

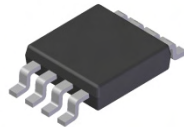
## Features

- Low On-Resistance
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- Low Gate Resistance
- **Lead Free By Design/RoHS Compliant (Note 1)**
- **"Green" Device (Note 2)**
- **Qualified to AEC-Q101 Standards for High Reliability**

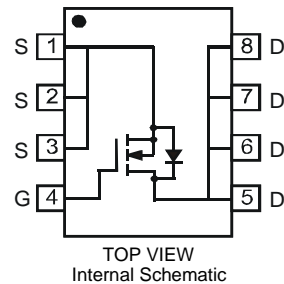
## Mechanical Data

- 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
- Marking Information: See Page 5
- Ordering Information: See Page 5
- Weight: 0.072 grams (approximate)

SO-8



TOP VIEW


 TOP VIEW  
Internal Schematic

## Maximum Ratings @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic			Symbol	Value	Unit
Drain-Source Voltage			$V_{DSS}$	30	V
Gate-Source Voltage			$V_{GSS}$	$\pm 25$	V
Continuous Drain Current (Note 3)	Steady State	$T_A = 25^\circ\text{C}$	$I_D$	10	A
		$T_A = 85^\circ\text{C}$		6	
Pulsed Drain Current (Note 4)			$I_{DM}$	60	A
Avalanche Current (Notes 4 & 5)			$I_{AR}$	16	A
Repetitive Avalanche Energy (Notes 4 & 5) $L = 0.1\text{mH}$			$E_{AR}$	12.8	mJ

## Thermal Characteristics

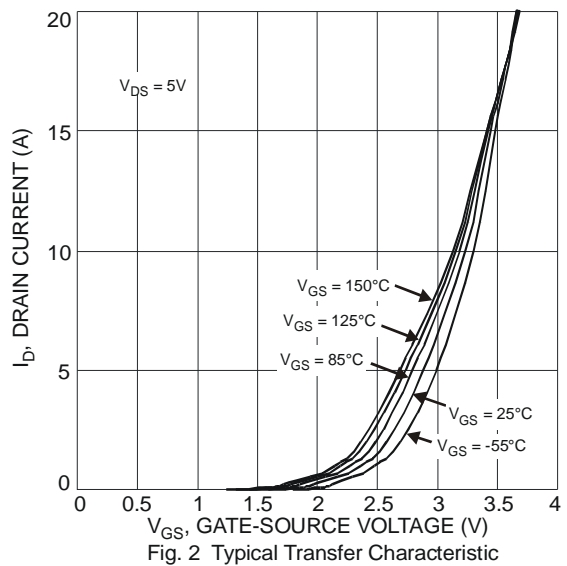
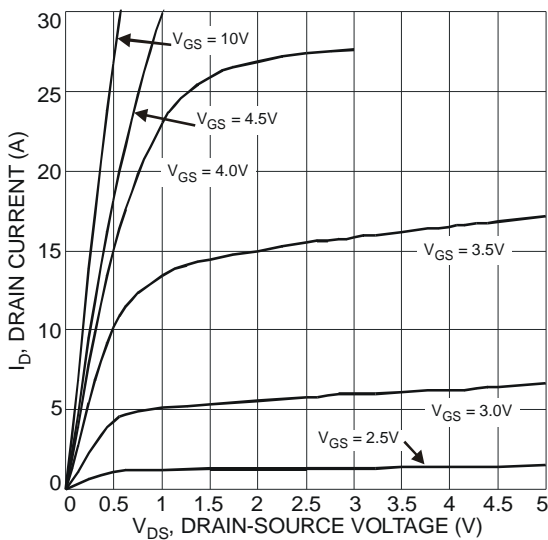
Characteristic			Symbol	Value	Unit
Power Dissipation (Note 3)			$P_D$	1.42	W
Thermal Resistance, Junction to Ambient @ $T_A = 25^\circ\text{C}$ (Note 3)			$R_{\theta JA}$	88.4	$^\circ\text{C/W}$
Operating and Storage Temperature Range			$T_J, T_{STG}$	-55 to +150	$^\circ\text{C}$

- Notes:
1. No purposefully added lead.
  2. Diodes Inc.'s "Green" policy can be found on our website at <http://www.diodes.com>.
  3. Device mounted on FR-4 substrate PC board with minimum recommended pad layout in a still air environment @  $T_A = 25^\circ\text{C}$ . The value in any given application depends on the user's specific board design.
  4. Repetitive rating, pulse width limited by junction temperature.
  5.  $I_{AR}$  and  $E_{AR}$  rating are based on low frequency and duty cycles to keep  $T_J = 25^\circ\text{C}$

