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[Diodes Incorporated](#)
[DMN3025LSS-13](#)

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DMN3025LSS

N-CHANNEL ENHANCEMENT MODE MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(ON)max}$	$I_D max$ $T_A = +25^{\circ}C$
30V	20mΩ @ $V_{GS} = 10V$	7.2A
	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

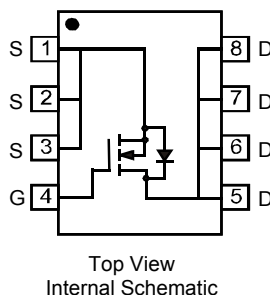
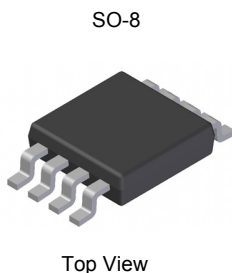
Features and Benefits

- 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 **e3**
- Weight: 0.008 grams (approximate)

NEW PRODUCT

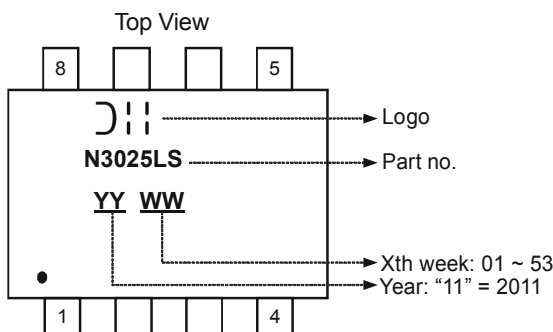


Ordering Information (Note 4)

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	
Continuous Drain Current (Note 6) V _{GS} = 10V	I _D	T _A = +25°C T _A = +70°C	7.2 5.7	A
		t < 10s	T _A = +25°C T _A = +70°C	9.6 7.7
Maximum Continuous Body Diode Forward Current (Note 6)	I _S	3	A	
Pulsed Drain Current (10µs pulse, duty cycle = 1%)	I _{DM}	40	A	
Avalanche Current (L = 0.1mH)	I _{AS}	14.5	A	
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)	P _D	T _A = +25°C	1.4	W
		T _A = +70°C	0.9	
Thermal Resistance, Junction to Ambient (Note 5)	R _{θJA}	Steady State	87	°C/W
		t < 10s	44	
Total Power Dissipation (Note 6)	P _D	T _A = +25°C	1.7	W
		T _A = +70°C	1.1	
Thermal Resistance, Junction to Ambient (Note 6)	R _{θJA}	Steady State	73	°C/W
		t < 10s	37	
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C	

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 7)						
Drain-Source Breakdown Voltage	BV _{DSS}	30	—	—	V	V _{GS} = 0V, I _D = 250µA
Zero Gate Voltage Drain Current	I _{DSS}	—	—	1	µA	V _{DS} = 30V, V _{GS} = 0V
Gate-Source Leakage	I _{GSS}	—	—	±1	µA	V _{GS} = ±20V, V _{DS} = 0V
ON CHARACTERISTICS (Note 7)						
Gate Threshold Voltage	V _{GS(th)}	0.8	-	2.0	V	V _{DS} = V _{GS} , I _D = 250µA
Static Drain-Source On-Resistance	R _{DS(on)}	—	14	20	mΩ	V _{GS} = 10V, I _D = 10A
		—	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	—	pF	V _{DS} = 15V, V _{GS} = 0V, f = 1.0MHz
Output Capacitance	C _{OSS}	—	66	—		
Reverse Transfer Capacitance	C _{RSS}	—	50	—		
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	—	nC	V _{DS} = 15V, I _D = 10A
Total Gate Charge (V _{GS} = 10V)	Q _g	—	13.2	—		
Gate-Source Charge	Q _{gs}	—	1.7	—		
Gate-Drain Charge	Q _{gd}	—	2.2	—		
Turn-On Delay Time	t _{D(on)}	—	3.3	—	ns	V _{DD} = 15V, V _{GS} = 10V, R _G = 6Ω, I _D = 1A
Turn-On Rise Time	t _r	—	4.4	—		
Turn-Off Delay Time	t _{D(off)}	—	22.3	—		
Turn-Off Fall Time	t _f	—	5.3	—		

- Notes:
- Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.
 - Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate.
 - Short duration pulse test used to minimize self-heating effect.
 - Guaranteed by design. Not subject to product testing.



