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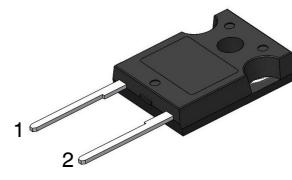
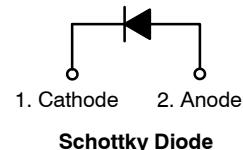
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Silicon Carbide Schottky Diode



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TO-247-2LD
CASE 340DA

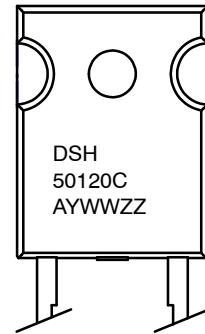
Features

- Max Junction Temperature 175°C
- Avalanche Rated 380 mJ
- High Surge Current Capacity
- Positive Temperature Coefficient
- Ease of Paralleling
- No Reverse Recovery / No Forward Recovery
- NV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable
- These Devices are Halogen Free/BFR Free and are RoHS Compliant

Applications

- Automotive HEV–EV Onboard Chargers
- Automotive HEV–EV DC–DC Converters

MARKING DIAGRAM



DSH50120C = Specific Device Code
A = Assembly Plant Code
YWW = Date Code (Year & Week)
ZZ = Lot Code

ORDERING INFORMATION

See detailed ordering and shipping information on page 2 of this data sheet.

NVDSH50120C

ABSOLUTE MAXIMUM RATINGS (T_J = 25°C unless otherwise noted)

Symbol	Parameter		Value	Unit
V _{RRM}	Peak Repetitive Reverse Voltage		1200	V
E _{AS}	Single Pulse Avalanche Energy (Note 1)		380	mJ
I _F	Continuous Rectified Forward Current @ T _C < 139°C		50	A
	Continuous Rectified Forward Current @ T _C < 135°C		53	
I _{F, Max}	Non-Repetitive Peak Forward Surge Current	T _C = 25°C, 10 µs	1568	A
		T _C = 150°C, 10 µs	1414	A
I _{F,SM}	Non-Repetitive Forward Surge Current		231	A
I _{F,RM}	Repetitive Forward Surge Current		84	A
P _{tot}	Power Dissipation	T _C = 25°C	375	W
		T _C = 150°C	62.5	W
T _J , T _{STG}	Operating and Storage Temperature Range		-55 to +175	°C

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

1. E_{AS} of 380 mJ is based on starting T_J = 25°C, L = 0.5 mH, I_{AS} = 39 A, V = 50 V.

THERMAL CHARACTERISTICS

Symbol	Parameter	Value	Unit
R _{θJC}	Thermal Resistance, Junction to Case, Max	0.4	°C/W
R _{θJA}	Thermal Resistance, Junction to Ambient, Max	40	°C/W

ELECTRICAL CHARACTERISTICS (T_J = 25°C unless otherwise noted)

Symbol	Parameter	Test Condition	Min	Typ	Max	Unit
V _F	Forward Voltage	I _F = 50 A, T _J = 25°C	–	1.4	1.75	V
		I _F = 50 A, T _J = 125°C	–	1.63	–	
		I _F = 50 A, T _J = 175°C	–	1.84	–	
I _R	Reverse Current	V _R = 1200 V, T _J = 25°C	–	12.2	200	µA
		V _R = 1200 V, T _J = 125°C	–	30	200	
		V _R = 1200 V, T _J = 175°C	–	61.5	200	
Q _C	Total Capacitive Charge	V = 800 V	–	246	–	nC
C	Total Capacitance	V _R = 1 V, f = 100 kHz	–	3691	–	pF
		V _R = 400 V, f = 100 kHz	–	198	–	
		V _R = 800 V, f = 100 kHz	–	143	–	

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

ORDERING INFORMATION

Part Number	Top Marking	Package	Shipping
NVDSH50120C	DSH50120C	TO-247-2LD (Pb-Free / Halogen Free)	30 Units / Tube

TYPICAL CHARACTERISTICS ($T_J = 25^\circ\text{C}$ unless otherwise noted)

