

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)}$ max	I_D max $T_A = +25^\circ C$
30V	16m Ω @ $V_{GS} = 10V$	9.8A
	23m Ω @ $V_{GS} = 4.5V$	8.7A

Description

This MOSFET is designed to minimize the on-state resistance ($R_{DS(on)}$) and yet maintain superior switching performance, making it ideal for high efficiency power management applications.

Applications

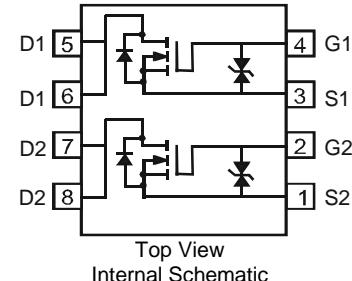
- Backlighting
- Power Management Functions
- DC-DC Converters

Features

- Low On-Resistance
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- ESD Protected Up To 2kV
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **PPAP Capable (Note 4)**

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
- Weight: 0.072 grams (Approximate)

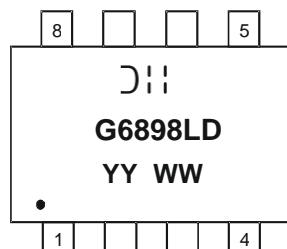


Ordering Information (Notes 4 & 5)

Part Number	Qualification	Case	Packaging
DMG6898LSD-13	Commercial	SO-8	2,500 / Tape & Reel
DMG6898LSDQ-13	Automotive	SO-8	2,500 / Tape & Reel

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
 2. See http://www.diodes.com/quality/lead_free.html for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
 3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
 4. Automotive products are AEC-Q101 qualified and are PPAP capable. Automotive, AEC-Q101 and standard products are electrically and thermally the same, except where specified. For more information, please refer to http://www.diodes.com/quality/product_compliance_definitions/.
 5. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

Marking Information



DII = Manufacturer's Marking
 G6898LD = Product Type Marking Code
 YYWW = Date Code Marking
 YY or YY = Year (ex: 14 = 2014)
 WW = Week (01 - 53)

Maximum Ratings @ $T_A = +25^\circ\text{C}$ unless otherwise specified

Characteristic			Symbol	Value	Unit
Drain-Source Voltage			V_{DSS}	20	V
Gate-Source Voltage			V_{GSS}	± 12	V
Continuous Drain Current (Note 6)	Steady State	$T_A = +25^\circ\text{C}$ $T_A = +85^\circ\text{C}$	I_D	9.5 7.1	A
Pulsed Drain Current (Note 7)			I_{DM}	30	A

Thermal Characteristics

Characteristic			Symbol	Value	Unit
Power Dissipation (Note 6)			P_D	1.28	W
Thermal Resistance, Junction to Ambient @ $T_A = +25^\circ\text{C}$ (Note 6)			$R_{\theta JA}$	99.3	°C/W
Operating and Storage Temperature Range			T_J, T_{STG}	-55 to +150	°C

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 8)						
Drain-Source Breakdown Voltage	BV_{DSS}	20	-	-	V	$V_{GS} = 0\text{V}, I_D = 250\mu\text{A}$
Zero Gate Voltage Drain Current $T_J = +25^\circ\text{C}$	I_{DSS}	-	-	1.0	μA	$V_{DS} = 20\text{V}, V_{GS} = 0\text{V}$
Gate-Source Leakage	I_{GS}	-	-	± 10	μA	$V_{GS} = \pm 12\text{V}, V_{DS} = 0\text{V}$
ON CHARACTERISTICS (Note 8)						
Gate Threshold Voltage	$V_{GS(\text{th})}$	0.5	1.0	1.5	V	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$
Static Drain-Source On-Resistance	$R_{DS(\text{ON})}$	-	11 17	16 23	$\text{m}\Omega$	$V_{GS} = 4.5\text{V}, I_D = 9.4\text{A}$ $V_{GS} = 2.5\text{V}, I_D = 8.3\text{A}$
Forward Transfer Admittance	$ Y_{fs} $	-	17	-	S	$V_{DS} = 5\text{V}, I_D = 9.4\text{A}$
Diode Forward Voltage	V_{SD}	-	0.7	1.2	V	$V_{GS} = 0\text{V}, I_S = 1.3\text{A}$
DYNAMIC CHARACTERISTICS (Note 9)						
Input Capacitance	C_{iss}	-	1149	-	pF	$V_{DS} = 10\text{V}, V_{GS} = 0\text{V}, f = 1.0\text{MHz}$
Output Capacitance	C_{oss}	-	157	-	pF	
Reverse Transfer Capacitance	C_{rss}	-	142	-	pF	
Gate Resistance	R_g	-	1.51	-	Ω	
Total Gate Charge ($V_{GS} = 4.5\text{V}$)	Q_g	-	11.6	-	nC	$V_{GS} = 4.5\text{V}, V_{DS} = 10\text{V}, I_D = 9.4\text{A}$
Total Gate Charge ($V_{GS} = 10\text{V}$)	Q_g	-	26	-	nC	
Gate-Source Charge	Q_{qs}	-	2.7	-	nC	
Gate-Drain Charge	Q_{gd}	-	3.4	-	nC	
Turn-On Delay Time	$t_{D(\text{on})}$	-	11.67	-	ns	$V_{DD} = 10\text{V}, V_{GS} = 4.5\text{V}, R_{\text{GEN}} = 6\Omega, I_D = 1\text{A}$
Turn-On Rise Time	t_r	-	12.49	-	ns	
Turn-Off Delay Time	$t_{D(\text{off})}$	-	35.89	-	ns	
Turn-Off Fall Time	t_f	-	12.33	-	ns	

