

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)}$ max	I_D $T_A = +25^\circ C$
-30V	16m Ω @ $V_{GS} = -20V$	-7.3A
	20m Ω @ $V_{GS} = -10V$	-6.0A

Description

This new generation 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

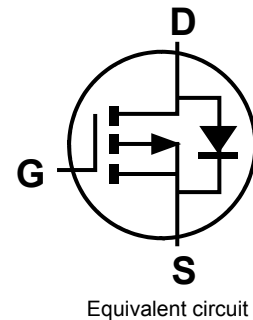
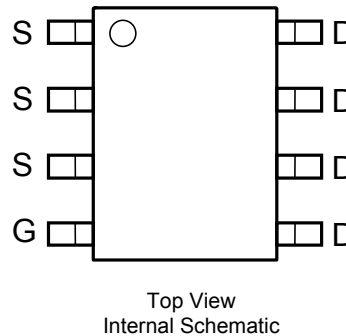
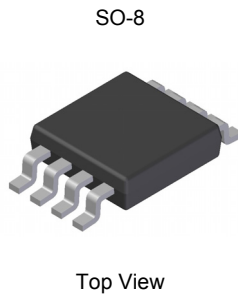
- DC-DC Converters
- Power management functions
- Backlighting

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 Indicator: See diagram
- Terminals: Finish — Matte Tin annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208 e3
- Weight: 0.074 grams (approximate)

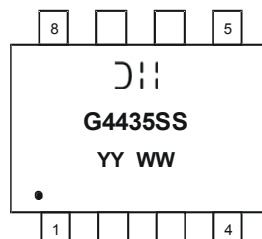
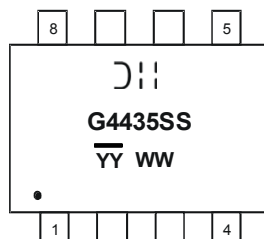


Ordering Information (Note 4)

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/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



$\text{D};\text{I}$ = Manufacturer's Marking
 G4435SS = Product Type Marking Code
 YYWW = Date Code Marking
 YY or \overline{YY} = Year (ex: 13 = 2013)
 WW = Week (01 - 53)
 \overline{YY} = Date Code Marking for SAT (Shanghai Assembly/ Test site)
 \overline{YY} = Date Code Marking for CAT (Chengdu Assembly/ Test site)

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
Continuous Drain Current (Note 5) V _{GS} = -20	Steady State	T _A = +25°C T _A = +70°C	I _D	-7.3 -5.7	A
	t < 10s	T _A = +25°C T _A = +70°C	I _D	-10 -7.5	A
Pulsed Drain Current (Note 6)			I _{DM}	-80	A

Thermal Characteristics

Characteristic		Symbol	Value	Unit
Power Dissipation (Note 5)	T _A = +25°C	P _D	2.5	W
	T _A = +70°C		1.5	W
Thermal Resistance, Junction to Ambient @T _A = +25°C	Steady state	R _{θJA}	96.5	°C/W
	t < 10s		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	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 7)						
Drain-Source Breakdown Voltage	BV _{DSS}	-30	—	—	V	V _{GS} = 0V, I _D = -1mA
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} = ±25V, V _{DS} = 0V
ON CHARACTERISTICS (Note 7)						
Gate Threshold Voltage	V _{GS(th)}	-1.0	-1.7	-2.5	V	V _{DS} = V _{GS} , I _D = -250µA
Static Drain-Source On-Resistance	R _{DS(on)}	—	13	16	mΩ	V _{GS} = -20V, I _D = -11A
			15	20		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	V _{DS} = -15V, V _{GS} = 0V, f = 1.0MHz
Output Capacitance	C _{oss}	—	226	—	pF	
Reverse Transfer Capacitance	C _{rss}	—	214	—	pF	
Gate Resistance	R _g	—	6.8	—	Ω	V _{DS} = 0V, V _{GS} = 0V, f = 1MHz
Total Gate Charge at 10V	Q _g	—	35.4	—	nC	V _{GS} = -10V, V _{DS} = -15V, I _D = -10A
Total Gate Charge at 5V	Q _g	—	18.9	—	nC	V _{GS} = -5V, V _{DS} = -15V, I _D = -10A
Gate-Source Charge	Q _{gs}	—	4.6	—	nC	
Gate-Drain Charge	Q _{gd}	—	5.7	—	nC	
Turn-On Delay Time	t _{D(on)}	—	8.6	—	ns	V _{DS} = -15V, V _{GS} = -10V, R _L = 1.5Ω, R _{GEN} = 3Ω,
Turn-On Rise Time	t _r	—	12.7	—	ns	
Turn-Off Delay Time	t _{D(off)}	—	44.9	—	ns	
Turn-Off Fall Time	t _f	—	22.8	—	ns	