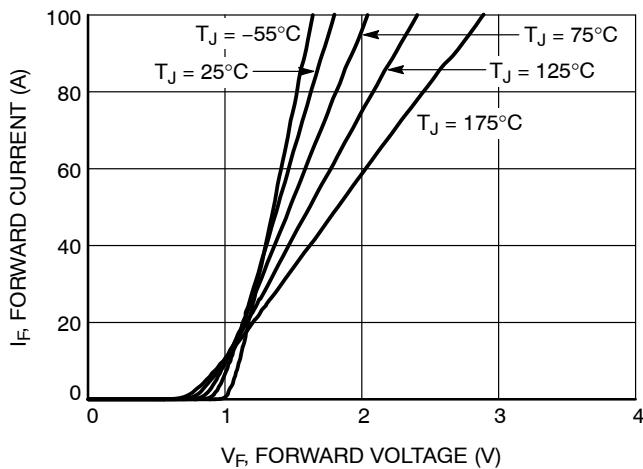


Figure 1. Forward Characteristics

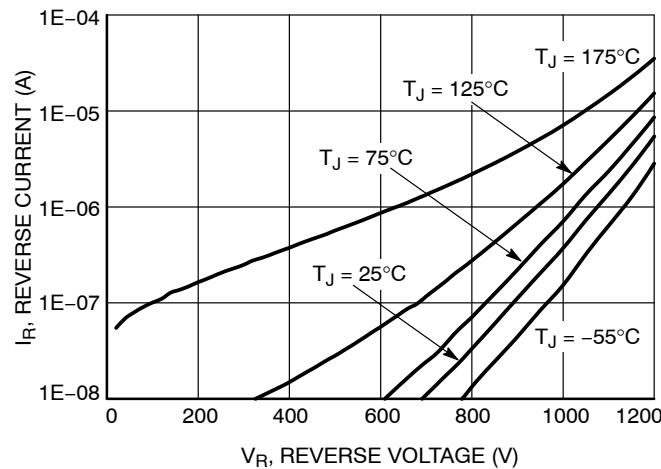


Figure 2. Reverse Characteristics

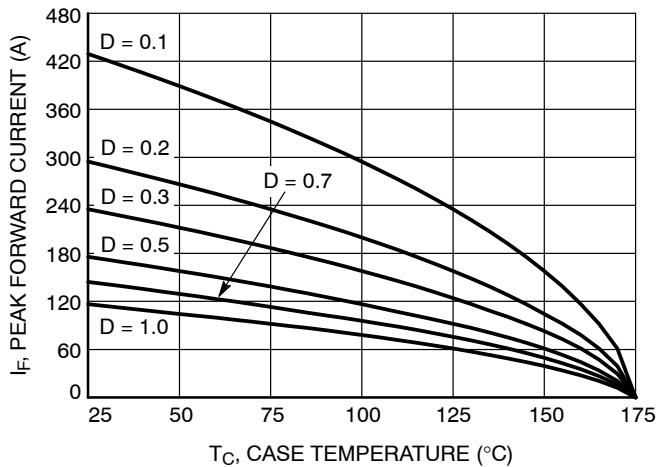


Figure 3. Current Derating

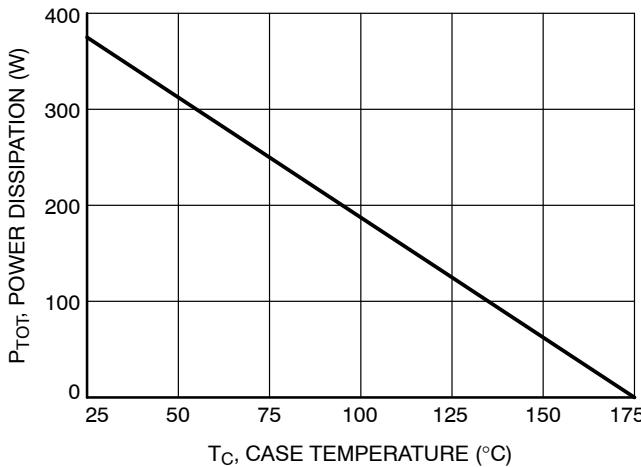


