

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)}$ max	I_D max $T_A = +25^\circ\text{C}$
30V	16m Ω @ $V_{GS} = 10\text{V}$	9.8A
	22m Ω @ $V_{GS} = 4.5\text{V}$	8.4A

Description

This MOSFET has been 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

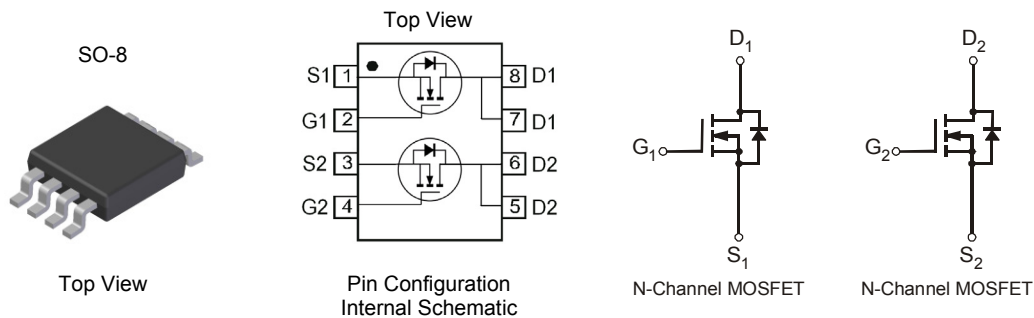
- Backlighting
- Power Management Functions
- DC-DC Converters

Features and Benefits

- 100% avalanche rated part
- Low $R_{DS(on)}$ - minimizes conduction losses
- Low Q_g - minimizes switching losses
- **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**

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 Indicator: See diagram
- Terminals: Finish — Matte Tin annealed over Copper leadframe.
Solderable per MIL-STD-202, Method 208 
- Weight: 0.076 grams (approximate)

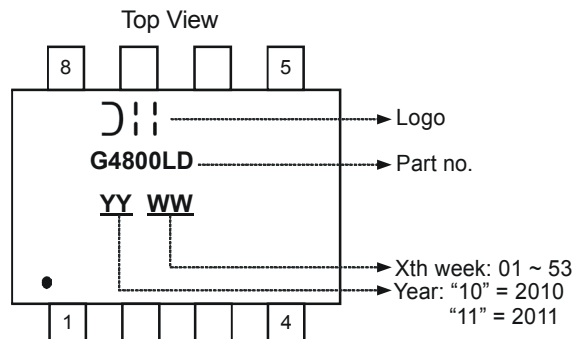


Ordering Information (Note 4)

Part Number	Compliance	Case	Packaging
DMG4800LSD-13	Standard	SO-8	2500 / Tape & Reel
DMG4800LSDQ-13	Automotive	SO-8	2500 / 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. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

Marking Information



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

Characteristic			Symbol	Value	Units
Drain-Source Voltage			V _{DSS}	30	V
Gate-Source Voltage			V _{GSS}	±25	V
Continuous Drain Current (Note 6) V _{GS} = 10V	Steady State	T _A = +25°C T _A = +70°C	I _D	7.5 6.0	A
	t < 10s	T _A = +25°C T _A = +70°C	I _D	9.8 7.7	A
Continuous Drain Current (Note 6) V _{GS} = 4.5V	Steady State	T _A = +25°C T _A = +70°C	I _D	6.4 5.0	A
	t < 10s	T _A = +25°C T _A = +70°C	I _D	8.4 6.6	A
Maximum Continuous Body Diode Forward Current (Note 6)			I _S	2	A
Pulsed Drain Current (10µs pulse, duty cycle = 1%)			I _{DM}	42	A
Avalanche Current (Notes 7 & 8) L = 0.1mH			I _{AR}	17	A
Repetitive Avalanche Energy (Notes 7 & 8) L = 0.1mH			E _{AR}	14	mJ

Thermal Characteristics

Characteristic		Symbol	Value	Units
Total Power Dissipation (Note 5)		P _D	1.17	W
Thermal Resistance, Junction to Ambient (Note 5)	Steady State	R _{θJA}	107	°C/W
	t < 10s		61	
Total Power Dissipation (Note 6)		P _D	1.5	W
Thermal Resistance, Junction to Ambient (Note 6)	Steady State	R _{θJA}	83	°C/W
	t < 10s		49	
Thermal Resistance, Junction to Case		R _{θJC}	14.5	
Operating and Storage Temperature Range		T _J , T _{STG}	-55 to 150	°C

