



#### **DUAL N-CHANNEL ENHANCEMENT MODE MOSFET**

### **Product Summary**

BV <sub>DSS</sub>	R <sub>DS(ON)</sub> Max	I <sub>D</sub> Max T <sub>A</sub> = +25°C		
00)/	$16m\Omega @ V_{GS} = 4.5V$	9.8A		
20V	$23m\Omega$ @ $V_{GS} = 2.5V$	8.7A		

### **Description and Applications**

This MOSFET is designed to meet the stringent requirements of automotive applications. It is qualified to AEC-Q101, supported by a PPAP, and is ideal for use in:

- 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
- 100% Unclamped Inductive Switching (UIS) Test in Production Ensures More Reliable and Robust End Application
- Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)
- Halogen and Antimony Free. "Green" Device (Note 3)
- The DMG6898LSDQ is suitable for automotive applications requiring specific change control; this part is AEC-Q101 qualified, PPAP capable, and manufactured in IATF 16949 certified facilities.

https://www.diodes.com/quality/product-definitions/

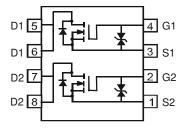
### **Mechanical Data**

- Package: SO-8
- Package Material: Molded Plastic, "Green" Molding Compound.
   UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish- Matte Tin Annealed over Copper Lead Frame.
   Solderable per MIL-STD-202, Method 208 (3)
- Terminal Connections: See Diagram Below
- Weight: 0.072 grams (Approximate)





Top View



Top View Internal Schematic

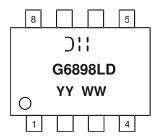
## Ordering Information (Note 4)

Part Number	Qualification	Package	Pac	Packing		
			Qty.	Carrier		
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) & 2015/863/EU (RoHS 3) compliant.
- See https://www.diodes.com/quality/lead-free/ 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.
- $4. For packaging details, go to our website at \ https://www.diodes.com/design/support/packaging/diodes-packaging/. \\$

## Marking Information



DII = Manufacturer's Marking
G6898LD = Product Type Marking Code
YYWW = Date Code Marking
YY or YY = Year (ex: 22 = 2022)
WW = Week (01 to 53)



# **Maximum Ratings** (@ $T_A = +25$ °C, unless otherwise specified.)

Char	Symbol	Value	Unit		
Drain-Source Voltage	V <sub>DSS</sub>	20	V		
Gate-Source Voltage	$V_{GSS}$	±12	V		
Continuous Drain Current (Note 5)	Steady State	$T_A = +25^{\circ}C$ $T_A = +85^{\circ}C$	I <sub>D</sub>	9.5 7.1	Α
Pulsed Drain Current (Note 6)	I <sub>DM</sub>	30	Α		

## **Thermal Characteristics**

Characteristic		Value	Unit
Power Dissipation (Note 5)		1.28	W
Thermal Resistance, Junction to Ambient @T <sub>A</sub> = +25°C (Note 5)	Reja	99.3	°C/W
Operating and Storage Temperature Range	TJ, TSTG	-55 to +150	°C

