



N-CHANNEL ENHANCEMENT MODE MOSFET

Product Summary

V _{(BR)DSS}	R _{DS(ON)} max	I _D max T _A = +25°C
00)/	20mΩ @ V _{GS} = 10V	7.2A
30V	31mΩ @ 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 and Benefits

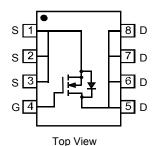
- Low On-Resistance
- Low Input Capacitance
- Fast Switching Speed
- Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)
- Halogen and Antimony Free. "Green" Device (Note 3)
- Qualified to AEC-Q101 standards for High Reliability

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
- Terminal Connections Indicator: See diagram
- Terminals: Finish Matte Tin annealed over Copper leadframe.
 Solderable per MIL-STD-202, Method 208 (3)
- Weight: 0.008 grams (approximate)







Internal Schematic

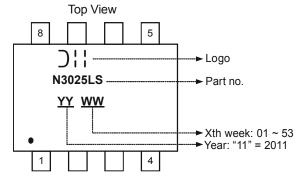
Ordering Information (Note 4)

Part Number	Case	Packaging
DMN3025LSS-13	SO-8	2500/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 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.

Marking Information





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	
Outlines Brill Outline (Note 1974)		$T_A = +25^{\circ}C$ $T_A = +70^{\circ}C$	I _D	7.2 5.7	Α	
Continuous Drain Current (Note 6) V _{GS} = 10V	t<10s	T _A = +25°C T _A = +70°C	I _D	9.6 7.7	А	
Maximum Continuous Body Diode Forward Current	I _S	3	Α			
Pulsed Drain Current (10µs pulse, duty cycle = 1%	I _{DM}	40	Α			
Avalanche Current (L = 0.1mH)			I _{AS}	14.5	Α	
Repetitive Avalanche Energy (L = 0.1mH)			E _{AS}	10.5	mJ	

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

Characteristic	Symbol	Value	Units		
Total Power Dissipation (Note 5)	T _A = +25°C	D-	1.4	W	
Total Power Dissipation (Note 5)	T _A = +70°C	P_{D}	0.9		
Thermal Resistance, Junction to Ambient (Note 5)	Steady State	D	87	°C/W	
Thermal Resistance, Junction to Ambient (Note 5)	t<10s	$R_{\theta JA}$	44		
Total Power Dissipation (Note 6)	$T_A = +25^{\circ}C$	P_{D}	1.7	W	
Total Fower Dissipation (Note 0)	T _A = +70°C	FD	1.1	VV	
Thermal Resistance, Junction to Ambient (Note 6)	Steady State	D	73	°C/W	
Thermal Resistance, Junction to Ambient (Note o)	t<10s	$R_{\theta JA}$	37	C/VV	
Operating and Storage Temperature Range	$T_{J_i} T_{STG}$	-55 to +150	°C		

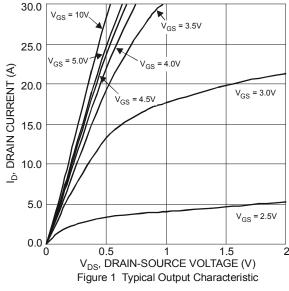
Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

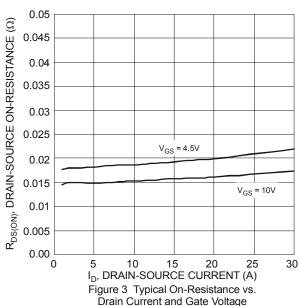
Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition	
OFF CHARACTERISTICS (Note 7)							
Drain-Source Breakdown Voltage	BV _{DSS}	30	_	_	V	$V_{GS} = 0V, I_D = 250\mu A$	
Zero Gate Voltage Drain Current	I _{DSS}	_	_	1	μΑ	$V_{DS} = 30V, V_{GS} = 0V$	
Gate-Source Leakage	I _{GSS}	_	_	±1	μΑ	$V_{GS} = \pm 20V, V_{DS} = 0V$	
ON CHARACTERISTICS (Note 7)		•	•	•	•	•	
Gate Threshold Voltage	V _{GS(th)}	8.0	-	2.0	V	$V_{DS} = V_{GS}, I_{D} = 250 \mu A$	
Static Drain-Source On-Resistance	0		14	20	mΩ	$V_{GS} = 10V, I_D = 10A$	
Static Drain-Source On-Resistance	R _{DS (ON)}	_	23	31		$V_{GS} = 4.5V, I_D = 7.5A$	
Forward Transfer Admittance	Y _{fs}	_	11	-	S	$V_{DS} = 5V, I_{D} = 10A$	
Diode Forward Voltage	V_{SD}	_	0.70	1.0	V	$V_{GS} = 0V, I_{S} = 1A$	
DYNAMIC CHARACTERISTICS (Note 8)				-			
Input Capacitance	C _{iss}	_	641			V _{DS} = 15V, V _{GS} = 0V, f = 1.0MHz	
Output Capacitance	Coss	_	66	_	pF		
Reverse Transfer Capacitance	C _{rss}	_	50	_		1 = 1:001112	
Gate resistance	R_{g}	_	2.2	_	Ω	$V_{DS} = 0V, V_{GS} = 0V, f = 1.0MHz$	
Total Gate Charge (V _{GS} = 4.5V)	Q_g	_	6	_			
Total Gate Charge (V _{GS} = 10V)	Qq	_	13.2	_		V _{DS} = 15V, I _D = 10A	
Gate-Source Charge	Q _{qs}	_	1.7	_	nC		
Gate-Drain Charge	Q _{gd}	_	2.2	_			
Turn-On Delay Time	t _{D(on)}	_	3.3	_			
Turn-On Rise Time	t _r	_	4.4	_		V _{DD} = 15V, V _{GS} = 10V,	
Turn-Off Delay Time	t _{D(off)}	_	22.3	_	ns	$R_G = 6\Omega$, $I_D = 1A$	
Turn-Off Fall Time	t _f	_	5.3	_			

