NEW PRODUCT

DMG4822SSD

DUAL N-CHANNEL ENHANCEMENT MODE MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(ON)}$ max	I_D max T_A = +25°C
30V	20mΩ @ V_{GS} = 10V	10A

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

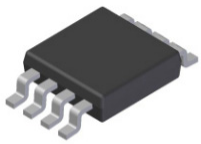
- General Purpose Interfacing Switch
- Power Management Functions
- DC-DC Converters
- Analog Switch

Features and Benefits

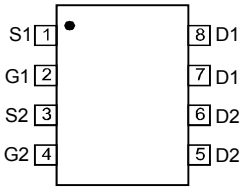
- Low On-Resistance
- Low Input Capacitance
- Low Input/Output leakage
- Low Gate Resistance
- Fast Switching Speed
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

Mechanical Data

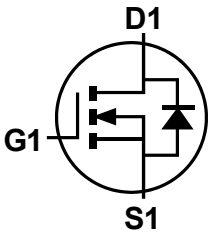
- Case: SO-8
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections Indicator: See diagram
- Terminals: Finish — NiPdAu over Copper leadframe. Solderable per MIL-STD-202, Method 208
- Weight: 0.072 grams (approximate)



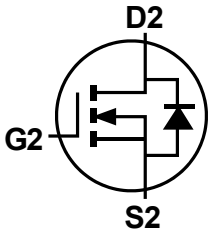
Top View



TOP VIEW
Internal Schematic



N-Channel MOSFET



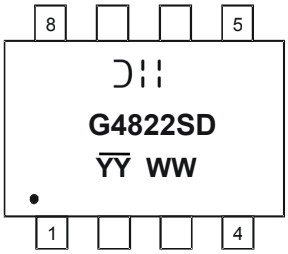
N-Channel MOSFET

Ordering Information (Note 4)

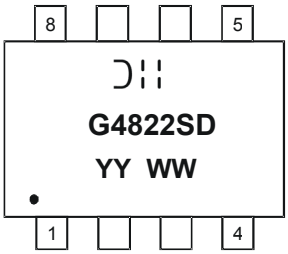
Part Number	Case	Packaging
DMG4822SSD-13	SO-8	2,500/Tape & Reel

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. For packaging details, go to our website at http://www.diodes.com/products/packages.html.

Marking Information



Chengdu A/T Site



Shanghai A/T Site

= Manufacturer's Marking
G4822SD = Product Type Marking Code
YYWW = Date Code Marking
YY or YY = Year (ex: 13 = 2013)
WW = Week (01 - 53)
YY = Date Code Marking for SAT (Shanghai Assembly/ Test site)
YY = Date Code Marking for CAT (Chengdu Assembly/ Test site)

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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 5) V_{GS} = 10V	Steady State	T_A = +25°C T_A = +85°C	I_D	10 6.6	A
Pulsed Drain Current (Note 6)			I_{DM}	60	A
Avalanche Current (Note 7 & 8)			I_{AR}	1.68	A
Repetitive Avalanche Energy L= 0.3mH (Note 7 & 8)			E_{AR}	12.8	mJ

Thermal Characteristics @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Value	Units
Total Power Dissipation (Note 5)	P_D	1.42	W
Thermal Resistance, Junction to Ambient (Note 5)	$R_{\theta JA}$	88.4	°C/W
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	I_{DSS}	-	-	1	μA	V_{DS} = 30V, V_{GS} = 0V
Gate-Source Leakage	I_{GSS}	-	-	±100	nA	V_{GS} = ±25V, V_{DS} = 0V
ON CHARACTERISTICS (Note 9)						
Gate Threshold Voltage	$V_{GS(th)}$	1	-	3	V	V_{DS} = V_{GS}, I_D = 250μA
Static Drain-Source On-Resistance	$R_{DS\ (ON)}$	-	13.4	20	mΩ	V_{GS} = 10V, I_D = 8.5A
		-	19.5	31		V_{GS} = 4.5V, I_D = 6A
Forward Transfer Admittance	$\|Y_{fs}\|$	-	20	-	mS	V_{DS} = 5V, I_D = 8.5A
Diode Forward Voltage	V_{SD}	-	0.4	1.0	V	V_{GS} = 0V, I_S = 1A
DYNAMIC CHARACTERISTICS (Note 10)						
Input Capacitance	C_{iss}	-	478.9	-	pF	V_{DS} = 16V, V_{GS} = 0V, f = 1MHz
Output Capacitance	C_{oss}	-	96.7	-	pF	
Reverse Transfer Capacitance	C_{rss}	-	61.4	-	pF	
Gate resistance	R_g		1.1		Ω	V_{DS} = 0V, V_{GS} = 0V,f = 1MHz
Total Gate Charge (V_{GS} = 4.5V)	Q_g		5	-	nC	V_{GS} = 10V, V_{DS} = 15V, I_D =8.5A
Total Gate Charge (V_{GS} = 10V)	Q_g	-	10.5	-	nC	
Gate-Source Charge	Q_{gs}	-	1.8	-	nC	
Gate-Drain Charge	Q_{gd}	-	1.6	-	nC	
Turn-On Delay Time	$t_{D(on)}$	-	2.9	-	ns	V_{DS}= 15V, V_{GS} = 10V, R_L = 1.8Ω, R_G = 3Ω,
Turn-On Rise Time	t_r	-	7.9	-	ns	
Turn-Off Delay Time	$t_{D(off)}$	-	14.6	-	ns	
Turn-Off Fall Time	t_f	-	3.1	-	ns	

