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<u>Silicon Carbide (SiC)</u> <u>Schottky Diode</u> – EliteSiC, 30 A, 1200 V, D3, TO-247-2L

NDSH30120C-F155

Description

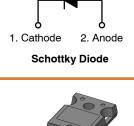
Silicon Carbide (SiC) Schottky Diodes use a completely new technology that provides superior switching performance and higher reliability compared to Silicon. No reverse recovery current, temperature independent switching characteristics, and excellent thermal performance sets Silicon Carbide as the next generation of power semiconductor. System benefits include highest efficiency, faster operating frequency, increased power density, reduced EMI, and reduced system size and cost.

Features

- Max Junction Temperature 175°C
- Avalanche Rated 196 mJ
- High Surge Current Capacity
- Positive Temperature Coefficient
- Ease of Paralleling
- No Reverse Recovery / No Forward Recovery
- These Devices are Halogen Free/BFR Free and are RoHS Compliant

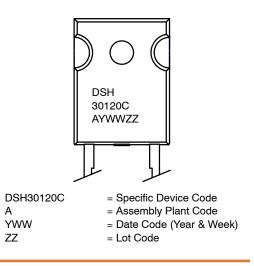
Applications

- General Purpose
- SMPS, Solar Inverter, UPS
- Power Switching Circuits





MARKING DIAGRAM



ORDERING INFORMATION

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

NDSH30120C-F155

Symbol	Parameter	Value	Unit	
V _{RRM}	Peak Repetitive Reverse Voltage		1200	V
E _{AS}	Single Pulse Avalanche Energy (Note 1)	196	mJ	
١ _F	Continuous Rectified Forward Current @ T _C < 148°C		30	А
	Continuous Rectified Forward Current @ $T_C < 135^{\circ}C$		38	
I _{F, Max}	Non-Repetitive Peak Forward Surge Current	T _C = 25°C, 10 μs	1078	А
		T _C = 150°C, 10 μs	994	А
I _{F,SM}	Non-Repetitive Forward Surge Current	Half-Sine Pulse, t _p = 8.3 ms	161	А
I _{F,RM}	Repetitive Forward Surge Current	Half-Sine Pulse, t _p = 8.3 ms	57	А
Ptot	Power Dissipation	$T_{\rm C} = 25^{\circ}{\rm C}$	333	W
		T _C = 150°C	56	W
T _J , T _{STG}	Operating and Storage Temperature Range		–55 to +175	°C

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

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 196 mJ is based on starting $T_J = 25^{\circ}$ C, L = 0.5 mH, $I_{AS} = 28$ A, V = 50 V.

THERMAL CHARACTERISTICS

Symbol	Parameter	Value	Unit
$R_{\theta JC}$	Thermal Resistance, Junction to Case, Max	0.45	°C/W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient, Max	40	°C/W

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

Symbol	Parameter	Test Condition	Min	Тур	Max	Unit
V _F	Forward Voltage	$I_{F} = 30 \text{ A}, \text{ T}_{J} = 25^{\circ}\text{C}$	-	1.41	1.75	V
		$I_F = 30 \text{ A}, \text{ T}_J = 125^{\circ}\text{C}$	-	1.71	-	
		I _F = 30 A, T _J = 175°C	-	1.97	-	
I _R	Reverse Current	$V_{R} = 1200 \text{ V}, \text{ T}_{J} = 25^{\circ}\text{C}$	-	5	200	μΑ
		$V_{R} = 1200 \text{ V}, \text{ T}_{J} = 125^{\circ}\text{C}$	-	14	200	
		$V_{R} = 1200 \text{ V}, \text{ T}_{J} = 175^{\circ}\text{C}$	-	31	200	
Q _C	Total Capacitive Charge	V = 800 V	-	132	-	nC
С	Total Capacitance	V _R = 1 V, f = 100 kHz	-	1961	-	pF
		V _R = 400 V, f = 100 kHz	-	115	-	
		V _R = 800 V, f = 100 kHz	-	88	-	