**Electrical Characteristics** @T<sub>A</sub> = 25°C unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS (Note 6)</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	30	-	-	V	V <sub>GS</sub> = 0V, I <sub>D</sub> = 250μA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	-	-	1	μA	V <sub>DS</sub> = 30V, V <sub>GS</sub> = 0V
Gate-Source Leakage	I <sub>GSS</sub>	-	-	±100	nA	V <sub>GS</sub> = ±25V, V <sub>DS</sub> = 0V
<b>ON CHARACTERISTICS (Note 6)</b>						
Gate Threshold Voltage	V <sub>GS(th)</sub>	1.0	1.45	2.4	V	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA
Static Drain-Source On-Resistance	R <sub>DS(on)</sub>	-	15	23	mΩ	V <sub>GS</sub> = 10V, I <sub>D</sub> = 10A
		-	25	33		V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 7.5A
Forward Transfer Admittance	Y <sub>fs</sub>	-	2.5	-	S	V <sub>DS</sub> = 5V, I <sub>D</sub> = 10A
Diode Forward Voltage	V <sub>SD</sub>	-	0.69	1	V	V <sub>GS</sub> = 0V, I <sub>S</sub> = 1A
<b>DYNAMIC CHARACTERISTICS (Note 7)</b>						
Input Capacitance	C <sub>iss</sub>	-	478.9	-	pF	V <sub>DS</sub> = 15V, V <sub>GS</sub> = 0V, f = 1.0MHz
Output Capacitance	C <sub>oss</sub>	-	96.7	-	pF	
Reverse Transfer Capacitance	C <sub>rss</sub>	-	61.4	-	pF	
Gate Resistance	R <sub>g</sub>	0.4	1.1	1.6	Ω	V <sub>DS</sub> = 0V, V <sub>GS</sub> = 0V, f = 1MHz
Total Gate Charge (V <sub>GS</sub> = 4.5V)	Q <sub>g</sub>	-	5.0	8	nC	V <sub>DS</sub> = 15V, V <sub>GS</sub> = 10V, I <sub>D</sub> = 10A
Total Gate Charge (V <sub>GS</sub> = 10V)	Q <sub>g</sub>	-	10.5	17		
Gate-Source Charge	Q <sub>gs</sub>	-	1.8	-		
Gate-Drain Charge	Q <sub>gd</sub>	-	1.6	-		
Turn-On Delay Time	t <sub>D(on)</sub>	-	2.9	-	ns	V <sub>GS</sub> = 10V, V <sub>DS</sub> = 15V, R <sub>G</sub> = 3Ω, R <sub>L</sub> = 1.5Ω
Turn-On Rise Time	t <sub>r</sub>	-	7.9	-	ns	
Turn-Off Delay Time	t <sub>D(off)</sub>	-	14.6	-	ns	
Turn-Off Fall Time	t <sub>f</sub>	-	3.1	-	ns	

Notes: 6. Short duration pulse test used to minimize self-heating effect.  
7. Guaranteed by design. Not subject to production testing.