Notes:
5. Device mounted on FR-4 PCB, with minimum recommended pad layout.
6. Device mounted on minimum recommended pad layout test board, 10μs pulse duty cycle = 1%
7. Repetitive rating, pulse width limited by junction temperature.
8. I_{AR} and E_{AR} rating are based on low frequency and duty cycles to keep T_j=+25°C
9. Short duration pulse test used to minimize self-heating effect.
10. Guaranteed by design. Not subject to product testing.

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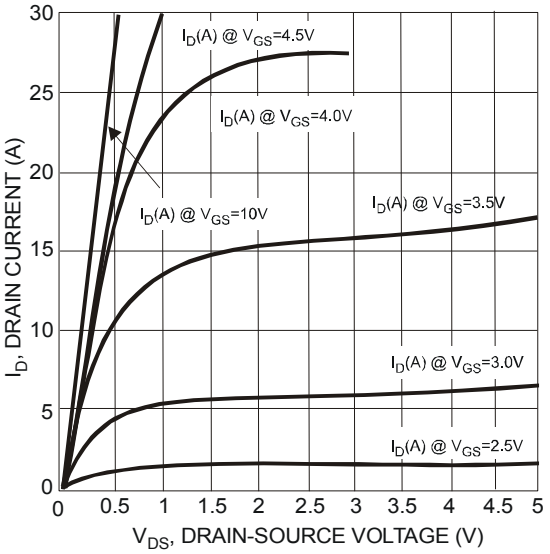

