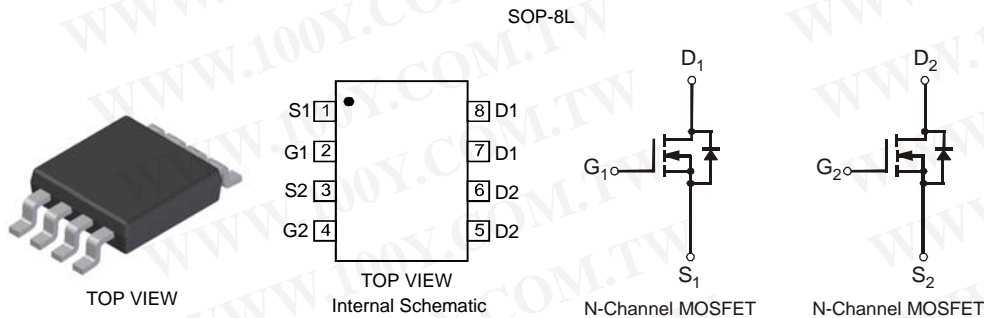


## Features

- Dual N-Channel MOSFET
- Low On-Resistance
  - 22mΩ @  $V_{GS} = 10V$
  - 33mΩ @  $V_{GS} = 4.5V$
- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- **Lead Free By Design/RoHS Compliant (Note 2)**
- **"Green" Device (Note 4)**
- **Qualified to AEC-Q101 Standards for High Reliability**

## Mechanical Data

- Case: SOP-8L
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020D
- Terminals Connections: See Diagram
- Terminals: Finish - Matte Tin annealed over Copper lead frame. Solderable per MIL-STD-202, Method 208
- Marking Information: See Page 4
- Ordering Information: See Page 4
- Weight: 0.072grams (approximate)



## Maximum Ratings @ $T_A = 25^\circ C$ unless otherwise specified

Characteristic	Symbol	Value	Units
Drain-Source Voltage	$V_{DSS}$	30	V
Gate-Source Voltage	$V_{GSS}$	$\pm 20$	V
Drain Current (Note 1)	$I_D$	6.9 5.8	A
		Steady State $T_A = 25^\circ C$ $T_A = 70^\circ C$	
Pulsed Drain Current (Note 3)	$I_{DM}$	30	A

## Thermal Characteristics

Characteristic	Symbol	Value	Unit
Total Power Dissipation (Note 1)	$P_D$	2	W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	62.5	$^\circ C/W$
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	$^\circ C$

- Notes:
1. Device mounted on 2 oz. Copper pads on FR-4 PCB with  $R_{\theta JA} = 62.5^\circ C/W$
  2. No purposefully added lead.
  3. Pulse width  $\leq 10\mu s$ , Duty Cycle  $\leq 1\%$ .
  4. Diodes Inc.'s "Green" policy can be found on our website at [http://www.diodes.com/products/lead\\_free/index.php](http://www.diodes.com/products/lead_free/index.php).

