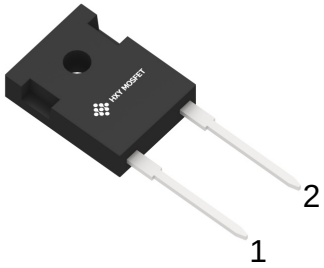
NVDSH50120C

Silicon Carbide Schottky Diode

Features

- 1200-Volt Schottky Rectifier
- Zero Reverse Recovery Current
- Zero Forward Recovery Voltage
- High-Frequency Operation
- Temperature-Independent Switching Behavior
- Extremely Fast Switching
- Positive Temperature Coefficient on V_F



TO-247-2L



Benefits

- Replace Bipolar with Unipolar Rectifiers
- Essentially No Switching Losses
- Higher Efficiency
- Reduction of Heat Sink Requirements
- Parallel Devices Without Thermal Runaway

Applications

- Switch Mode Power Supplies
- Power Factor Correction
- Motor Drives

Part Number	Package	Qty(PCS)
NVDSH50120C	TO-247-2L	30

Maximum Ratings (T_C = 25 ˚C unless otherwise specified)

Symbol	Parameter	Value	Unit	Test Conditions
V_{RRM}	Repetitive Peak Reverse Voltage	1200	V	
V_{RSM}	Surge Peak Reverse Voltage	1200	V	
I_F	Continuous Forward Current	146.3 69.6 50	A	T_C=25˚C T_C=135˚C T_C=152˚C
I_{FRM}	Repetitive Peak Forward Surge Current	175	A	T_C=25˚C, t_P = 10 ms, Half Sine Wave
I_{FSM}	Non-Repetitive Peak Forward Surge Current	350	A	T_C=25˚C, t_p = 10 ms, Half Sine Wave
P_{tot}	Power Dissipation	652 283	W	T_C=25˚C T_C=110˚C
T_J , T_{stg}	Operating Junction and Storage Temperature	-55 to +175	˚C	
	TO-220 Mounting Torque	1	Nm	M3 Screw
$\int i^2dt$	i^2dt value	612.5	A^2s	T_C=25˚C, t_p = 10 ms, Half Sine Wave

Electrical Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
V_{DC}	DC Blocking Voltage	1200			V	
V_F	Forward Voltage		1.43 2	1.7 2.5	V	I_F = 50 A T_J=25°C I_F = 50 A T_J=175°C
I_R	Reverse Current		35 132	100 600	μA	V_R = 1200 V T_J=25°C V_R = 1200 V T_J=175°C
Q_C	Total Capacitive Charge		268		nC	V_R = 800 V T_J = 25°C
C	Total Capacitance		4072 254 205		pF	V_R = 0 V, T_J = 25°C, f = 1 MHz V_R = 400 V, T_J = 25°C, f = 1 MHz V_R = 800 V , T_J = 25°C, f = 1 MHz
E_C	Capacitance Stored Energy		138		μJ	V_R = 800 V

Thermal Characteristics

Symbol	Parameter	Typ.	Unit
$R_{\theta JC}$	Thermal Resistance from Junction to Case	0.23	°C/W

