

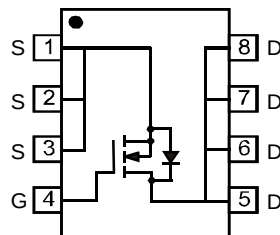
Features

- Low On-Resistance
 - 9mΩ @ $V_{GS} = 10V$
 - 13mΩ @ $V_{GS} = 4.5V$
- 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: 0.072g (approximate)

SOP-8L



TOP VIEW

TOP VIEW
Internal Schematic

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}	± 20	V
Drain Current (Note 1)	Steady State	$T_A = 25^{\circ}\text{C}$	I_D	16	A
		$T_A = 70^{\circ}\text{C}$		13	
Pulsed Drain Current (Note 3)			I_{DM}	64	A

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Total Power Dissipation (Note 1)	P_D	2.5	W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	50	$^\circ\text{C}/\text{W}$
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ\text{C}$

- Notes:
- Device mounted on 2 oz. Copper pads on FR-4 PCB, with $R_{\theta JA} = 50^\circ\text{C}$
 - No purposefully added lead.
 - Pulse width $\leq 10\mu\text{s}$, Duty Cycle $\leq 1\%$.
 - Diodes Inc.'s "Green" policy can be found on our website at http://www.diodes.com/products/lead_free/index.php.

Electrical Characteristics @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 5)						
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}	—	—	±100	nA	V _{GS} = ±20V, V _{DS} = 0V
ON CHARACTERISTICS (Note 5)						
Gate Threshold Voltage	V _{GS(th)}	1.1	—	2.0	V	V _{DS} = V _{GS} , I _D = 250μA
Static Drain-Source On-Resistance	R _{DS(on)}	—	—	9 13	mΩ	V _{GS} = 10V, I _D = 16A V _{GS} = 4.5V, I _D = 10A
Forward Transconductance	g _{fs}	—	16	—	S	V _{DS} = 10V, I _D = 12A
Diode Forward Voltage (Note 5)	V _{SD}	0.5	—	1.2	V	V _{GS} = 0V, I _S = 16A
DYNAMIC CHARACTERISTICS						
Input Capacitance	C _{iss}	—	2096	—	pF	V _{DS} = 15V, V _{GS} = 0V f = 1.0MHz
Output Capacitance	C _{oss}	—	329	—	pF	
Reverse Transfer Capacitance	C _{rss}	—	258	—	pF	
Gate Resistance	R _G	—	1.2	—	Ω	V _{GS} = 0V, f = 1MHz
SWITCHING CHARACTERISTICS						
Total Gate Charge	Q _g	—	22.4 43.7	—	nC	V _{DS} = 15V, V _{GS} = 4.5V, I _D = 16A V _{DS} = 15V, V _{GS} = 10.0V, I _D = 16A
Gate-Source Charge	Q _{gs}	—	5.5	—		V _{DS} = 15V, V _{GS} = 10V, I _D = 16A
Gate-Drain Charge	Q _{gd}	—	12.6	—		V _{DS} = 15V, V _{GS} = 10V, I _D = 16A
Turn-On Delay Time	t _{d(on)}	—	7.11	—	ns	V _{GS} = 10V, V _{DS} = 15V, R _D = 15Ω, R _G = 6Ω
Rise Time	t _r	—	10.3	—		
Turn-Off Delay Time	t _{d(off)}	—	58.3	—		
Fall Time	t _f	—	32.1	—		

