



DUAL N-CHANNEL ENHANCEMENT MODE MOSFET

Product Summary

BV _{DSS}	R _{DS(ON)} max	I _D max T _A = +25°C
	20mΩ @ V _{GS} = 10V	6.9A
30V	27mΩ @ V _{GS} = 4.5V	5.8A

Features

- Low On-Resistance
- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)
- Halogen and Antimony Free. "Green" Device (Note 3)
- Qualified to AEC-Q101 Standards for High Reliability
- PPAP Capable (Note 4)

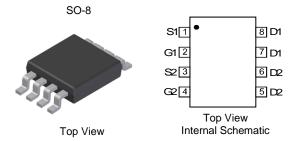
Description

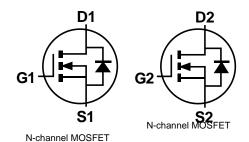
This MOSFET is designed to minimize the on-state resistance (R_{DS(on)}) and yet maintain superior switching performance, making it ideal for high-efficiency power management applications.

- Backlighting
- Power Management Functions
- DC-DC Converters

Mechanical Data

- Case: SO-8
- Case Material: Molded Plastic, "Green" Molding Compound;
 UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals Connections: See Diagram
- Terminals: Finish Matte Tin Annealed over Copper Leadframe;
 Solderable per MIL-STD-202, Method 208⁽³⁾
- Weight: 0.072grams (Approximate)





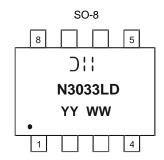
Ordering Information (Note 5)

Part Number	Case	Packaging
DMN3033LSDQ-13	SO-8	2,500/Tape & Reel

Notes:

- 1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
- 2. See http://www.diodes.com/quality/lead_free.html for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
- 3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
- 4. Automotive products are AEC-Q101 qualified and are PPAP capable. Automotive, AEC-Q101 and standard products are electrically and thermally the same, except where specified. For more information, please refer to http://www.diodes.com/quality/product_grade_definitions/.
- 5. For packaging details, go to our website at http://www.diodes.com/products/packages.html.

Marking Information



⊃¦¦ = Manufacturer's Marking
 N3033LD = Product Type Marking Code
 YYWW = Date Code Marking
 YY = Year (ex: 13 = 2013)
 WW = Week (01 - 53)



Maximum Ratings (@ $T_A = +25^{\circ}C$, unless otherwise specified.)

Characteristic			Symbol	Value	Units
Drain-Source Voltage			V _{DSS}	30	V
Gate-Source Voltage			V _{GSS}	±20	V
Drain Current (Note 6)	Steady State	$T_A = +25$ °C $T_A = +70$ °C	ID	6.9 5.8	А
Pulsed Drain Current (Note 7)			I _{DM}	30	А

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Total Power Dissipation (Note 6)	P_{D}	2	W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	62.5	°C/W
Operating and Storage Temperature Range	$T_{J,}T_{STG}$	-55 to +150	°C

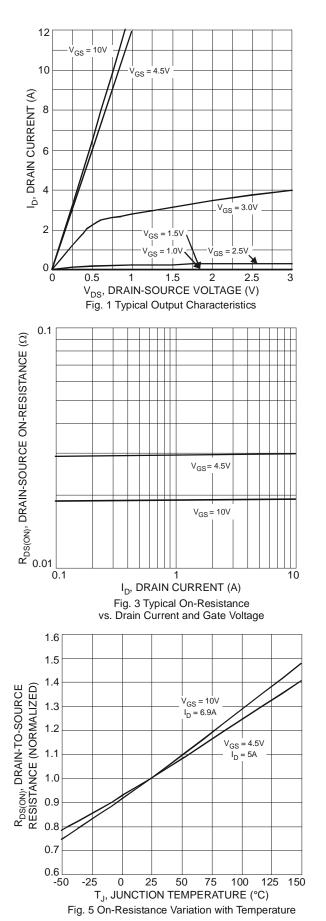
Electrical Characteristics (@ $T_A = +25^{\circ}C$, unless otherwise specified.)

