

**Product Summary**

$V_{(BR)DSS}$	$R_{DS(ON)max}$	$I_D max$ $T_A = +25^{\circ}C$
30V	20m $\Omega$ @ $V_{GS} = 10V$	7.2A
	31m $\Omega$ @ $V_{GS} = 4.5V$	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**

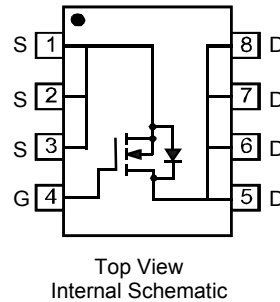
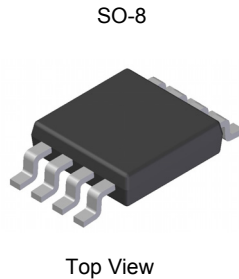
- Backlighting
- Power Management Functions
- DC-DC Converters

**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)

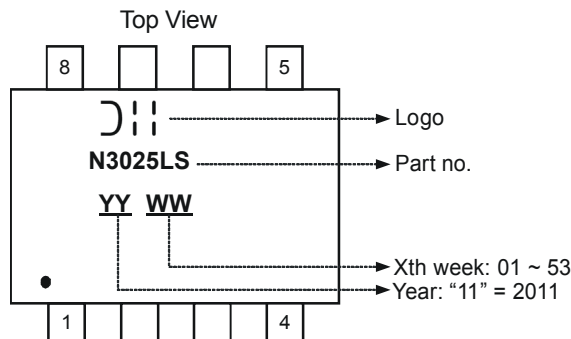


**Ordering Information** (Note 4)

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

Characteristic	Symbol	Value	Units
Drain-Source Voltage	$V_{DSS}$	30	V
Gate-Source Voltage	$V_{GSS}$	$\pm 20$	V
Continuous Drain Current (Note 6) $V_{GS} = 10\text{V}$	$I_D$	$T_A = +25^\circ\text{C}$	7.2
		$T_A = +70^\circ\text{C}$	5.7
	$I_D$	$T_A = +25^\circ\text{C}$	9.6
		$T_A = +70^\circ\text{C}$	7.7
Maximum Continuous Body Diode Forward Current (Note 6)	$I_S$	3	A
Pulsed Drain Current (10 $\mu\text{s}$ 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

