



JCD20IS065A

SiC Schottky Diode

Rev.1.0

DESCRIPTION

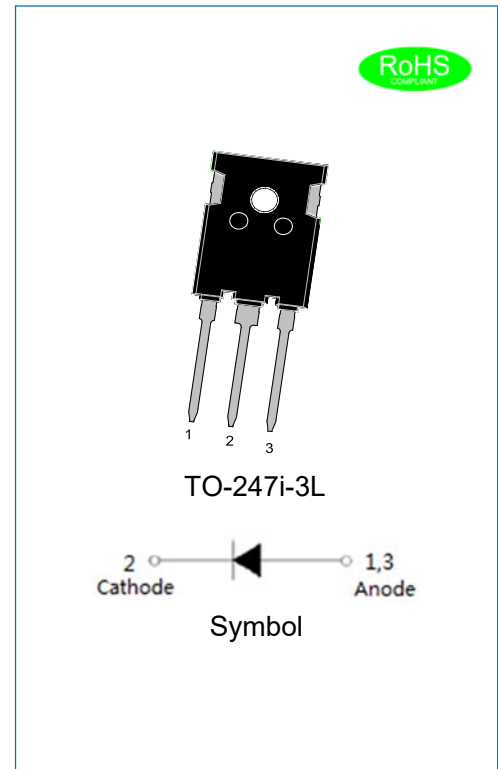
- ✧ 650V Schottky diode
- ✧ Zero reverse recovery current
- ✧ Zero forward recovery voltage
- ✧ High frequency operation
- ✧ Switching characteristics independent of temperature
- ✧ Fast switch
- ✧ Positive temperature coefficient of forward voltage (V_F)

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}	650	V
Maximum DC blocking voltage		V_{DC}	650	V
Average forward current	$T_C=135^{\circ}\text{C}$	$I_{F(AV)}$	20	A
Repetitive peak forward surge current	$t_P=10\text{ms}, T_C=25^{\circ}\text{C}$	I_{FRM}	140	A
Non-repetitive peak forward surge current	$t_P=10\text{ms}, T_C=25^{\circ}\text{C}$	I_{FSM}	170	A
Non-repetitive peak forward surge current	$T_C=25^{\circ}\text{C}, t_P=10\mu\text{s}, \text{Pulse}$	I_{FMax}	1360	A
Power dissipation	$T_C=25^{\circ}\text{C}$	P_{tot}	71	W
	$T_C=110^{\circ}\text{C}$		30	
Operating junction temperature range		T_j	-55 to+175	$^{\circ}\text{C}$
Storage temperature range		T_{stg}	-55 to+175	$^{\circ}\text{C}$

ISOLATION CHARACTERISTICS

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$V_{isol(RMS)}$	RMS isolation voltage	50Hz $\leq$ f $\leq$ 60Hz; RH $\leq$ 65%; from all pins to external heatsink; sinusoidal waveform; clean and dust free	-	-	2500	V
C_{isol}	Isolation capacitance	from cathode to external heatsink	-	10	-	pF

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	-	1.45	1.8	V
	$I_F=20A, T_j=175^\circ C$		-	1.8	2.1	
Reverse current	$V_R=650V, T_j=25^\circ C$	I_R	-	2	20	μA
	$V_R=650V, T_j=175^\circ C$		-	40	200	
Total capacitance	$V_R=0V, f=1MHz$	C	-	1340	-	pF
	$V_R=200V, f=1MHz$		-	120	-	
	$V_R=400V, f=1MHz$		-	109	-	
Total capacitance charge	$V_R=400V, T_j=25^\circ C$	Q_C	-	65	-	nC
Capacitance stored energy	$V_R=400V$	E_C	-	16	-	μJ