- Notes:
6. Device mounted on FR-4 PCB, with minimum recommended pad layout.
 7. Repetitive rating, pulse width limited by junction temperature.
 8. Short duration pulse test used to minimize self-heating effect.
 9. Guaranteed by design. Not subject to production testing.

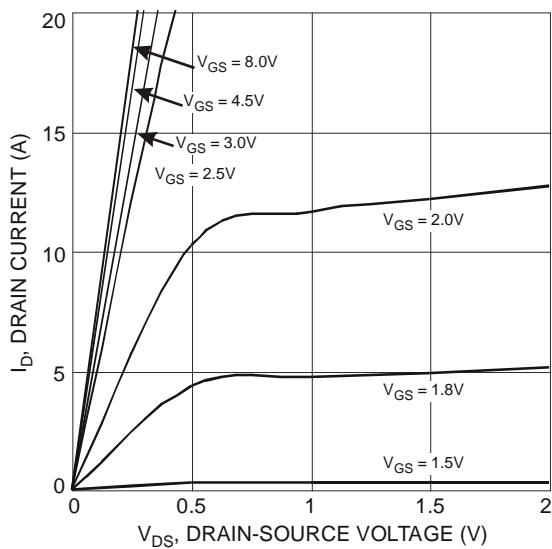


Fig. 1 Typical Output Characteristic

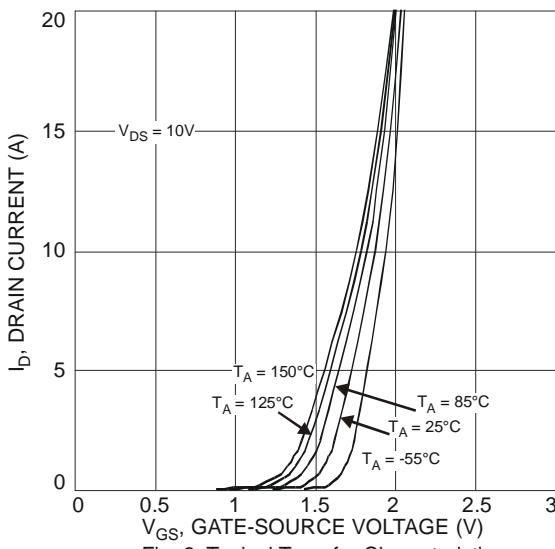


