

## Features

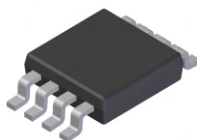
- Low On-Resistance
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- ESD Protected Up To 2kV
- **Lead Free By Design/RoHS Compliant (Note 1)**
- **"Green" Device (Note 2)**
- **Qualified to AEC-Q101 Standards for High Reliability**

## Mechanical Data

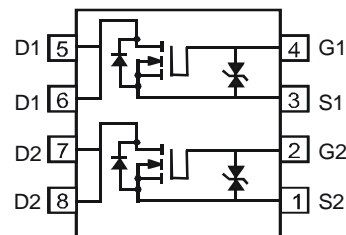
- Case: SO-8
- Case Material: Molded Plastic, "Green" Molding Compound.  
UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections: See Diagram Below
- Marking Information: See Page 5
- Ordering Information: See Page 5
- Weight: 0.072 grams (approximate)



ESD PROTECTED TO 2kV



TOP VIEW


 TOP VIEW  
 Internal Schematic

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

Characteristic			Symbol	Value	Unit
Drain-Source Voltage			V <sub>DSS</sub>	20	V
Gate-Source Voltage			V <sub>GSS</sub>	±12	V
Continuous Drain Current (Note 3)	Steady State	T <sub>A</sub> = 25°C	I <sub>D</sub>	9.5	A
		T <sub>A</sub> = 85°C		7.1	
Pulsed Drain Current (Note 4)			I <sub>DM</sub>	30	A

## Thermal Characteristics

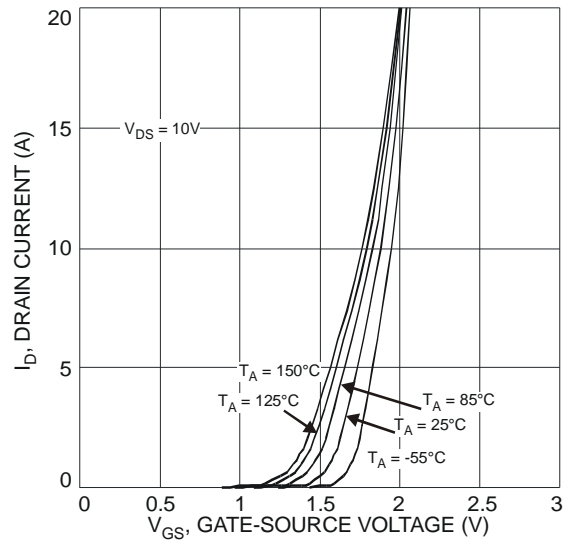
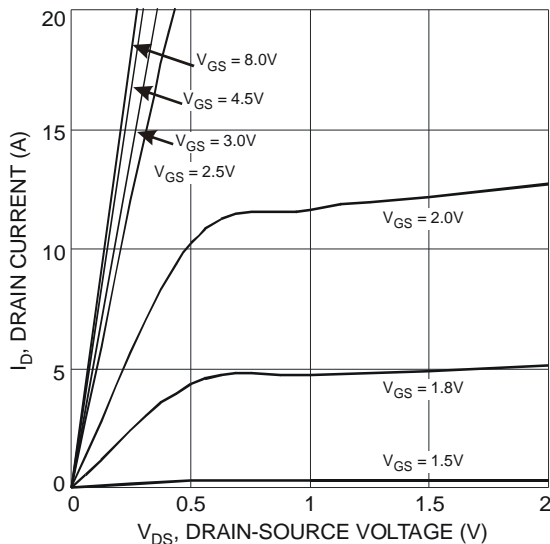
Characteristic			Symbol	Value	Unit
Power Dissipation (Note 3)			P <sub>D</sub>	1.28	W
Thermal Resistance, Junction to Ambient @T <sub>A</sub> = 25°C (Note 3)			R <sub>θJA</sub>	99.3	°C/W
Operating and Storage Temperature Range			T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

- Notes:
1. No purposefully added lead.
  2. 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).
  3. Device mounted on FR-4 PCB, with minimum recommended pad layout.
  4. Repetitive rating, pulse width limited by junction temperature.

