DONGGUAN NANJING ELECTRONICS LTD.,

TO-247-2 Silicon Carbide Schottky Diode

NJ20PS065A SiC Diode 650V, 20A, 44nC

General Description

This product family offers state of the art performance. It is designed for high frequency applications here high efficiency and high reliability are required.

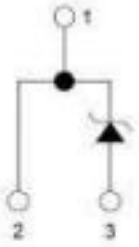
Features

- Zero Forward/Reverse Recovery Current
- High Blocking Voltage
- High Frequency Operation
- Positive Temperature Coefficient on VF
- Temperature Independent Switching Behavior

TO-247-2
Pin definition

Applications

- Motor Drives
- Solar/Wind Inverters
- AC/DC converters
- DC/DC converters
- Uninterruptable power supplies



Benefits

- Higher System Efficiency
- Parallel Device Convenience without thermal runaway
- Higher Temperature Application
- No Switching loss
- Hard Switching & Higher Reliability
- Environmental Protection

Caution: This device is sensitive to electrostatic discharge .Users should follow ESD handing procedures.

Key performance parameters

Type	V_R	I_F T_C=145℃	QC V_R=400V
NJ20PD065A	650V	20A	44nC

Maximum Ratings

T_C=25℃, unless otherwise specified

Parameter	Symbol	Value	Unit	Test conditions
Peak Repetitive Reverse Voltage	V_{RRM}	650	V	-
Peak Reverse Surge Voltage	V_{RSM}	650	V	-
DC Blocking Voltage	V_R	650	V	-
Continuous Forward Current (per leg / per device)	I_F	55 24 20	A	T_C = 25°C T_C = 135°C T_C = 145°C
Non repetitive Forward Surge Current *	I_{FSM}	120 110	A	tp =10 ms, Half Sine Pulse T_C = 25°C, T_C = 110°C
Repetitive peak Forward Surge Current *	I_{FRM}	110 100	A	tp =10 ms, Freq = 0.1Hz 100 cycles, Half Sine Pulse T_C = 25°C T_C = 110°C
Total power dissipation (per leg / per device)	P_D	167	W	T_C = 25°C
Operating Junction Temperature	T_J	-55 to 175	°C	
Storage Temperature	T_{STG}	-55 to 175	°C	

Thermal Characteristics

Parameter	Condition	Symbol	Typ.	Unit
Thermal resistance(per device)	junction-case	Rth(j-c)	0.9	°C/W

Electrical Characteristics

T_C =25°C, unless otherwise specified

Parameter	Symbol	Value			Unit	Test Condition
		Min.	Typ.	Max.		
DC Blocking Voltage	V_{DC}	650	-	-	V	I_R = 250μA T_J = 25°C
Forward Voltage	V_F	- - -	1.5 1.6 1.7	1.8 - -	V	I_F = 20A T_J = 25°C T_J = 125°C T_J = 175°C
Reverse Current	I_R	- - -	20 120 250	80 - -	uA	V_R = 650V T_J = 25°C T_J = 125°C T_J = 175°C
Total Capacitance Charge	Q_C	-	44	-	nC	V_R = 400V T_J = 25°C
Total Capacitance	C	- - -	770 90 64	- - -	pF	T_J = 25°C, Freq = 1MHz V_R = 1V V_R = 200V V_R = 400V