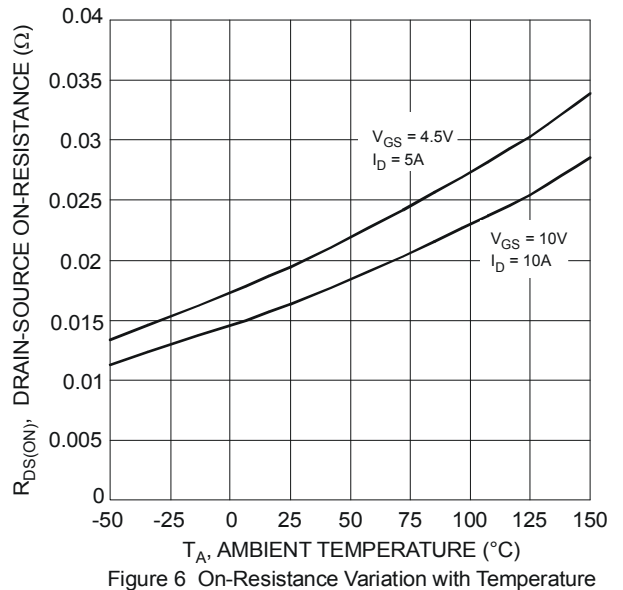
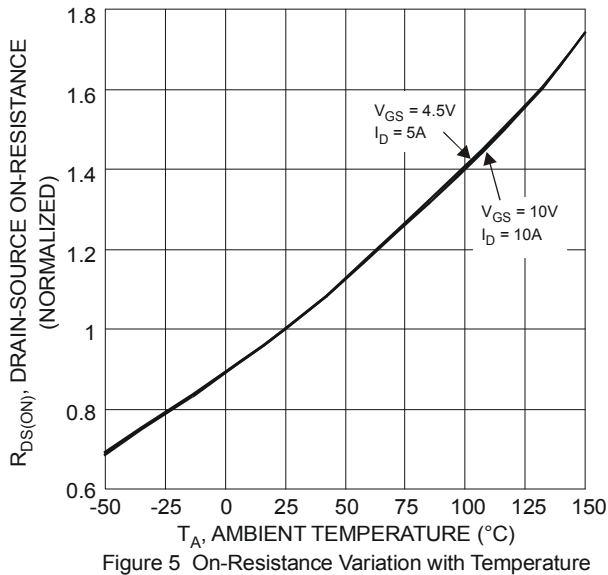
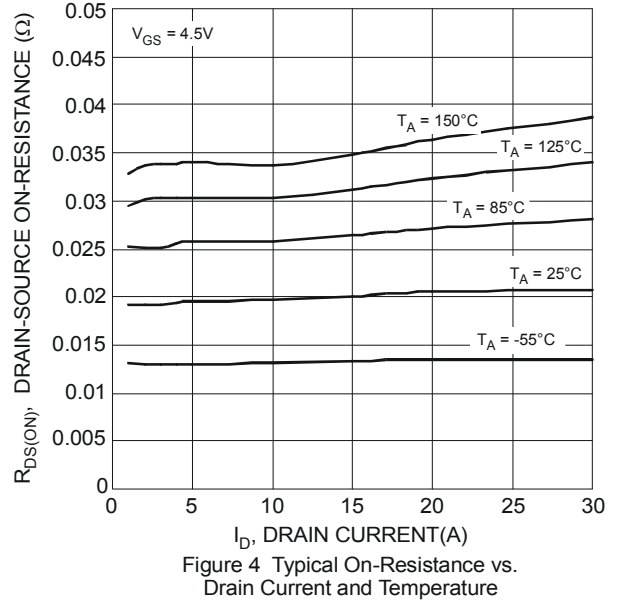
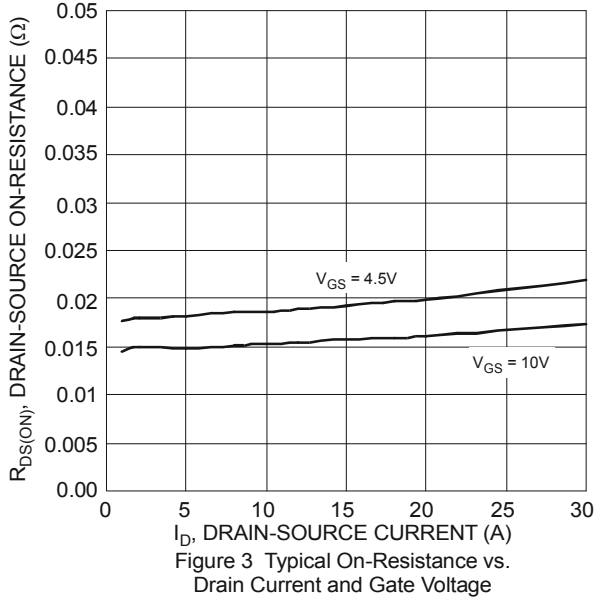
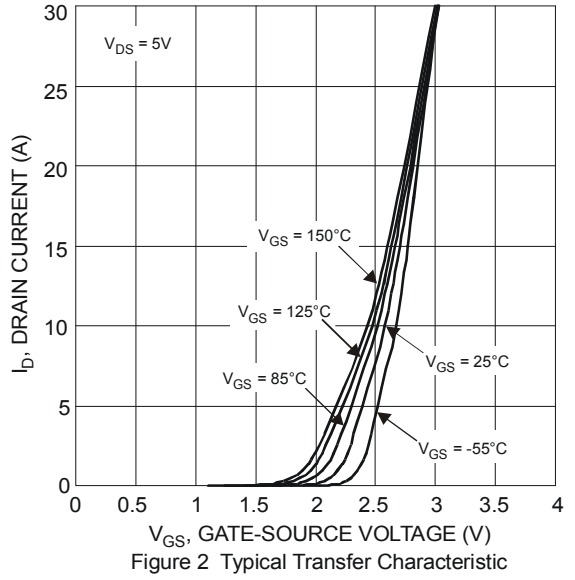
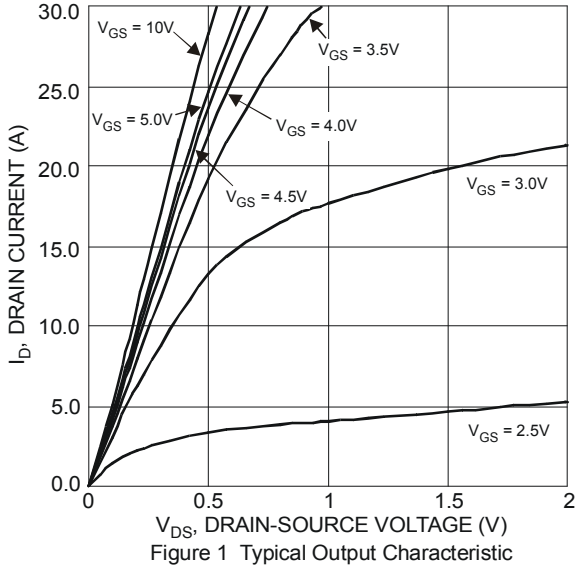
**Thermal Characteristics** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