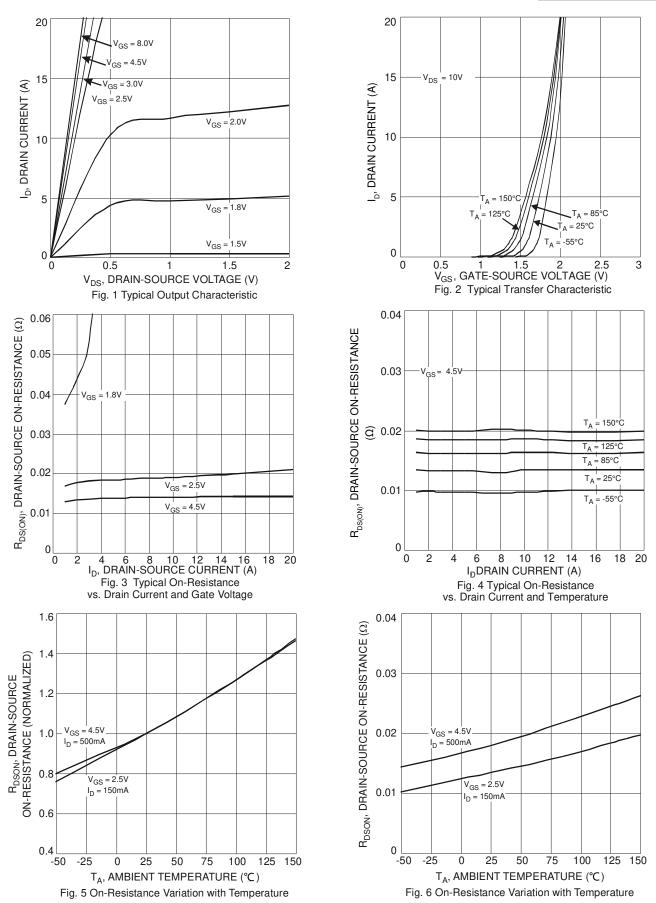
# Electrical Characteristics @TA = +25°C unless otherwise specified

Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition	
OFF CHARACTERISTICS (Note 7)		,		,		•	
Drain-Source Breakdown Voltage		20	_	_	V	$V_{GS} = 0V, I_D = 250\mu A$	
Zero Gate Voltage Drain Current T <sub>J</sub> = +25°C	IDSS	_	_	1.0	μΑ	$V_{DS} = 20V$ , $V_{GS} = 0V$	
Gate-Source Leakage	lgss	_	_	±10	μA	$V_{GS} = \pm 12V$ , $V_{DS} = 0V$	
ON CHARACTERISTICS (Note 7)							
Gate Threshold Voltage	V <sub>GS(TH)</sub>	0.5	1.0	1.5	V	$V_{DS} = V_{GS}$ , $I_D = 250\mu A$	
Static Drain-Source On-Resistance	Process		11	16	mΩ	$V_{GS} = 4.5V, I_D = 9.4A$	
Static Brain-Source On-Hesistance	RDS(ON)		17	23		$V_{GS} = 2.5V$ , $I_{D} = 8.3A$	
Forward Transfer Admittance	Y <sub>fs</sub>	_	17	_	S	$V_{DS} = 5V, I_{D} = 9.4A$	
Diode Forward Voltage	V <sub>SD</sub>	_	0.7	1.2	٧	$V_{GS} = 0V$ , $I_{S} = 1.3A$	
DYNAMIC CHARACTERISTICS (Note 8)							
Input Capacitance	C <sub>iss</sub>	_	1149	_	рF	101/1/	
Output Capacitance	Coss	_	157	_	рF	V <sub>DS</sub> = 10V, V <sub>GS</sub> = 0V, - f = 1.0MHz	
Reverse Transfer Capacitance	Crss	_	142	_	рF	1 = 1.01011 12	
Gate Resistance	Rg	_	1.51	_	Ω	$V_{DS} = 0V$ , $V_{GS} = 0V$ , $f = 1MHz$	
Total Gate Charge (V <sub>GS</sub> = 4.5V)	Qg	_	11.6	_	nC		
Total Gate Charge (V <sub>GS</sub> = 10V)	Qg	_	26	_	nC	V 10V I- 0.4A	
Gate-Source Charge	Qgs	_	2.7	_	nC	$V_{DS} = 10V, I_{D} = 9.4A$	
Gate-Drain Charge	$Q_{gd}$	_	3.4	_	nC		
Turn-On Delay Time	t <sub>D(ON)</sub>	_	11.67	_	ns		
Turn-On Rise Time	tr	_	12.49	_	ns	$V_{DD} = 10V, V_{GS} = 4.5V,$	
Turn-Off Delay Time	t <sub>D(OFF)</sub>	_	35.89	_	ns	$R_{GEN} = 6\Omega$ , $I_D = 1A$	
Turn-Off Fall Time	tf	_	12.33	_	ns		