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 9)						
Drain-Source Breakdown Voltage	BV _{DSS}	30	-	-	V	V _{GS} = 0V, I _D = 250µA
Zero Gate Voltage Drain Current T _J = +25°C	I _{DSS}	-	-	1.0	µA	V _{DS} = 30V, V _{GS} = 0V
Gate-Source Leakage	I _{GSS}	-	-	±100	nA	V _{GS} = ±20V, V _{DS} = 0V
ON CHARACTERISTICS (Note 9)						
Gate Threshold Voltage	V _{GS(th)}	0.8	-	1.6	V	V _{DS} = V _{GS} , I _D = 250µA
Static Drain-Source On-Resistance	R _{DS(on)}	-	12	16	mΩ	V _{GS} = 10V, I _D = 9A
			16	22		V _{GS} = 4.5V, I _D = 7A
Forward Transfer Admittance	Y _{fs}	-	8	-	S	V _{DS} = 10V, I _D = 9A
Diode Forward Voltage	V _{SD}	-	0.72	0.94	V	V _{GS} = 0V, I _S = 1A
DYNAMIC CHARACTERISTICS (Note 10)						
Input Capacitance	C _{iss}	-	798	-	pF	V _{DS} = 10V, V _{GS} = 0V, f = 1.0MHz
Output Capacitance	C _{oss}	-	128	-	pF	
Reverse Transfer Capacitance	C _{rss}	-	122	-	pF	
Gate Resistance	R _g	-	1.37	-	Ω	V _{DS} = 0V, V _{GS} = 0V, f = 1MHz
Total Gate Charge	Q _g	-	8.56	-	nC	V _{GS} = 5V, V _{DS} = 15V, I _D = 9A
Gate-Source Charge	Q _{gs}	-	1.8	-	nC	
Gate-Drain Charge	Q _{gd}	-	2.5	-	nC	
Turn-On Delay Time	t _{D(on)}	-	5.03	-	ns	V _{DD} = 15V, V _{GEN} = 10V, R _L = 15Ω, R _G = 6Ω, I _D = 1A
Turn-On Rise Time	t _r	-	4.50	-	ns	
Turn-Off Delay Time	t _{D(off)}	-	26.33	-	ns	
Turn-Off Fall Time	t _f	-	8.55	-	ns	

- Notes:
- Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.
 - Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate.
 - I_{AR} and E_{AR} rating are based on low frequency and duty cycles to keep T_J = +25°C.
 - Applicable to products manufactured with Data Code "1146" (Nov, 2011) and newer.
 - Short duration pulse test used to minimize self-heating effect.
 - Guaranteed by design. Not subject to product testing.