- 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.

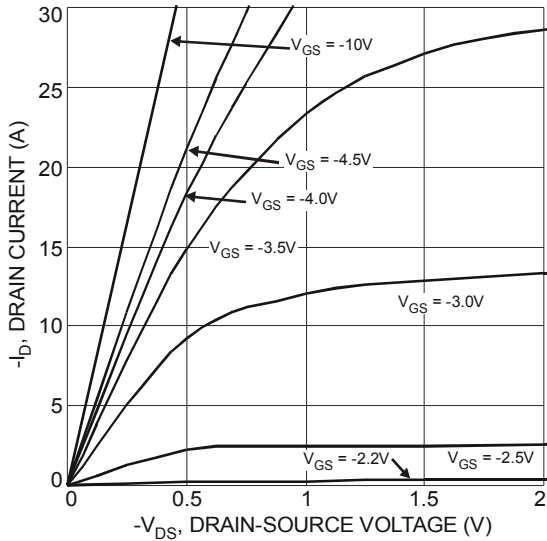


Fig. 1 Typical Output Characteristic

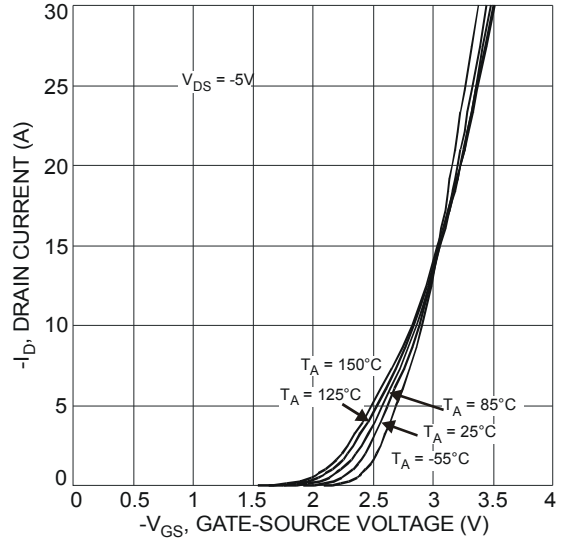


Fig. 2 Typical Transfer Characteristic

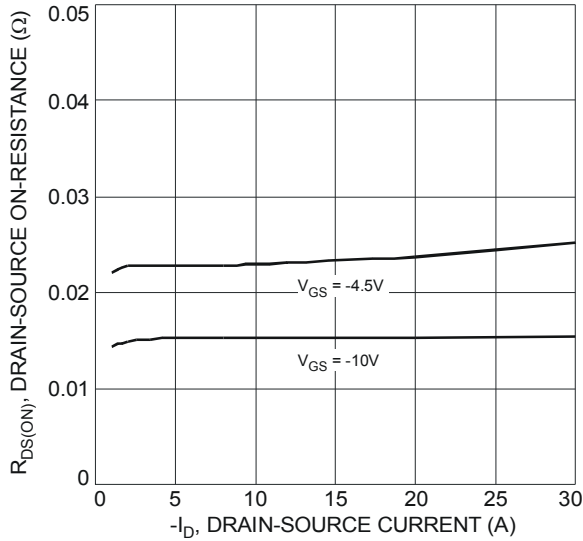


Fig. 3 Typical On-Resistance vs. Drain Current and Gate Voltage

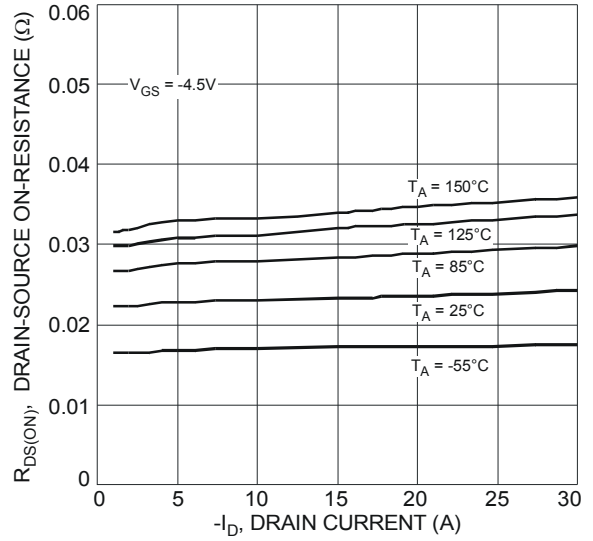


