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 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

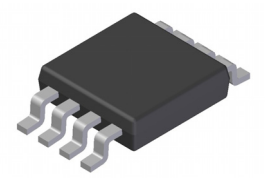
Features

- 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**

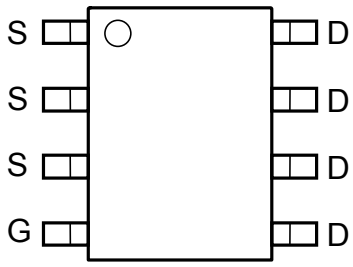
Mechanical Data

- 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)

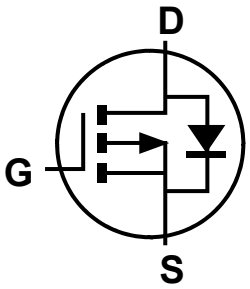
SO-8



Top View



Top View
Internal Schematic



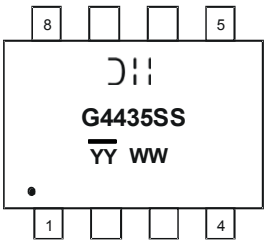
Equivalent circuit

Ordering Information (Note 4)

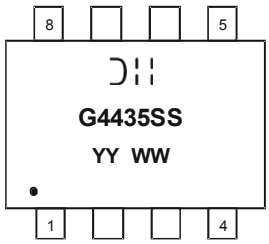
Part Number	Case	Packaging
DMG4435SSS-13	SO-8	2500 / Tape & Reel

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



Chengdu A/T Site



Shanghai A/T Site

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

© Diodes Incorporated

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	$R_{\theta JA}$	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.