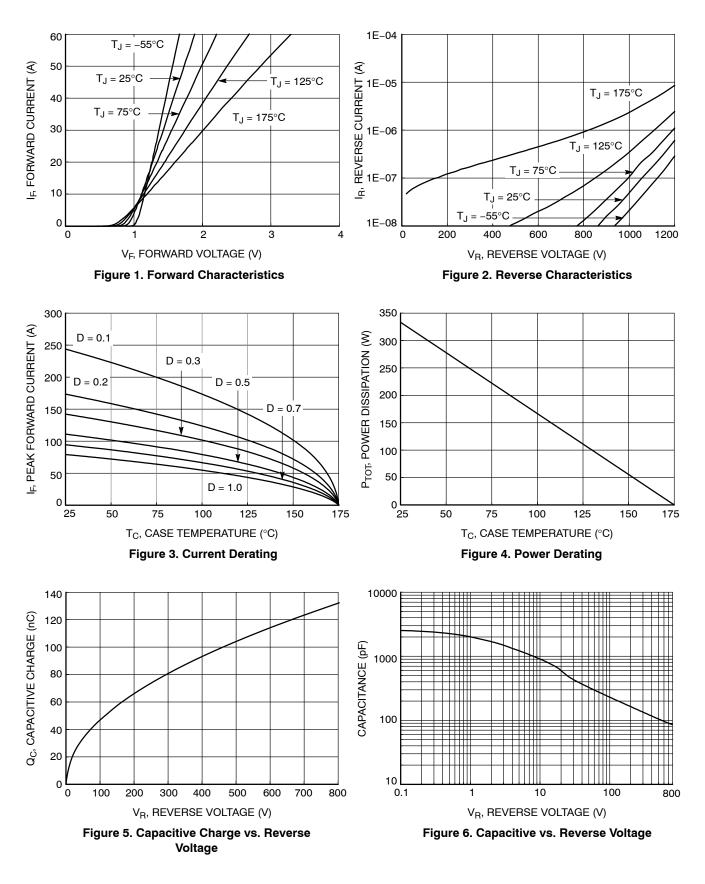
Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

ORDERING INFORMATION

Part Number	Top Marking	Package	Shipping
NDSH30120C-F155	DSH30120C	TO-247-2LD (Pb-Free / Halogen Free)	30 Units / Tube

NDSH30120C-F155

TYPICAL CHARACTERISTICS (T_J = 25°C UNLESS OTHERWISE NOTED)



NDSH30120C-F155

TYPICAL CHARACTERISTICS (T_J = 25°C UNLESS OTHERWISE NOTED)

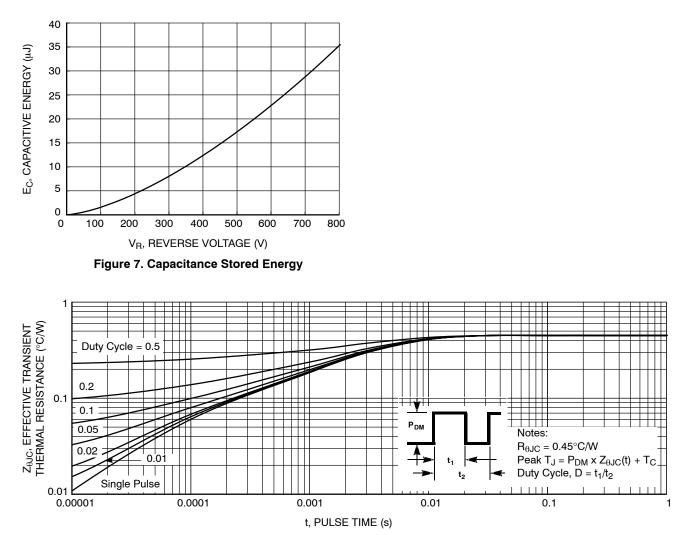
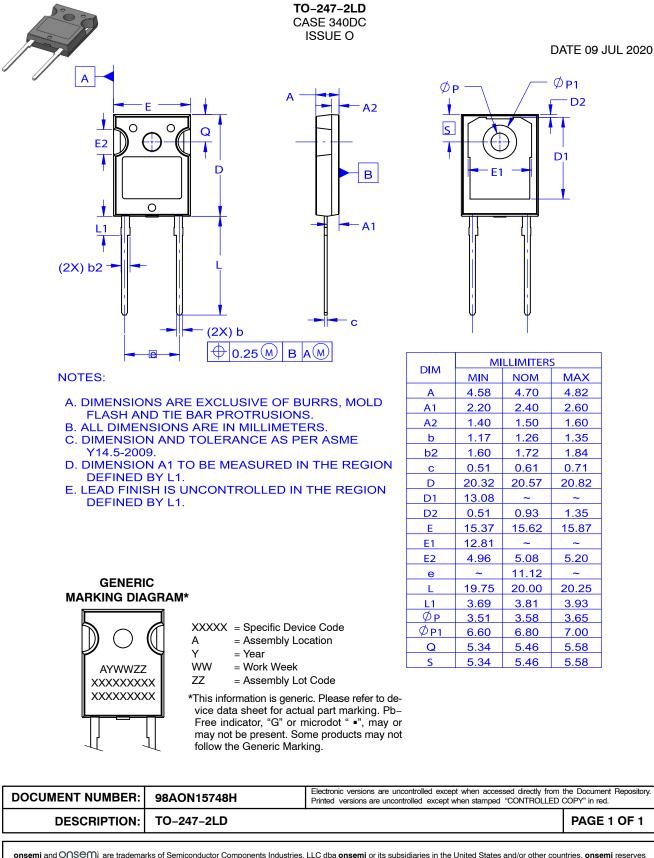


Figure 8. Junction-to-Case Transient Thermal Response Curve

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