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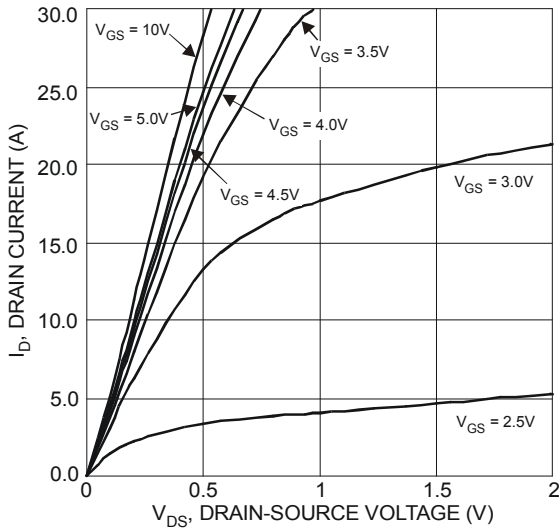


Figure 1 Typical Output Characteristic

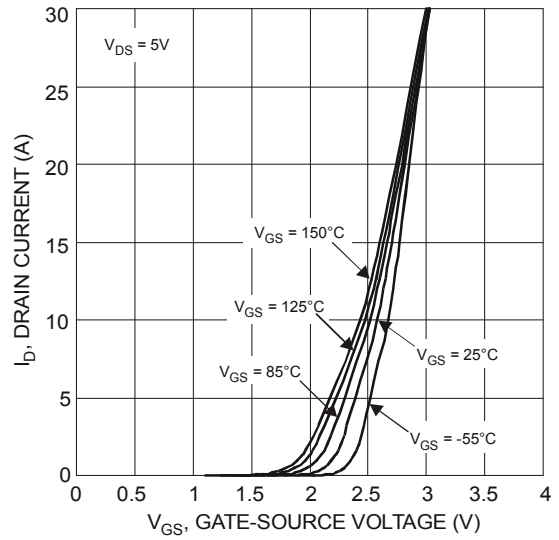


Figure 2 Typical Transfer Characteristic

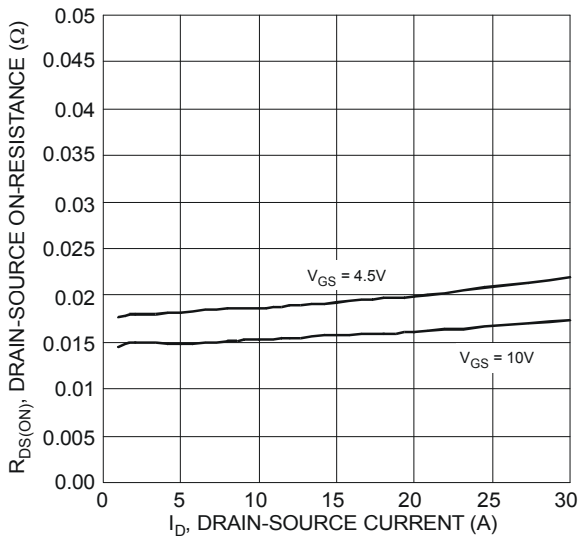


Figure 3 Typical On-Resistance vs. Drain Current and Gate Voltage

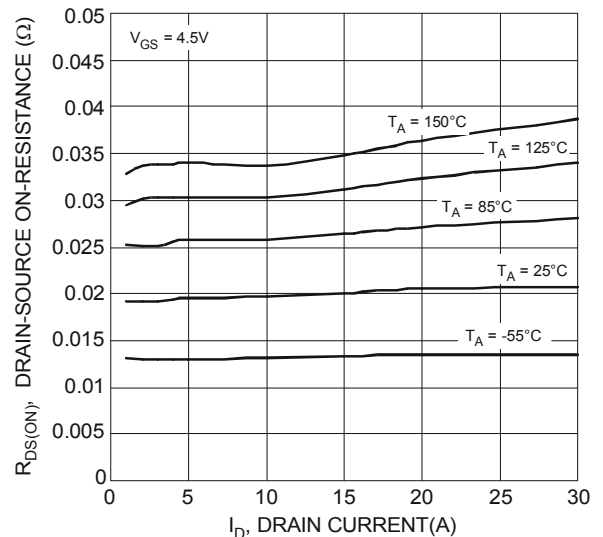


