



## JCD40SJ12ACT SiC Schottky Diode

Rev.2.2

### DESCRIPTION

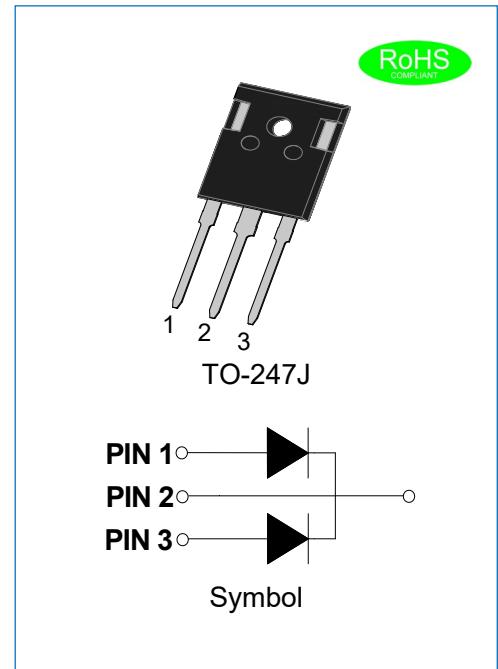
- ✧ 1200V Schottky diode
- ✧ Zero reverse recovery current
- ✧ Zero forward recovery voltage
- ✧ High frequency operation
- ✧ Switching characteristics independent of temperature
- ✧ Fast switch
- ✧ Positive temperature coefficient of forward voltage ( $V_F$ )

### 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	$T_C=137^\circ\text{C}$ $I_{F(AV)}$	20/40	A
Repetitive peak forward surge current	$t_P=10\text{ms}, T_C=25^\circ\text{C}$ $I_{FRM}$	100	A
Non-repetitive peak forward surge current	$t_P=10\text{ms}, T_C=25^\circ\text{C}$ $I_{FSM}$	140	A
Non-repetitive peak forward surge current	$T_C=25^\circ\text{C}, t_P=10\mu\text{s}$ , Pulse $I_{FMax}$	1200	A
Power dissipation	$T_C=25^\circ\text{C}$ $T_C=110^\circ\text{C}$ $P_{tot}$	283 123	W
Operating junction and storage temperature range	$T_j, T_{stg}$	-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	$I_F=20A, T_j=25^\circ C$	$V_F$	-	1.5	1.8	V
	$I_F=20A, T_j=175^\circ C$		-	2.2	3.0	
Reverse current	$V_R=1200V, T_j=25^\circ C$	$I_R$	-	10	100	$\mu A$
	$V_R=1200V, T_j=175^\circ C$		-	50	400	
Total capacitance	$V_R=0V, f=1MHz$	C	-	2010	-	pF
	$V_R=400V, f=1MHz$		-	120	-	
	$V_R=600V, f=1MHz$		-	97	-	
Total capacitance charge	$V_R=600V, T_j=25^\circ C$	$Q_C$	-	95	-	nC
Capacitance stored energy	$V_R=600V$	$E_C$	-	28.6	-	$\mu J$

**THERMAL CHARACTERISTICS**

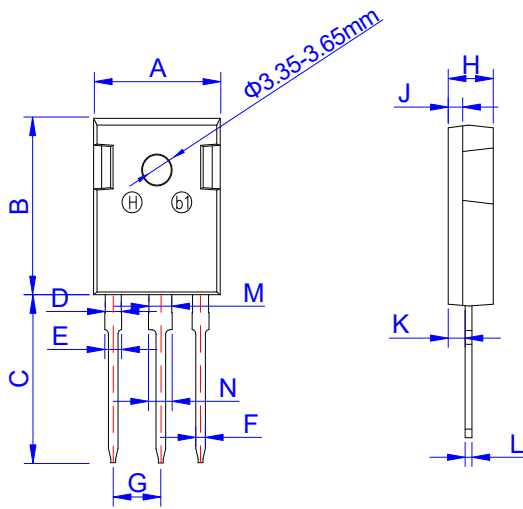
Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	Junction to case	0.53	$^\circ C/W$