Characteristic	Symbol	Value	Units
Total Power Dissipation (Note 5)	$P_D$	$T_A = +25^\circ\text{C}$	1.4
		$T_A = +70^\circ\text{C}$	0.9
Thermal Resistance, Junction to Ambient (Note 5)	$R_{\theta JA}$	Steady State	87
		t<10s	44
Total Power Dissipation (Note 6)	$P_D$	$T_A = +25^\circ\text{C}$	1.7
		$T_A = +70^\circ\text{C}$	1.1
Thermal Resistance, Junction to Ambient (Note 6)	$R_{\theta JA}$	Steady State	73
		t<10s	37
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	$^\circ\text{C}$

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS (Note 7)</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	30	—	—	V	$V_{GS} = 0\text{V}, I_D = 250\mu\text{A}$
Zero Gate Voltage Drain Current	$I_{DSS}$	—	—	1	$\mu\text{A}$	$V_{DS} = 30\text{V}, V_{GS} = 0\text{V}$
Gate-Source Leakage	$I_{GSS}$	—	—	$\pm 1$	$\mu\text{A}$	$V_{GS} = \pm 20\text{V}, V_{DS} = 0\text{V}$
<b>ON CHARACTERISTICS (Note 7)</b>						
Gate Threshold Voltage	$V_{GS(th)}$	0.8	-	2.0	V	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$
Static Drain-Source On-Resistance	$R_{DS(on)}$	—	14	20	m $\Omega$	$V_{GS} = 10\text{V}, I_D = 10\text{A}$
		—	23	31		$V_{GS} = 4.5\text{V}, I_D = 7.5\text{A}$
Forward Transfer Admittance	$ Y_{fs} $	—	11	-	S	$V_{DS} = 5\text{V}, I_D = 10\text{A}$
Diode Forward Voltage	$V_{SD}$	—	0.70	1.0	V	$V_{GS} = 0\text{V}, I_S = 1\text{A}$
<b>DYNAMIC CHARACTERISTICS (Note 8)</b>						
Input Capacitance	$C_{iss}$	—	641	—	pF	$V_{DS} = 15\text{V}, V_{GS} = 0\text{V}, f = 1.0\text{MHz}$
Output Capacitance	$C_{oss}$	—	66	—		
Reverse Transfer Capacitance	$C_{rss}$	—	50	—		
Gate resistance	$R_g$	—	2.2	—	$\Omega$	$V_{DS} = 0\text{V}, V_{GS} = 0\text{V}, f = 1.0\text{MHz}$
Total Gate Charge ( $V_{GS} = 4.5\text{V}$ )	$Q_g$	—	6	—	nC	$V_{DS} = 15\text{V}, I_D = 10\text{A}$
Total Gate Charge ( $V_{GS} = 10\text{V}$ )	$Q_g$	—	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	$V_{DD} = 15\text{V}, V_{GS} = 10\text{V}, R_G = 6\Omega, I_D = 1\text{A}$
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.