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

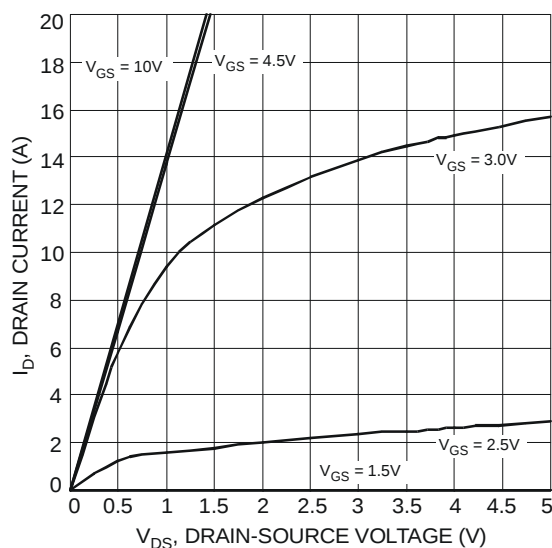


Fig. 1 Typical Output Characteristics

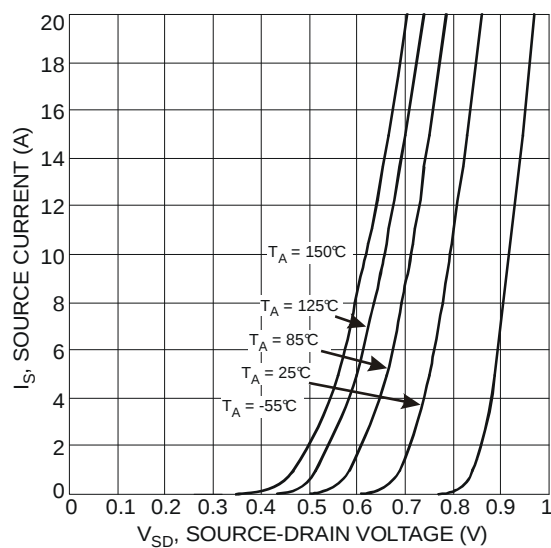


Fig. 2 Source Current vs. Source-Drain Voltage

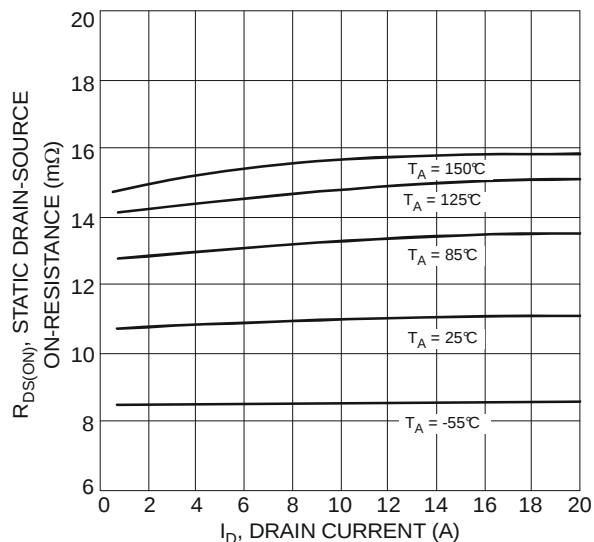


Fig. 3 Drain-Source On-Resistance vs. Drain Current

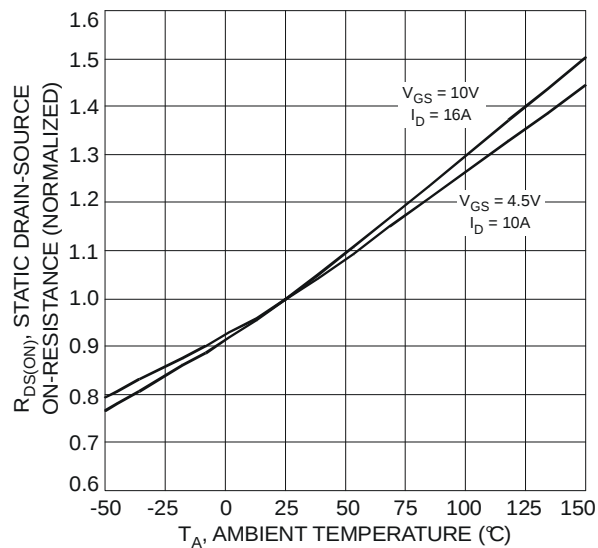


Fig. 4 On-Resistance Variation with Temperature

