



DUAL N-CHANNEL ENHANCEMENT MODE MOSFET

Product Summary

V _{(BR)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

Description

This MOSFET has been 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.

Applications

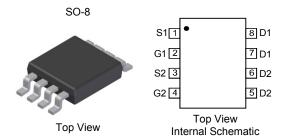
- Backlighting
- Power Management Functions
- DC-DC Converters

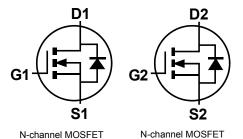
Features

- Dual N-Channel MOSFET
- 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

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 lead frame.
 Solderable per MIL-STD-202, Method 208
- Weight: 0.072grams (approximate)





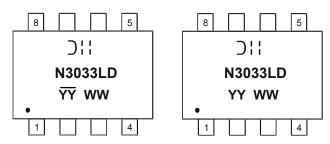
Ordering Information (Note 4)

Part Number	Case	Packaging
DMN3033LSD-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. For packaging details, go to our website at http://www.diodes.com/products/packages.html

Marking Information



Shanghai A/T Site

O':| = Manufacturer's Marking
N3033LD = Product Type Marking Code
YYWW = Date Code Marking
YY or YY = Year (ex: 13 = 2013)
WW = Week (01 - 53)
YY = Date Code Marking for SAT (Shanghai Assembly/ Test site)
YY = Date Code Marking for CAT (Chengdu Assembly/ Test site)

Chengdu A/T Site



Maximum Ratings (@T_A = +25°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 5)	Steady State	T _A = +25°C T _A = +70°C	I _D	6.9 5.8	А
Pulsed Drain Current (Note 6)			I _{DM}	30	Α

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Total Power Dissipation (Note 5)	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

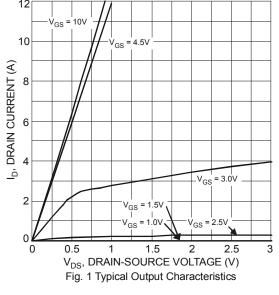
Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

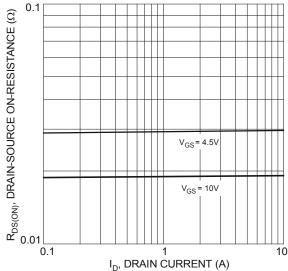
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Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 7)						
Drain-Source Breakdown Voltage	BV _{DSS}	30		_	V	$V_{GS} = 0V, I_D = 250\mu A$
Zero Gate Voltage Drain Current	I _{DSS}	_	_	100	nA	$V_{DS} = 30V, V_{GS} = 0V$
Gate-Source Leakage	1	_	_	±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 7)						
Gate Threshold Voltage	V _{GS(th)}	1	l	2.1	V	$V_{DS} = V_{GS}, I_D = 250 \mu A$
Static Drain-Source On-Resistance	D		13	20	mΩ	$V_{GS} = 10V, I_D = 6.9A$
Static Drain-Source On-Resistance	R _{DS (ON)}		22	27		$V_{GS} = 4.5V, I_D = 5A$
Forward Transconductance	g _{fs}	_	7	_	S	$V_{DS} = 5V, I_D = 6.9A$
Diode Forward Voltage (Note 7)	V_{SD}	0.5	-	1.2	V	$V_{GS} = 0V, I_{S} = 1A$
DYNAMIC CHARACTERISTICS					_	
Input Capacitance	C _{iss}	_	725	_	pF	V 45V V 0V
Output Capacitance	Coss	_	114	_	pF	V _{DS} = 15V, V _{GS} = 0V -f = 1MHz
Reverse Transfer Capacitance	C _{rss}	_	92	_	pF	1 - 1101112
Gate Resistance	R_G	_	0.89	_	Ω	$V_{GS} = 0V$, $V_{DS} = 0V$, $f = 1MHz$
SWITCHING CHARACTERISTICS	SWITCHING CHARACTERISTICS					
Total Gate Charge	Qg	_	6.4 13	_	nC	$V_{GS} = 4.5V, V_{DS} = 15V, I_{D} = 5A$
Total Gate Charge						$V_{GS} = 10V, V_{DS} = 15V, I_D = 6.9A$
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	

