



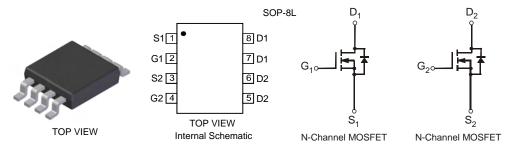
#### **DUAL N-CHANNEL ENHANCEMENT MODE FIELD EFFECT TRANSISTOR**

#### **Features**

- Dual N-Channel MOSFET
- Low On-Resistance
  - $24m\Omega$  @  $V_{GS} = 4.5V$
  - $29m\Omega$  @  $V_{GS} = 2.5V$
  - 37mΩ @ V<sub>GS</sub> = 1.8V
- 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 4Ordering Information: See Page 4
- Weight: 0.072g (approximate)



## **Maximum Ratings** @T<sub>A</sub> = 25°C unless otherwise specified

Chara	cteristic		Symbol	Value	Units
Drain-Source Voltage			V <sub>DSS</sub>	20	V
Gate-Source Voltage			V <sub>GSS</sub>	±8	V
Drain Current (Note 1)	Steady State	T <sub>A</sub> = 25°C T <sub>A</sub> = 70°C	I <sub>D</sub>	8 6.7	А
Pulsed Drain Current (Note 3)			I <sub>DM</sub>	30	Α

### Thermal Characteristics

Characteristic	Symbol	Value	Unit
Total Power Dissipation (Note 1)	P <sub>D</sub>	1.3	W
Thermal Resistance, Junction to Ambient	$R_{ heta JA}$	96	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

Notes:

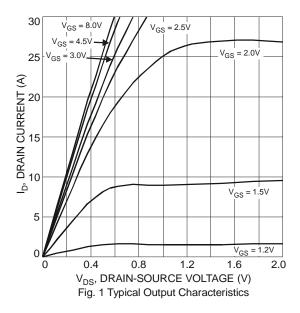
- 1. Device mounted on FR-4 PCB with minimum recommended pad layout.
- 2. No purposefully added lead.
- 3. Repetitive rating, pulse width limited by function temperature.
- 4. Diodes Inc.'s "Green" policy can be found on our website at http://www.diodes.com/products/lead\_free/index.php.

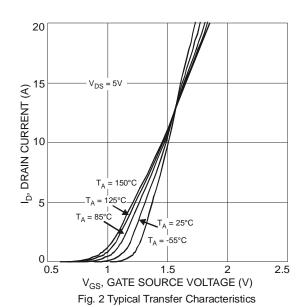


# Electrical Characteristics @T<sub>A</sub> = 25°C unless otherwise specified

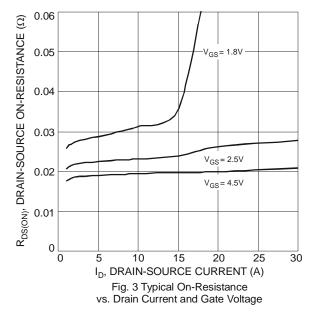
Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 5)						
Drain-Source Breakdown Voltage	$BV_{DSS}$	20	_	_	V	$V_{GS} = 0V, I_D = 250\mu A$
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	_	_	1	μΑ	$V_{DS} = 20V$ , $V_{GS} = 0V$
Gate-Source Leakage	I <sub>GSS</sub>	_	_	±100	nA	$V_{GS} = \pm 8V$ , $V_{DS} = 0V$
ON CHARACTERISTICS (Note 5)						
Gate Threshold Voltage	$V_{GS(th)}$	0.5	_	0.9	V	$V_{DS} = V_{GS}, I_D = 250 \mu A$
			19	24		$V_{GS} = 4.5V, I_D = 8.2A$
Static Drain-Source On-Resistance	R <sub>DS</sub> (ON)	_	23	29	mΩ	$V_{GS} = 2.5V, I_D = 3.3A$
	, ,		29	37		$V_{GS} = 1.8V, I_D = 2.0A$
Forward Transfer Admittance	Y <sub>fs</sub>	_	7		S	$V_{DS} = 10V, I_D = 4A$
Diode Forward Voltage (Note 5)	$V_{SD}$	0.5	_	0.9	V	$V_{GS} = 0V$ , $I_S = 1A$
DYNAMIC CHARACTERISTICS						
Input Capacitance	Ciss	_	867	_	pF	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
Output Capacitance	Coss	_	85	_	pF	$V_{DS} = 15V, V_{GS} = 0V$ -f = 1.0MHz
Reverse Transfer Capacitance	C <sub>rss</sub>	_	81	_	pF	1 = 1.0WH 12
Gate Resistance	$R_{G}$	_	1.29	_	Ω	$V_{GS} = 0V, V_{DS} = 0V, f = 1.0MHz$
SWITCHING CHARACTERISTICS						
Total Gate Charge	$Q_g$	_	8.8	_	nC	
Gate-Source Charge	Qgs	_	1.2	_	nC	$V_{GS} = 4.5V, V_{DS} = 10V, I_D = 8.2A$
Gate-Drain Charge	$Q_{gd}$	_	3.0	_	nC	
Turn-On Delay Time	t <sub>d(on)</sub>	_	13.2	_	ns	
Turn-On Rise Time	t <sub>r</sub>	_	12.6	_	ns	$V_{DD} = 10V, V_{GS} = 4.5V,$
Turn-Off Delay Time	t <sub>d(off)</sub>		64.8		ns	$R_L = 10\Omega$ , $R_G = 6\Omega$
Turn-Off Fall Time	t <sub>f</sub>		21.7	_	ns	

