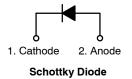
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Silicon Carbide (SiC) **Schottky Diode** – EliteSiC, 10 A, 1700 V, D1, Die



NDC10170A

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 156 mJ
- High Surge Current Capacity
- Positive Temperature Coefficient
- Ease of Paralleling
- No Reverse Recovery / No Forward Recovery

Applications

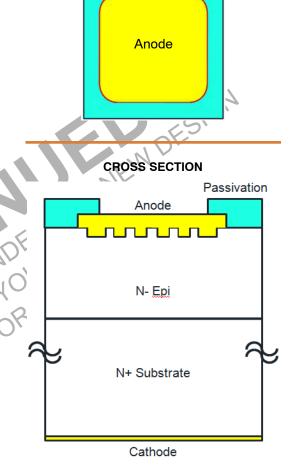
- Inverter, Solar Inverter, ESNOTOTIONE Industrial Motor Loads, Wind Generation Inverter, Solar Inverter UPS
- Power Switching Circuits

Die Information

- Wafer Diameter: 6 inch
- Die Size: 2660 × 2660 µm (include Scribe Lane)
- Metallization:
 - ♦ Top: Ti/TiN/AlSiCu
 - Back: Ti/NiV/Ag
- Die Thickness: Typ. 200 μm
- Bonding Pad Size:
 - Anode: 1985 × 1985 μm
- Recommended Wire Bond (Note 1) • Anode: $15 \text{ mil} \times 2$

NOTE:

1. Based on TO-247 package



ORDERING INFORMATION

See detailed ordering and shipping information on page 3 of this data sheet.

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

Symbol	Parameter		Value	Unit
V _{RRM}	Peak Repetitive Reverse Voltage		1700	V
E _{AS}	Single Pulse Avalanche Energy (Notes 2 and 4)	156	mJ
١ _F	Continuous Rectified Forward Current @ T _C <	157°C	10	А
	Continuous Rectified Forward Current @ T_C <	135°C	16	
I _{F, Max}	Non-Repetitive Peak Forward Surge Current	T _C = 25°C, 10 μs	868	А
		T _C = 150°C, 10 μs	798	А
I _{F,SM}	Non-Repetitive Forward Surge Current	Half-Sine Pulse, t _p = 8.3 ms	105	А
Ptot	Power Dissipation	$T_{C} = 25^{\circ}C$	185	W
		T _C = 150°C	31	W
T _J , T _{STG}	Operating and Storage Temperature Range	•	-55 to +175	°C

THERMAL CHARACTERISTICS

 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. 2. E_{AS} of 156 mJ is based on starting T_J = 25°C, L = 0.5 mH, I_{AS} = 25 A, V = 50 V. 3. I_{FMax}, and I_{FSM} surge test value are limited by measurement limitation, it's not product capability 4. DC, E_{AS} and Curve test result base on TO247 package 						
Symbol	Parameter Value	Unit				
R _{θJC}	Thermal Resistance, Junction to Case, Max 0.81	°C/W				
ELECTRICAL CHARACTERISTICS (T _J = 25°C unless otherwise noted)						

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

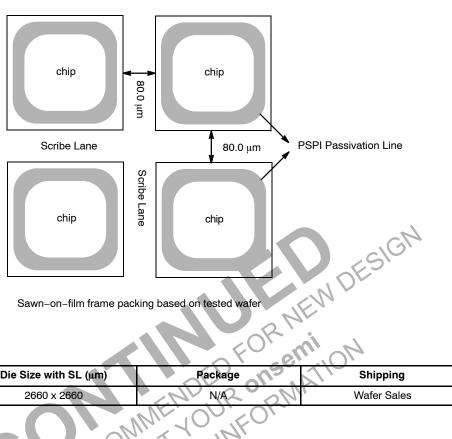
Symbol	Parameter	Test Condition	Min	Тур	Max	Unit
V _F	Forward Voltage	I _F = 10 A, T _J = 25°C	10 <u>-</u> 1/1	1.5	-	V
		I _F = 10 A, T _J = 125°C		1.87	-	
		I _F = 10 A, T _J = 175°C		2.19	-	
I _R	Reverse Current	V _R = 1700 V, T _J = 25°C	-	0.09	40	μΑ
	SP	V _R = 1700 V, T _J = 125°C	-	0.42	60	
		V _R = 1700 V, T _J = 175°C	-	2.46	100	
Q_{C}	Total Capacitive Charge	V = 800 V	-	74	-	nC
С	Total Capacitance	V _R = 1 V, f = 100 kHz	-	856	-	pF
	S DET	V _R = 400 V, f = 100 kHz	-	69	_	
		V _R = 800 V, f = 100 kHz	_	48	_	

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.

