



DONGGUAN NANJING ELECTRONICS LTD.,

## TO-247-2 Silicon Carbide Schottky Diode

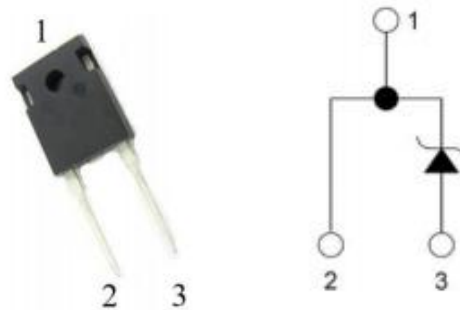
**NJ10PS120A** SiC Diode 1200V, 10A, 52nC

### General Description

This product family offers state of the art performance. It is designed for high frequency applications where 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
- High surge current capability



**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

### Key performance parameters

Type	$V_R$	$I_F$ $T_C=150^\circ\text{C}$	$Q_C$
NJ10PS120A	1200V	10A	52nC

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

## Typical Characteristics

### Maximum Ratings

$T_C=25^{\circ}\text{C}$ , unless otherwise specified

Parameter	Symbol	Value	Unit
Peak Repetitive Reverse Voltage	$V_{RRM}$	1200	V
Peak Reverse Surge Voltage	$V_{RSM}$	1200	V
DC Blocking Voltage	$V_R$	1200	V

### Maximum Ratings

$T_C=25^{\circ}\text{C}$ , unless otherwise specified

Parameter	Symbol	Value	Unit
Continuous Forward Current: $T_C = 25^{\circ}\text{C}$ $T_C = 135^{\circ}\text{C}$ $T_C = 150^{\circ}\text{C}$	$I_F$	39 17 10	A
Non Repetitive Forward Surge Current: $T_C = 25^{\circ}\text{C}$ , $t_p = 10\text{ms}$ , Half Sine Pulse $T_C = 110^{\circ}\text{C}$ , $t_p = 10\text{ms}$ , Half Sine Pulse	$I_{FSM}$	100 90	A
Repetitive peak Forward Surge Current: Freq = 0.1Hz, 100 cycles $T_C = 25^{\circ}\text{C}$ , $t_p = 10\text{ms}$ , Half Sine Pulse $T_C = 110^{\circ}\text{C}$ , $t_p = 10\text{ms}$ , Half Sine Pulse	$I_{FRM}$	90 80	A
Total power dissipation : $T_C = 25^{\circ}\text{C}$ $T_C = 110^{\circ}\text{C}$	$P_D$	188 81	W
Single Pulse Avalanche Energy: $L = 2\text{mH}$ , $I_{AS} = A$	$E_{AS}$	100	mJ
Diode dv/dt ruggedness: $V_R = 0-1200\text{V}$	dv/dt	80	V/ns
Operating Junction Temperature	$T_j$	-55 to 175	$^{\circ}\text{C}$
Storage Temperature	$T_{stg}$	-55 to 175	$^{\circ}\text{C}$

## Typical Characteristics

### Thermal Resistance

Parameter	Symbol	Typ.	Max	Unit
Thermal resistance, junction-case	$R_{thJC}$	0.8		$^{\circ}\text{C}/\text{W}$

### Electrical Characteristic

$T_C = 25^{\circ}\text{C}$ , unless otherwise specified

Parameter	Symbol	Value			Unit	Test Condition
		Min.	Typ.	Max.		
DC Blocking Voltage	$V_{DC}$	1200			V	$T_J = 25^{\circ}\text{C}$
Forward Voltage	$V_F$		1.45 1.8 2.0	1.8	V	$I_F = 10\text{A}$ $T_J = 25^{\circ}\text{C}$ $T_J = 125^{\circ}\text{C}$ $T_J = 175^{\circ}\text{C}$
Reverse Current	$I_R$		5 15 60	200 250 300	$\mu\text{A}$	$V_R = 1200\text{V}$ $T_J = 25^{\circ}\text{C}$ $T_J = 125^{\circ}\text{C}$ $T_J = 175^{\circ}\text{C}$
Total Capacitance Charge	$Q_C$		52		nC	$V_R = 800\text{V}$ $T_J = 25^{\circ}\text{C}$
Total Capacitance	C		590 53 34		pF	$V_R = 1\text{V}$ $V_R = 400\text{V}$ $V_R = 800\text{V}$ $T_J = 25^{\circ}\text{C}$ Freq = 1MHz