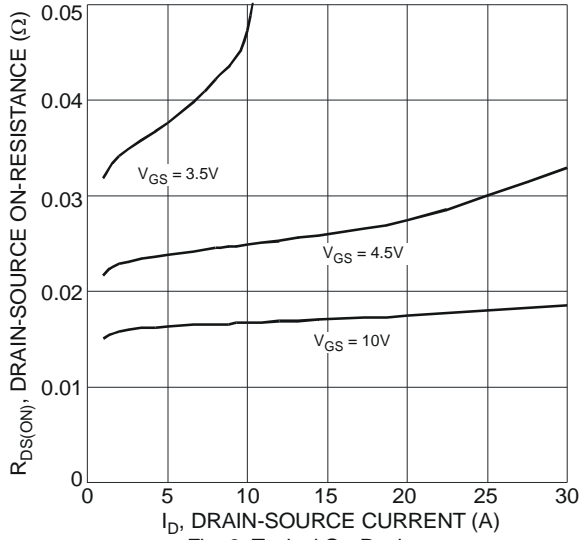


Fig. 3 Typical On-Resistance vs. Drain Current and Gate Voltage

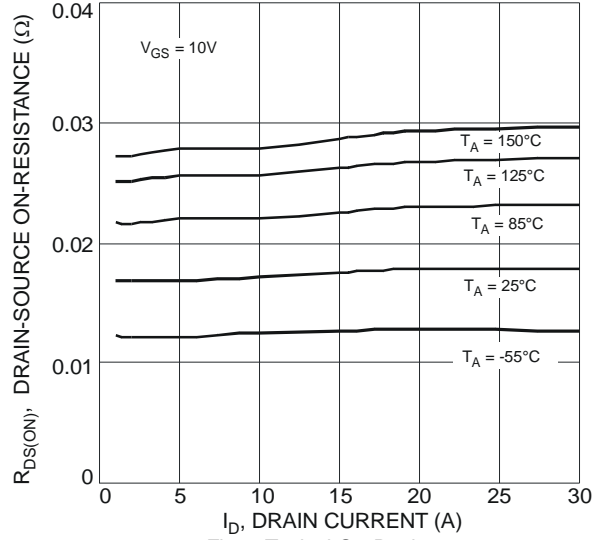


Fig. 4 Typical On-Resistance vs. Drain Current and Temperature

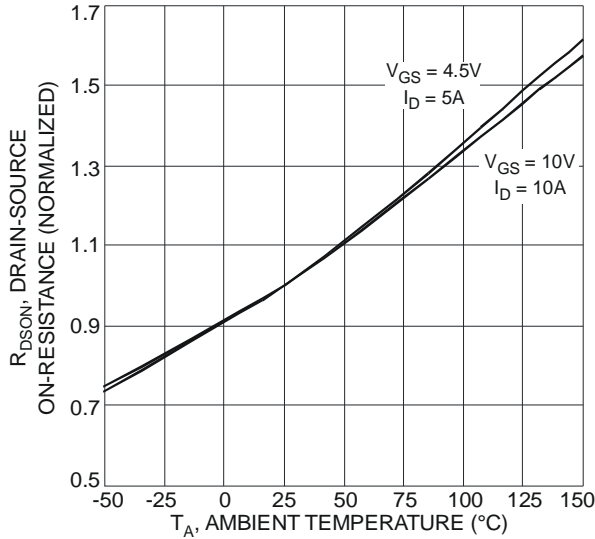


Fig. 5 On-Resistance Variation with Temperature

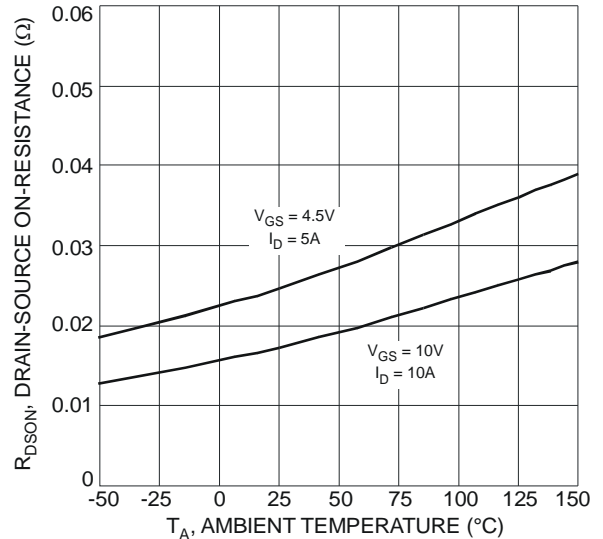