**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>	20	-	-	V	V <sub>GS</sub> = 0V, I <sub>D</sub> = 250μA
Zero Gate Voltage Drain Current T <sub>J</sub> = 25°C	I <sub>DSS</sub>	-	-	1.0	μA	V <sub>DS</sub> = 20V, V <sub>GS</sub> = 0V
Gate-Source Leakage	I <sub>GSS</sub>	-	-	±10	μA	V <sub>GS</sub> = ±12V, V <sub>DS</sub> = 0V
<b>ON CHARACTERISTICS (Note 5)</b>						
Gate Threshold Voltage	V <sub>GS(th)</sub>	0.5	1.0	1.5	V	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA
Static Drain-Source On-Resistance	R <sub>DS(on)</sub>	-	11	16	mΩ	V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 9.4A
			17	23		V <sub>GS</sub> = 2.5V, I <sub>D</sub> = 8.3A
Forward Transfer Admittance	Y <sub>fs</sub>	-	17	-	S	V <sub>DS</sub> = 5V, I <sub>D</sub> = 9.4A
Diode Forward Voltage	V <sub>SD</sub>	-	0.7	1.2	V	V <sub>GS</sub> = 0V, I <sub>S</sub> = 1.3A
<b>DYNAMIC CHARACTERISTICS (Note 6)</b>						
Input Capacitance	C <sub>iss</sub>	-	1149	-	pF	V <sub>DS</sub> = 10V, V <sub>GS</sub> = 0V, f = 1.0MHz
Output Capacitance	C <sub>oss</sub>	-	157	-	pF	
Reverse Transfer Capacitance	C <sub>rss</sub>	-	142	-	pF	
Gate Resistance	R <sub>g</sub>	-	1.51	-	Ω	V <sub>DS</sub> = 0V, V <sub>GS</sub> = 0V, f = 1MHz
Total Gate Charge (V <sub>GS</sub> = 4.5V)	Q <sub>g</sub>	-	11.6	-	nC	V <sub>GS</sub> = 4.5V, V <sub>DS</sub> = 10V, I <sub>D</sub> = 9.4A
Total Gate Charge (V <sub>GS</sub> = 10V)	Q <sub>g</sub>	-	26	-	nC	
Gate-Source Charge	Q <sub>gs</sub>	-	2.7	-	nC	
Gate-Drain Charge	Q <sub>gd</sub>	-	3.4	-	nC	
Turn-On Delay Time	t <sub>D(on)</sub>	-	11.67	-	ns	V <sub>DD</sub> = 10V, V <sub>GS</sub> = 4.5V, R <sub>GEN</sub> = 6Ω, I <sub>D</sub> = 1A
Turn-On Rise Time	t <sub>r</sub>	-	12.49	-	ns	
Turn-Off Delay Time	t <sub>D(off)</sub>	-	35.89	-	ns	
Turn-Off Fall Time	t <sub>f</sub>	-	12.33	-	ns	

Notes: 5. Short duration pulse test used to minimize self-heating effect.  
6. Guaranteed by design. Not subject to production testing.