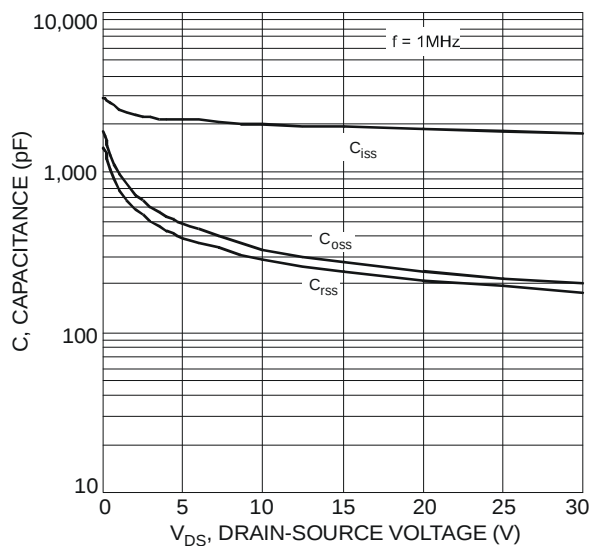


Fig. 5 Typical Capacitance

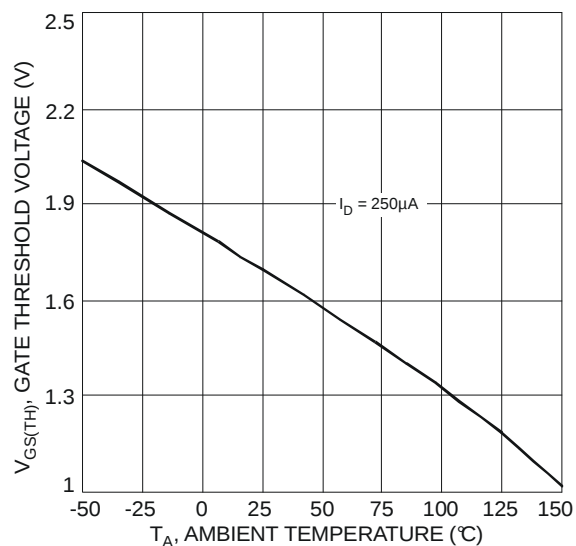


Fig. 6 Gate Threshold Variation vs. Ambient Temperature

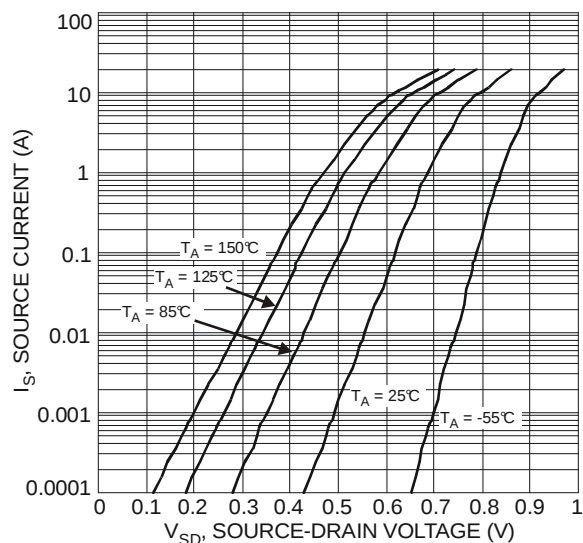


Fig. 7 Diode Forward Voltage vs. Current

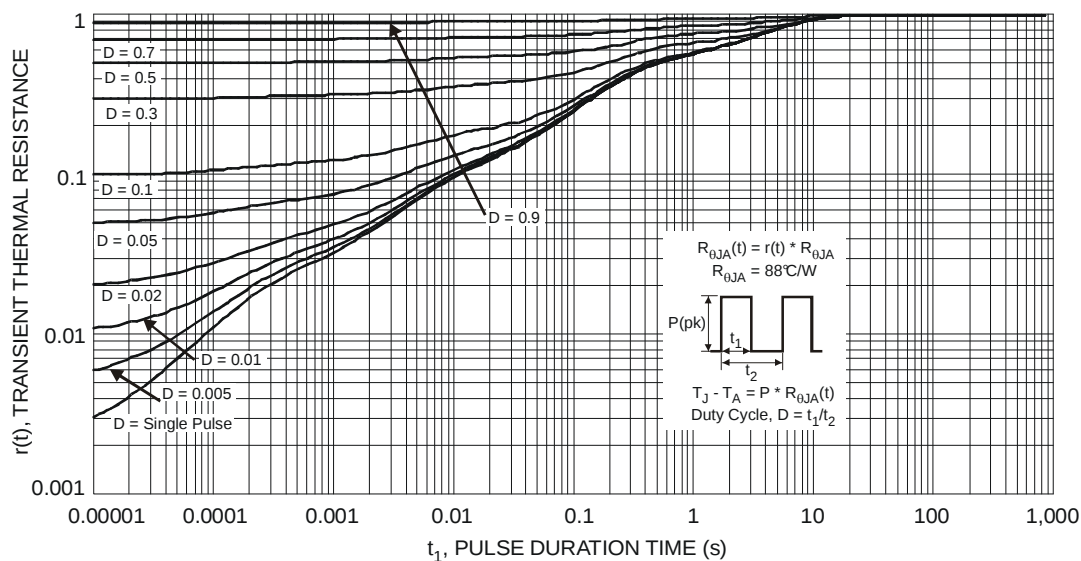


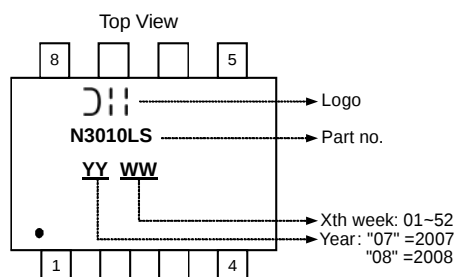
Fig. 8 Transient Thermal Response

Ordering Information (Note 6)