Fig.1 Typical Output Characteristic

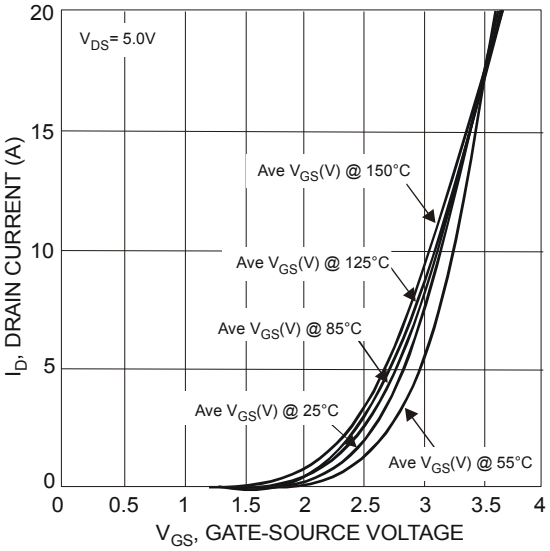

Fig.2 Typical Transfer Characteristics

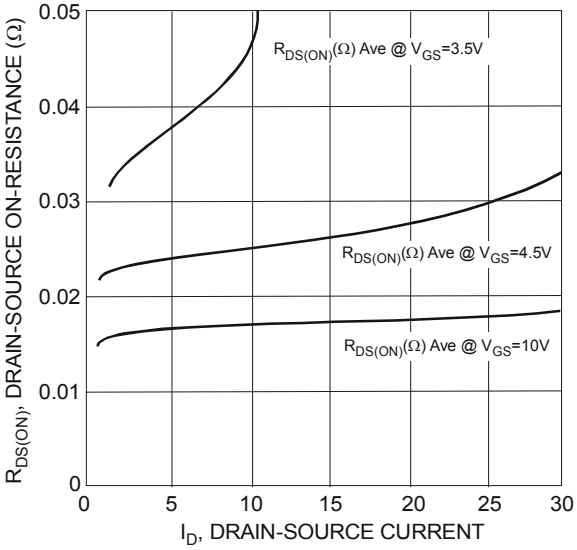

Fig. 3 Typical On-Resistance vs. Drain Current and Gate Voltage

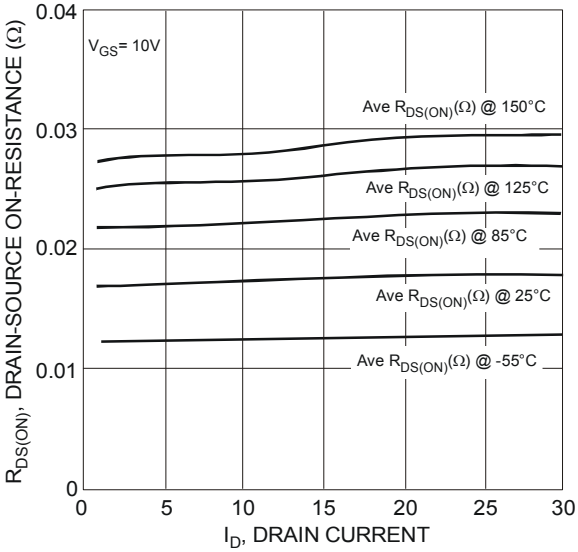

Fig. 4 Typical On-Resistance vs. Drain Current and Temperature

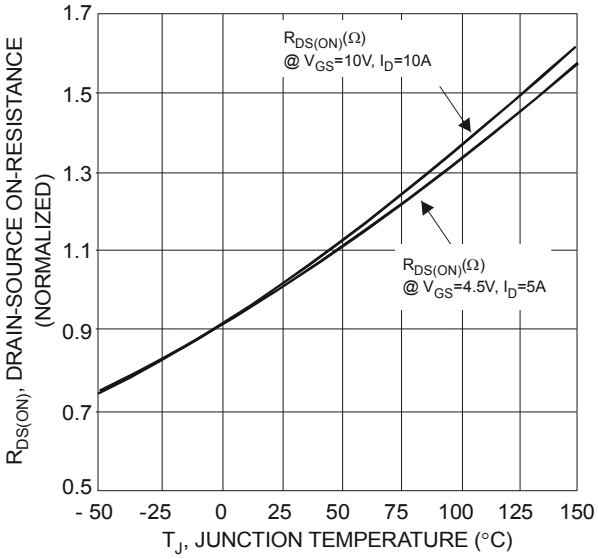

Fig. 5 On-Resistance Variation with Temperature

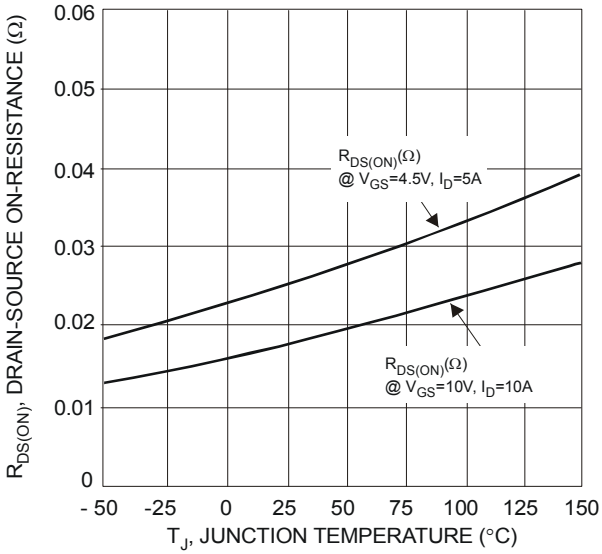

Fig. 6 On-Resistance Variation with Temperature

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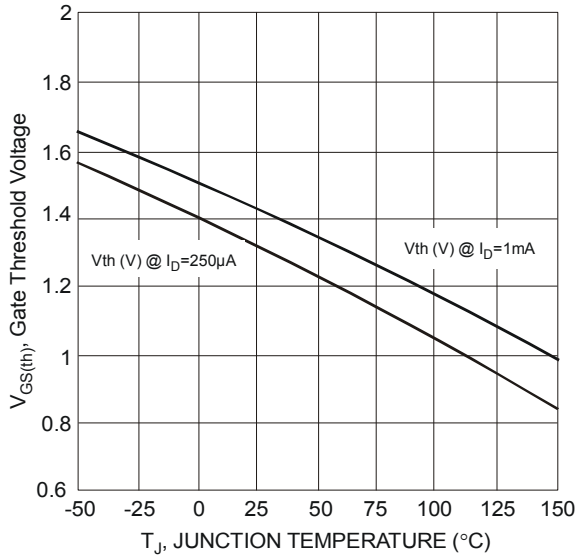