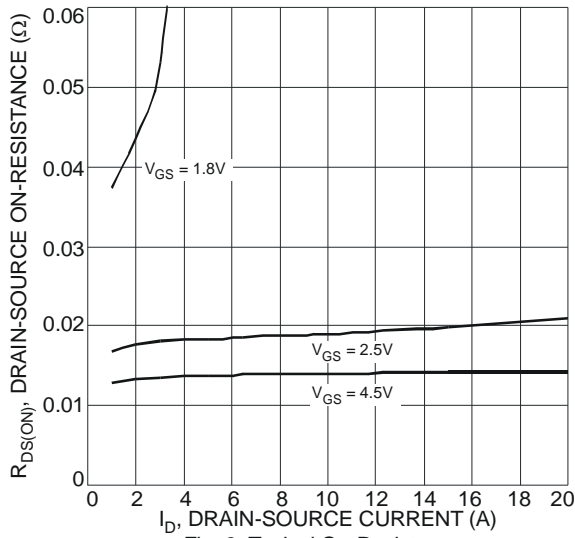


Fig. 3 Typical On-Resistance vs. Drain Current and Gate Voltage

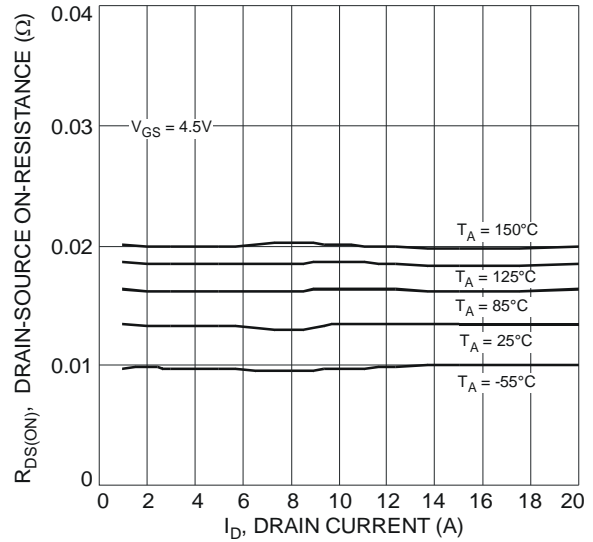


Fig. 4 Typical On-Resistance vs. Drain Current and Temperature

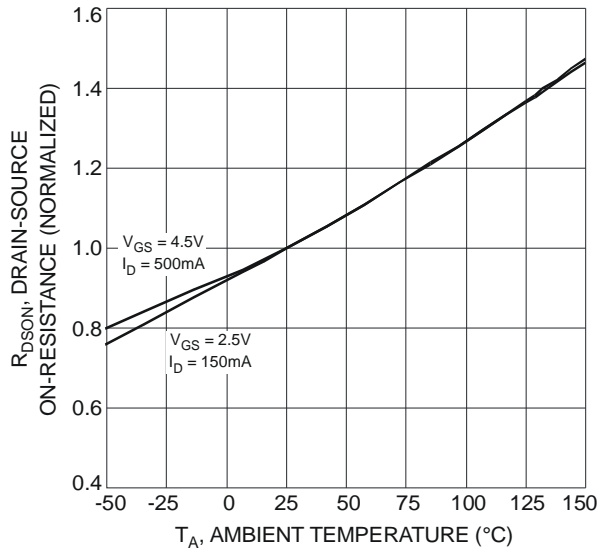


Fig. 5 On-Resistance Variation with Temperature

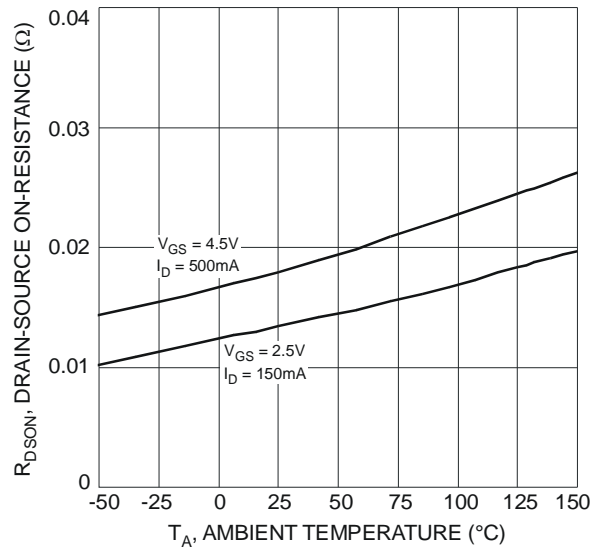


Fig. 6 On-Resistance Variation with Temperature

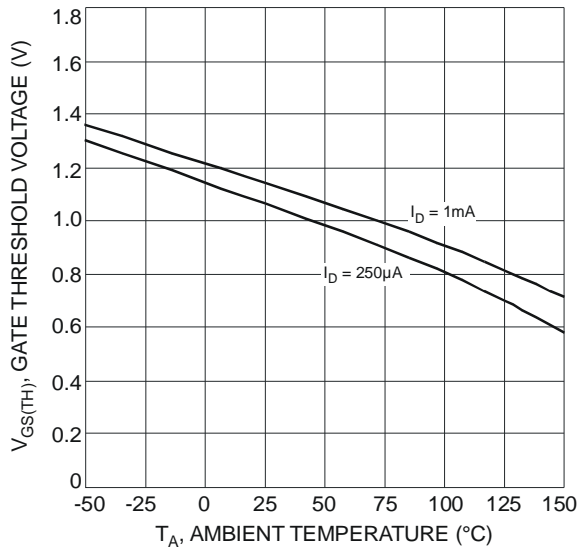


Fig. 7 Gate Threshold Variation vs. Ambient Temperature