### Characteristics Curves

Figure 1. Forward Characteristics

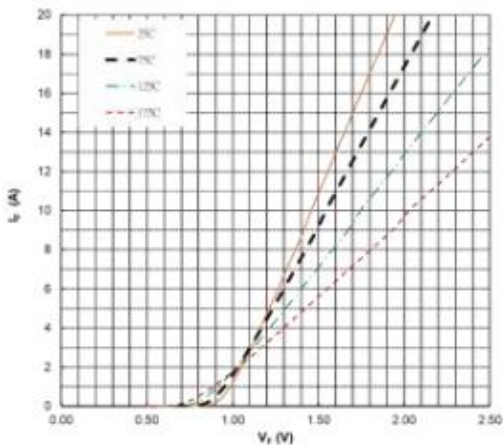


Figure 2. Forward Characteristics

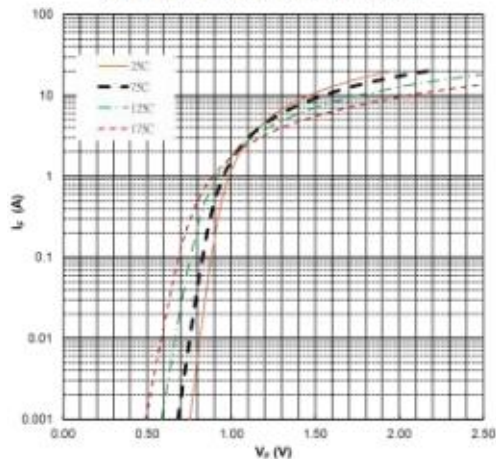


Figure 3. Reverse Characteristics

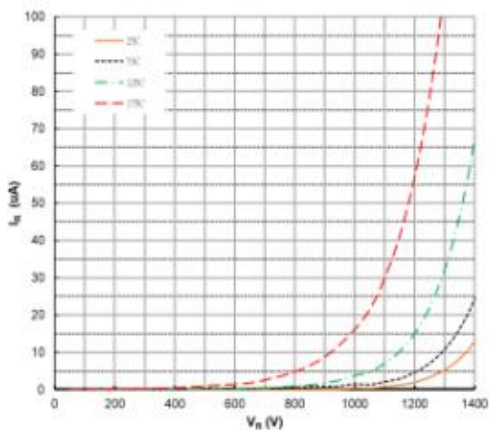


Figure 4. Power Derating

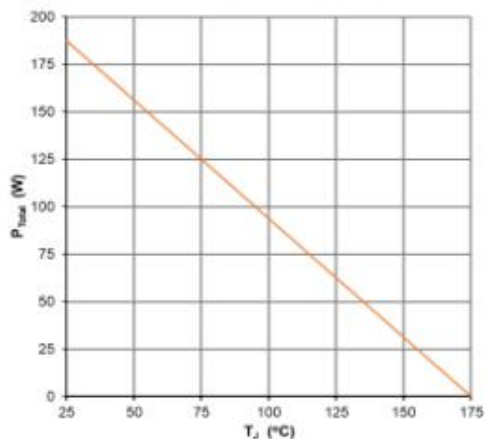


Figure 5. Reverse charge vs. Reverse Voltage

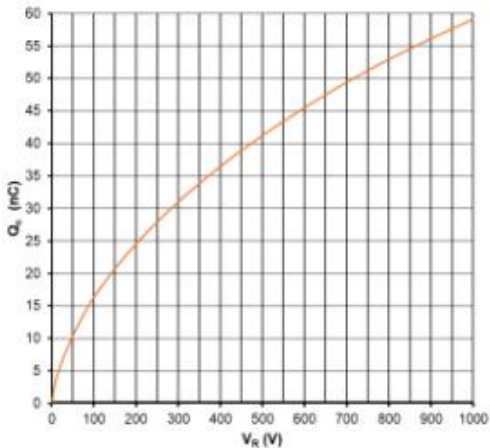
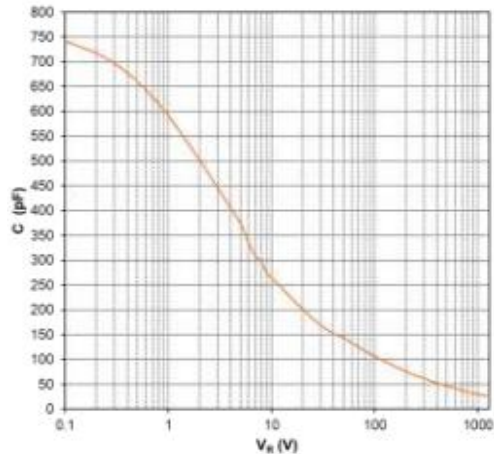
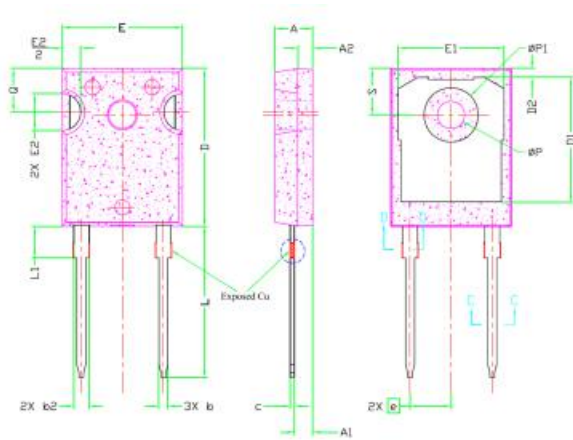


Figure 6. Capacitance vs. Reverse Voltage



Package Outline:TO-247-2

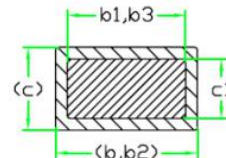


SYMBOL	DIMENSIONS			NOTES
	MIN.	NOM.	MAX.	
A	4.83	5.02	5.21	
A1	2.29	2.41	2.55	
A2	1.50	2.00	2.49	
b	1.12	1.20	1.33	
b1	1.12	1.20	1.28	
b2	1.91	2.00	2.39	6
b3	1.91	2.00	2.34	
c	0.55	0.60	0.69	6
c1	0.55	0.60	0.65	
D	20.80	20.95	21.10	4
D1	16.25	16.55	17.65	5
D2	0.51	1.19	1.35	
E	15.75	15.94	16.13	4
E1	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