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**Electrical Characteristics** @T<sub>A</sub> = 25°C unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS (Note 5)</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	30	—	—	V	V <sub>GS</sub> = 0V, I <sub>D</sub> = 250μA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	—	—	1	μA	V <sub>DS</sub> = 30V, V <sub>GS</sub> = 0V
Gate-Source Leakage	I <sub>GSS</sub>	—	—	±100	nA	V <sub>GS</sub> = ±20V, V <sub>DS</sub> = 0V
<b>ON CHARACTERISTICS (Note 5)</b>						
Gate Threshold Voltage	V <sub>GS(th)</sub>	1	—	2.1	V	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA
Static Drain-Source On-Resistance	R <sub>DS(ON)</sub>	—	—	22 33	mΩ	V <sub>GS</sub> = 10V, I <sub>D</sub> = 6.9A V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 5.0A
Forward Transconductance	g <sub>fs</sub>	—	7	—	S	V <sub>DS</sub> = 5V, I <sub>D</sub> = 6.9A
Diode Forward Voltage (Note 5)	V <sub>SD</sub>	0.5	—	1.2	V	V <sub>GS</sub> = 0V, I <sub>S</sub> = 1A
<b>DYNAMIC CHARACTERISTICS</b>						
Input Capacitance	C <sub>iss</sub>	—	725	—	pF	V <sub>DS</sub> = 15V, V <sub>GS</sub> = 0V f = 1.0MHz
Output Capacitance	C <sub>oss</sub>	—	114	—	pF	
Reverse Transfer Capacitance	C <sub>rss</sub>	—	92	—	pF	
Gate Resistance	R <sub>G</sub>	—	0.89	—	Ω	V <sub>GS</sub> = 0V, V <sub>DS</sub> = 0V, f = 1.0MHz
<b>SWITCHING CHARACTERISTICS</b>						
Total Gate Charge	Q <sub>g</sub>	—	6.4 13.0	—	nC	V <sub>GS</sub> = 4.5V, V <sub>DS</sub> = 15V, I <sub>D</sub> = 5A V <sub>GS</sub> = 10V, V <sub>DS</sub> = 15V, I <sub>D</sub> = 6.9A
Gate-Source Charge	Q <sub>gs</sub>	—	1.9	—	nC	V <sub>GS</sub> = 4.5V, V <sub>DS</sub> = 15V, I <sub>D</sub> = 6.9A
Gate-Drain Charge	Q <sub>gd</sub>	—	3.2	—	nC	V <sub>GS</sub> = 4.5V, V <sub>DS</sub> = 15V, I <sub>D</sub> = 6.9A
Turn-On Delay Time	t <sub>d(on)</sub>	—	11	—	ns	V <sub>DD</sub> = 15V, V <sub>GS</sub> = 10V, R <sub>D</sub> = 1.8Ω, R <sub>G</sub> = 6Ω
Turn-On Rise Time	t <sub>r</sub>	—	7	—	ns	
Turn-Off Delay Time	t <sub>d(off)</sub>	—	63	—	ns	
Turn-Off Fall Time	t <sub>f</sub>	—	30	—	ns	

Notes: 5. Short duration pulse test used to minimize self-heating effect.