Notes:

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







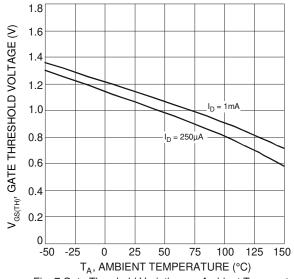
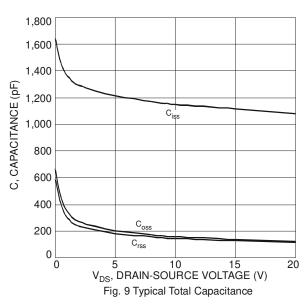


Fig. 7 Gate Threshold Variation vs. Ambient Temperature



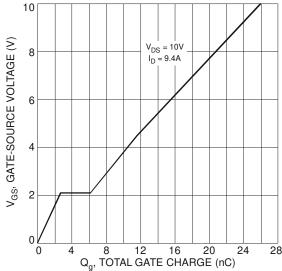
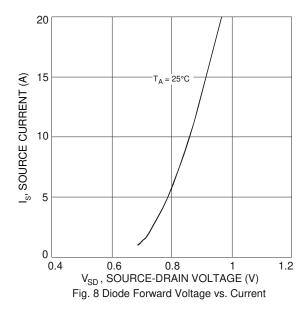
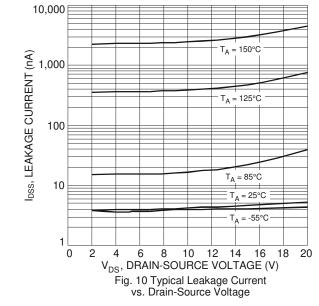
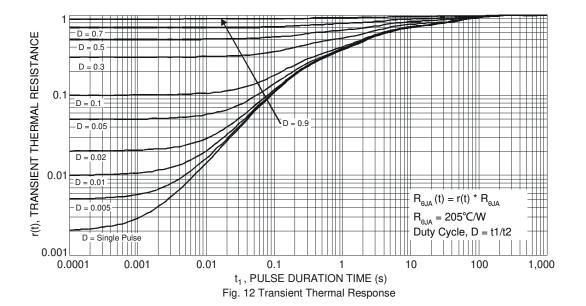


Fig. 11 Gate-Source Voltage vs. Total Gate Charge







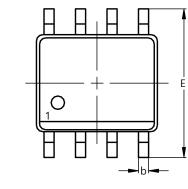


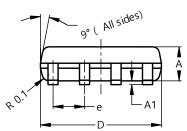


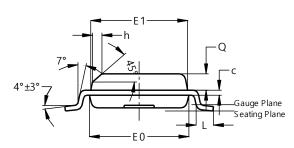
## **Package Outline Dimensions**

Please see http://www.diodes.com/package-outlines.html for the latest version.







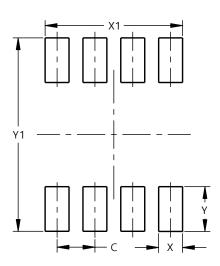


SO-8						
Dim	Min	Max	Тур			
Α	1.40	1.50	1.45			
<b>A</b> 1	0.10	0.20	0.15			
b	0.30	0.50	0.40			
C	0.15	0.25	0.20			
D	4.85	4.95	4.90			
Е	5.90	6.10	6.00			
E1	3.80	3.90	3.85			
E0	3.85	3.95	3.90			
е	-		1.27			
h			0.35			
Т	0.62	0.82	0.72			
Ø	0.60	0.70	0.65			
All Dimensions in mm						

## **Suggested Pad Layout**

Please see http://www.diodes.com/package-outlines.html for the latest version.





Dimensions	Value (in mm)			
С	1.27			
Х	0.802			
X1	4.612			
Υ	1.505			
Y1	6.50			



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