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The Configuration of Chips

(Based on 6 inch Wafer)

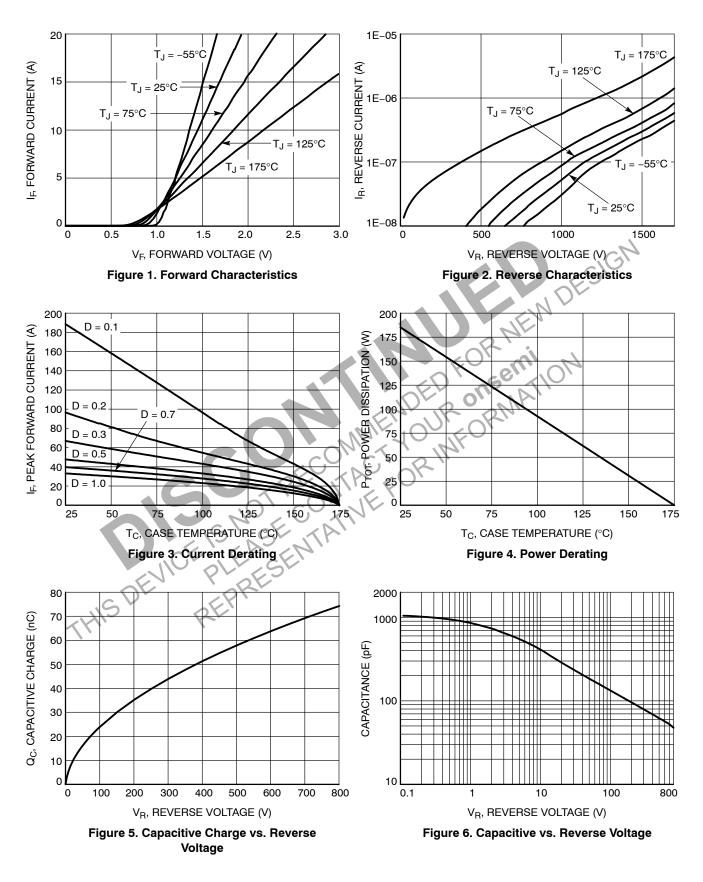


ORDERING INFORMATION

Part Number	Die Size with SL (μm)	Package	Shipping
NDC10170A	2660 x 2660	N/A 2	Wafer Sales
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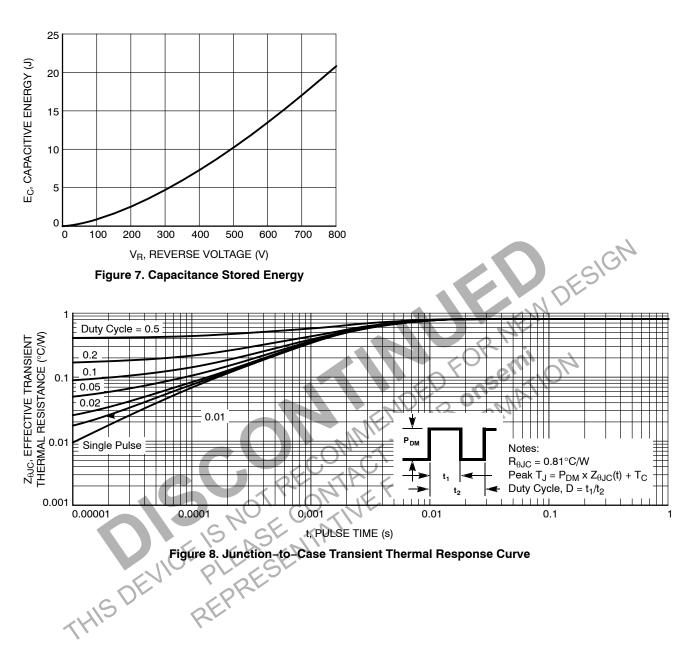
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TYPICAL CHARACTERISTICS (T_J = 25°C UNLESS OTHERWISE NOTED)



NDC10170A

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



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TECHNICAL PUBLICATIONS:

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ONLINE SUPPORT: <u>www.onsemi.com/support</u> For additional information, please contact your local Sales Representative at <u>www.onsemi.com/support/sales</u>