Fig. 4 Typical On-Resistance vs. Drain Current and Temperature

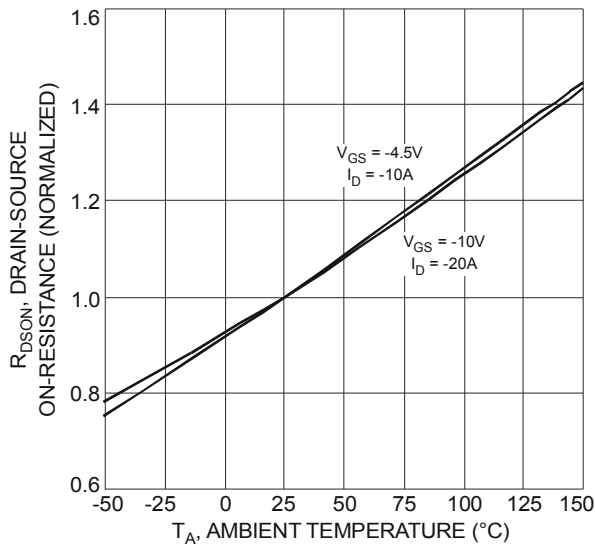


Fig. 5 On-Resistance Variation with Temperature

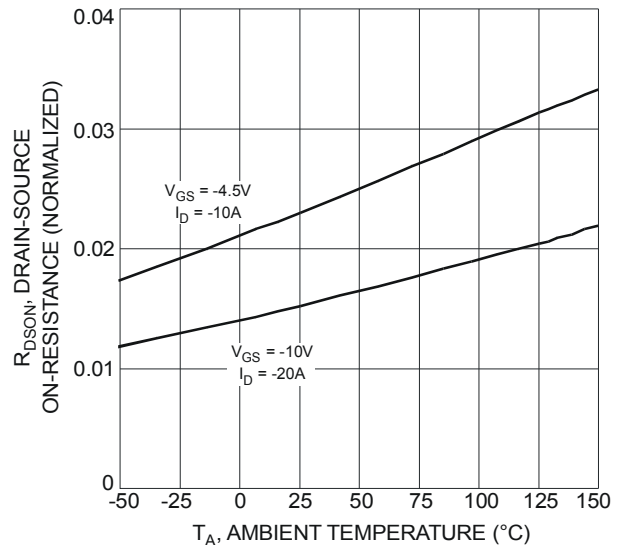


Fig. 6 On-Resistance Variation with Temperature

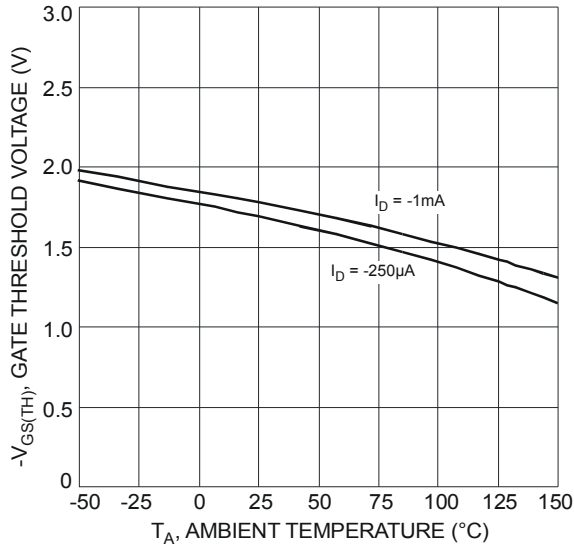


Fig. 7 Gate Threshold Variation vs. Ambient Temperature

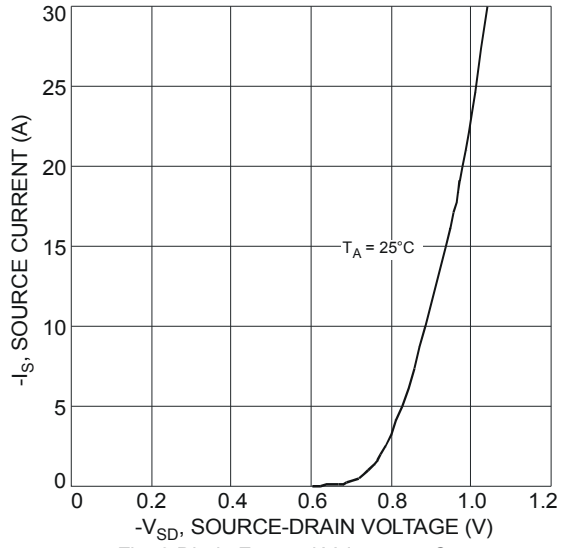