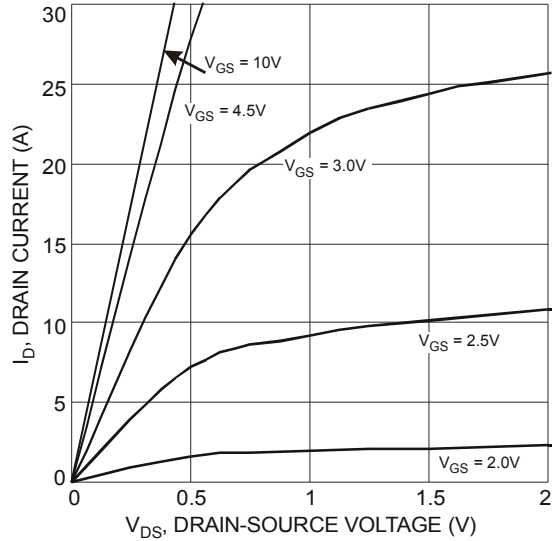


Fig. 1 Typical Output Characteristic

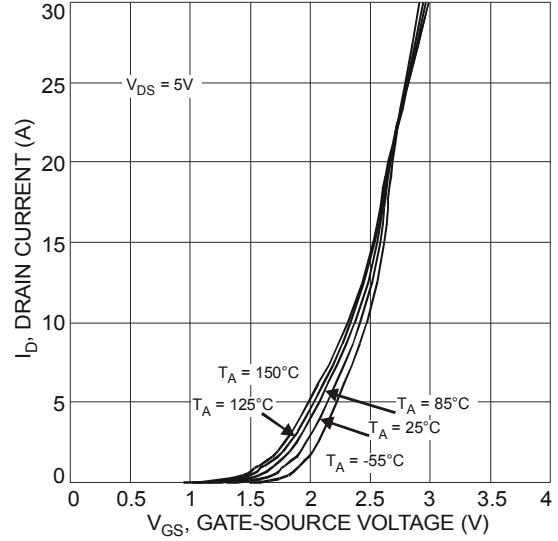


Fig. 2 Typical Transfer Characteristic

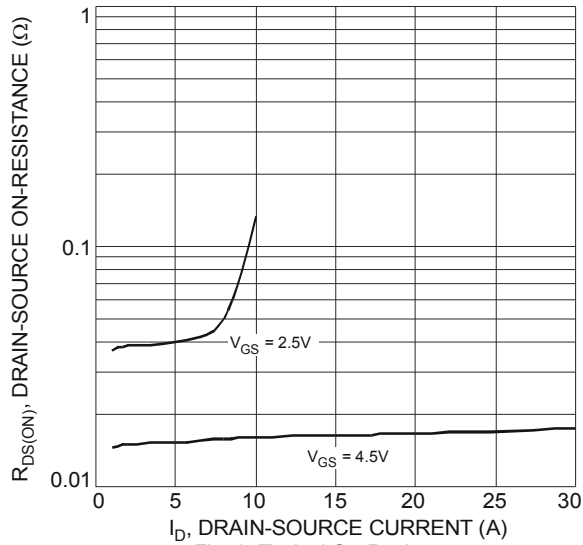


Fig. 3 Typical On-Resistance vs. Drain Current and Gate Voltage

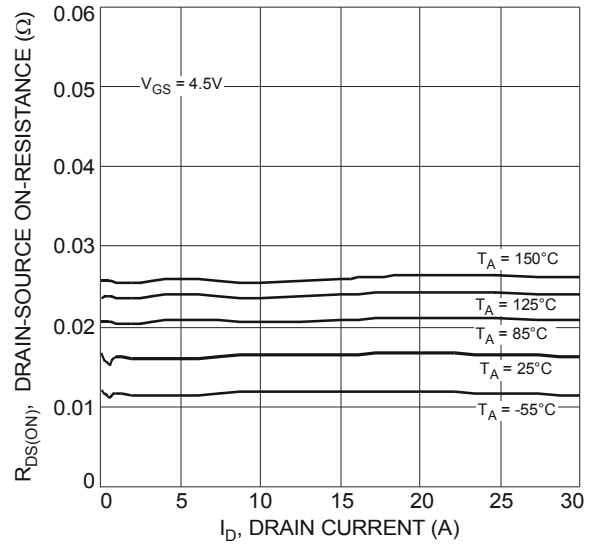


Fig. 4 Typical On-Resistance vs. Drain Current and Temperature

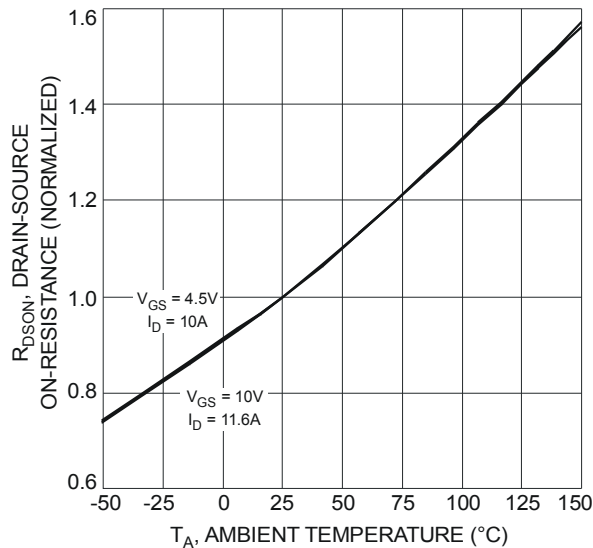


