Extremefast Diode Die with Sinterable Top Metal

750 V, 225 A

NCD225E75F8M1

ON Semiconductor®

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V_{RRM} = 750 V
I_F = Limited by $T_{j(max)}$

Features

- AEC−Q101 Qualified and PPAP Capable
- Maximum Junction Temperature 175°C
- Extremefast Technology Generation 2 with Improved Soft Recovery
- Low Forward Voltage: V_F = 1.75 V (Typ.) @ I_F = 225 A
- Anode Pad Covered with Sinterable Metal Layer

Applications

- Automotive Traction Modules
- General Power Modules

MECHANICAL PARAMETERS

Parameter	Mils	μm
Die Size	394 × 197	10,000 × 5,000
Anode Pad Size	353 × 156	8,967 × 3,967
Scibe Lane Width	3.14	80
Die Thickness	3.62	92
Top Metal	6 μm AlSiCu + 0.95 μm Ti/NiV/Ag (STM)	
Back Metal	0.95 μm Ti/NiV/Ag	
Topside Passivation	Silicon Nitride plus Polyimide	
Wafer Diameter	200 mm	
Max Possible Die Per Wafer	467	
Recommended Storage Environment	In original container, in dry nitrogen, < 3 months at an ambient temperature of 23°C	

DIODE DIE



DIODE OUTLINE



ORDERING INFORMATION

Device	Inking?	Shipping
NCD225E75F8M1	Yes	Sawn Wafer on Tape

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ABSOLUTE MAXIMUM RATINGS (T_{VJ} = 25°C unless otherwise noted)

Parameter	Symbol	Ratings	Unit
Repetitive Peak Reverse Voltage	V_{RRM}	750	V
DC Forward Current, limited by T_{VJ} max	I_F	(Note 1)	A
Pulsed Forward Current, tp limited by $T_{VJ\ max}$ (Note 2)	I_{FM}	675	A
Operating Junction Temperature	T_{VJ}	−40 to +175	°C
Storage Temperature Range	Tstg	+18 to +28	°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. Depends on the thermal properties of assembly.
2. Not subject to production test – verified by design/characterization.

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

Parameter	Symbol	Test Conditions		Min	Typ	Max	Unit
STATIC CHARACTERISTICS (Tested on Wafers)							
Breakdown Voltage	V_{BR}	I_R = 1 mA		750	–	–	V
Reverse Leakage Current	I_R	V_R = 750 V		–	–	30	μA
Forward Voltage	V_F	I_F = 200 A		1.4	1.65	1.95	V
ELECTRICAL CHARACTERISTICS (Not Subjected to Production Test – Verified by Design/Characterization)							
Breakdown Voltage	V_{BR}	I_R = 1 mA	T_{VJ} = −40°C	700	790		V
Forward Voltage	V_F	I_F = 225 A	T_{VJ} = 25°C	–	1.75		V
			T_{VJ} = 150°C	–	1.8		V
			T_{VJ} = 175°C	–	1.8	–	V
Reverse Recovery Charge	Q_{rr}	I_F = 225 A, V_R = 400 V, dI_F/dt = 500 A/μs, T_{VJ} = 25°C		–	2.43	–	μC
Reverse Recovery Current	I_{rr}			–	21.5	–	A
Reverse Recover Time	T_{rr}			–	223	–	ns
Reverse Recovery Charge	Q_{rr}	I_F = 225 A, V_R = 400 V, dI_F/dt = 500 A/μs, T_{VJ} = 150°C		–	8.28	–	μC
Reverse Recovery Current	I_{rr}			–	46.5	–	A
Reverse Recover Time	T_{rr}			–	354	–	ns
Reverse Recovery Charge	Q_{rr}	I_F = 225A, V_R = 400 V, dI_F/dt = 500 A/μs, T_{VJ} = 175°C		–	10.08	–	μC
Reverse Recovery Current	I_{rr}			–	52	–	A
Reverse Recover Time	T_{rr}			–	388	–	ns

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.

Switching characteristics and thermal properties are depending strongly on module design and mounting technology.

For ordering, technique and other information on automotive bare die products from ON Semiconductor, please contact automotivebaredie@onsemi.com

DIE LAYOUT

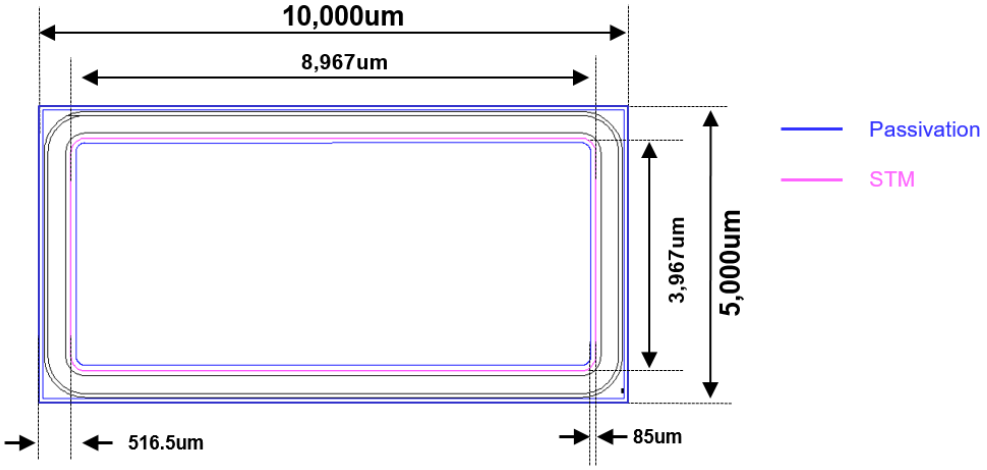


Figure 1. DIE Layout

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