DONGGUAN NANJING ELECTRONICS LTD.,

TO-247-3 Silicon Carbide Schottky Diode

NJ20PD065B SiC Diode 650V, 20A, 46nC

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.

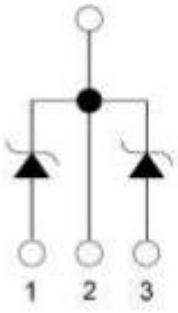
TO-247-3
Pin definition

Features

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

Applications

- Servo 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=150℃	Q_C
NJ20PD065B	650V	20A**	46nC**

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	32/64 14/28 10/20	A	T_C=25°C T_C=135°C T_C=150°C
Non repetitive Forward Surge Current *	I_{FSM}	65 55 520	A	T_C = 25°C T_C = 110°C Tp =10 ms, Half Sine Pulse T_C = 25°C, tp =10 us,Square Pulse
Repetitive peak Forward Surge Current *	I_{FRM}	55 45	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	94/188	W	T_C=25°C
Operating Junction Temperature	T_J	-55 to 175	°C	
Storage Temperature	T_{STG}	-55 to 175	°C	

Note : * Per leg ** Per device

Thermal Characteristics

Parameter	Condition	Symbol	Typ.	Unit
Thermal resistance(per device)	junction-case	$R_{th(j-c)}$	0.8	°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	T_J = 25°C
Forward Voltage*	V_F	- - -	1.45 1.6 1.7	1.8 - -	V	I_F = 10A T_J = 25°C T_J = 125°C T_J = 175°C
Reverse Current*	I_R	- - -	12 68 190	80 - -	uA	V_R = 650V T_J = 25°C T_J = 125°C T_J = 175°C
Total Capacitance Charge*	Q_C	-	23	-	nC	V_R = 400V T_J = 25°C
Total Capacitance*	C	- - -	380 48 31	- - -	pF	T_J = 25°C Freq = 1MHz V_R = 1V, V_R = 200V V_R = 400V

