



JCD40SJ12BCT

SiC Schottky Diode

Rev.1.0

DESCRIPTION

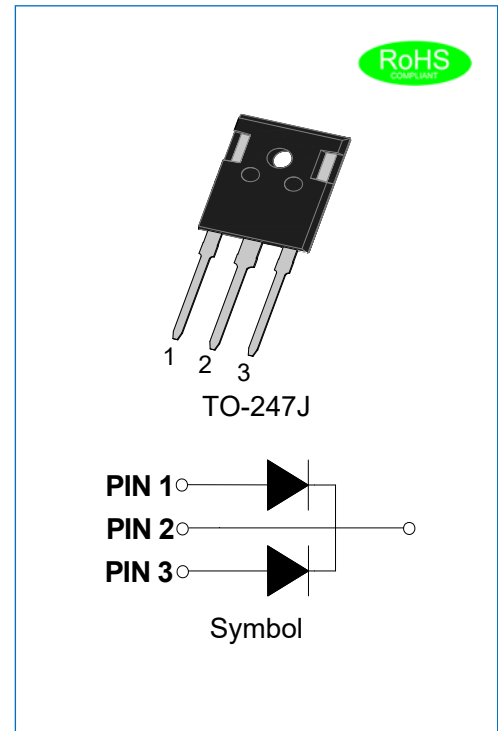
- ✧ 1200V Schottky diode
- ✧ Zero reverse recovery current
- ✧ Zero forward recovery voltage
- ✧ High frequency operation
- ✧ Switching characteristics independent of temperature
- ✧ Fast switch
- ✧ Positive temperature coefficient of forward voltage (V_F)

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}	1200	V
Maximum DC blocking voltage		V_{DC}	1200	V
Average forward current	$T_C=153^{\circ}C$	$I_{F(AV)}$	20* 40**	A
Repetitive peak forward surge current	$t_P=10ms, T_C=25^{\circ}C$	I_{FRM}	108*	A
Non-repetitive peak forward surge current	$t_P=10ms, T_C=25^{\circ}C$	I_{FSM}	135*	A
Power dissipation	$T_C=25^{\circ}C$	P_{tot}	283*	W
	$T_C=110^{\circ}C$		122*	
Operating junction and storage temperature range		T_j, T_{stg}	-55 to +175	°C

Note: *per leg, **per device

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

Parameter	Conditions	Symbol	Value			Unit
			Min.	Typ.	Max.	
Forward voltage	$I_F=20A, T_j=25^\circ C$	V_F	-	1.37	1.80	V
	$I_F=20A, T_j=175^\circ C$		-	2.01	-	
Reverse current	$V_R=1200V, T_j=25^\circ C$	I_R	-	3	200	μA
	$V_R=1200V, T_j=175^\circ C$		-	32	-	
Total capacitance	$V_R=1V, f=1MHz$	C	-	1100	-	pF
	$V_R=400V, f=1MHz$		-	94	-	
	$V_R=800V, f=1MHz$		-	79	-	
Total capacitance charge	$V_R=800V, T_j=25^\circ C$	Q_C	-	101	-	nC
Capacitance stored energy	$V_R=800V$	E_C	-	29	-	μJ

THERMAL CHARACTERISTICS

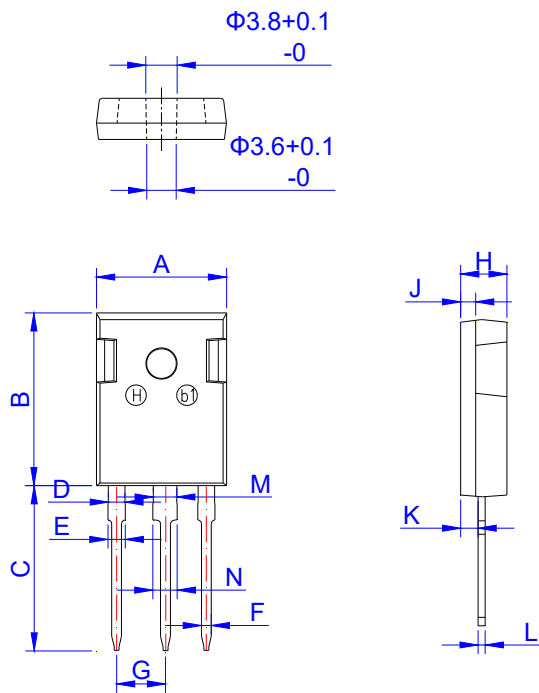
Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	Junction to case	0.53*	$^\circ C/W$

