

Features

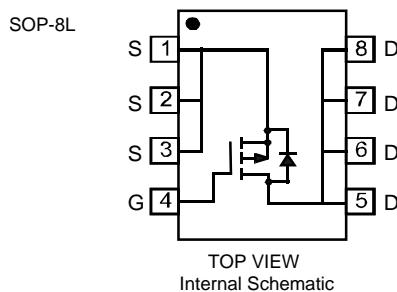
- Low On-Resistance
 - 7.5mΩ @ $V_{GS} = -10V$
 - 10.2mΩ @ $V_{GS} = -4.5V$
- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- Lead Free By Design/RoHS Compliant (Note 2)
- "Green" Device (Note 4)
- Qualified to AEC-Q101 Standards for High Reliability



TOP VIEW

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 2
- Ordering Information: See Page 2
- Weight: 0.072g (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}	± 20	V
Drain Current (Note 1)	I_D	-10.5 -8.3	A
Pulsed Drain Current (Note 3)	I_{DM}	-40	A

Thermal Characteristics

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

Notes:

1. Device mounted on 1" x 1" 2 oz. Copper pads on 2" x 2" FR-4 PCB.
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.

Electrical Characteristics @ $T_A = 25^\circ\text{C}$ unless otherwise specified

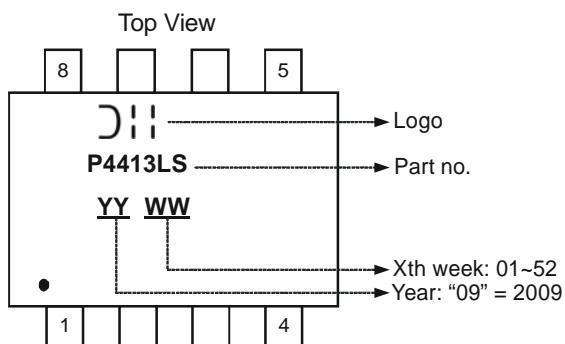
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 5)						
Drain-Source Breakdown Voltage	BV_{DSS}	-30	—	—	V	$\text{V}_{\text{GS}} = 0\text{V}$, $\text{I}_D = -250\mu\text{A}$
Zero Gate Voltage Drain Current	I_{DSS}	—	—	-1	μA	$\text{V}_{\text{DS}} = -30\text{V}$, $\text{V}_{\text{GS}} = 0\text{V}$
Gate-Source Leakage	I_{GSS}	—	—	± 1	μA	$\text{V}_{\text{GS}} = \pm 20\text{V}$, $\text{V}_{\text{DS}} = 0\text{V}$
ON CHARACTERISTICS (Note 5)						
Gate Threshold Voltage	$\text{V}_{\text{GS}(\text{th})}$	-1.1	1.6	-2.1	V	$\text{V}_{\text{DS}} = \text{V}_{\text{GS}}$, $\text{I}_D = -250\mu\text{A}$
Static Drain-Source On-Resistance	$\text{R}_{\text{DS}(\text{ON})}$	—	6.3 7.9	7.5 10.2	$\text{m}\Omega$	$\text{V}_{\text{GS}} = -10\text{V}$, $\text{I}_D = -13\text{A}$ $\text{V}_{\text{GS}} = -4.5\text{V}$, $\text{I}_D = -10\text{A}$
Forward Transconductance	g_{fs}	—	26	—	S	$\text{V}_{\text{DS}} = -15\text{V}$, $\text{I}_D = -13\text{A}$
Diode Forward Voltage (Note 5)	V_{SD}	—	-0.7	-1.0	V	$\text{V}_{\text{GS}} = 0\text{V}$, $\text{I}_S = -2.7\text{A}$
DYNAMIC CHARACTERISTICS						
Input Capacitance	C_{iss}	—	4965	—	pF	$\text{V}_{\text{DS}} = -15\text{V}$, $\text{V}_{\text{GS}} = 0\text{V}$ $f = 1.0\text{MHz}$
Output Capacitance	C_{oss}	—	1487	—	pF	
Reverse Transfer Capacitance	C_{rss}	—	711	—	pF	$\text{V}_{\text{DS}} = 0\text{V}$, $\text{V}_{\text{GS}} = 0\text{V}$ $f = 1.0\text{MHz}$
Gate Resistance	R_{G}	—	7.3	—	Ω	
SWITCHING CHARACTERISTICS						
Total Gate Charge	Q_{G}	—	46	—	nC	$\text{V}_{\text{DS}} = -15\text{V}$, $\text{V}_{\text{GS}} = -5\text{V}$ $\text{I}_D = -13\text{A}$
Gate-Source Charge	Q_{GS}	—	17	—		
Gate-Drain Charge	Q_{GD}	—	16	—	ns	$\text{V}_{\text{DS}} = -15\text{V}$, $\text{V}_{\text{GS}} = -10\text{V}$, $\text{I}_D = -1\text{A}$, $\text{R}_{\text{G}} = 6.0\Omega$
Turn-On Delay Time	$\text{t}_{\text{d}(\text{on})}$	—	15	—		
Rise Time	t_{r}	—	9	—		
Turn-Off Delay Time	$\text{t}_{\text{d}(\text{off})}$	—	160	—		
Fall Time	t_{f}	—	66	—		

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

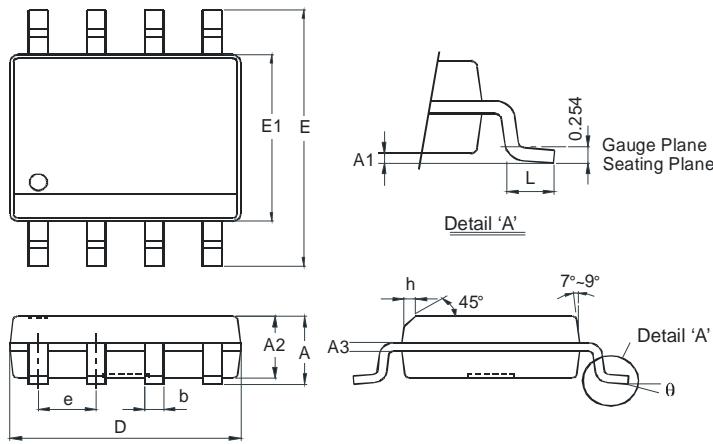
Ordering Information (Note 6)

Part Number	Case	Packaging
DMG4413LSS-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


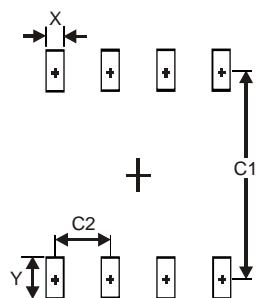
Package Outline Dimensions



SOP-8L		
Dim	Min	Max
A	-	1.75
A1	0.10	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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