Figure 4 Typical On-Resistance vs. Drain Current and Temperature

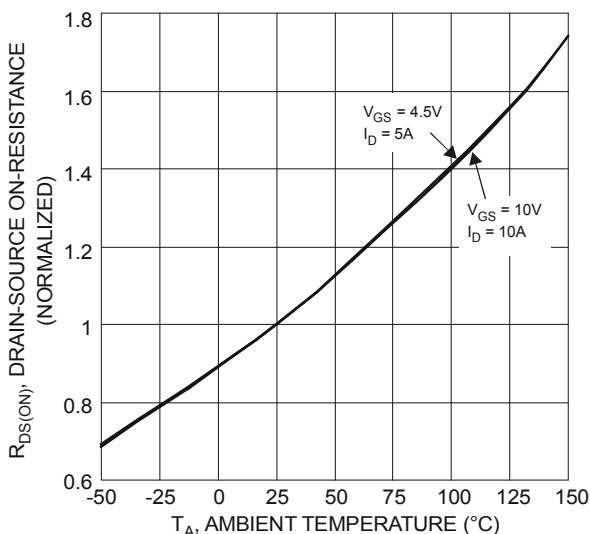


Figure 5 On-Resistance Variation with Temperature

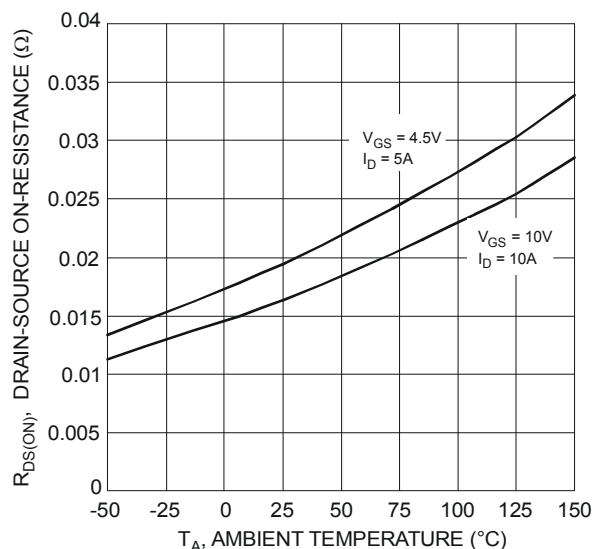


Figure 6 On-Resistance Variation with Temperature



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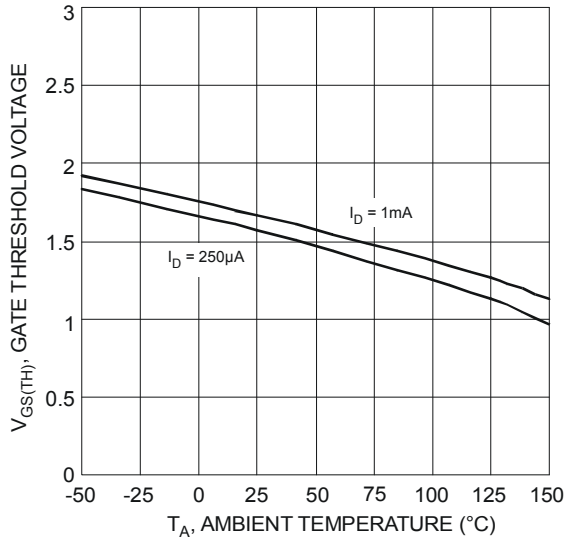