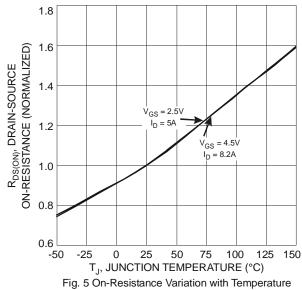
Notes: 5. Short duration pulse test used to minimize self-heating effect.

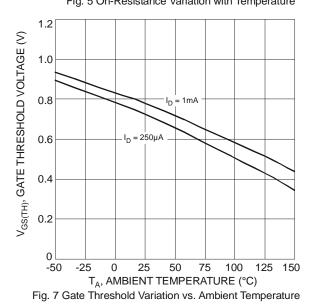












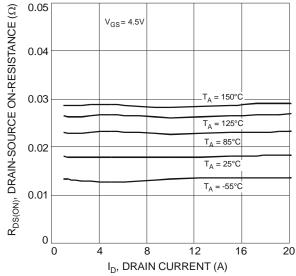


Fig. 4 Typical Drain-Source On-Resistance vs. Drain Current and Temperature

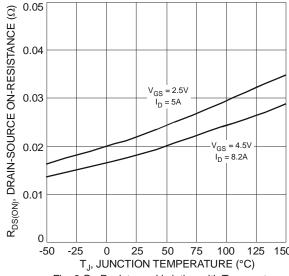
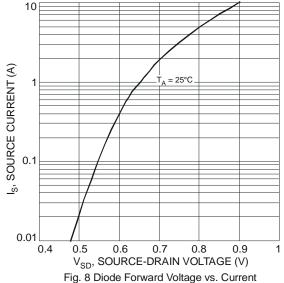
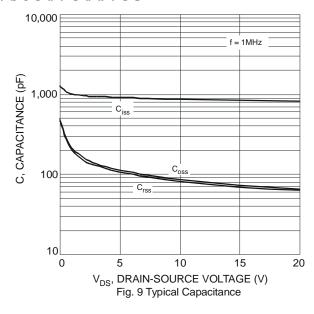


Fig. 6 On-Resistance Variation with Temperature







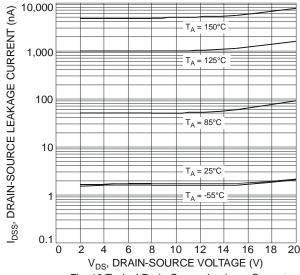


Fig. 10 Typical Drain-Source Leakage Current vs. Drain-Source Voltage

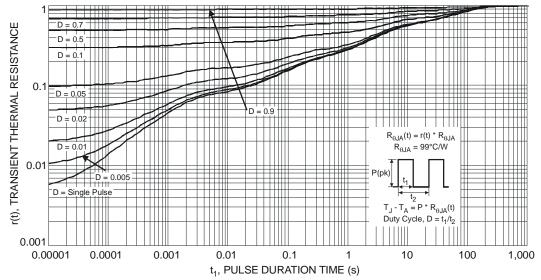


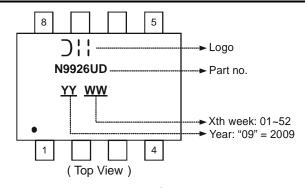
Fig. 11 Transient Thermal Response

## Ordering Information (Note 6)

Part Number	Case	Packaging
DMG9926USD-13	SOP-8L	2500/Tape & Reel

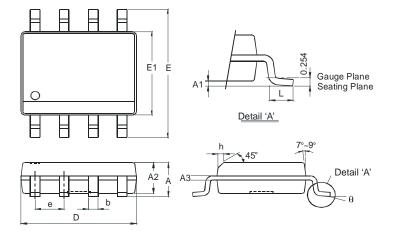
Notes: 6. For packaging details, go to our website at http://www.diodes.com/datasheets/ap02007.pdf.

## **Marking Information**



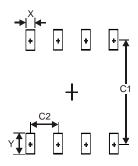


## **Package Outline Dimensions**



SOP-8L			
Dim	Min	Max	
Α	-	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	
٦	0.62	0.82	
θ	0°	8°	
All Dimensions in mm			

# Suggested Pad Layout



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



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