Note: *per leg

ORDERING INFORMATION

J JieJie Microelectronics Co., Ltd SiC Schottky Diode	CD $I_{F(AV)}=40A$	40 SJ: TO-247J	SJ	12 $V_{RRM}: 1200V$	B Version B	CT Dual chip
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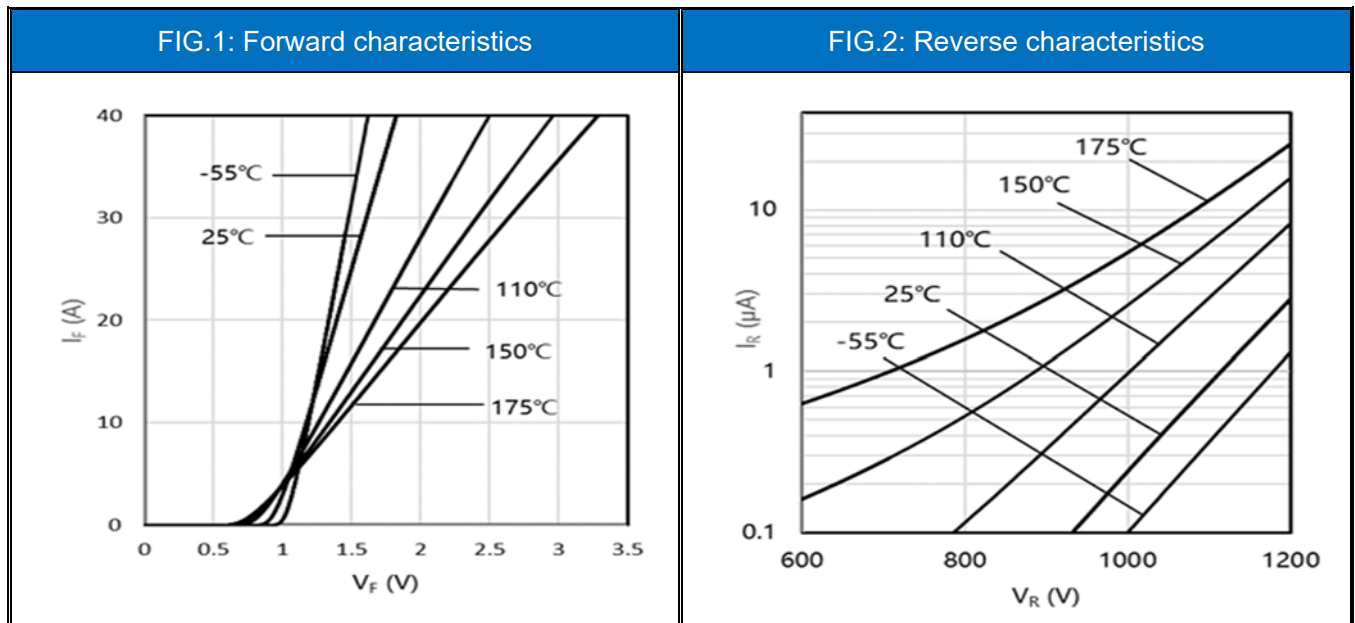
PACKAGE MECHANICAL DATA



TO-247J

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	5.25		5.65	0.207		0.222
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
M	2.80	3.00	3.20	0.110	0.118	0.126
N	2.90	3.10	3.30	0.114	0.122	0.130