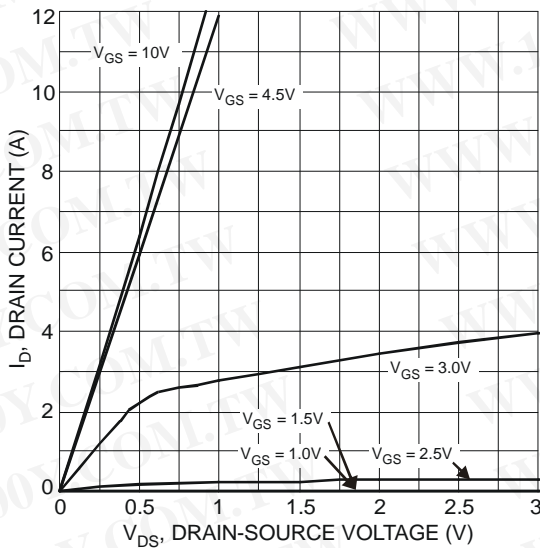


Fig. 1 Typical Output Characteristics

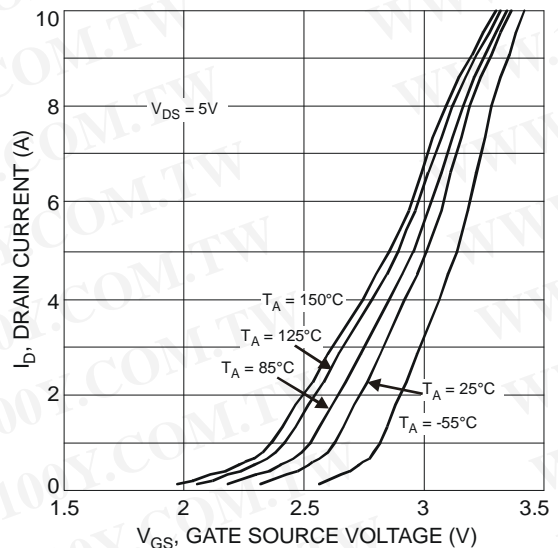


Fig. 2 Typical Transfer Characteristics

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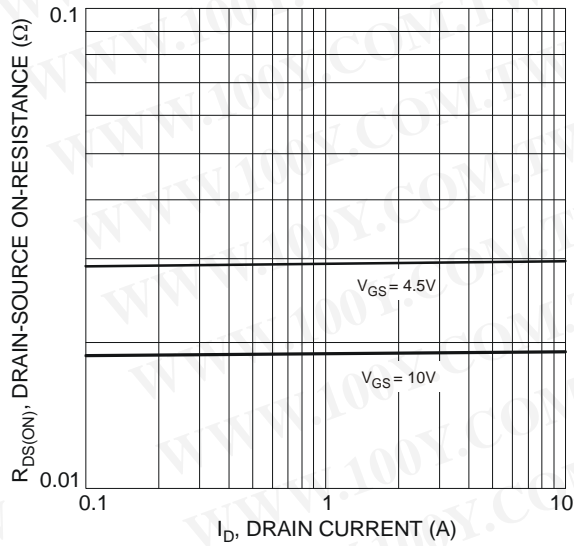