Typical Performance

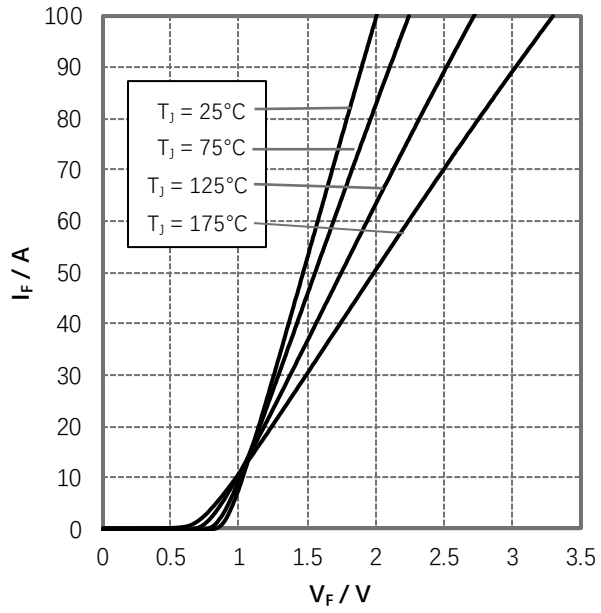


Figure 1. Forward Characteristics

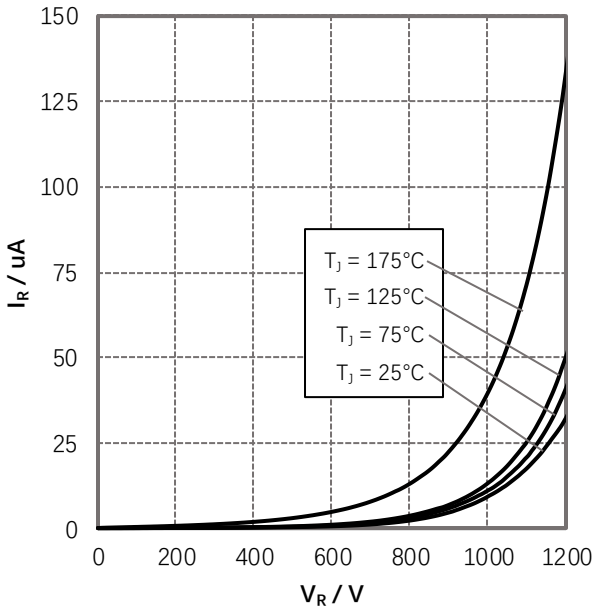


Figure 2. Reverse Characteristics

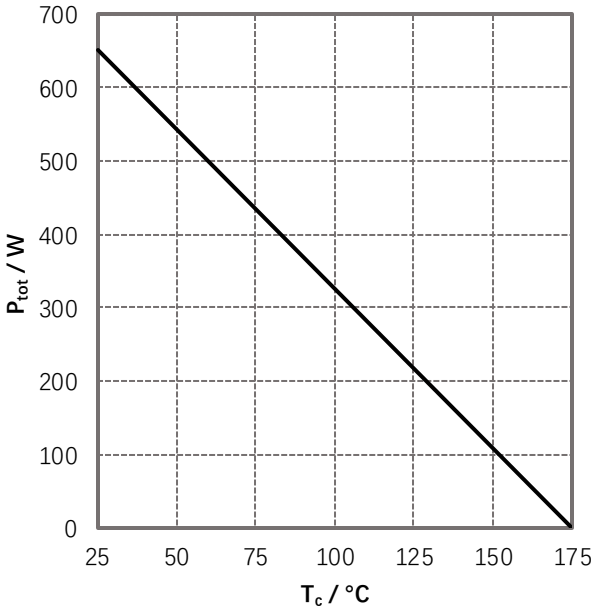


Figure 3. Power Derating

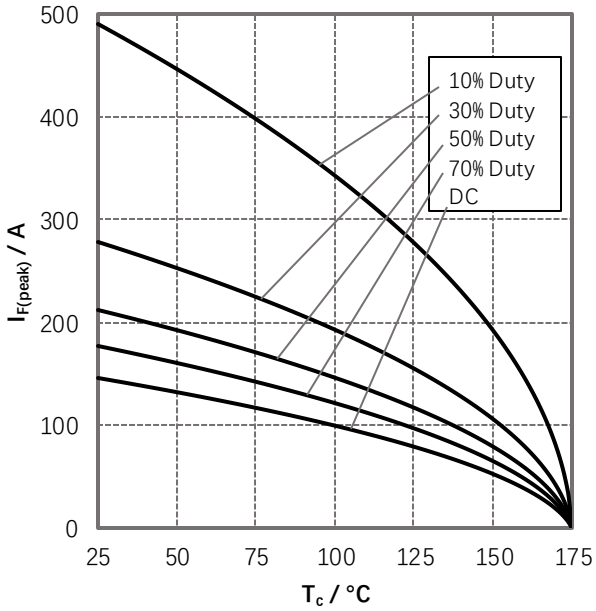


Figure 4. Current Derating

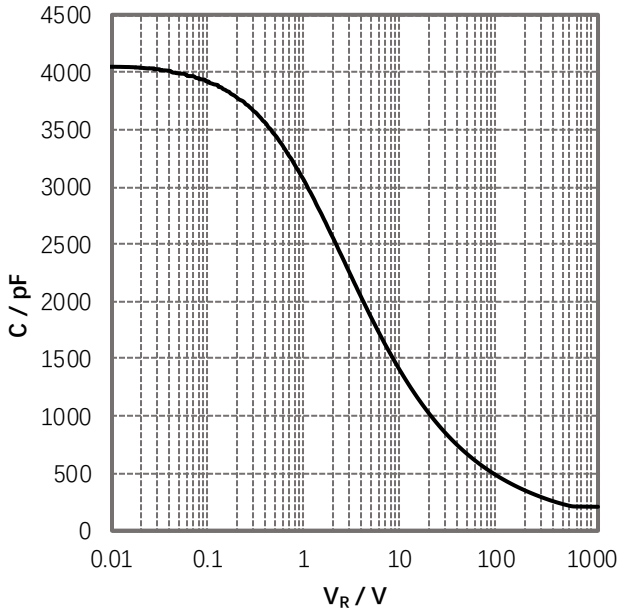


Figure 5. Capacitance vs. Reverse Voltage

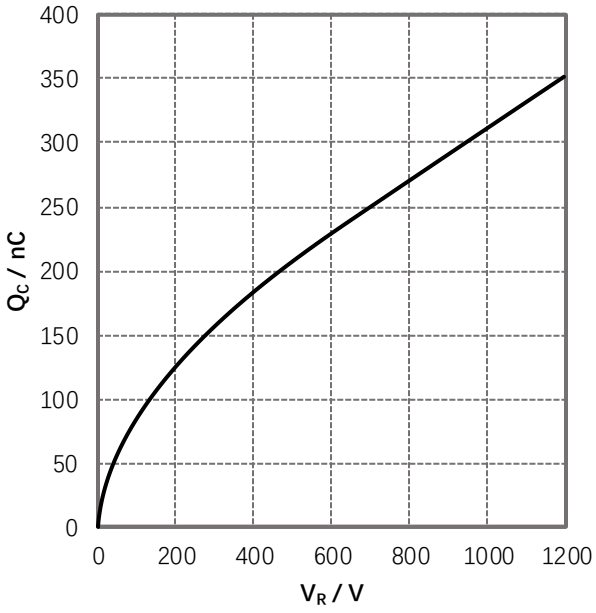


Figure 6. Total Capacitance Charge vs. Reverse Voltage

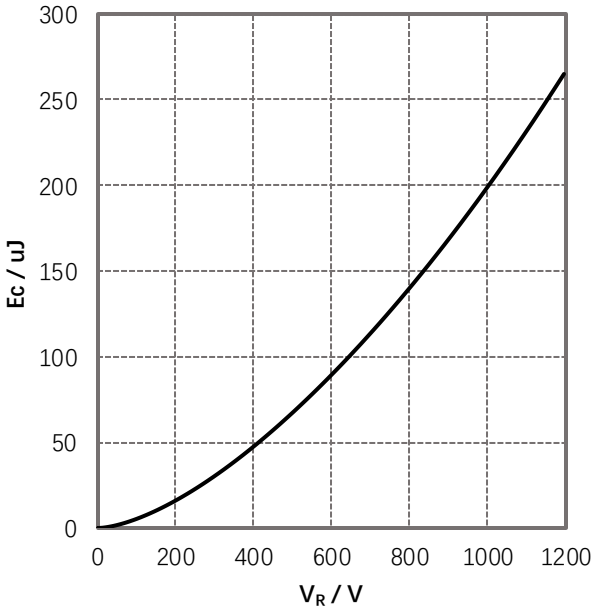


Figure 7. Capacitance Stored Energy