Fig. 5 On-Resistance Variation with Temperature

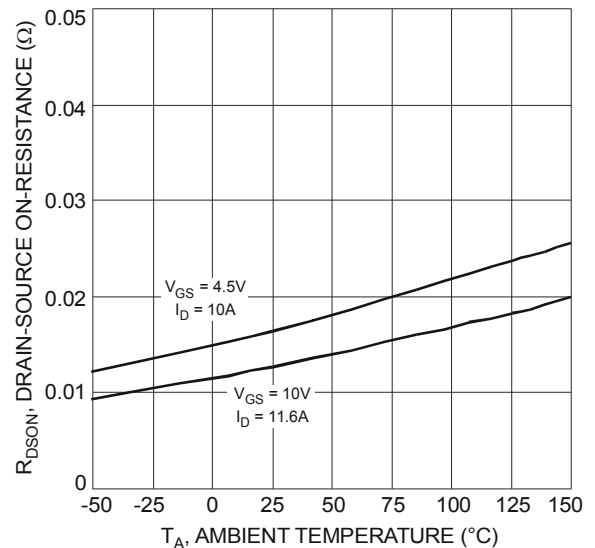


Fig. 6 On-Resistance Variation with Temperature

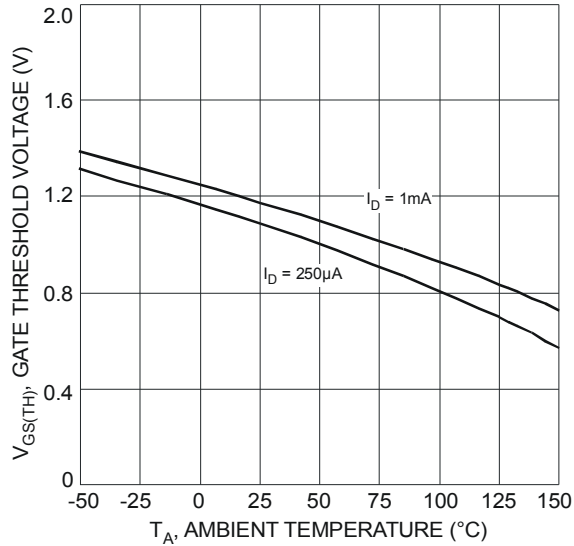


Fig. 7 Gate Threshold Variation vs. Ambient Temperature

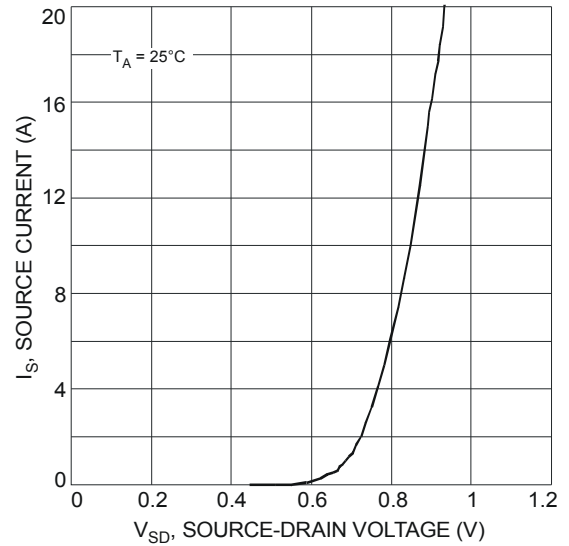


Fig. 8 Diode Forward Voltage vs. Current

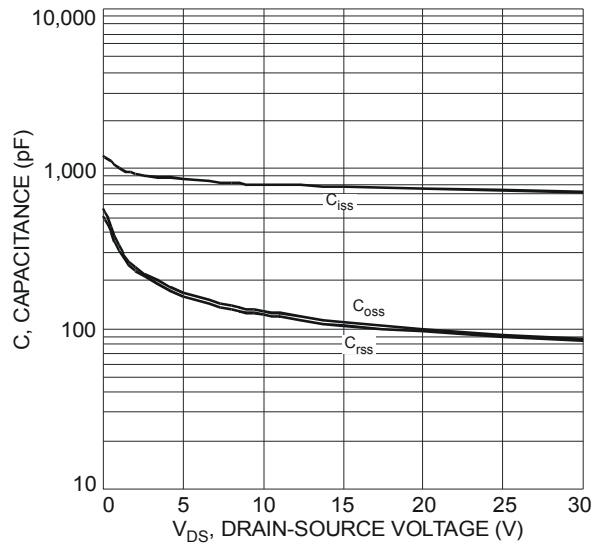


Fig. 9 Typical Total Capacitance