Fig. 3 Typical On-Resistance vs. Drain Current and Gate Voltage

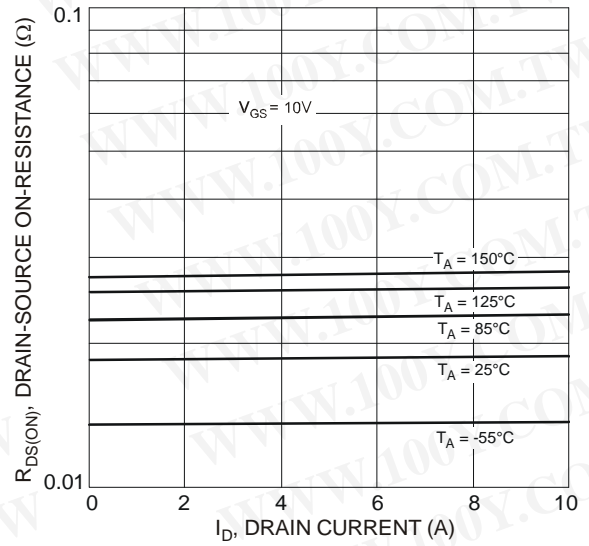


Fig. 4 Typical Drain-Source On-Resistance vs. Drain Current and Temperature

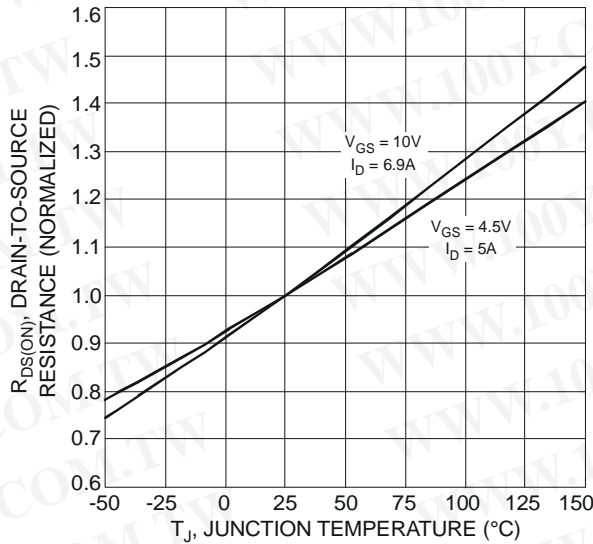


Fig. 5 On-Resistance Variation with Temperature

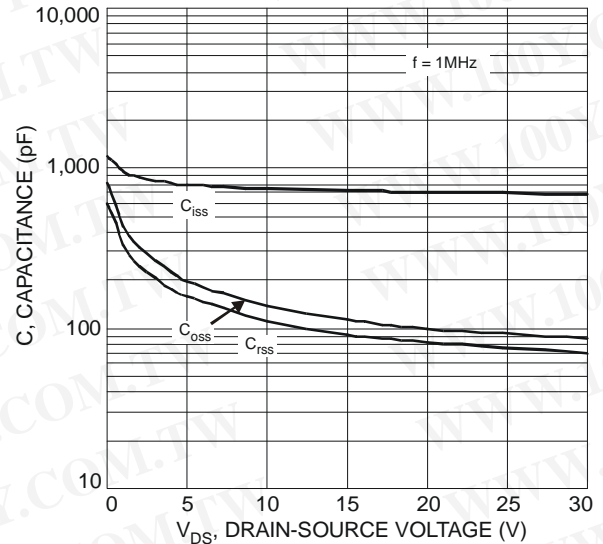


Fig. 6 Typical Capacitance

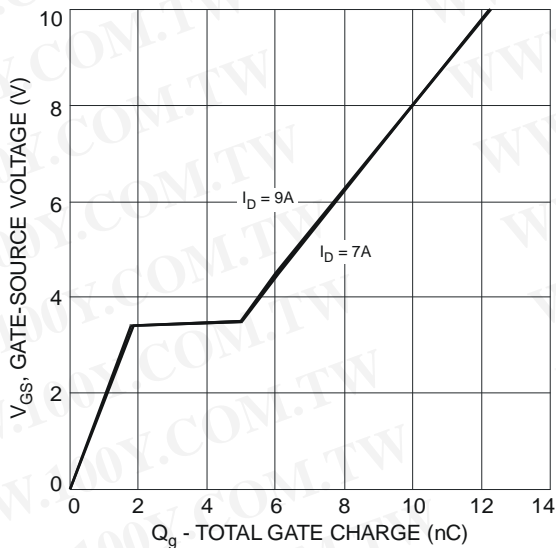


Fig. 7 Gate Charge

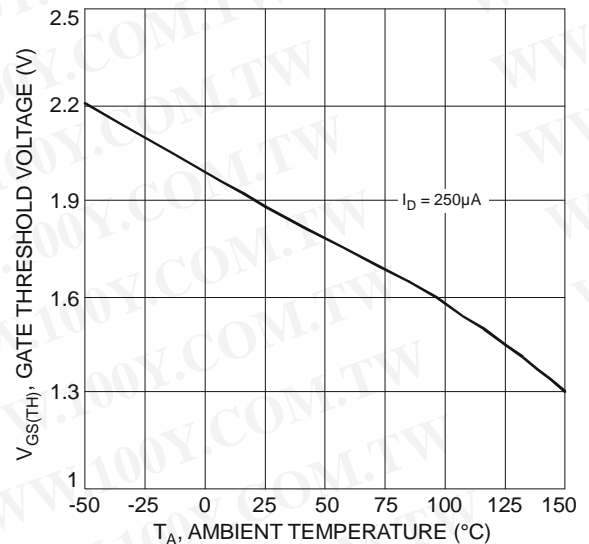


Fig. 8 Gate Threshold Variation vs. Ambient Temperature

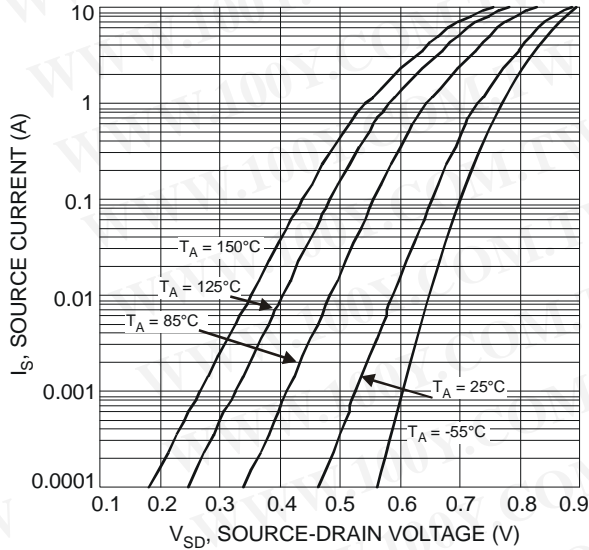


Fig. 9 Diode Forward Voltage vs. Current

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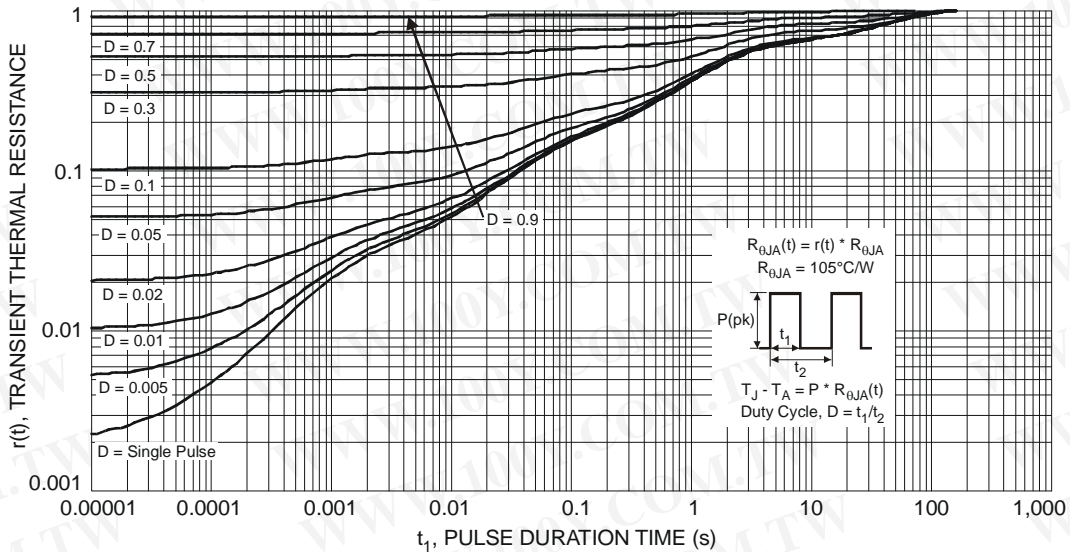


