

P-CHANNEL ENHANCEMENT MODE MOSFET

Product Summary

V _{(BR)DSS}	R _{DS(on) max}	I _D T _A = +25°C
-30V	16mΩ @ $V_{GS} = -20V$	-7.3A
	20mΩ @ V _{GS} = -10V	-6.0A

Description

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

Applications

- DC-DC Converters
- Power management functions
- Backlighting

Features

- Low On-Resistance
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- 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

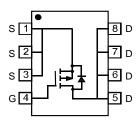
Mechanical Data

- 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: See Diagram Below
- Weight: 0.072 grams (approximate)

SO-8



Top View



Top View Internal Schematic

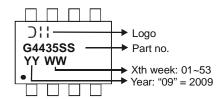
Ordering Information (Note 4)

Part Number	Case	Packaging
DMG4435SSS-13	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 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.

Marking Information





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

Characteristic			Symbol	Value	Unit
Drain-Source Voltage			V_{DSS}	-30	V
Gate-Source Voltage			V_{GSS}	±25	V
	Steady State	$T_A = +25$ °C $T_A = +70$ °C	ID	-7.3 -5.7	Α
Continuous Drain Current (Note 5) V _{GS} = -20	t < 10s	$T_A = +25^{\circ}C$ $T_A = +70^{\circ}C$	I _D	-10 -7.5	А
Pulsed Drain Current (Note 6)			I _{DM}	-80	А

Thermal Characteristics

Characteristic		Symbol	Value	Unit
Power Dissipation (Note 5)	$T_A = +25$ °C	5	2.5	W
Power Dissipation (Note 5)	$T_A = +70^{\circ}C$	P _D	1.5	W
Thermal Resistance, Junction to Ambient @T _A = +25°C	Steady state	ב	96.5	°C/W
Thermal Resistance, Junction to Ambient @ 1A = +25 C	t < 10s	$R_{\theta JA}$	55	°C/W
Operating and Storage Temperature Range		T_J , T_{STG}	-55 to +150	°C

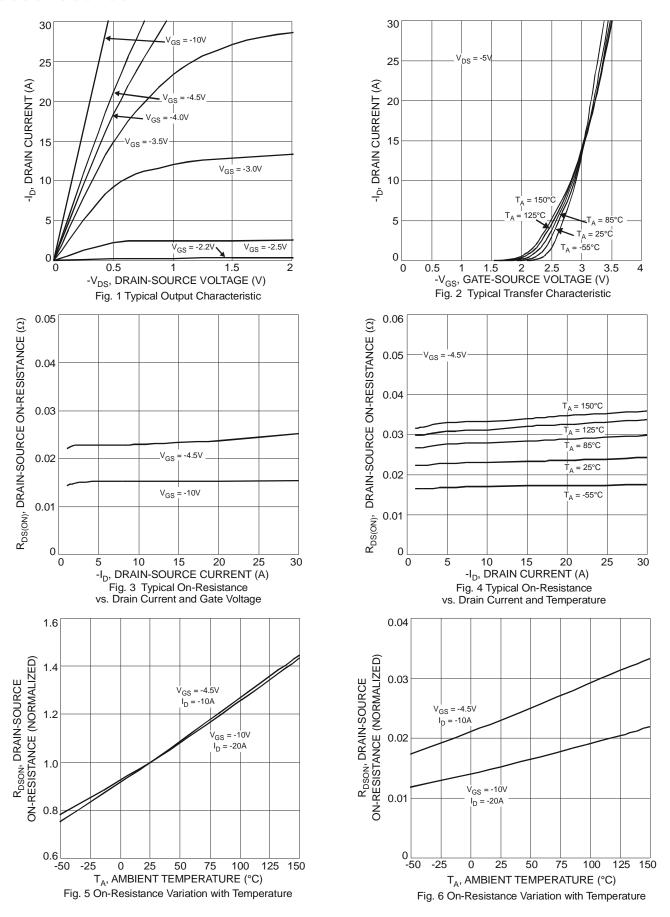
Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition	
OFF CHARACTERISTICS (Note 7)							
Drain-Source Breakdown Voltage	BV _{DSS}	-30	ı	-	٧	$V_{GS} = 0V$, $I_D = -1mA$	
Zero Gate Voltage Drain Current T _J = +25°C	I _{DSS}	-	-	-1.0	μΑ	$V_{DS} = -30V, V_{GS} = 0V$	
Gate-Source Leakage	I _{GSS}	-	-	±100	nA	$V_{GS} = \pm 25V, V_{DS} = 0V$	
ON CHARACTERISTICS (Note 7)	ē.						
Gate Threshold Voltage	V _{GS(th)}	-1.0	-1.7	-2.5	٧	$V_{DS} = V_{GS}, I_{D} = -250 \mu A$	
			13	16		$V_{GS} = -20V, I_{D} = -11A$	
Static Drain-Source On-Resistance	R _{DS (ON)}	-	15	20	$\mathbf{m}\Omega$	$V_{GS} = -10V, I_D = -10A$	
			21	29		$V_{GS} = -5V, I_D = -5A$	
Forward Transfer Admittance	Y _{fs}	-	22	-	S	$V_{DS} = -5V, I_{D} = -10A$	
Diode Forward Voltage	V _{SD}	-	-0.74	-1.0	V	$V_{GS} = 0V, I_{S} = -1A$	
DYNAMIC CHARACTERISTICS (Note 8)							
Input Capacitance	C _{iss}	-	1614	-	pF	15/1/	
Output Capacitance	Coss	-	226	-	pF	$V_{DS} = -15V, V_{GS} = 0V,$ f = 1.0MHz	
Reverse Transfer Capacitance	C _{rss}	-	214	-	pF	1 = 1.0IVII IZ	
Gate Resistance	R_g	-	6.8	-	Ω	$V_{DS} = 0V$, $V_{GS} = 0V$, $f = 1MHz$	
Total Gate Charge at 10V	Qq	-	35.4	-	nC	$V_{GS} = -10V, V_{DS} = -15V, I_{D} = -10A$	
Total Gate Charge at 5V	Qg	-	18.9	-	nC	V 5V V 45V	
Gate-Source Charge	Q _{gs}	-	4.6	-	nC	$V_{GS} = -5V, V_{DS} = -15V,$	
Gate-Drain Charge	Q _{gd}	-	5.7	-	nC	I _D = -10A	
Turn-On Delay Time	t _{D(on)}	-	8.6	-	ns		
Turn-On Rise Time	t _r	-	12.7	-	ns	V _{DS} = -15V, V _{GS} = -10V,	
Turn-Off Delay Time	t _{D(off)}	-	44.9	-	ns	$R_L = 1.5\Omega$, $R_{GEN} = 3\Omega$,	
Turn-Off Fall Time	t _f	-	22.8	-	ns	1	