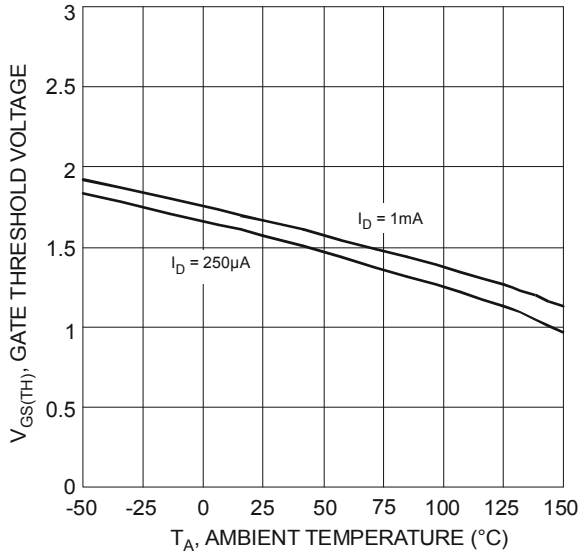


Figure 7 Gate Threshold Variation vs. Ambient Temperature

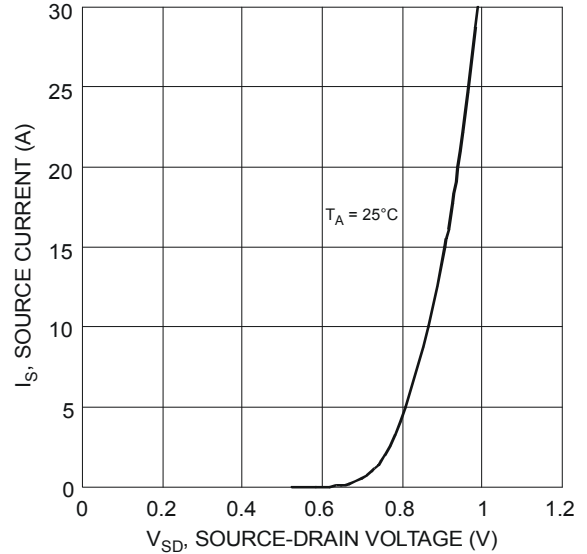


Figure 8 Diode Forward Voltage vs. Current

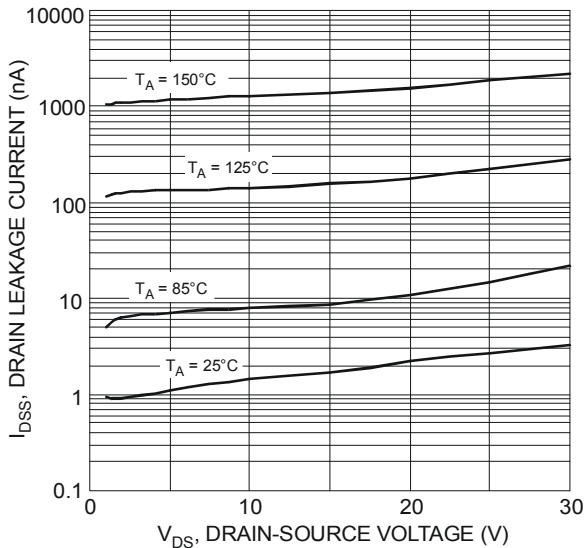


Figure 9 Typical Drain-Source Leakage Current vs. Voltage

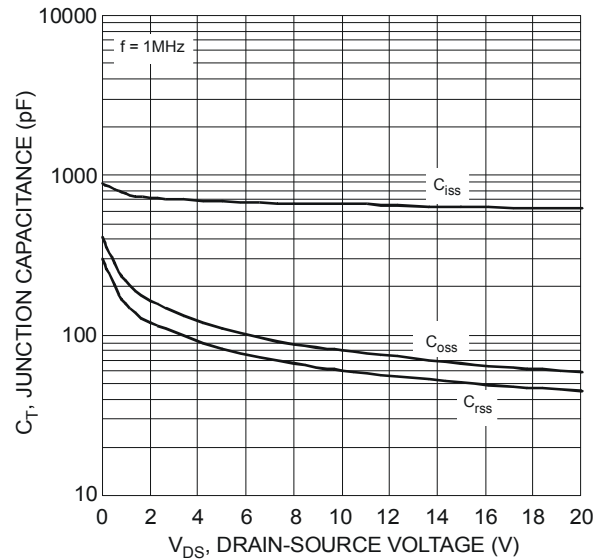


Figure 10 Typical Junction Capacitance