Figure 4. Power Derating

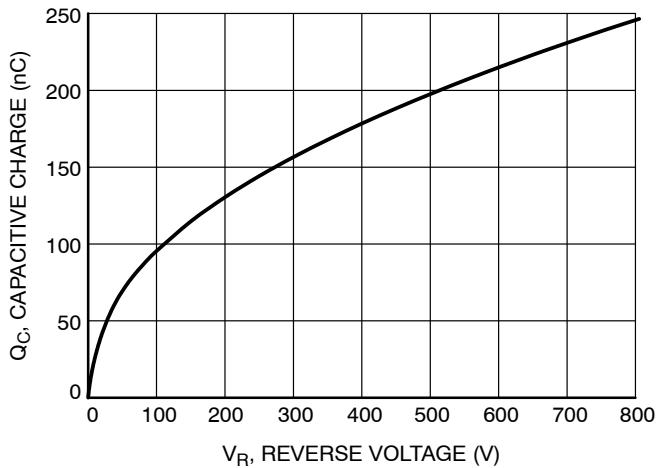


Figure 5. Capacitive Charge vs. Reverse Voltage

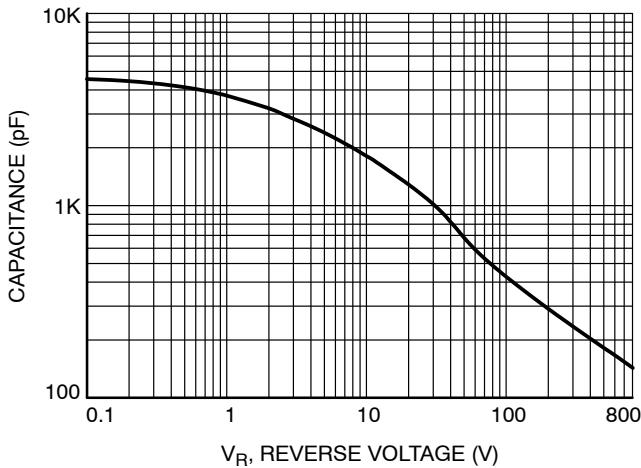
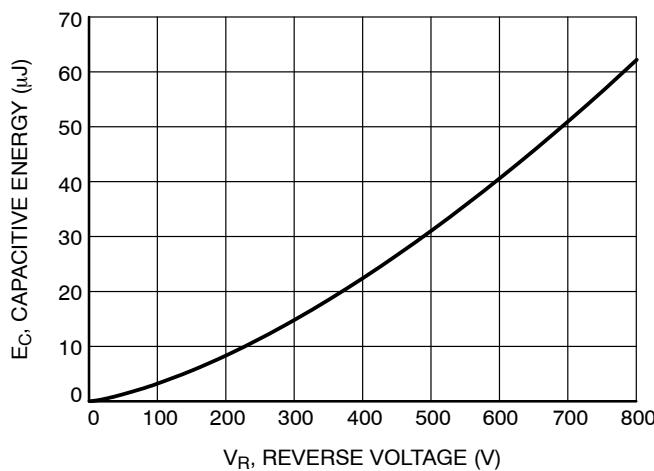
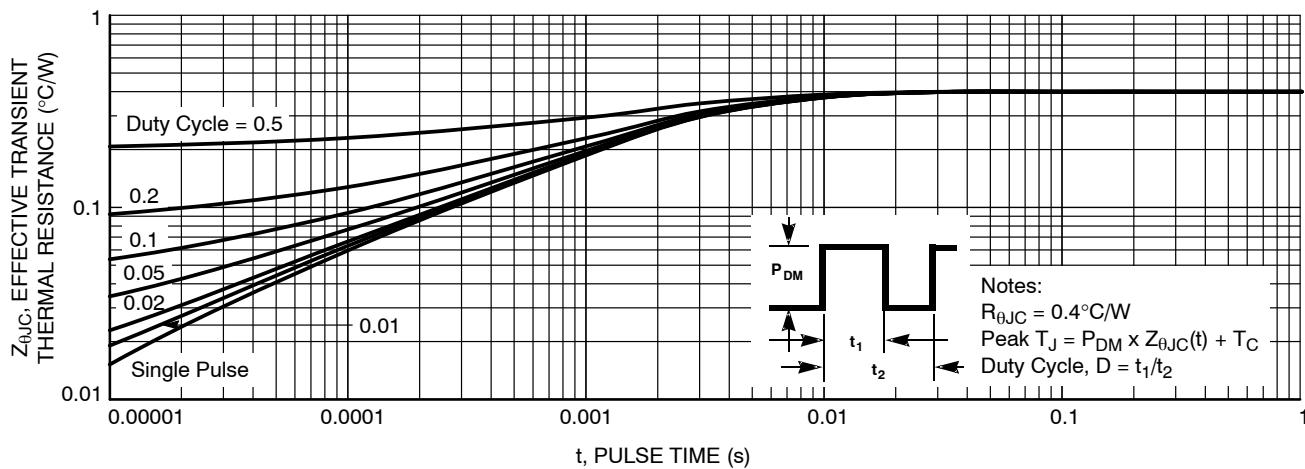
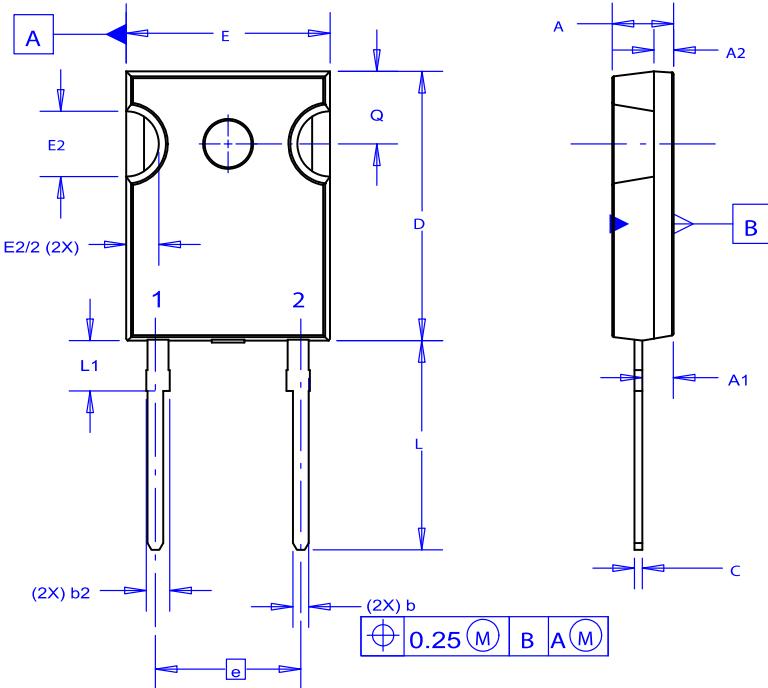