CHARACTERISTICS CURVE



CHARACTERISTICS CURVE

FIG.3: Capacitance vs. reverse voltage

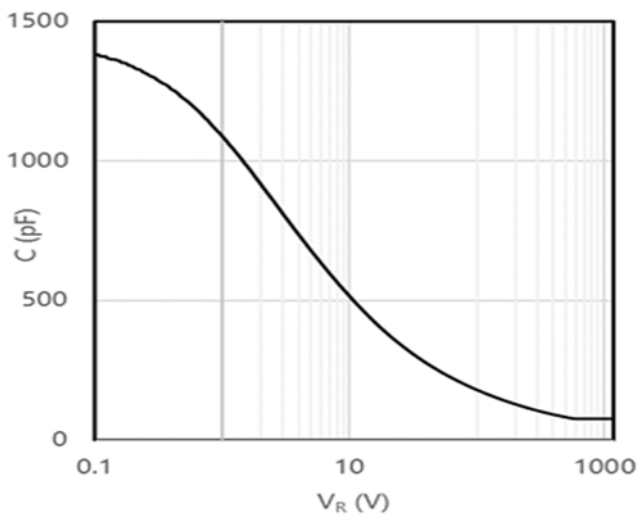


FIG.4: Transient thermal impedance

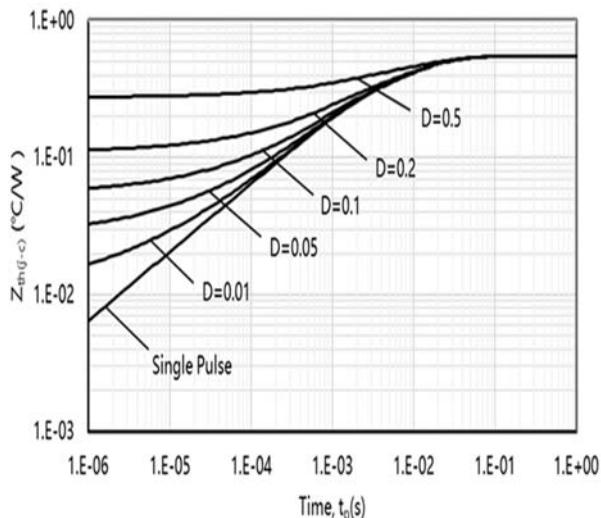


FIG.5: Capacitance charge vs. reverse voltage

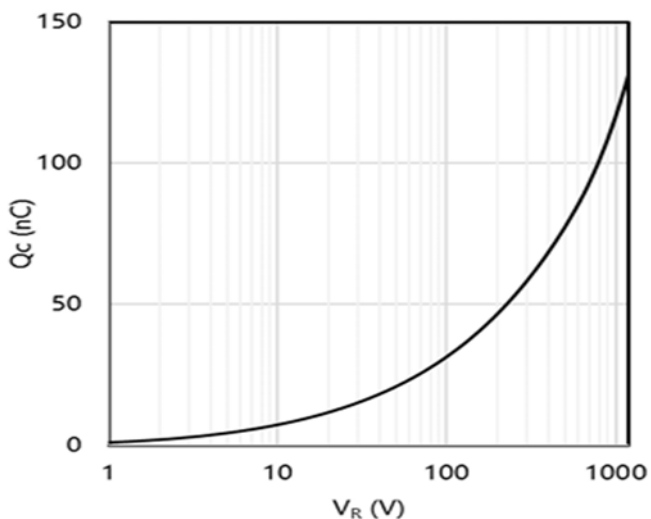


FIG.6: Capacitance stored energy

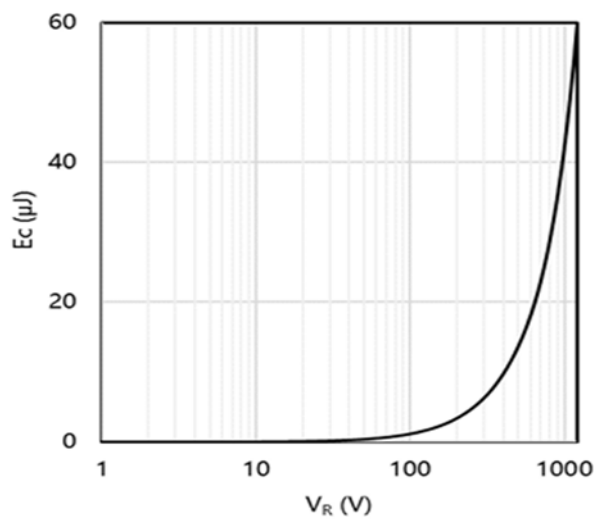
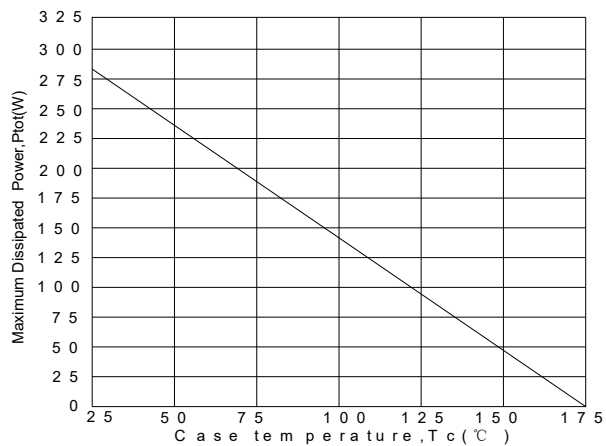


FIG.7: Power derating




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