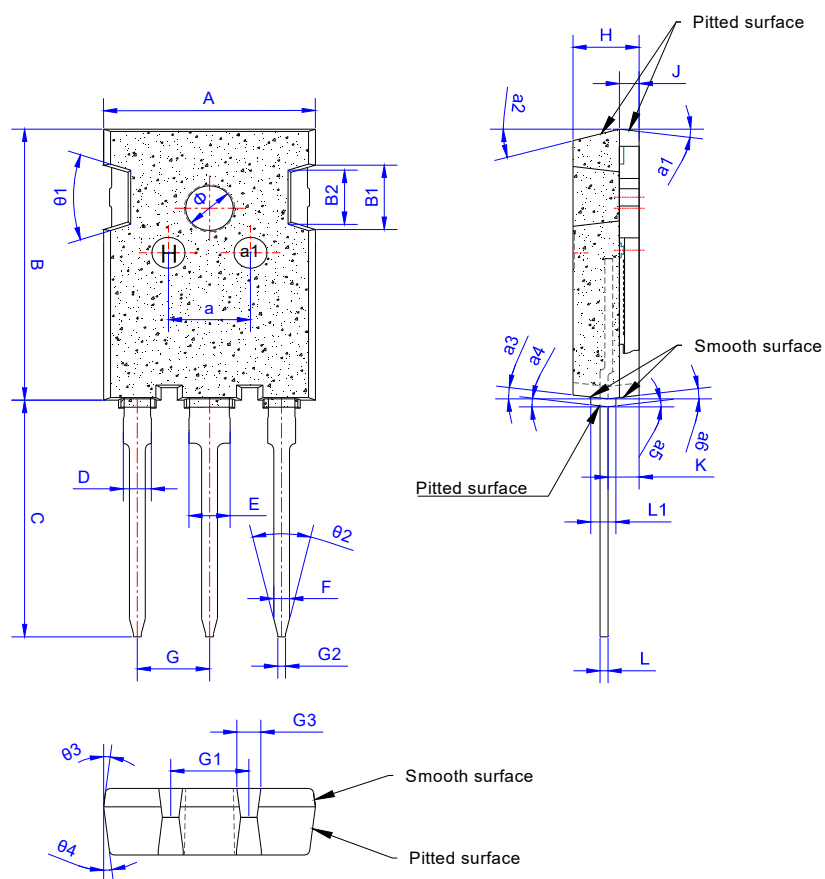
THERMAL CHARACTERISTICS

Symbol	Parameter	Min.	Typ.	Max.	Unit
$R_{th(j-c)}$	Junction to case	-	-	1.5	$^\circ C/W$

ORDERING INFORMATION

J	CD	20	IS	065	A
JieJie Microelectronics Co., Ltd.	SiC Schottky Diode	$I_{F(AV)}=20A$	IS: TO-247i-3L	$V_{RRM}=650V$	Version A

PACKAGE MECHANICAL DATA



Symbol	Dimension			Inches			Symbol	Dimension			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.		Min.	Typ.	Max.	Min.	Typ.	Max.
A	15.95	16.00	16.05	0.628	0.630	0.632	K	2.30	2.35	2.40	0.091	0.093	0.094
a	6.15	6.20	6.25	0.242	0.244	0.246	L	0.59	0.60	0.61	0.023	0.024	0.024
B	21.85	21.90	21.95	0.860	0.862	0.864	L1	1.85	1.90	1.95	0.073	0.075	0.077
B1	5.15	5.20	5.25	0.203	0.205	0.207	φ	3.55	3.60	3.65	0.140	0.142	0.144
B2	4.32	4.37	4.42	0.170	0.172	0.174	θ1	35°	36°	37°	35°	36°	37°
C	19.01	19.11	19.21	0.748	0.752	0.756	θ2	26°	27°	28°	26°	27°	28°
D	2.07	2.10	2.13	0.081	0.083	0.084	θ3	6°	7°	8°	6°	7°	8°
E	3.07	3.10	3.13	0.121	0.122	0.123	θ4	6°	7°	8°	6°	7°	8°
F	1.15	1.20	1.25	0.045	0.047	0.049	α1	6°	7°	8°	6°	7°	8°
G	5.45REF			0.215REF			α2	14°	15°	16°	14°	15°	16°
G1	5.85	5.90	5.95	0.230	0.232	0.234	α3	6°	7°	8°	6°	7°	8°
G2		0.60			0.024		α4	6°	7°	8°	6°	7°	8°
G3	1.76	1.81	1.86	0.069	0.071	0.073	α5	6°	7°	8°	6°	7°	8°
H	4.95	5.00	5.05	0.195	0.197	0.199	α6	6°	7°	8°	6°	7°	8°
J	1.44	1.49	1.54	0.057	0.059	0.061							