Fig. 2 Typical Transfer Characteristic

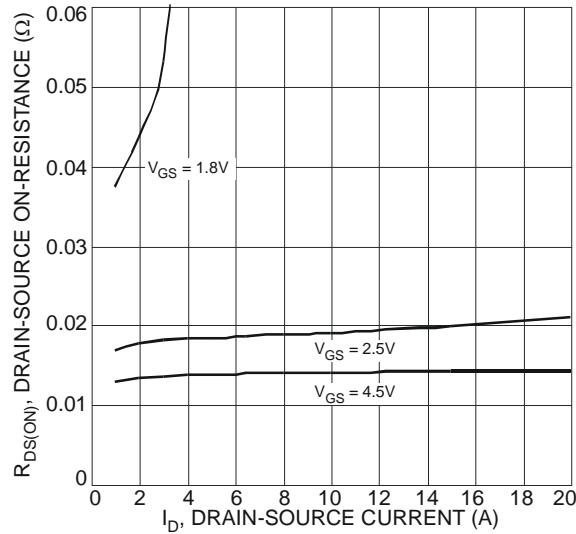


Fig. 3 Typical On-Resistance vs. Drain Current and Gate Voltage

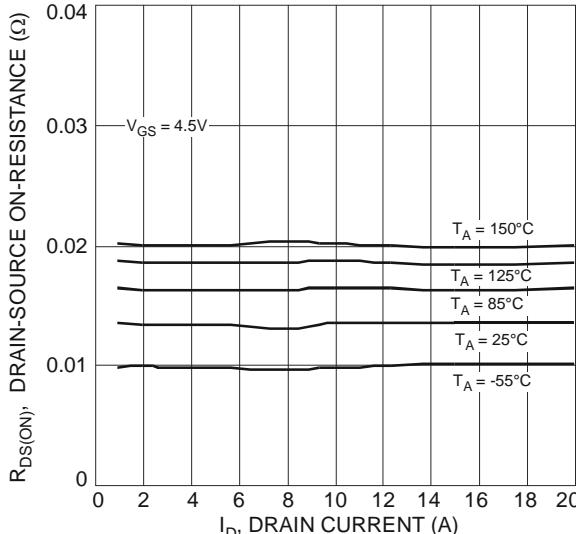


Fig. 4 Typical On-Resistance vs. Drain Current and Temperature

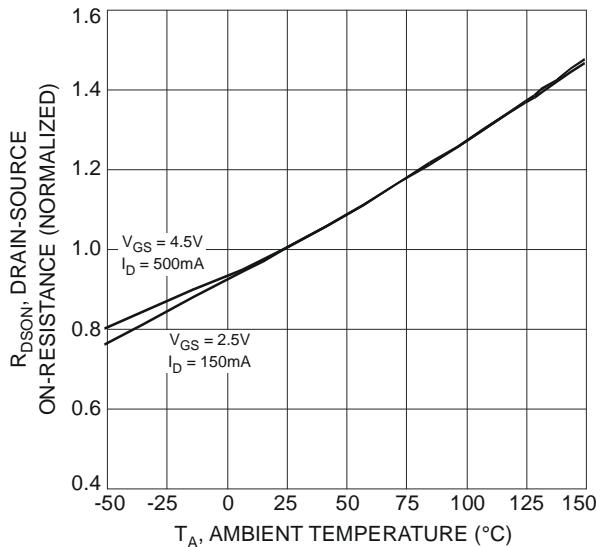


Fig. 5 On-Resistance Variation with Temperature

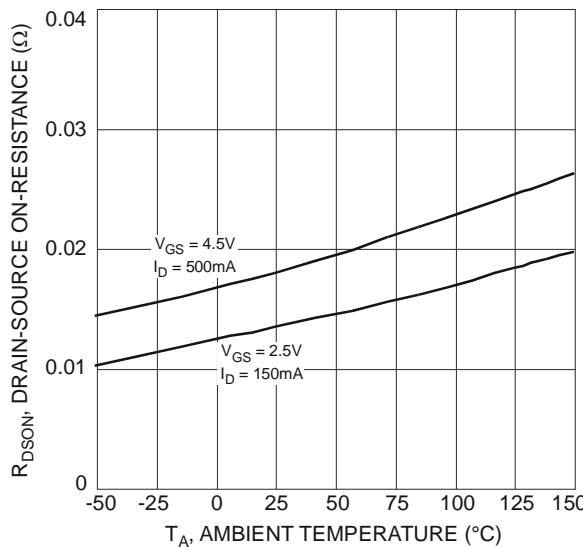


Fig. 6 On-Resistance Variation with Temperature