Note: This is a majority carrier diode, so there is no reverse recovery charge

Characteristics Curves

Figure 1. Forward Characteristics

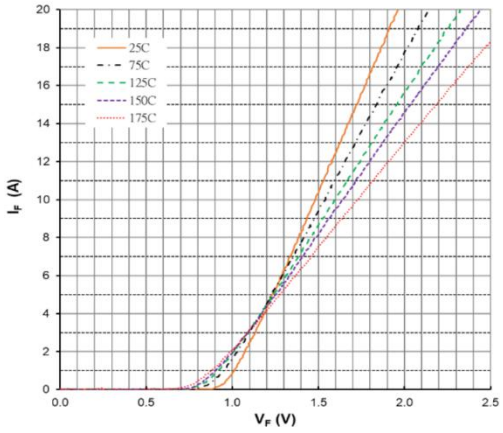


Figure 2. Forward Characteristics

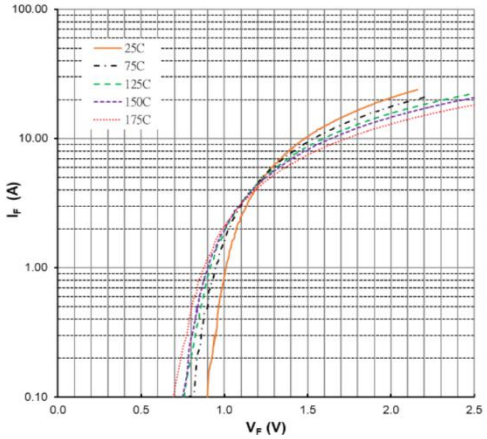


Figure 3. Reverse Characteristics

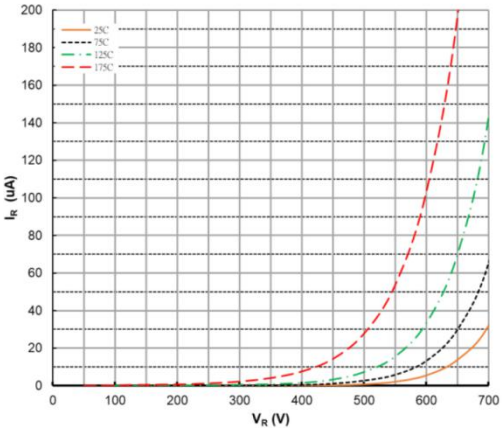


Figure 4. Power Derating

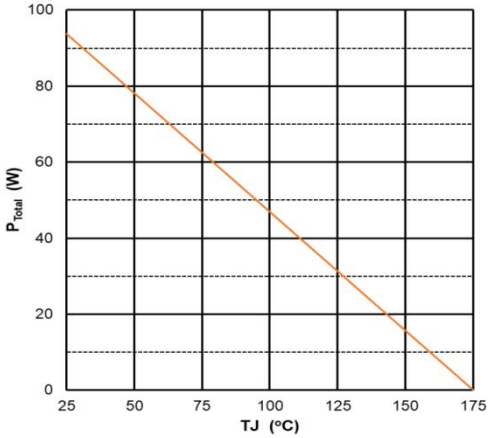


Figure 5. Capacitance vs Reverse Voltage

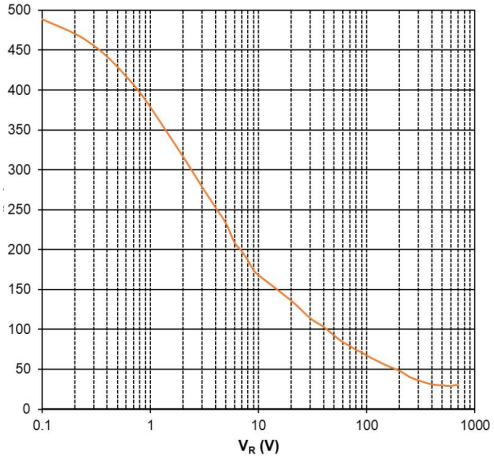
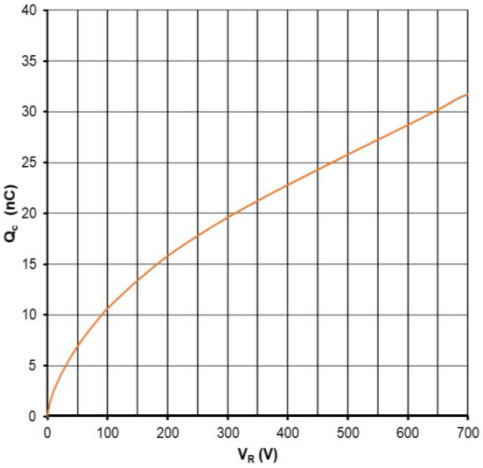
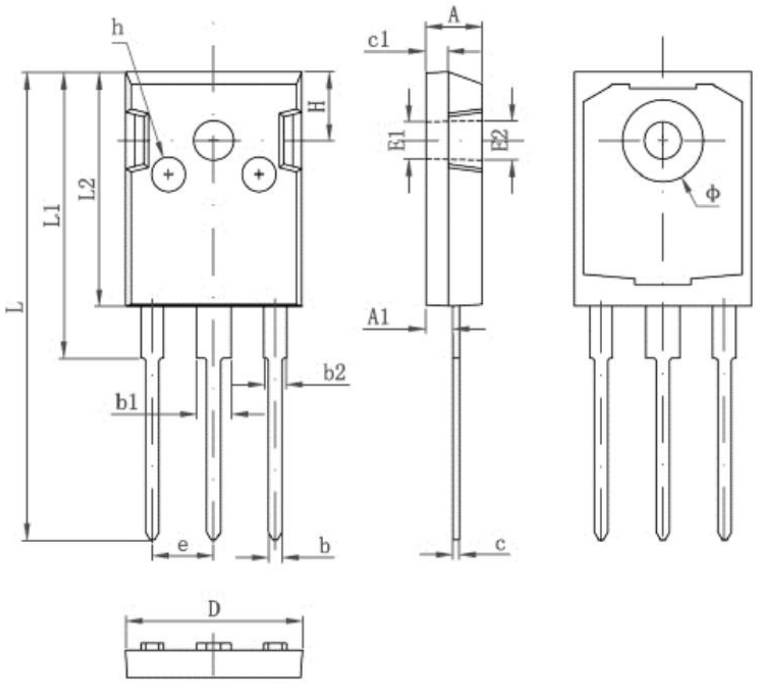


Figure 6. Recovery Charge vs Reverse Voltage



Package Dimensions:TO-247-3

Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	4.850	5.150	0.191	0.200
A1	2.200	2.600	0.087	0.102
b	1.000	1.400	0.039	0.055
b1	2.800	3.200	0.110	0.126
b2	1.800	2.200	0.071	0.087
c	0.500	0.700	0.020	0.028
c1	1.900	2.100	0.075	0.083
D	15.450	15.750	0.608	0.620
E1	3.500 REF		0.138 REF	
E2	3.600 REF		0.142 REF	
L	40.900	41.300	1.610	1.626
L1	24.800	25.100	0.976	0.988
L2	20.300	20.600	0.799	0.811
Φ	7.100	7.300	0.280	0.287
e	5.450 TYP		0.215 TYP	
H	5.980 REF		0.235 REF	
h	0.000	0.300	0.000	0.012