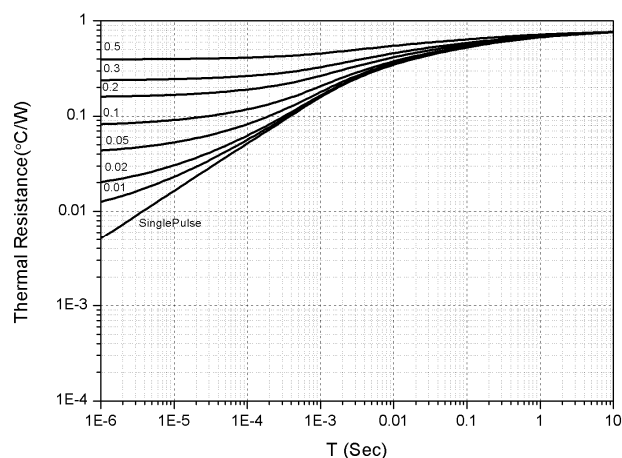


FIG.5: Capacitance charge vs. reverse voltage

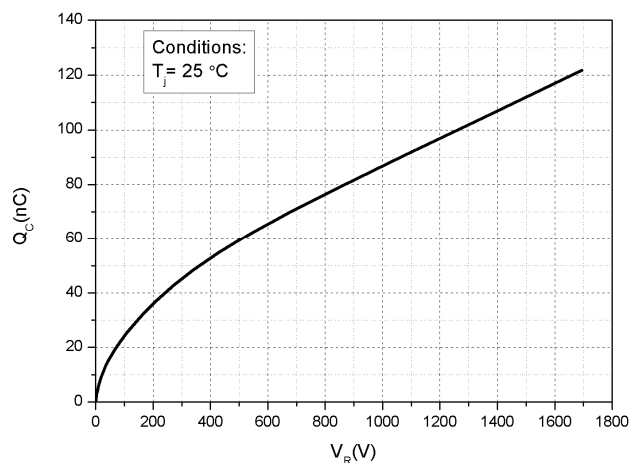


FIG.6: Capacitance stored energy

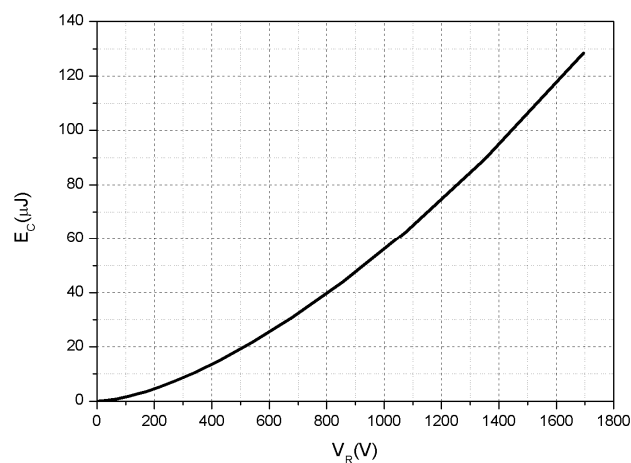


FIG.7: Power derating

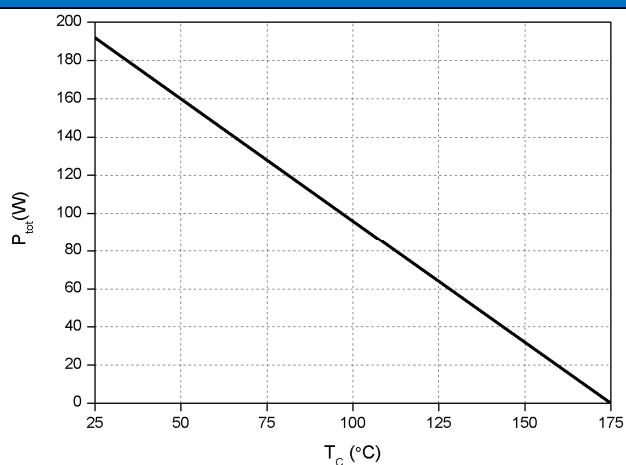
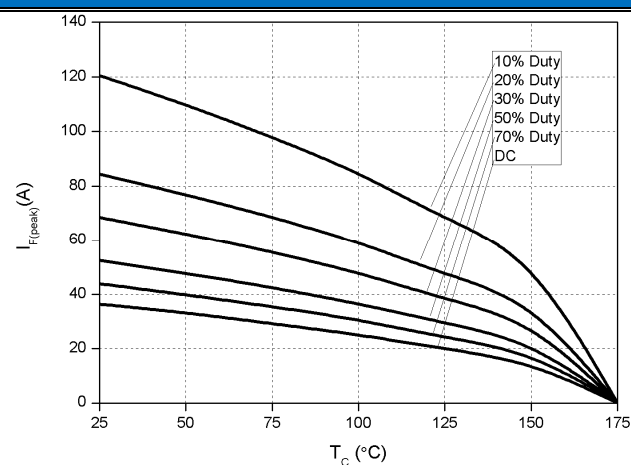


FIG.8: Current derating



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