Fig. 6 On-Resistance Variation with Temperature

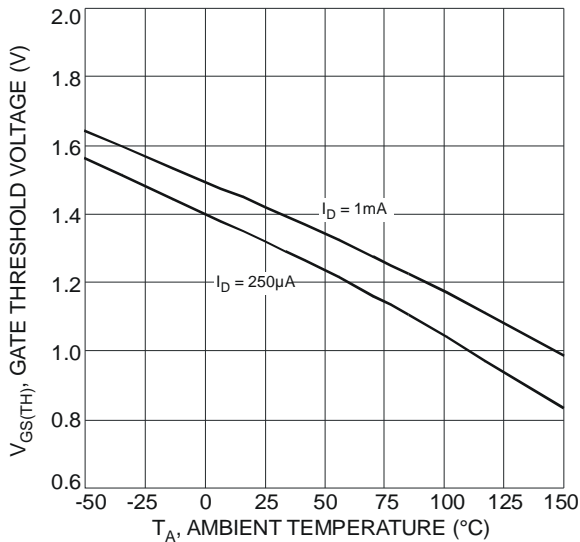


Fig. 7 Gate Threshold Variation vs. Ambient Temperature

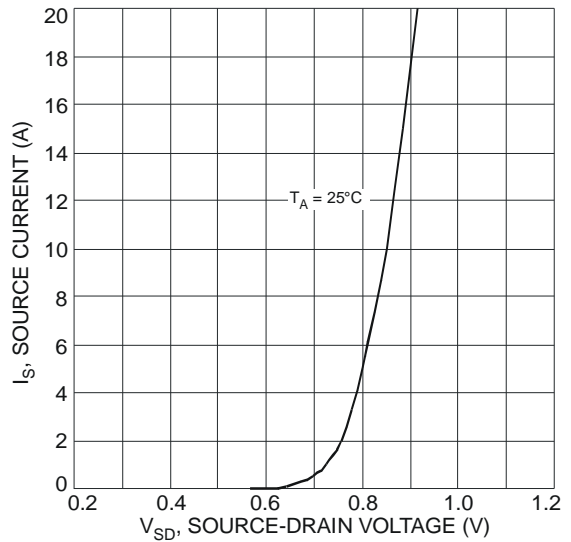
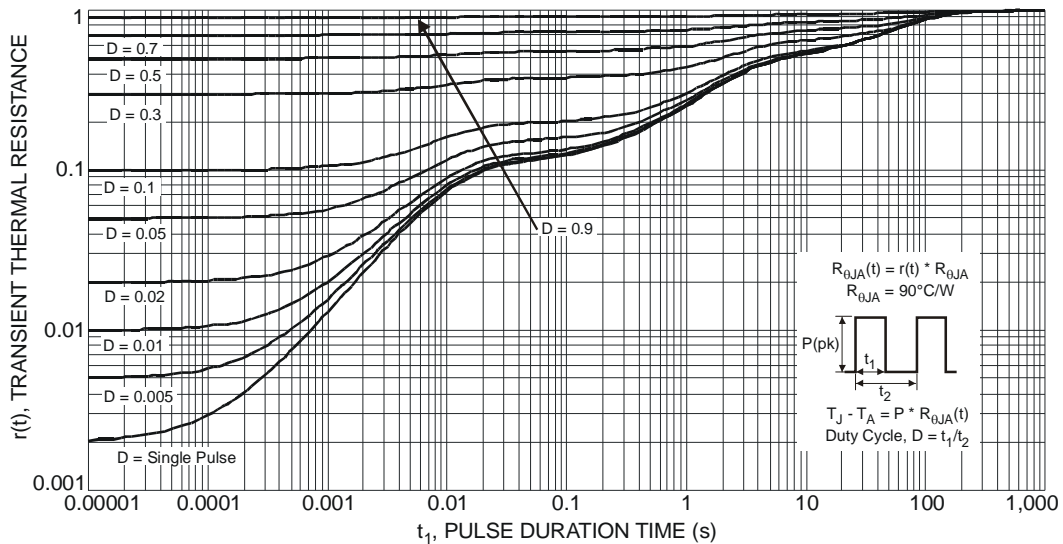
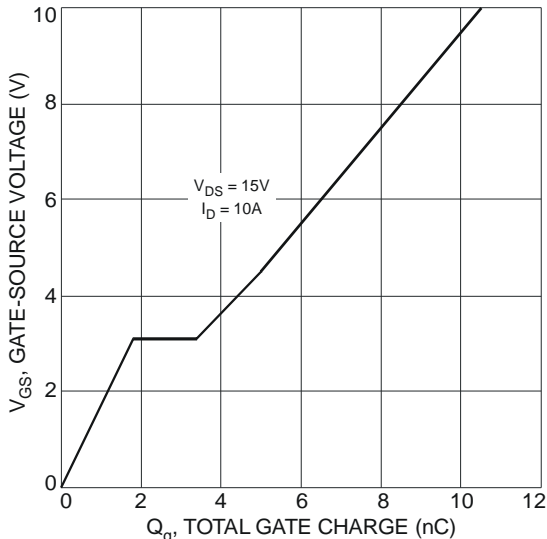
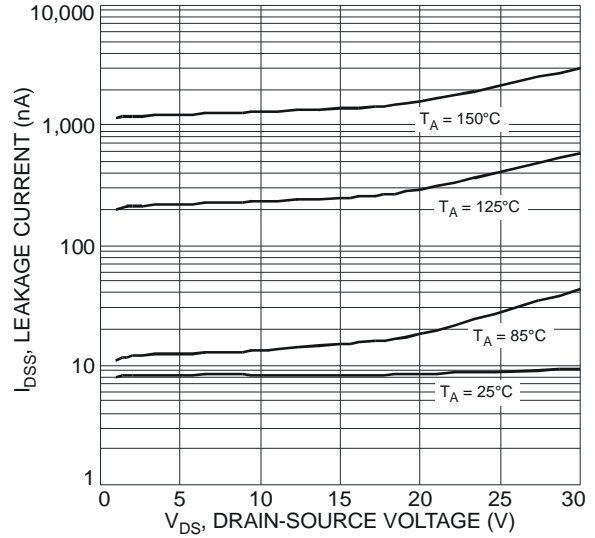
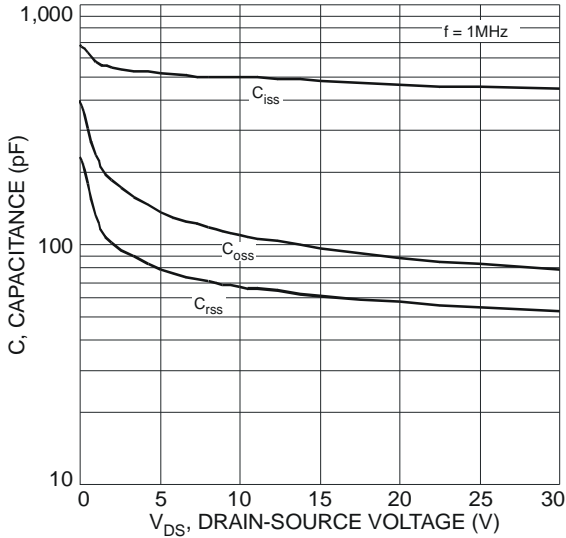