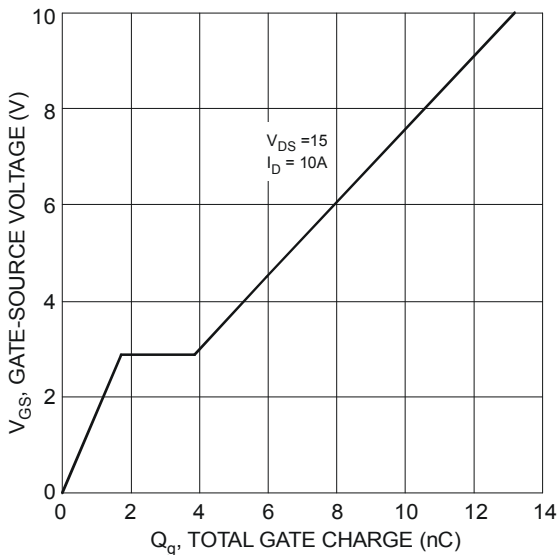


Figure 11 Gate-Source Voltage vs. Total Gate Charge

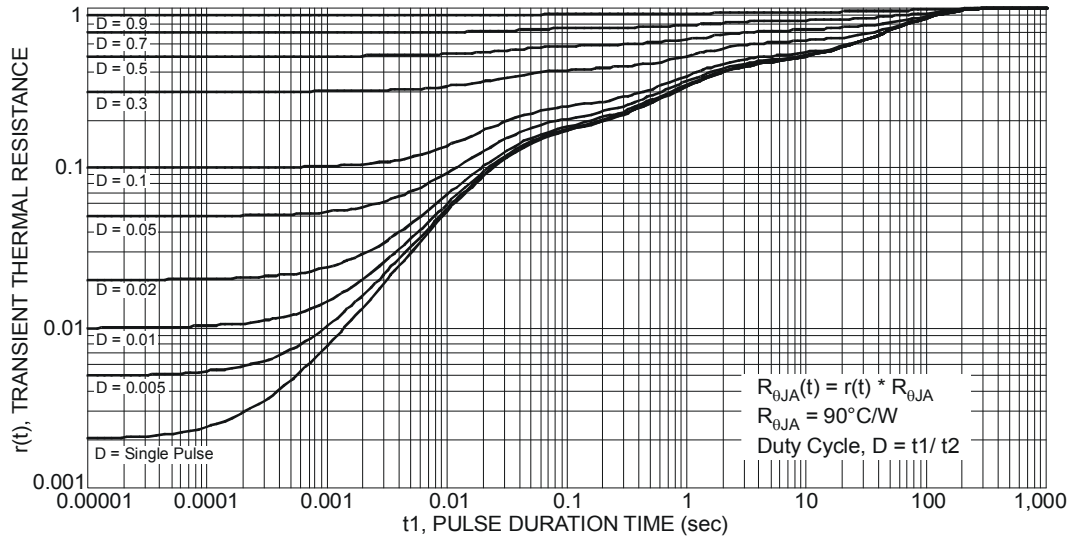
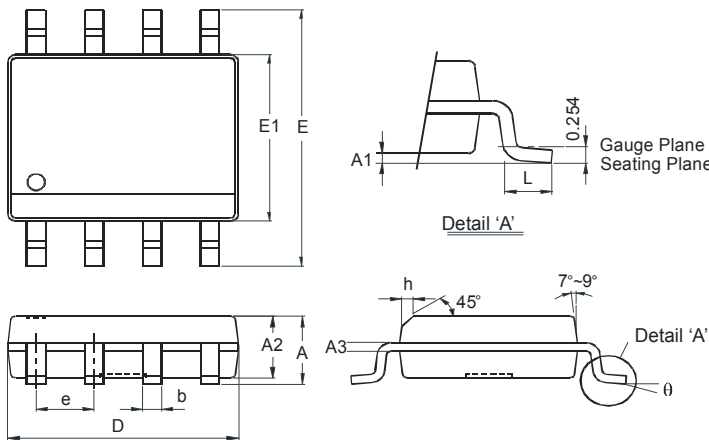


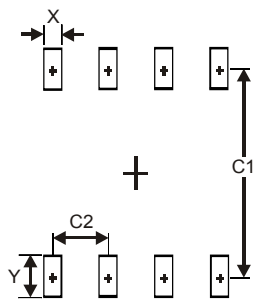
Figure 12 Transient Thermal Resistance

**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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