Figure 6. Capacitive vs. Reverse Voltage

TYPICAL CHARACTERISTICS ($T_J = 25^\circ\text{C}$ unless otherwise noted)**Figure 7. Capacitance Stored Energy****Figure 8. Junction-to-Case Transient Thermal Response Curve**

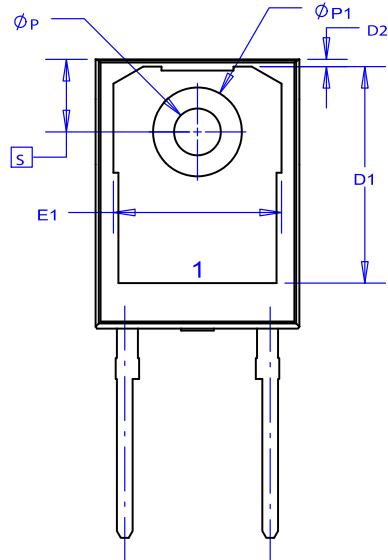
PACKAGE DIMENSIONS

TO-247-2LD
CASE 340DA
ISSUE A



NOTES: UNLESS OTHERWISE SPECIFIED.

- A. DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH, AND TIE BAR EXTRUSIONS.
- B. ALL DIMENSIONS ARE IN MILLIMETERS.
- C. DRAWING CONFORMS TO ASME Y14.5 - 2009.
- D. DIMENSION A1 TO BE MEASURED IN THE REGION DEFINED BY L1.
- E. LEAD FINISH IS UNCONTROLLED IN THE REGION DEFINED BY L1.



DIM	MILLIMETERS		
	MIN	NOM	MAX
A	4.58	4.70	4.82
A1	2.20	2.40	2.60
A2	1.40	1.50	1.60
b	1.17	1.26	1.35
b2	1.53	1.65	1.77
c	0.51	0.61	0.71
D	20.32	20.57	20.82
D1	13.08	~	~
D2	0.51	0.93	1.35
E	15.37	15.62	15.87
E1	12.81	~	~
E2	4.96	5.08	5.20
e	~	11.12	~
L	15.75	16.00	16.25
L1	3.69	3.81	3.93
ØP	3.51	3.58	3.65
ØP1	6.60	6.80	7.00
Q	5.34	5.46	5.58
S	5.34	5.46	5.58

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