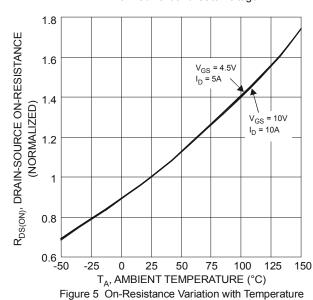
5. Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout. 6. Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate. Notes:

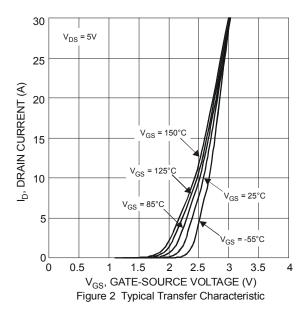
^{7.} Short duration pulse test used to minimize self-heating effect. 8. Guaranteed by design. Not subject to product testing.

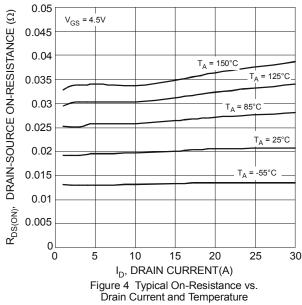












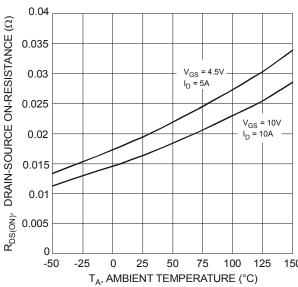


Figure 6 On-Resistance Variation with Temperature



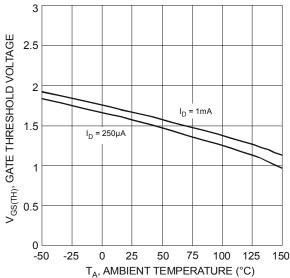


Figure 7 Gate Threshold Variation vs. Ambient Temperature

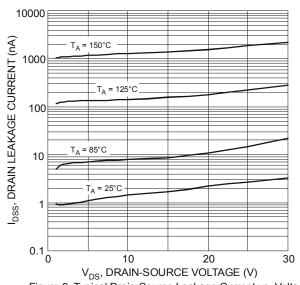


Figure 9 Typical Drain-Source Leakage Current vs. Voltage

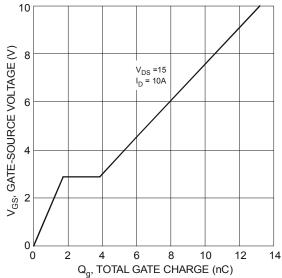
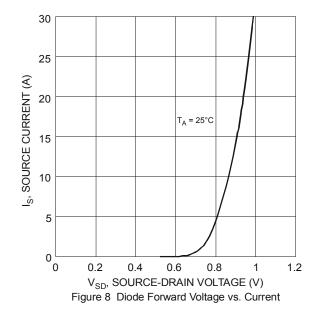
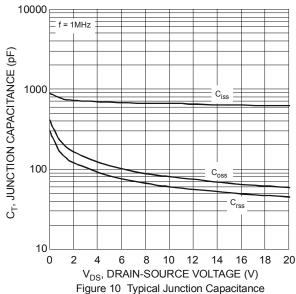
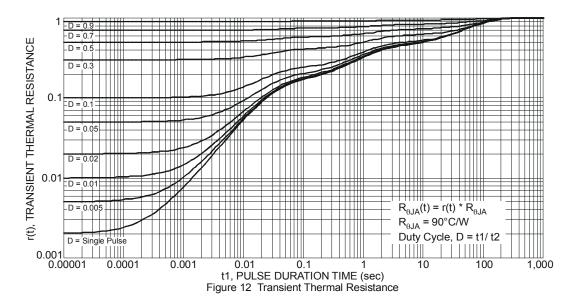


Figure 11 Gate-Source Voltage vs. Total Gate Charge

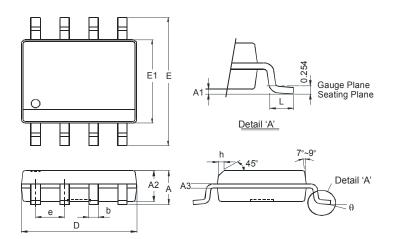






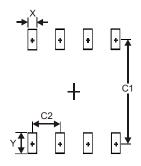


Package Outline Dimensions



SO-8					
Dim	Min	Max			
Α	ı	1.75			
A1	0.10	0.20			
A2	1.30	1.50			
А3	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



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



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