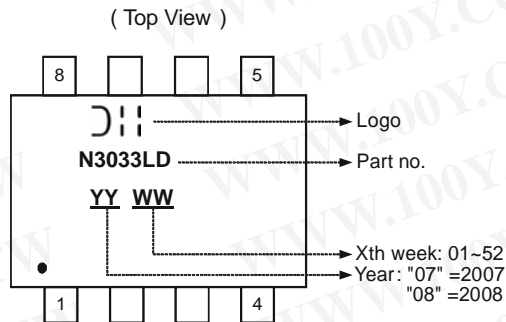
Fig. 10 Transient Thermal Response

**Ordering Information** (Note 6)

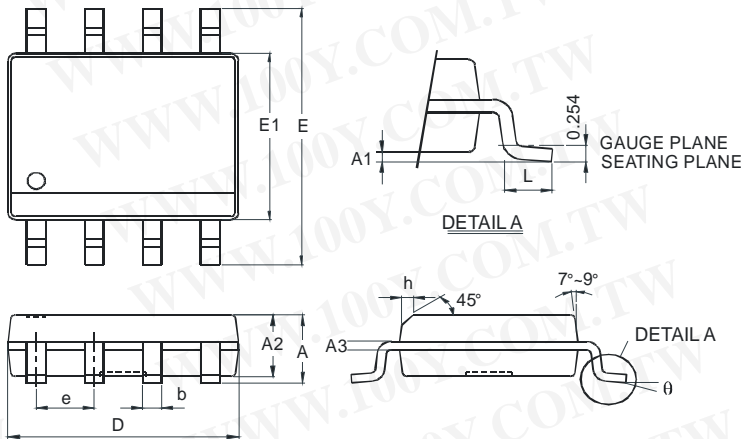
Part Number	Case	Packaging
DMN3033LSD-13	SOP-8L	2500/Tape & Reel

Notes: 6. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

**Marking Information**

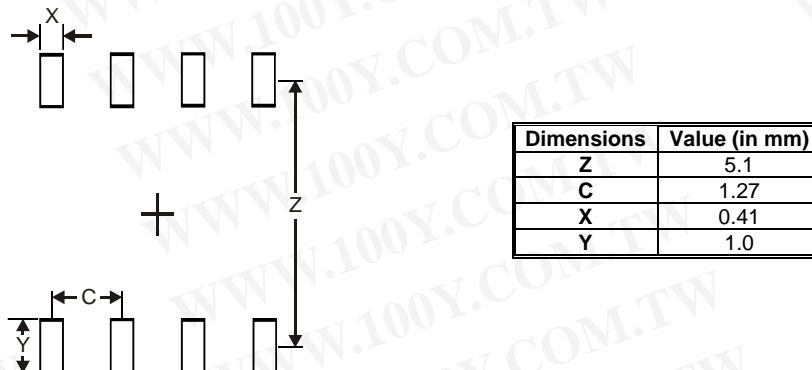


**Package Outline Dimensions**



SOP-8L		
Dim	Min	Max
A	-	1.75
A1	0.08	0.25
A2	1.30	1.50
A3	0.20 Typ.	
b	0.3	0.5
D	4.80	5.30
E	5.79	6.20
E1	3.70	4.10
e	1.27 Typ.	
h	-	0.35
L	0.38	1.27
θ	0°	8°
All Dimensions in mm		

**Suggested Pad Layout**



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