Fig. 8 Diode Forward Voltage vs. Current

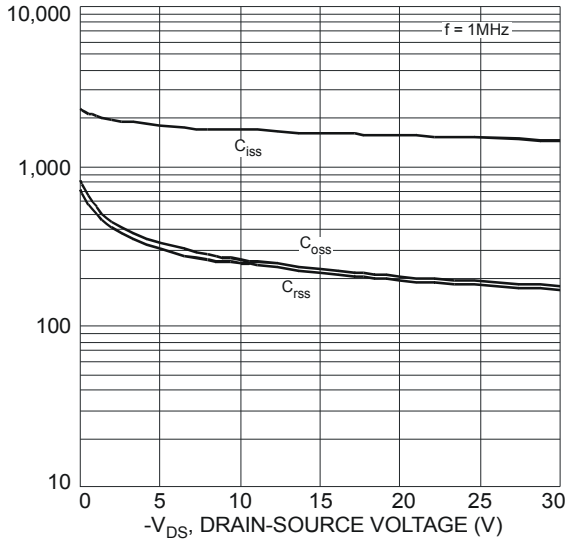


Fig. 9 Typical Total Capacitance

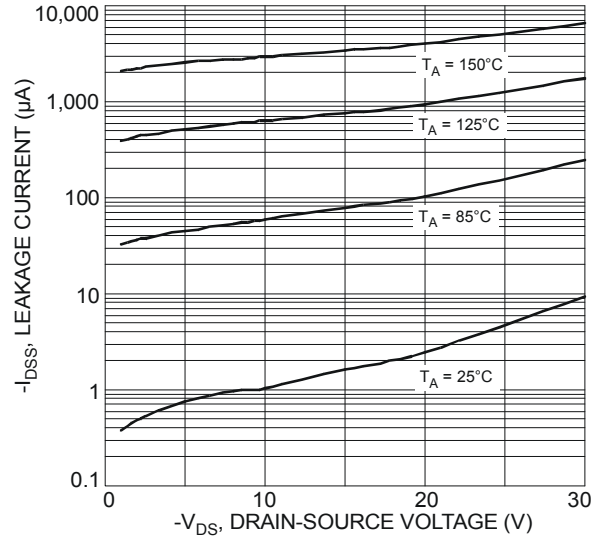


Fig. 10 Typical Leakage Current vs. Drain-Source Voltage

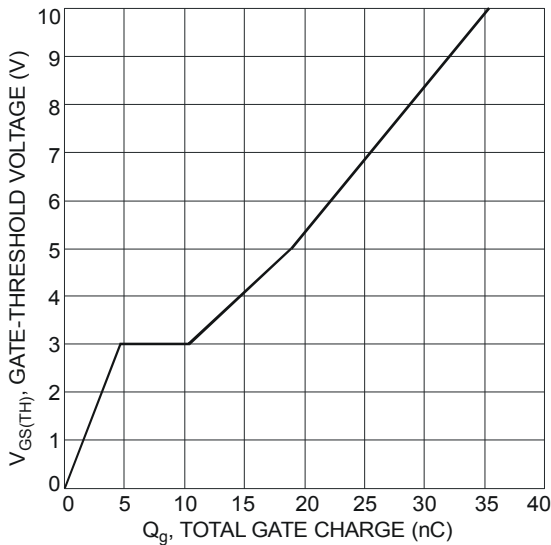


Fig. 11 Gate Threshold Voltage vs. Total Gate Charge

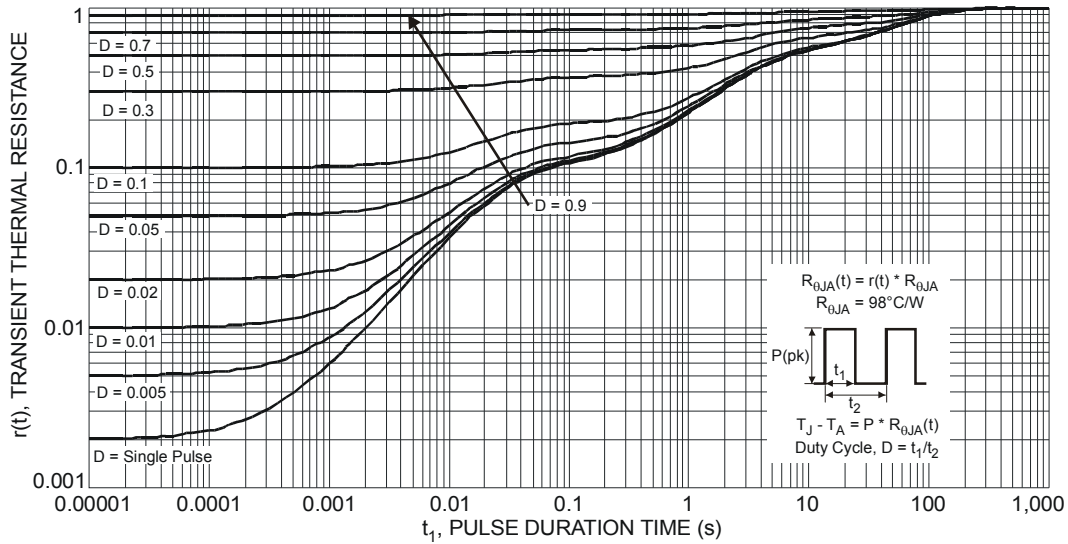