Fig. 7 Gate Threshold Variation vs. Ambient Temperature

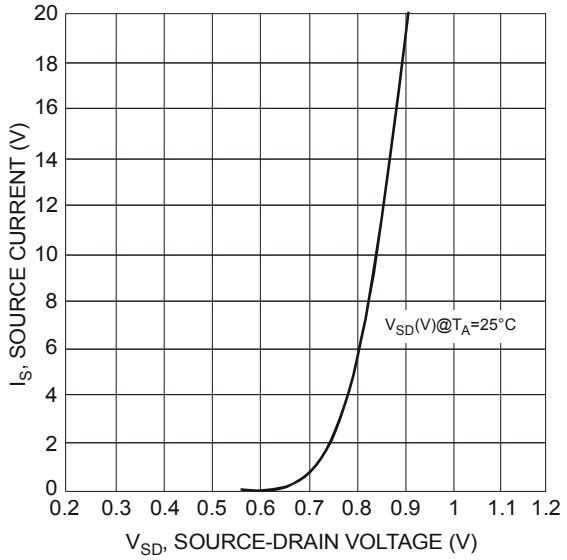

Fig.8 Diode Forward Voltage vs. Current

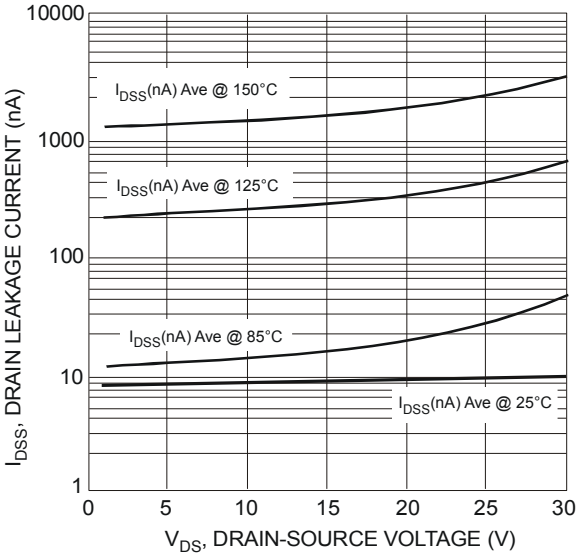

Fig. 9 Typical Drain-Source Leakage Current vs. Voltage

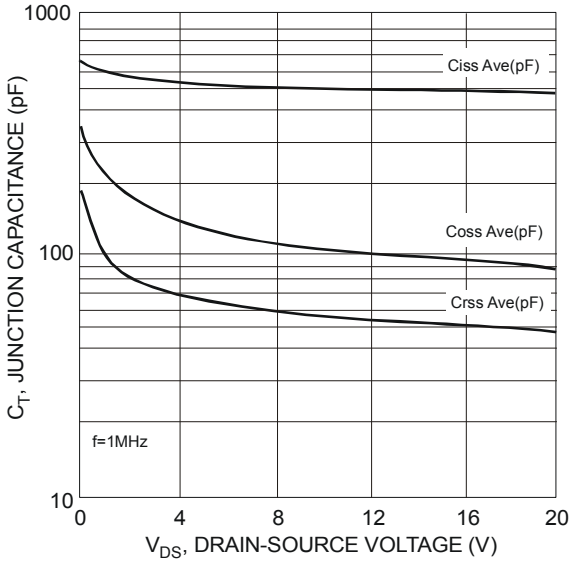

Fig. 10 Typical Junction Capacitance

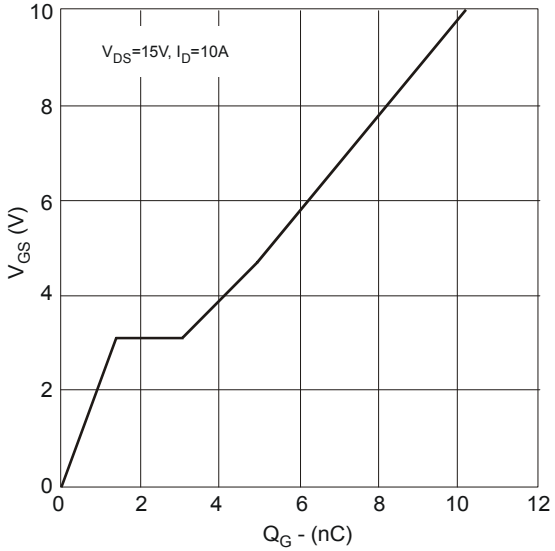

Fig. 11 Gate Charge

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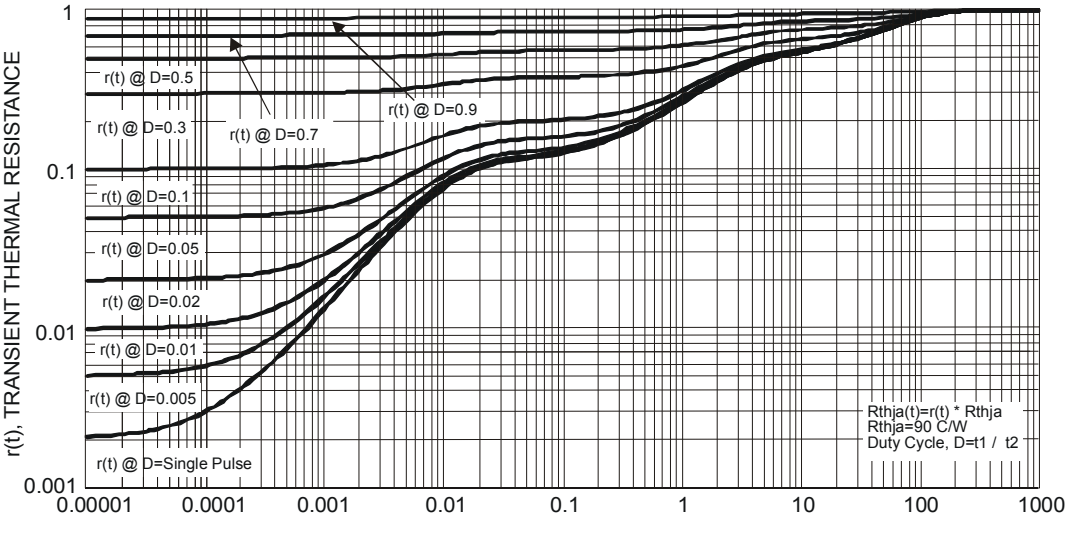