Note: \*per leg, \*\*per device

**ORDERING INFORMATION**

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

FIG.1: Forward characteristics

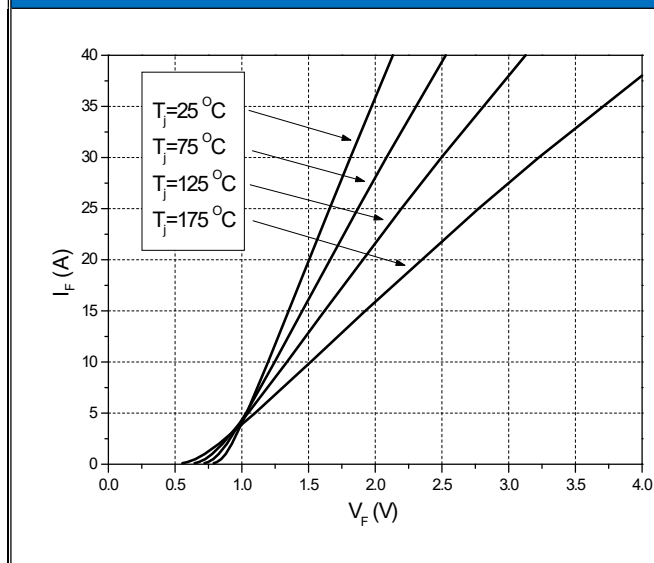
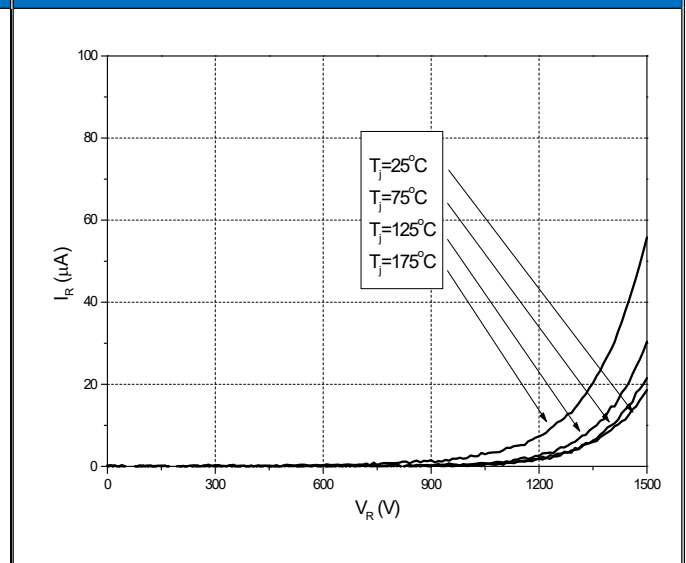