CHARACTERISTICS CURVE

FIG.1: Forward characteristics

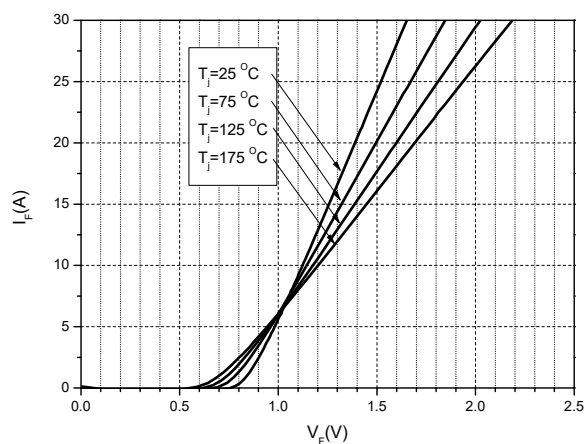


FIG.2: Reverse characteristics

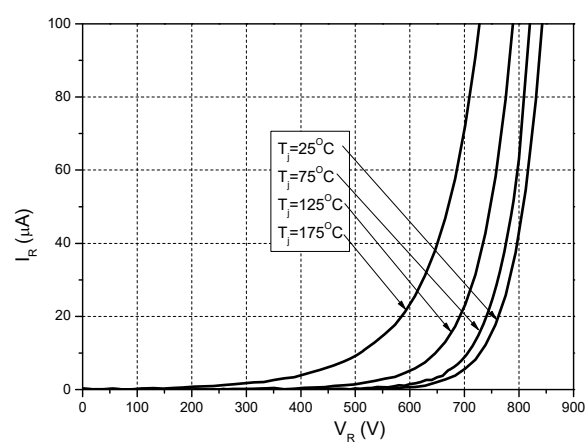


FIG.3: Capacitance vs. reverse voltage

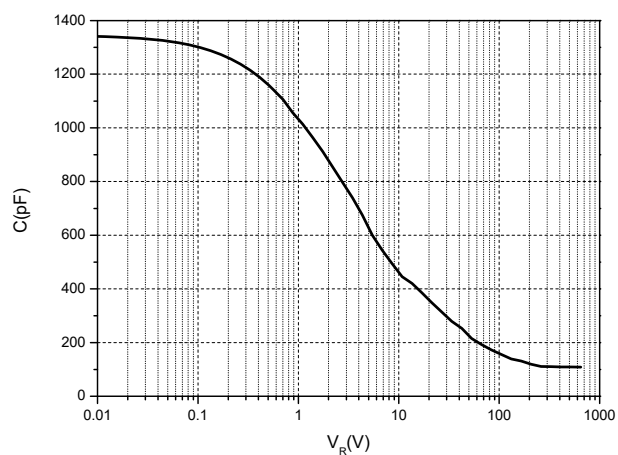
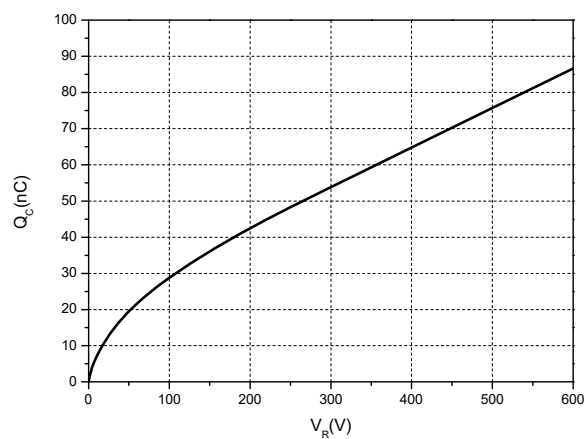


FIG.4: Capacitance charge vs. reverse voltage



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