© Diodes Incorporated

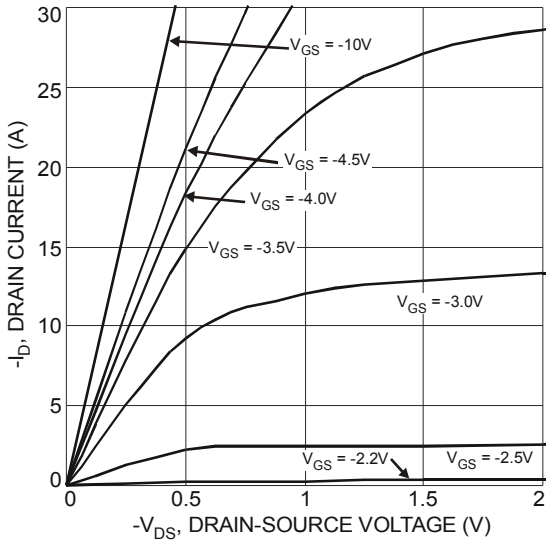


Fig. 1 Typical Output Characteristic

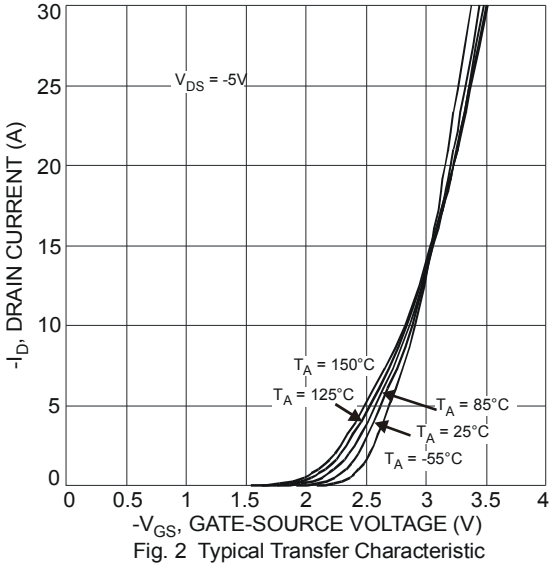


Fig. 2 Typical Transfer Characteristic

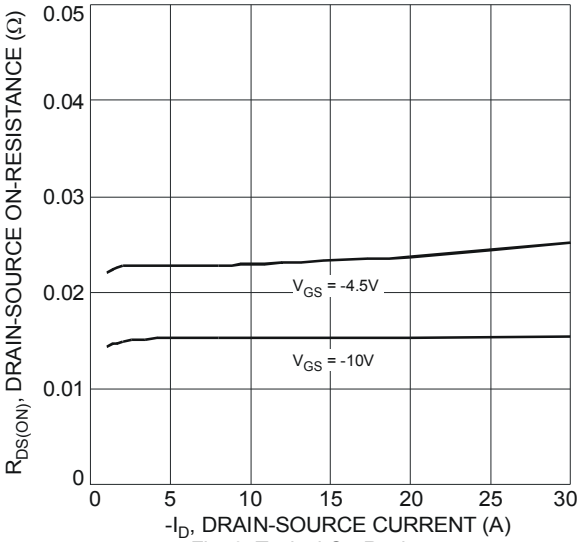


Fig. 3 Typical On-Resistance
vs. Drain Current and Gate Voltage

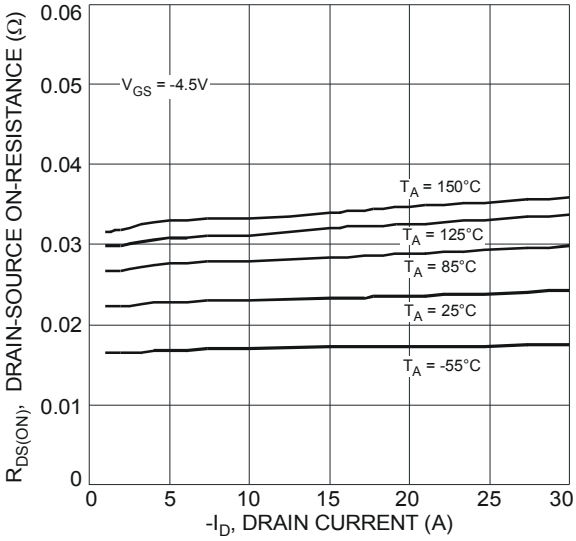


Fig. 4 Typical On-Resistance
vs. Drain Current and Temperature

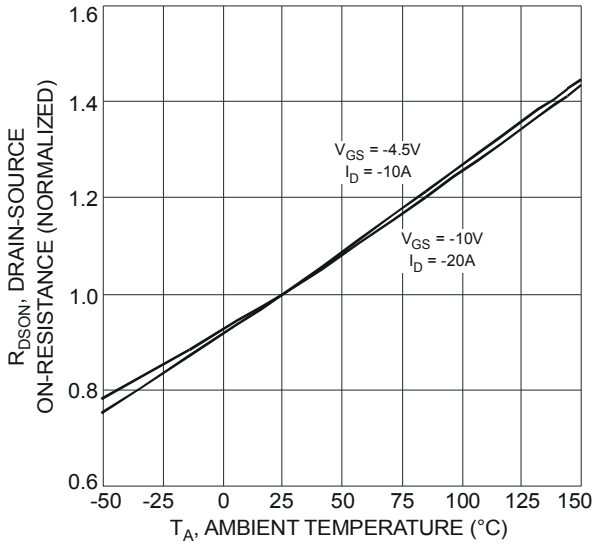


Fig. 5 On-Resistance Variation with Temperature

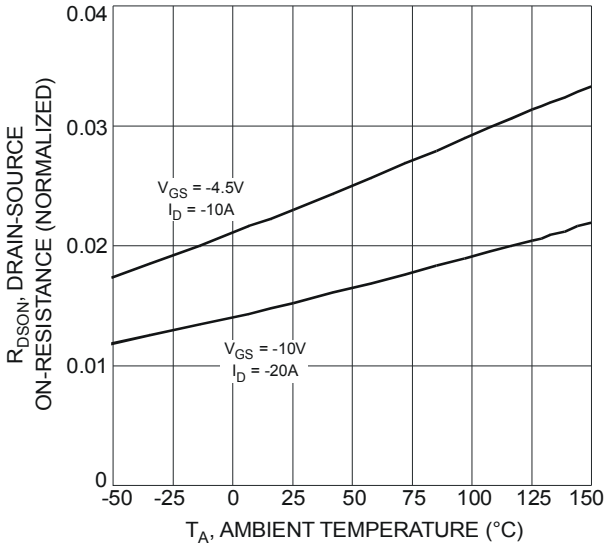