FIG.2: Reverse characteristics



CHARACTERISTICS CURVE

FIG.3: Capacitance vs. reverse voltage

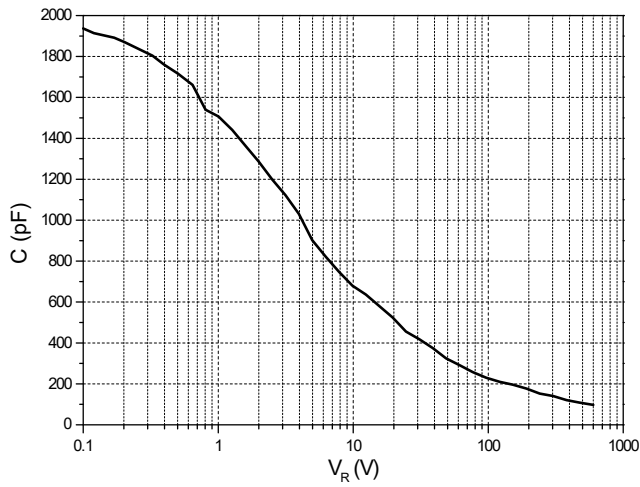


FIG.4: Transient thermal impedance

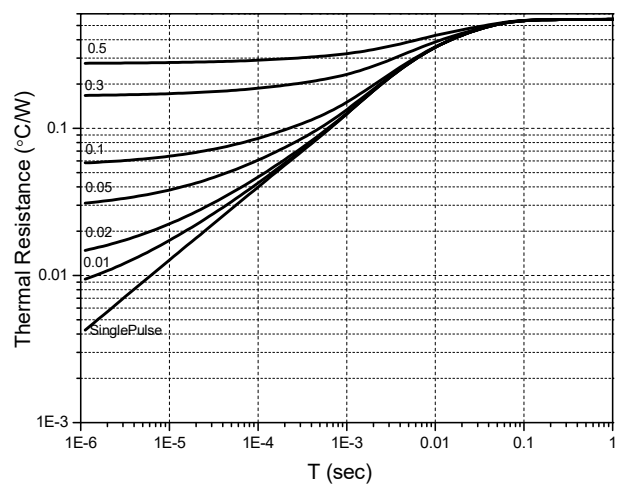


FIG.5: Capacitance charge vs. reverse voltage

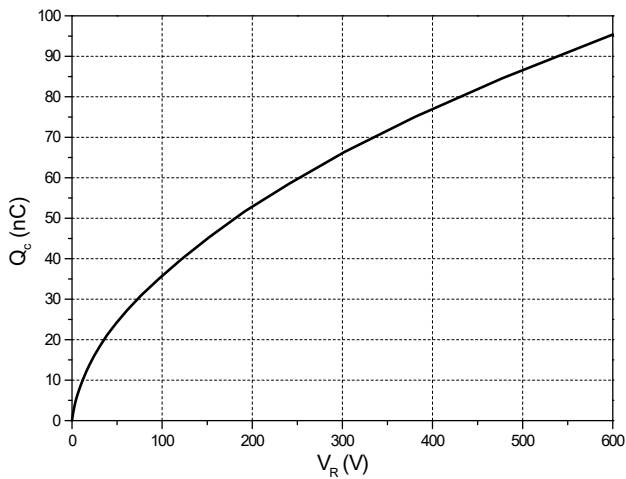


FIG.6: Capacitance stored energy

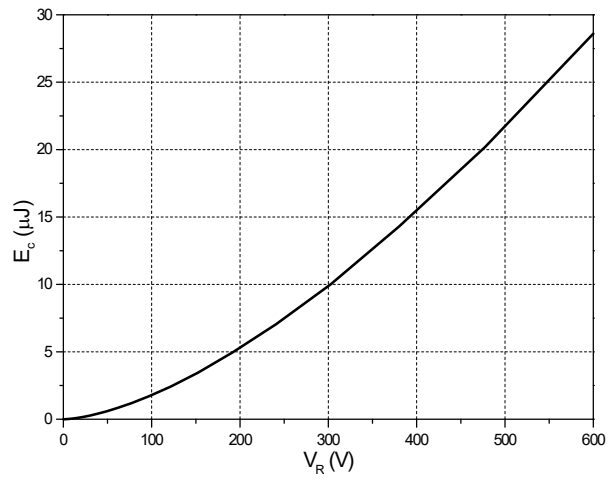


FIG.7: Power derating

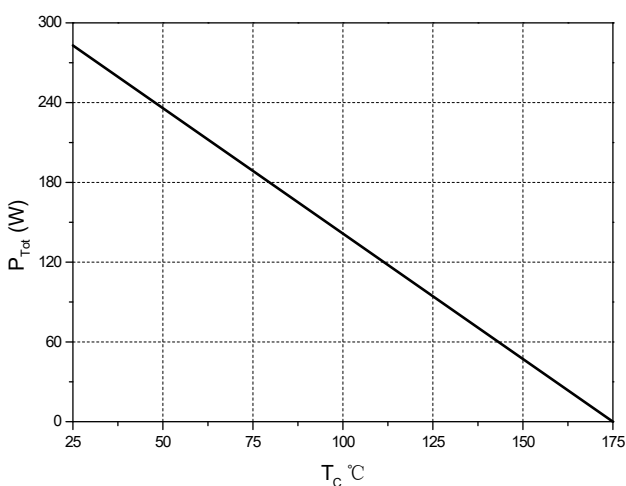
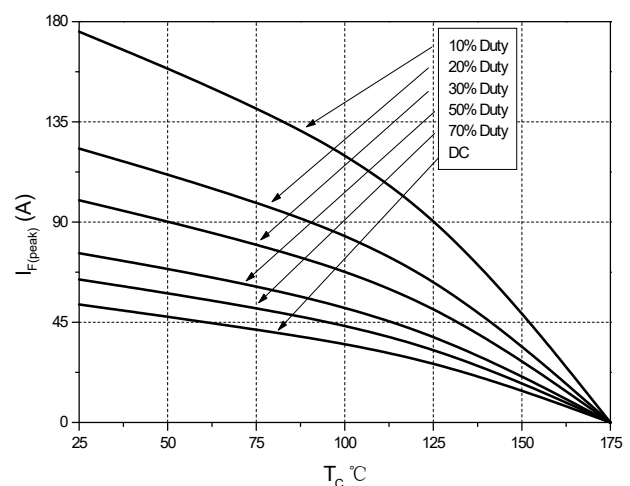


FIG.8: Current derating




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