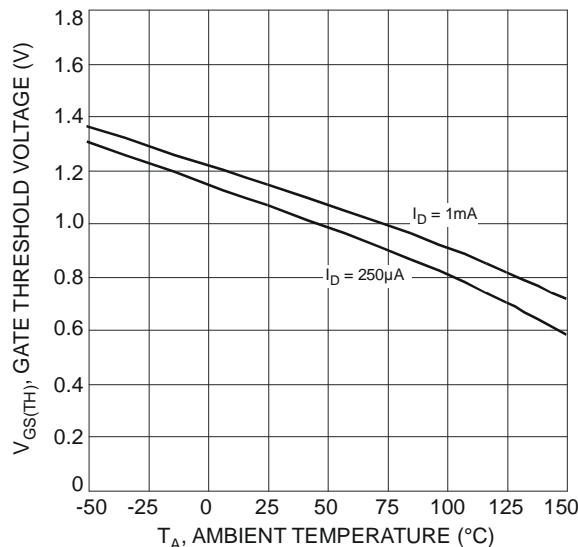


Fig. 7 Gate Threshold Variation vs. Ambient Temperature

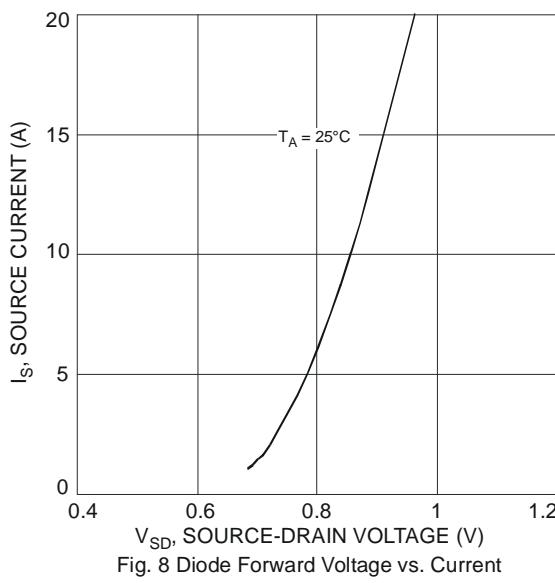


Fig. 8 Diode Forward Voltage vs. Current

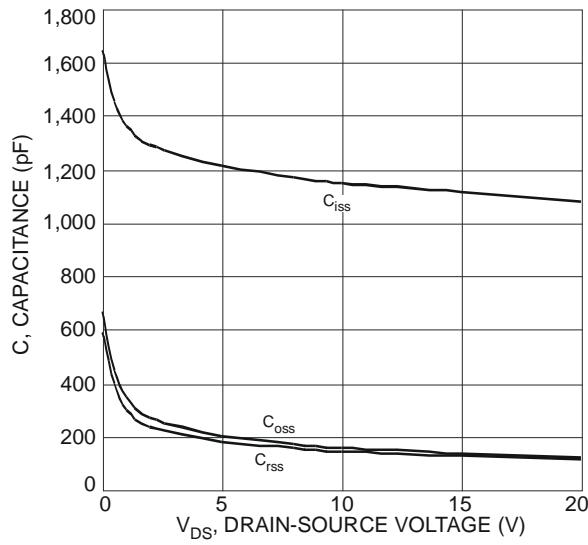


Fig. 9 Typical Total Capacitance

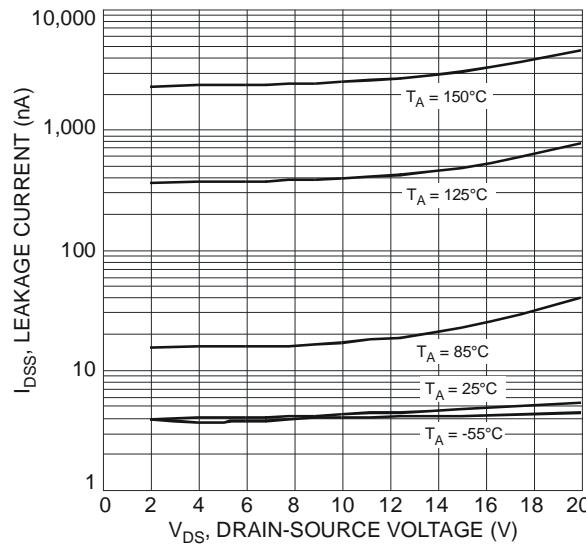


Fig. 10 Typical Leakage Current vs. Drain-Source Voltage

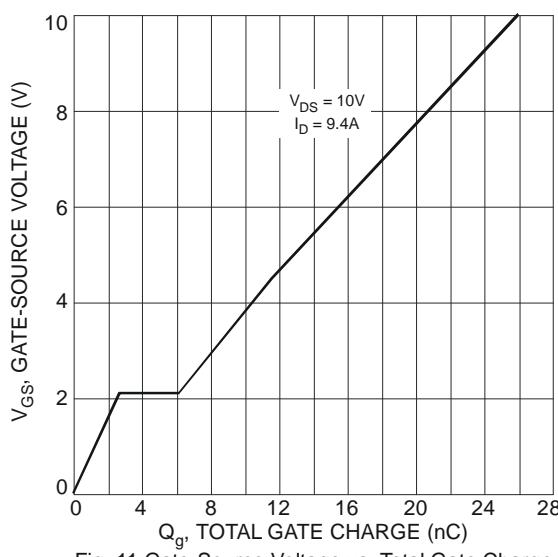