Characteristics Curves

Fig1：Forward Characteristics

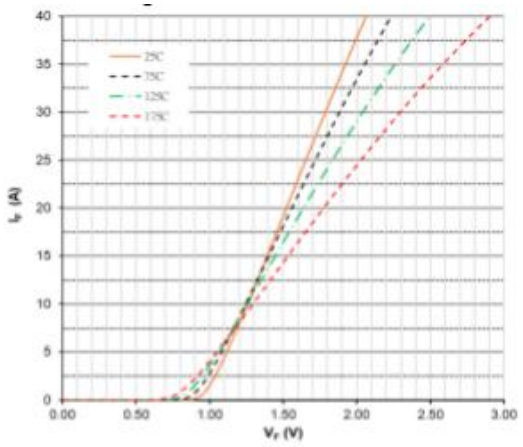


Fig 2：Forward Characteristics

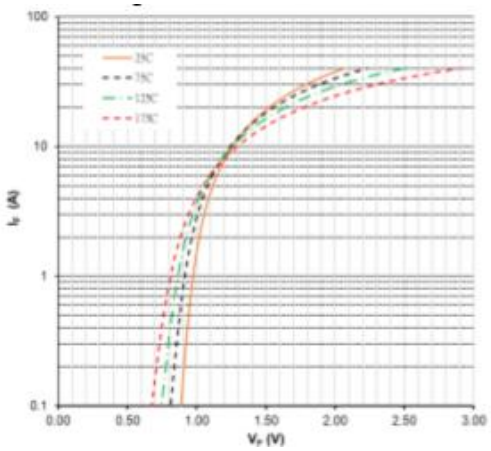


Fig 3：Reverse Characteristics

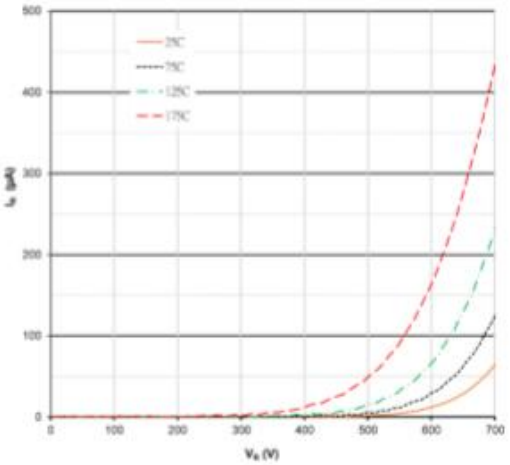


Fig 4：Power Derating

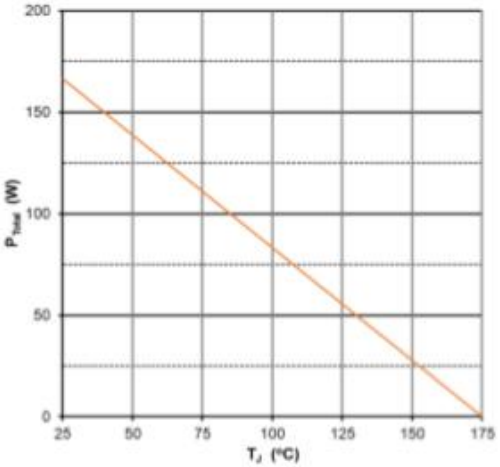


Fig5：Capacitance vs. Reverse Voltage

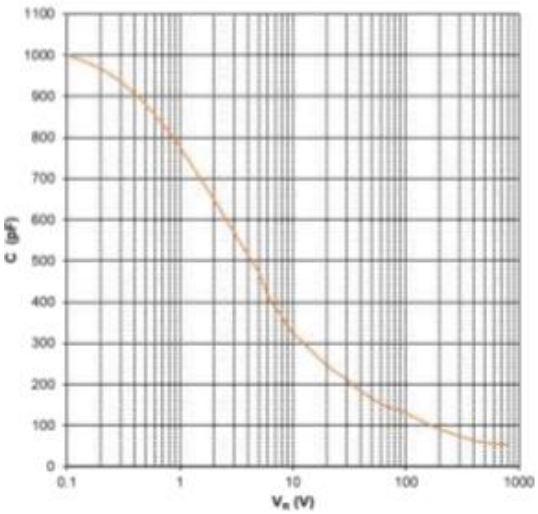
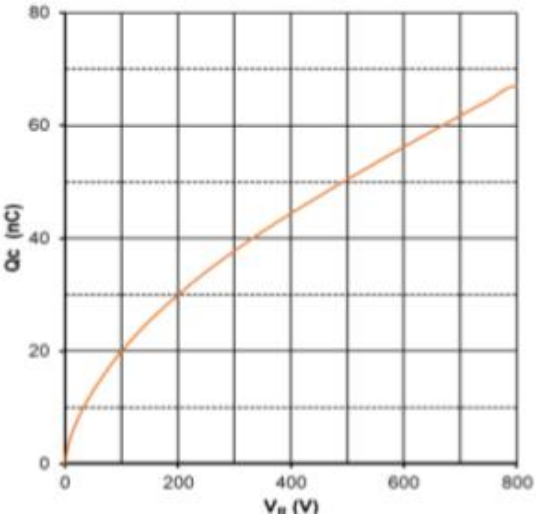
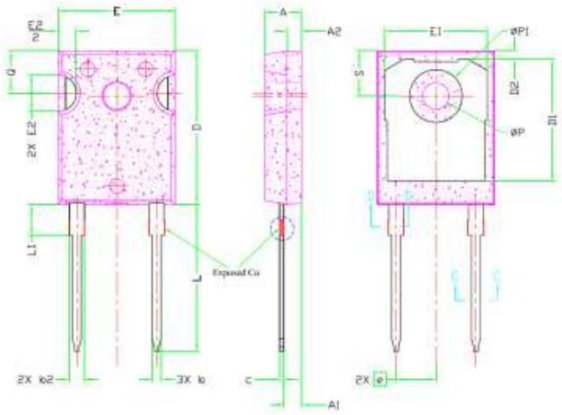


Fig 6：Recovery Charge vs. Reverse Voltage

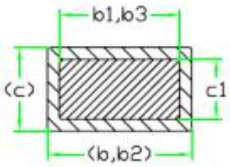


Package Dimensions:TO-247-2



SYMBOL	DIMENSIONS			NOTES
	MIN.	NOM.	MAX.	
A	4.83	5.02	5.21	
A1	2.29	2.41	2.55	
A2	1.50	2.00	2.49	
b	1.12	1.20	1.33	
b1	1.12	1.20	1.28	
b2	1.91	2.00	2.39	6
b3	1.91	2.00	2.34	
c	0.55	0.60	0.69	6
c1	0.55	0.60	0.65	
D	20.80	20.95	21.10	4
D1	16.25	16.55	17.65	5
D2	0.51	1.19	1.35	
E	15.75	15.94	16.13	4
E1	13.46	14.02	14.16	5
E2	4.32	4.91	5.49	3
e	5.44BSC			
L	19.81	20.07	20.32	
L1	4.10	4.19	4.40	6
ØP	3.56	3.61	3.65	7
ØP1	7.19REF.			
Q	5.39	5.79	6.20	
S	6.04	6.17	6.30	

Note:
1. Package Reference: JEDEC TO247, Variation AD.
2. All Dimensions Are In mm.
3. Slot Required, Notch May Be Rounded
4. Dimension D & E Do Not Include Mold Flash. Mold Flash Shall Not Exceed 0.127mm Pre Side. These Dimensions Are Measured At The Outermost Extreme Of The Plastic Body.
5. Thermal Pad Contour Optional Within Dimension D1 & E1.
6. Lead Finish Uncontrolled In L1.
7. ØP To Have A Maximum Draft Angle Of 1.5° To The Top Of The Part With A Maximum Hole Diameter Of 3.91mm.
8. Dimension "b2" And "b4" Does Not Include Dambar Protrusion. Allowable Dambar Protrusion Shall Be 0.10mm Total In Excess Of "b2" And "b4" Dimension At Maximum Material Condition.



Section C–C,D–D