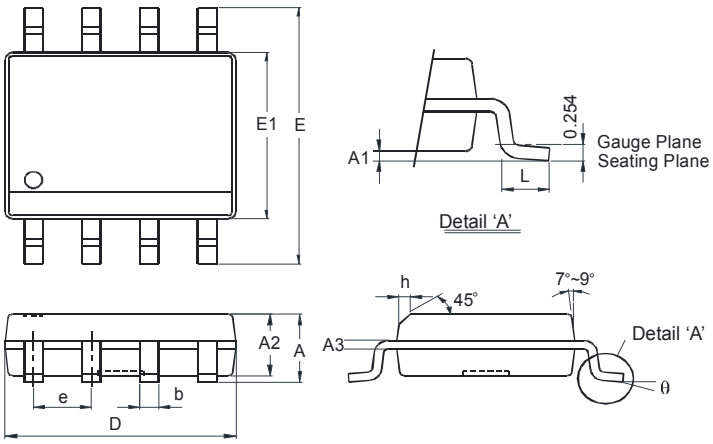


Fig. 12 Transient Thermal Resistance

Package Outline Dimensions

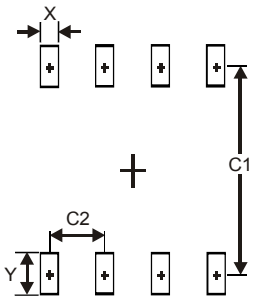
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for latest version.



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

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



Dimensions	Value (in mm)
X	0.60
Y	1.55
C1	5.4
C2	1.27

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