Fig. 11 Gate-Source Voltage vs. Total Gate Charge

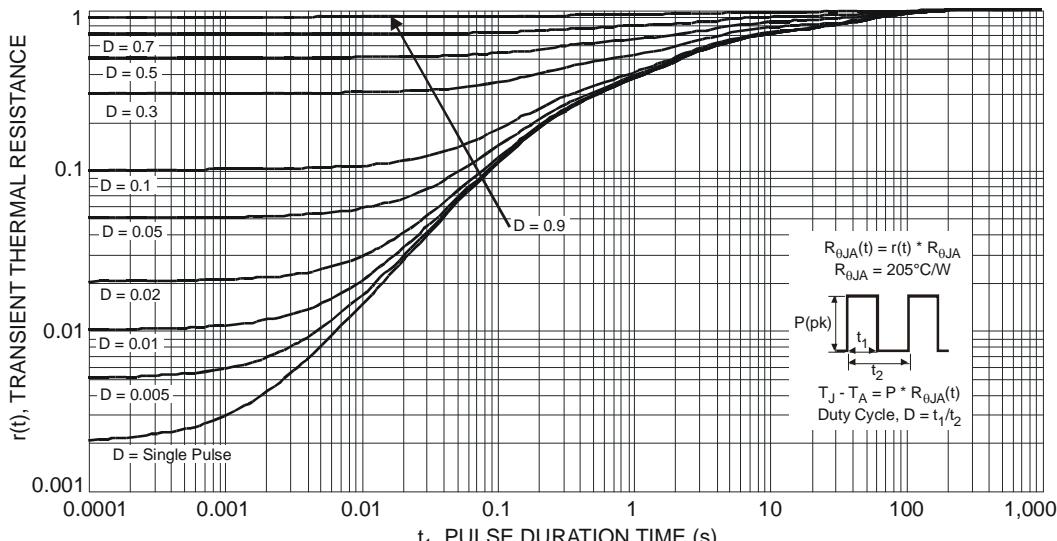
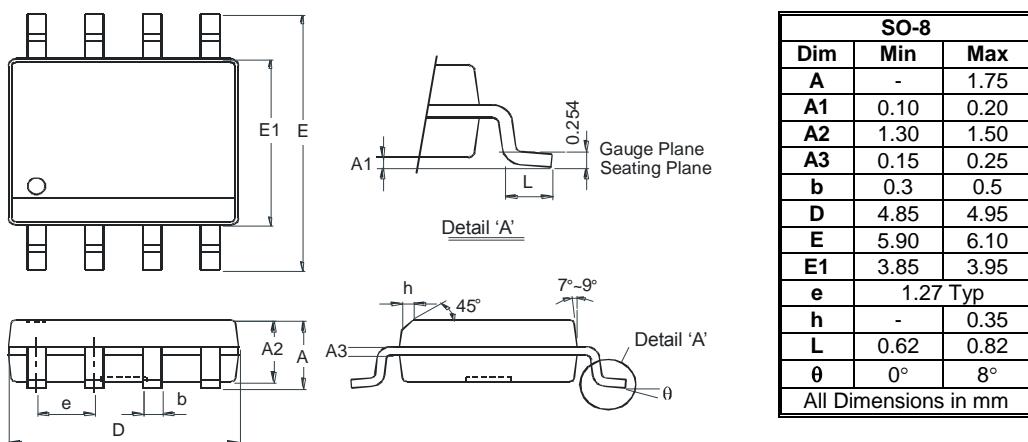


Fig. 12 Transient Thermal Response

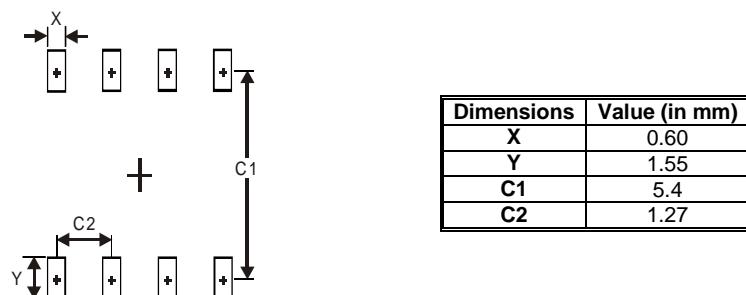
Package Outline Dimensions

Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.



Suggested Pad Layout

Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.



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