Fig. 6 On-Resistance Variation with Temperature

© Diodes Incorporated

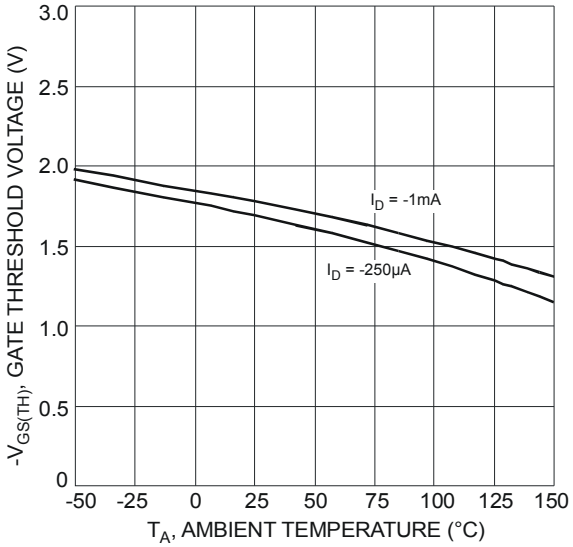


Fig. 7 Gate Threshold Variation vs. Ambient Temperature

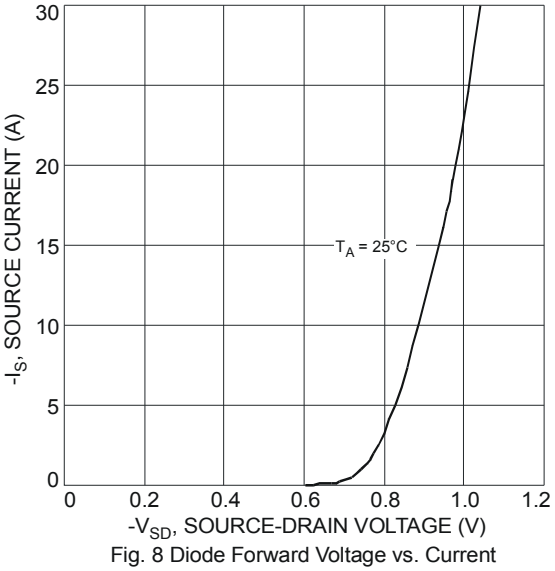


Fig. 8 Diode Forward Voltage vs. Current

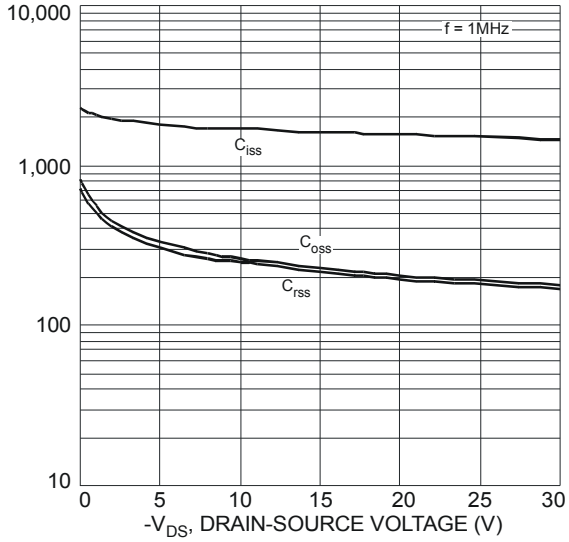


Fig. 9 Typical Total Capacitance

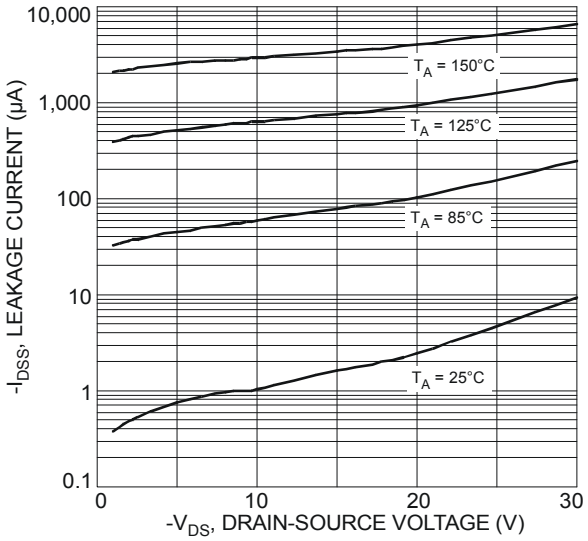


Fig. 10 Typical Leakage Current vs. Drain-Source Voltage

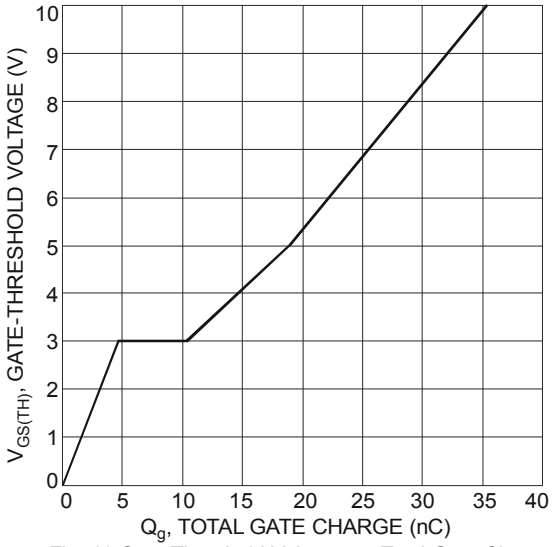


Fig. 11 Gate Threshold Voltage vs. Total Gate Charge

© Diodes Incorporated