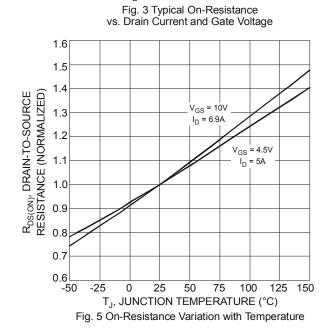
5. Device mounted on 2 oz. Copper pads on FR-4 PCB with $R_{\theta JA}$ = 62.5°C/W

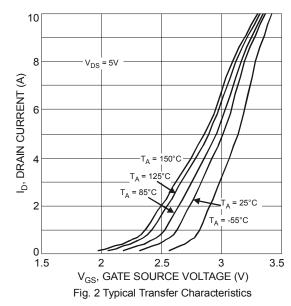
6. Pulse width ≤10µS, Duty Cycle ≤1%.
7. Short duration pulse test used to minimize self-heating effect.











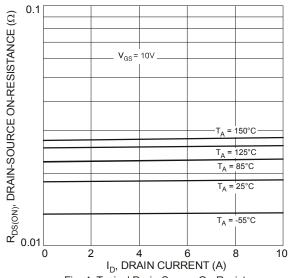
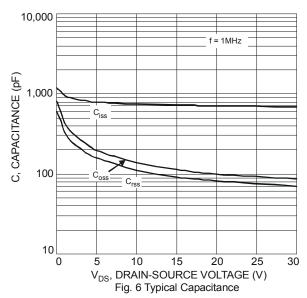
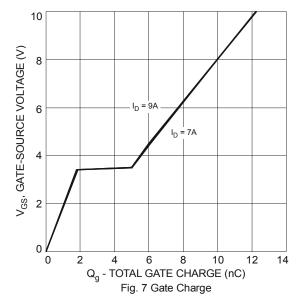


Fig. 4 Typical Drain-Source On-Resistance vs. Drain Current and Temperature







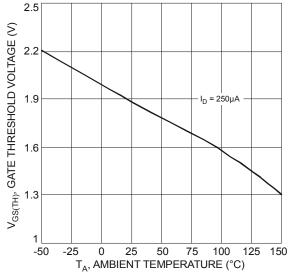
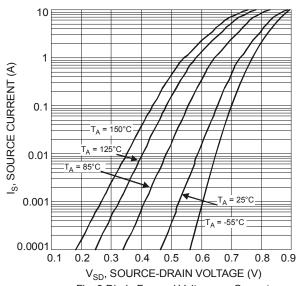
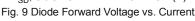


Fig. 8 Gate Threshold Variation vs. Ambient Temperature





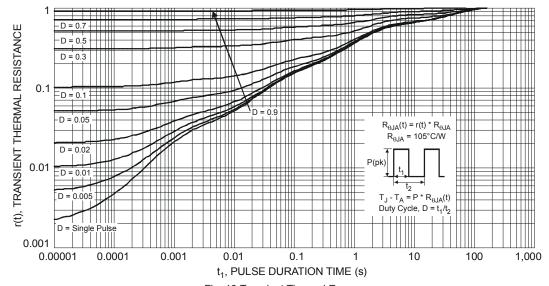
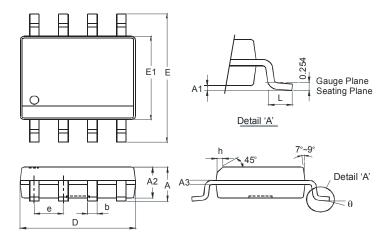


Fig. 10 Transient Thermal Response



Package Outline Dimensions

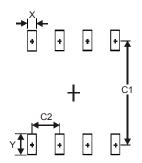
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for latest version.



SO-8					
Dim	Min	Max			
Α	-	1.75			
A 1	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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