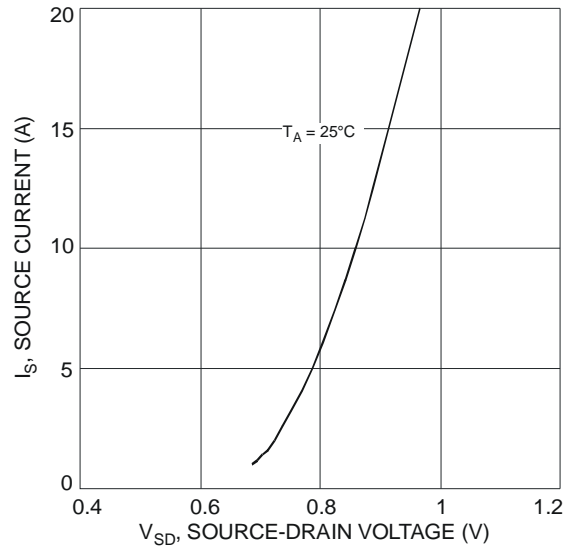


Fig. 8 Diode Forward Voltage vs. Current

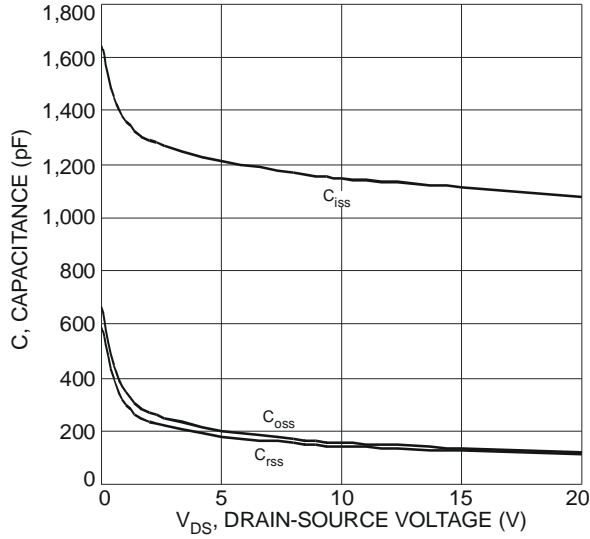


Fig. 9 Typical Total Capacitance

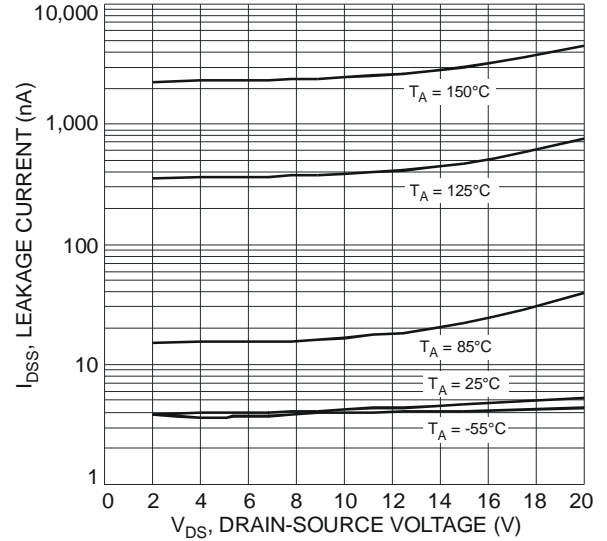


Fig. 10 Typical Leakage Current vs. Drain-Source Voltage

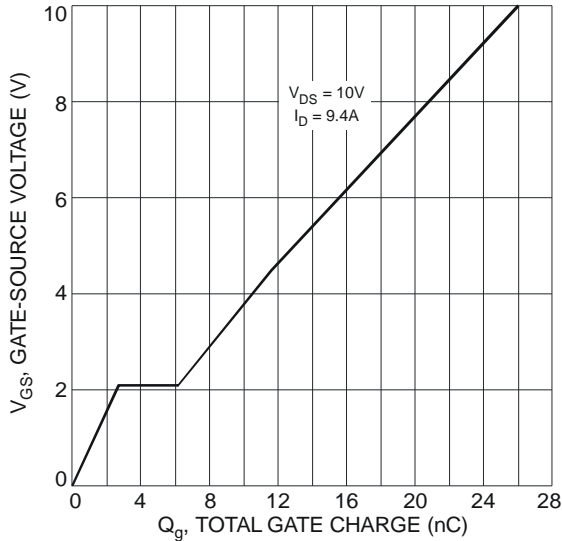


Fig. 11 Gate-Source Voltage vs. Total Gate Charge

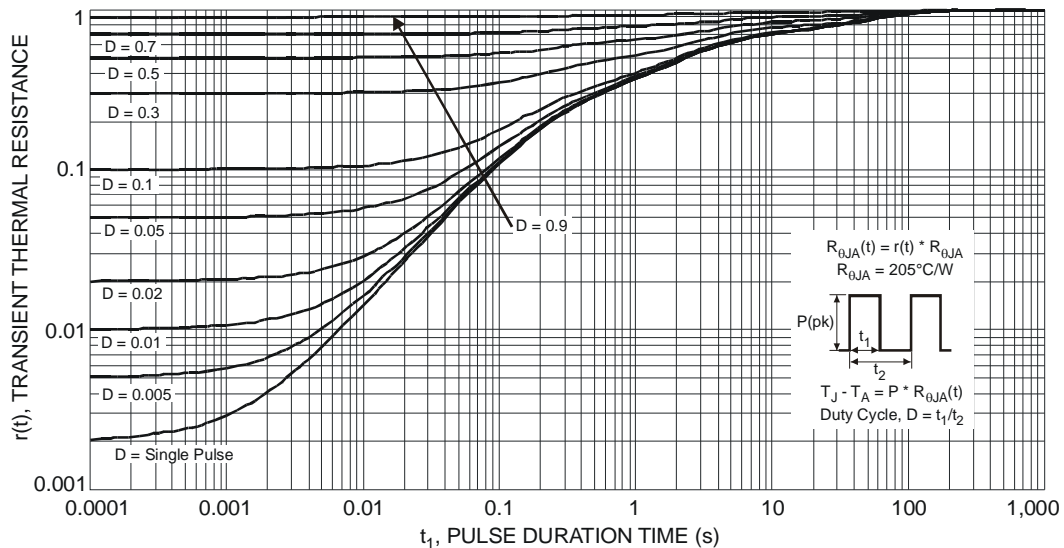


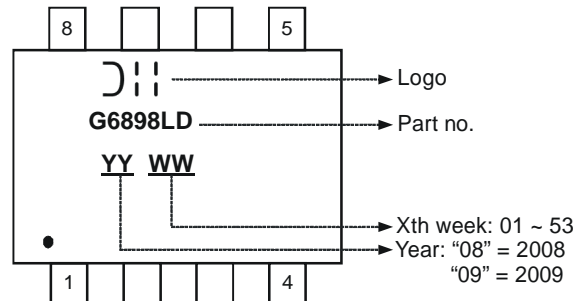