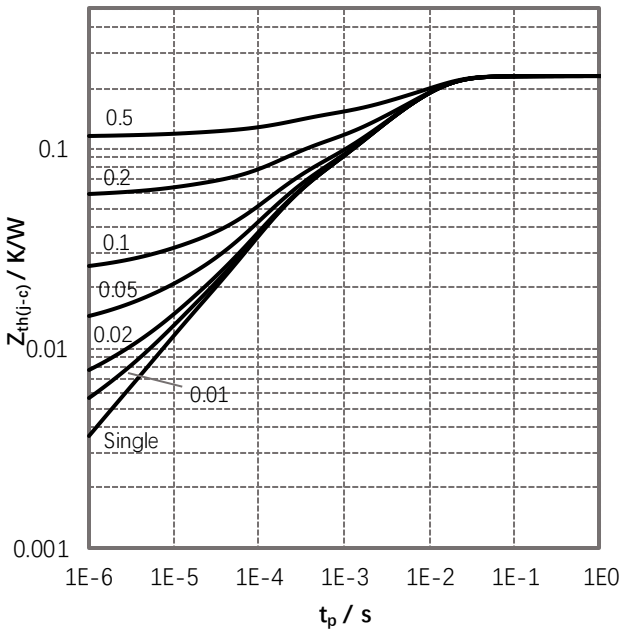
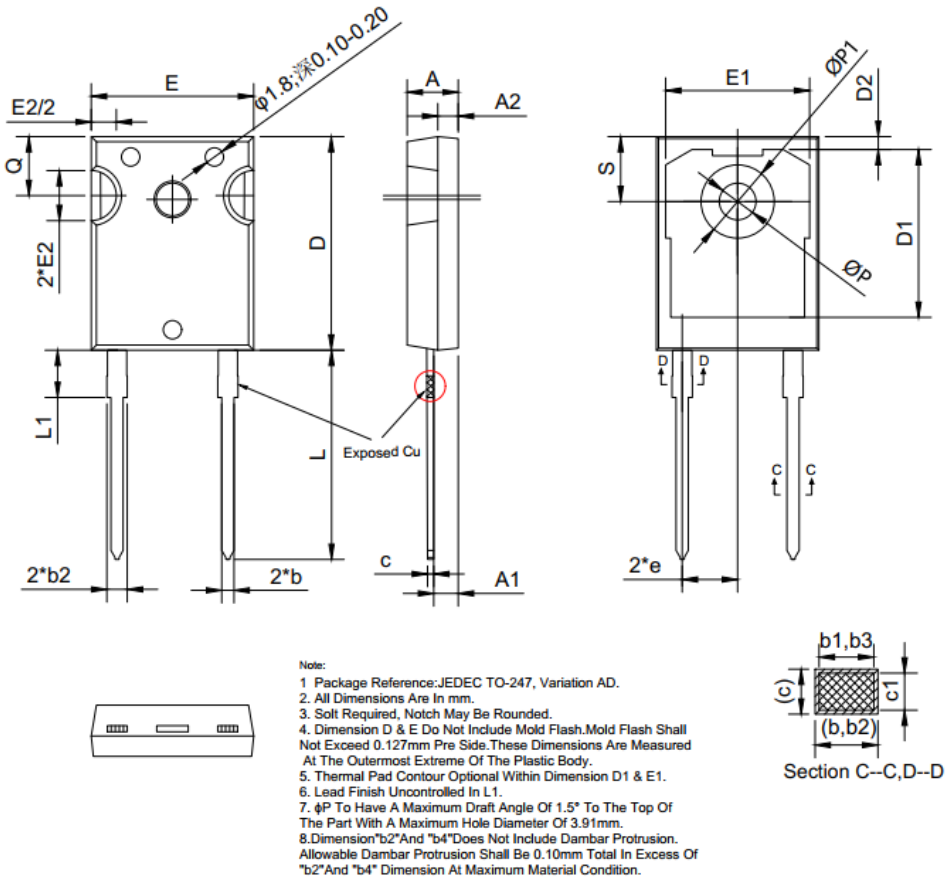


Figure 8. Transient Thermal Impedance

Package Information
TO-247-2L



SYMBOL	DIMENSIONS		NOTES
	MIN	MAX	
A	4.83	5.21	
A1	2.29	2.55	
A2	1.50	2.49	
b	1.07	1.33	
b1	1.07	1.28	
b2	1.91	2.41	6
b3	1.91	2.34	
c	0.55	0.69	6
c1	0.55	0.65	
D	20.80	21.10	4
D1	16.25	17.65	5
D2	0.51	1.35	
E	15.75	16.13	4
E1	13.10	14.16	5
E2	3.68	5.49	3
e	5.44BSC		
L	19.81	20.32	6
L1	3.90	4.40	7
ΦP	3.51	3.65	
ΦP1	7.19REF		
Q	5.39	6.20	
S	6.04	6.30	

Note:
1 Package Reference:JEDEC TO-247, Variation AD.
2. All Dimensions Are In mm.
3. Solt 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. ϕP 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.

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HXY MOSFET:

HSD15C.TCT HSEN2411D3 HSEN3611D3 PESDLC2FD3V3BH PJSD24CW_R1 RLSD32A121V 60N06 AZ4007-01H HRCLAMP3371ZCTFT LM393DR-HXY PJEC5V0M1FN2 TPSMB28A-VR HCEZ36V,L3F HPTVSUC3D5VB AZ4836-01L BV05C-H HESDSLC3V3D3B HSTS521050B331 TPSMB100CA-VR HSG3D15B3.3MA ESD5L5.0C-HXY ESD5LM5.0C-HXY HESD36VD3B PESDNC2XD5VBF HAZ4007-01H PESDSC2FD5VU HLY323BC1524L PESDNC2XD5VBL AQ15C-01FTG HACPDQC5V0-HF