Fig. 8 Diode Forward Voltage vs. Current

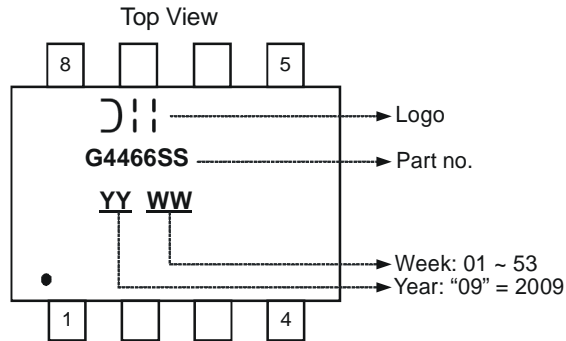


### Ordering Information (Note 8)

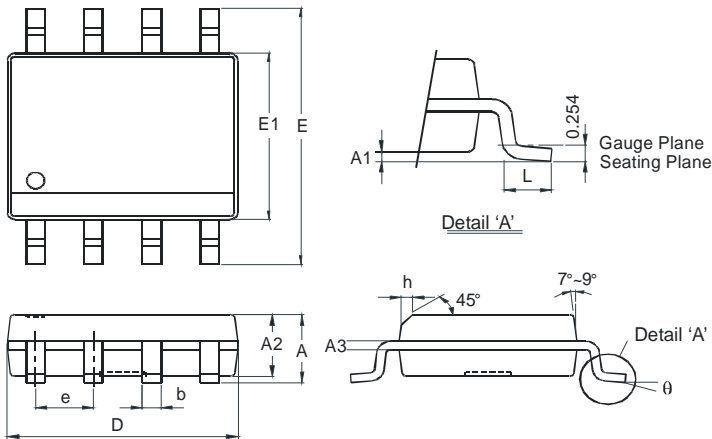
Part Number	Case	Packaging
DMG4466SSS-13	SO-8	2500 / Tape & Reel

Notes: 8. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

### Marking Information

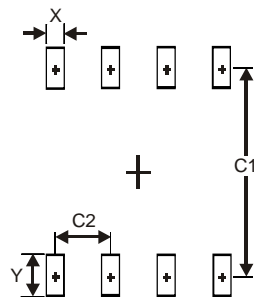


### Package Outline Dimensions



SO-8		
Dim	Min	Max
<b>A</b>	-	1.75
<b>A1</b>	0.10	0.20
<b>A2</b>	1.30	1.50
<b>A3</b>	0.15	0.25
<b>b</b>	0.3	0.5
<b>D</b>	4.85	4.95
<b>E</b>	5.90	6.10
<b>E1</b>	3.85	3.95
<b>e</b>	1.27 Typ	
<b>h</b>	-	0.35
<b>L</b>	0.62	0.82
<b>θ</b>	0°	8°
All Dimensions in mm		

### Suggested Pad Layout



Dimensions	Value (in mm)
<b>X</b>	0.60
<b>Y</b>	1.55
<b>C1</b>	5.4
<b>C2</b>	1.27

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