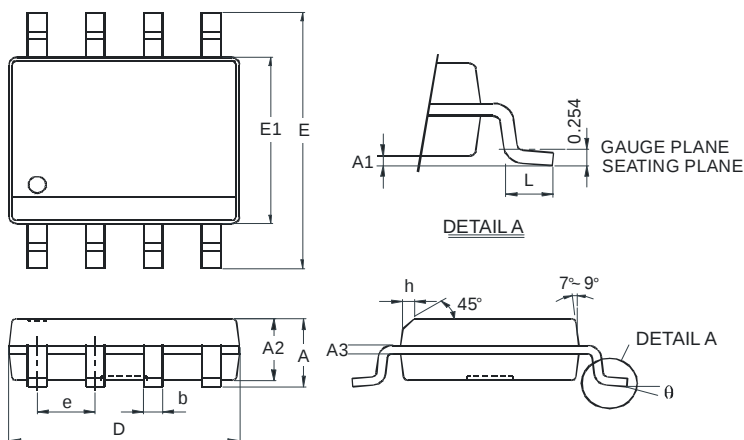
Part Number	Case	Packaging
DMN3010LSS-13	SOP-8L	2500/Tape & Reel

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

Marking Information

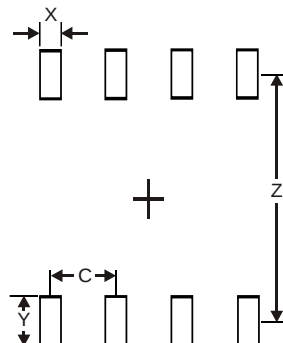


Package Outline Dimensions



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



Dimensions	Value (in mm)
Z	5.1
C	1.27
X	0.41
Y	1.0

IMPORTANT NOTICE

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