Figure 7 Gate Threshold Variation vs. Ambient Temperature

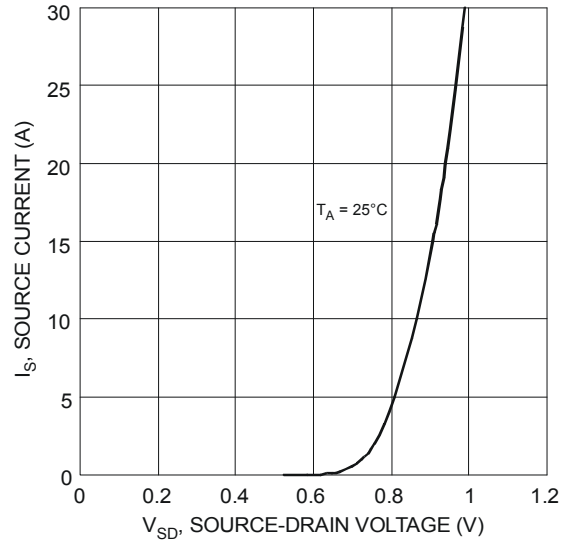


Figure 8 Diode Forward Voltage vs. Current

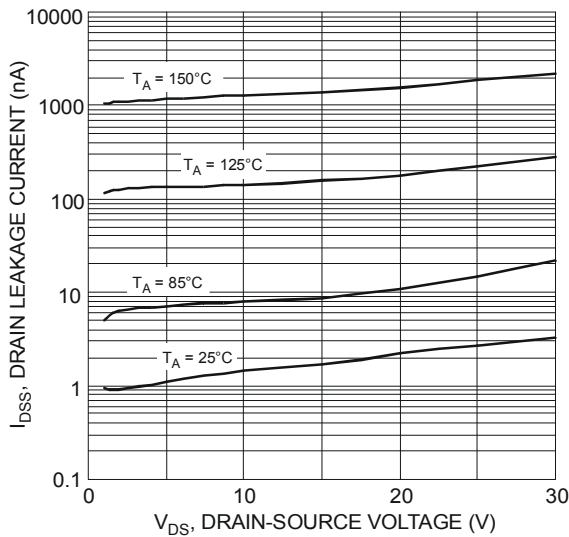


Figure 9 Typical Drain-Source Leakage Current vs. Voltage

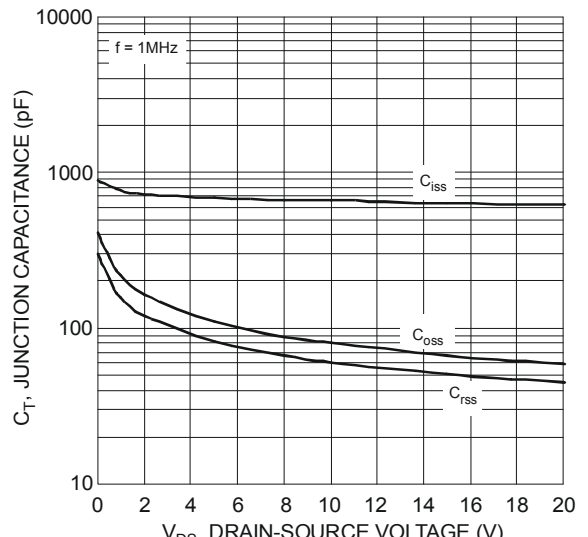


Figure 10 Typical Junction Capacitance

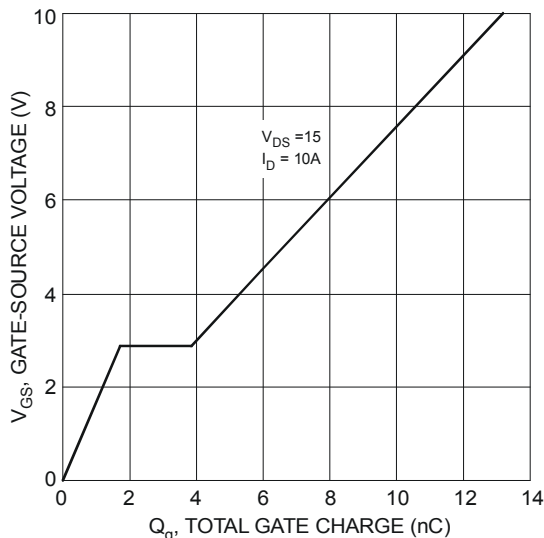


Figure 11 Gate-Source Voltage vs. Total Gate Charge