Notes:

- 5. Device mounted on 1in. x 1in. FR-4 PCB with 2oz. Copper, and the testing is based on the t<10s. The value in any given application depends on the user's specific board design.
- 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.







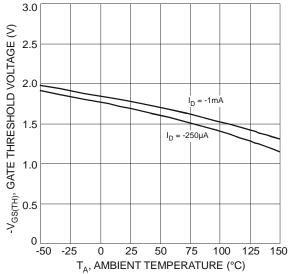
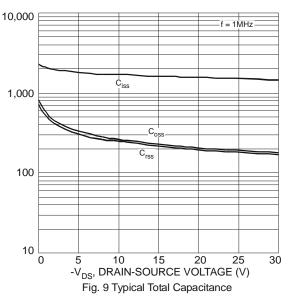
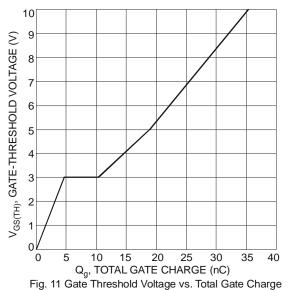
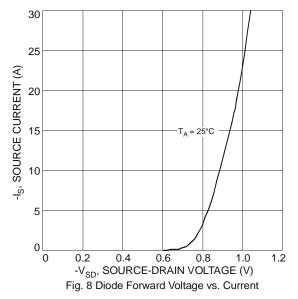


Fig. 7 Gate Threshold Variation vs. Ambient Temperature







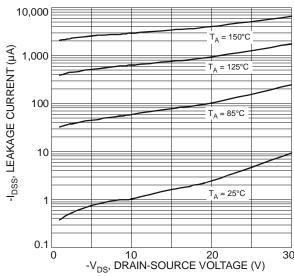


Fig. 10 Typical Leakage Current vs. Drain-Source Voltage



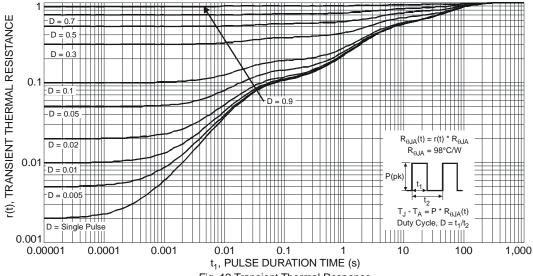
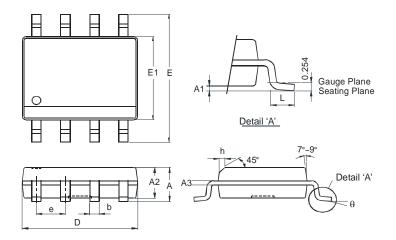


Fig. 12 Transient Thermal Response

Package Outline Dimensions

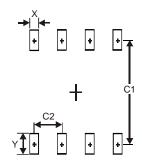
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for latest version.



SO-8					
Dim	Min	Max			
Α	-	1.75			
A 1	0.10	0.20			
A2	1.30	1.50			
А3	0.15	0.25			
b	0.3	0.5			
D	4.85	4.95			
Е	5.90	6.10			
E1	3.85	3.95			
е	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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