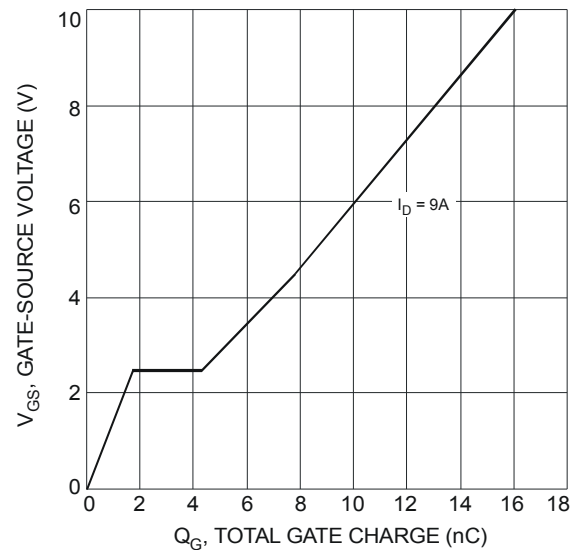


Fig. 10 Total Gate Charge

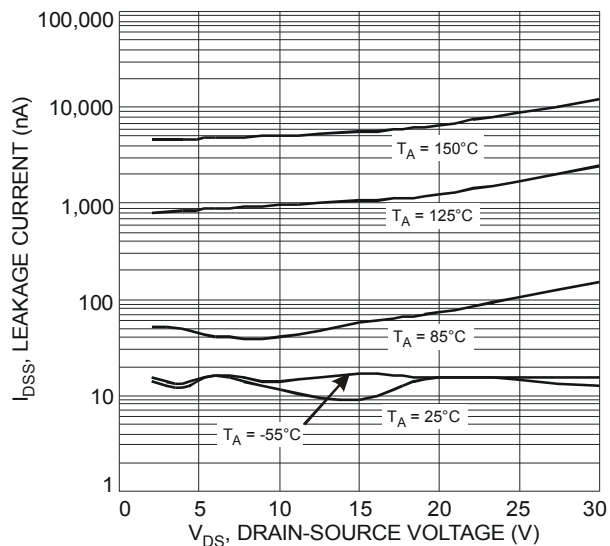
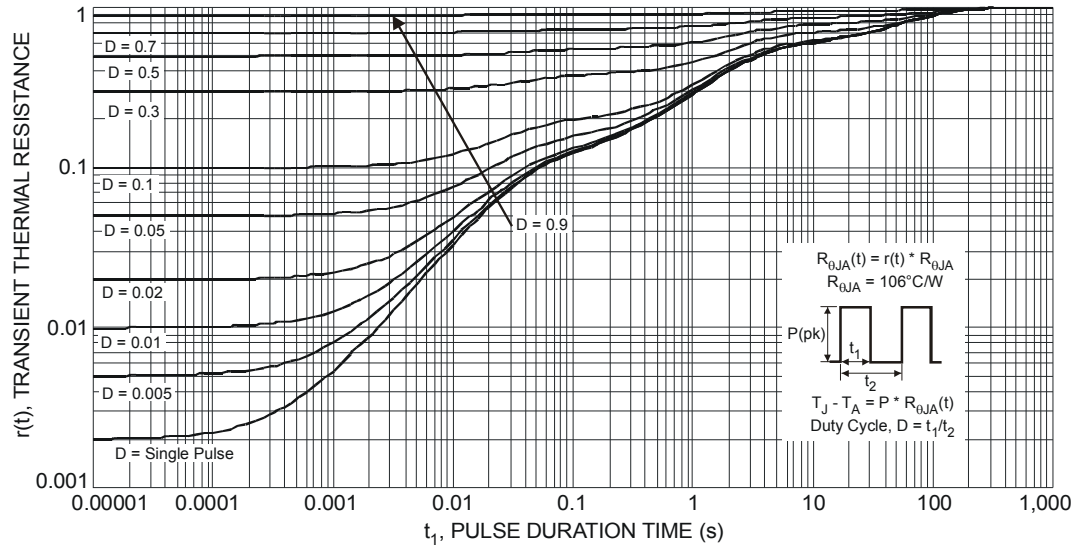
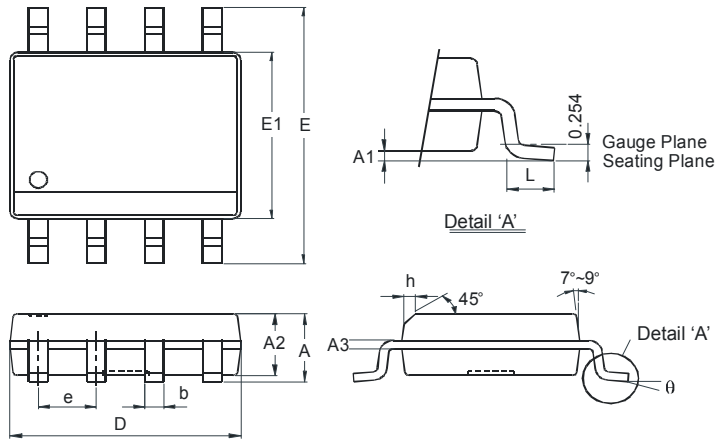


Fig. 11 Typical Leakage Current vs. Drain-Source Voltage

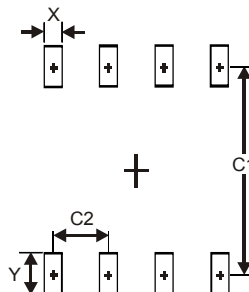


Package Outline Dimensions



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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