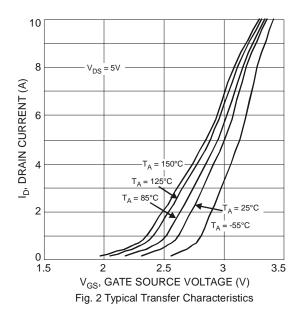
Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition	
OFF CHARACTERISTICS (Note 8)							
Drain-Source Breakdown Voltage	BV _{DSS}	30	_	_	V	$V_{GS} = 0V, I_D = 250\mu A$	
Zero Gate Voltage Drain Current	I _{DSS}	_	_	100	nA	$V_{DS} = 30V$, $V_{GS} = 0V$	
Cata Sauras Laskaga		_	_	±100	nA	$V_{GS} = \pm 20V, V_{DS} = 0V$	
Gate-Source Leakage	I _{GSS}	_	_	1	μΑ	$V_{GS} = \pm 25V, V_{DS} = 0V$	
ON CHARACTERISTICS (Note 8)							
Gate Threshold Voltage	V _{GS(th)}	1	1	2.1	V	$V_{DS} = V_{GS}, I_{D} = 250 \mu A$	
Static Drain-Source On-Resistance	7		13	20	mΩ	$V_{GS} = 10V, I_D = 6.9A$	
Static Dialif-Source Off-Resistance	R _{DS} (ON)		22	27	11152	$V_{GS} = 4.5V, I_D = 5A$	
Forward Transconductance	g fs	_	7	_	S	$V_{DS} = 5V, I_D = 6.9A$	
Diode Forward Voltage (Note 8)	V_{SD}	0.5	_	1.2	V	$V_{GS} = 0V$, $I_S = 1A$	
DYNAMIC CHARACTERISTICS (Note 9)							
Input Capacitance	C _{iss}	_	725	_	pF	V _{DS} = 15V, V _{GS} = 0V f = 1MHz	
Output Capacitance	Coss	_	114	_	pF		
Reverse Transfer Capacitance	Crss	_	92	_	pF	I = IIVIHZ	
Gate Resistance	R_{G}	_	0.89	_	Ω	$V_{GS} = 0V$, $V_{DS} = 0V$, $f = 1MHz$	
SWITCHING CHARACTERISTICS (Note 9)							
Total Gate Charge	Qg		6.4		nC	$V_{GS} = 4.5V, V_{DS} = 15V, I_D = 5A$	
Total Gate Charge			13			$V_{GS} = 10V, V_{DS} = 15V, I_D = 6.9A$	
Gate-Source Charge	Q_gs	_	1.9	_	nC	$V_{GS} = 4.5V, V_{DS} = 15V, I_D = 6.9A$	
Gate-Drain Charge	Q_{gd}	_	3.2	_	nC	$V_{GS} = 4.5V, V_{DS} = 15V, I_D = 6.9A$	
Turn-On Delay Time	t _{d(on)}	_	11	_	ns		
Turn-On Rise Time	t _r	_	7	_	ns	$V_{DD} = 15V, V_{GS} = 10V,$	
Turn-Off Delay Time	t _{d(off)}	_	63	_	ns	$R_D = 1.8\Omega, R_G = 6\Omega$	
Turn-Off Fall Time	t _f	_	30	_	ns		

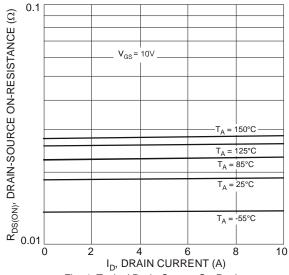
6. Device mounted on 2 oz. Copper pads on FR-4 PCB with $R_{\theta JA} = 62.5$ °C/W. Notes:

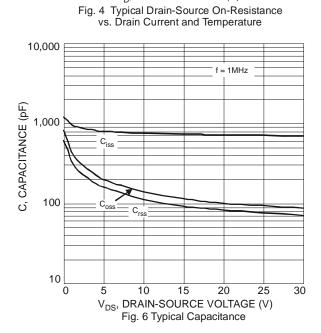
- 7. Pulse width ≤10µS, Duty Cycle ≤1%.
- S. Short duration pulse test used to minimize self-heating effect.
 Guaranteed by design. Not subject to product testing.



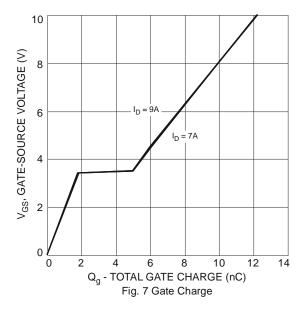












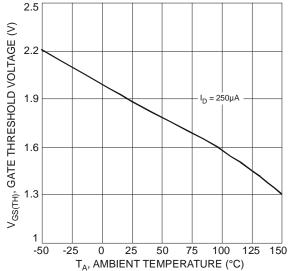
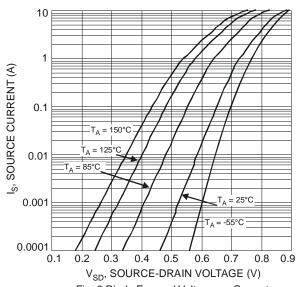


Fig. 8 Gate Threshold Variation vs. Ambient Temperature



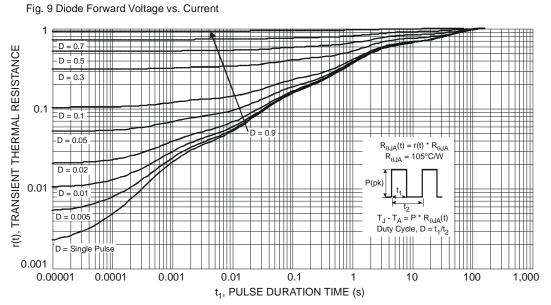
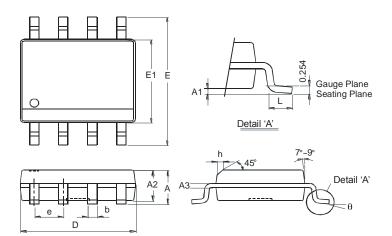


Fig. 10 Transient Thermal Response



Package Outline Dimensions

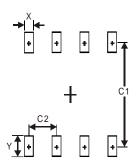
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for the latest version.



SO-8				
Dim	Min	Max		
Α	-	1.75		
A1	0.10	0.20		
A2	1.30	1.50		
A3	0.15	0.25		
b	0.3	0.5		
D	4.85	4.95		
Е	5.90	6.10		
E1	3.85	3.95		
е	1.27 Typ			
h	-	0.35		
L	0.62	0.82		
θ	0°	8°		
All Dimensions in mm				

Suggested Pad Layout

Please see AP02001 at http://www.diodes.com/datasheets/ap02001.pdf for the latest version.



Dimensions	Value (in mm)
Х	0.60
Y	1.55
C1	5.4
C2	1.27



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