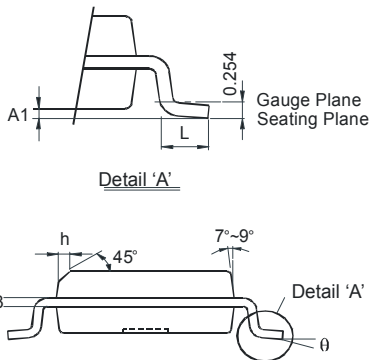
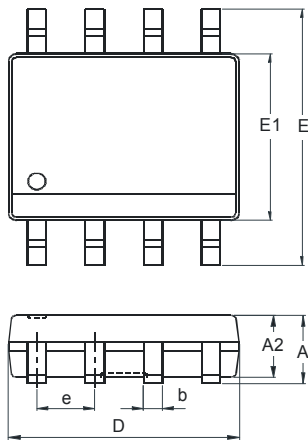


Fig. 12 Transient Thermal Response

Package Outline Dimensions

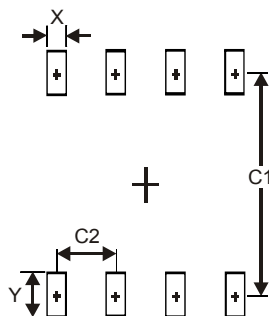
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for latest version.



SO-8		
Dim	Min	Max
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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