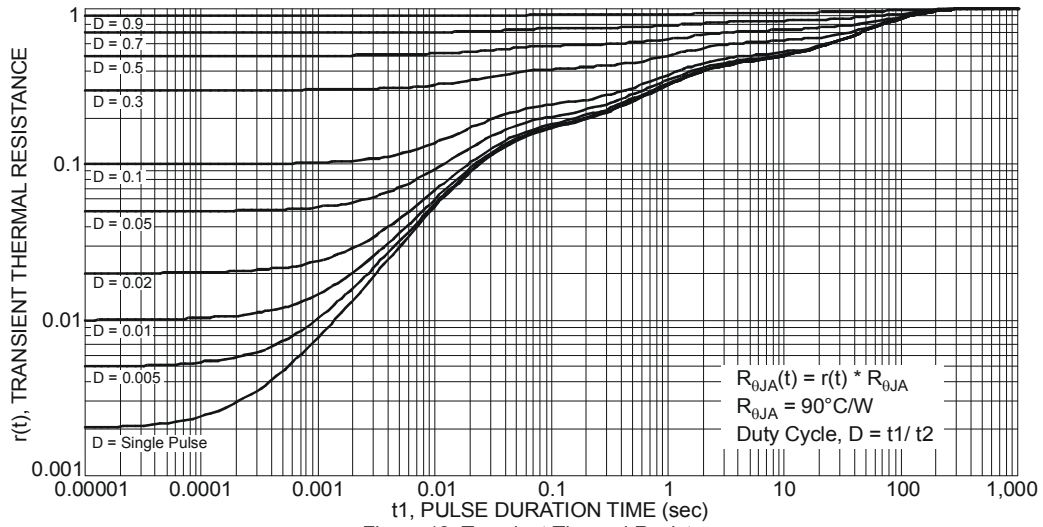
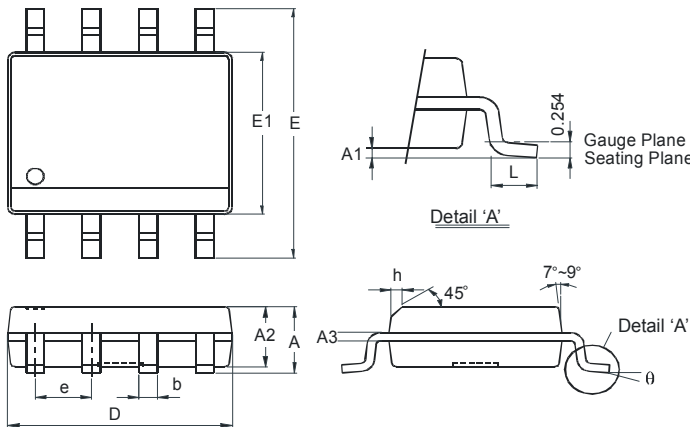


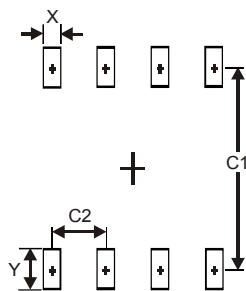
Figure 12 Transient Thermal Resistance

Package Outline Dimensions



SO-8		
Dim	Min	Max
A	-	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
E	5.90	6.10
E1	3.85	3.95
e	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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