Fig. 12 Transient Thermal Response

## Ordering Information (Note 7)

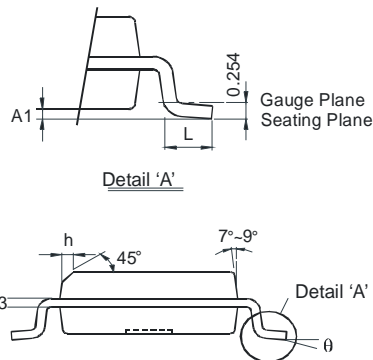
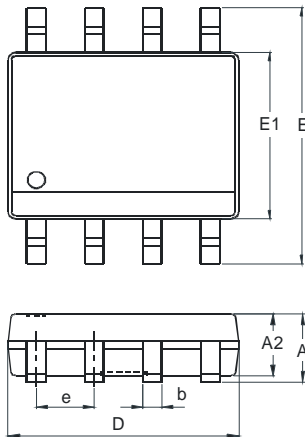
Part Number	Case	Packaging
DMG6898LSD-13	SO-8	2500 / Tape & Reel

Notes: 7. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

## Marking Information

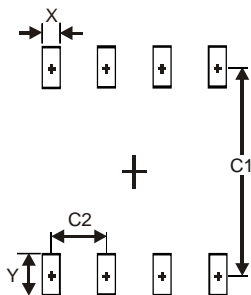


## Package Outline Dimensions



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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