

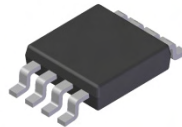
## Features

- 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**

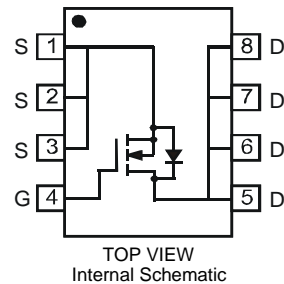
## Mechanical Data

- 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			$V_{GSS}$	$\pm 20$	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

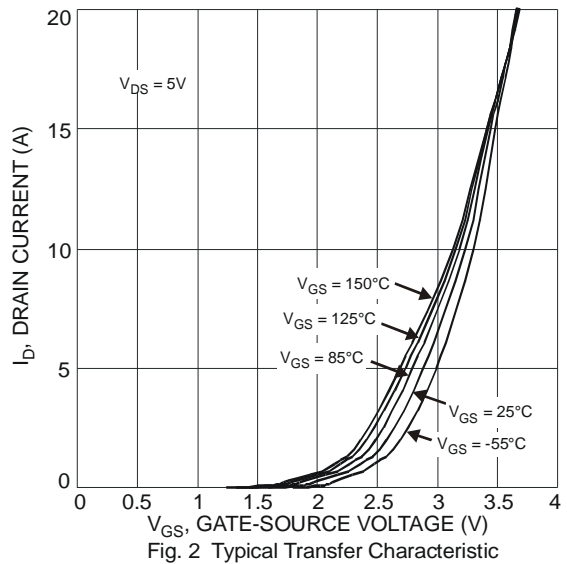
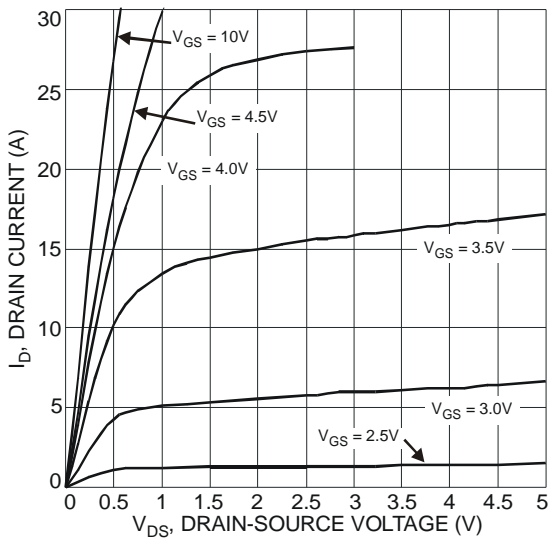
Characteristic			Symbol	Value	Unit
Power Dissipation (Note 3)			$P_D$	1.42	W
Thermal Resistance, Junction to Ambient @ $T_A = 25^\circ\text{C}$ (Note 3)			$R_{\theta JA}$	88.4	$^\circ\text{C/W}$
Operating and Storage Temperature Range			$T_J, T_{STG}$	-55 to +150	$^\circ\text{C}$

- 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** @ $T_A = 25^\circ\text{C}$  unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS (Note 6)</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	30	-	-	V	$V_{GS} = 0V, I_D = 250\mu A$
Zero Gate Voltage Drain Current	$I_{DSS}$	-	-	1	$\mu A$	$V_{DS} = 30V, V_{GS} = 0V$
Gate-Source Leakage	$I_{GSS}$	-	-	$\pm 100$	nA	$V_{GS} = \pm 20V, V_{DS} = 0V$
<b>ON CHARACTERISTICS (Note 6)</b>						
Gate Threshold Voltage	$V_{GS(th)}$	1.0	1.45	2.4	V	$V_{DS} = V_{GS}, I_D = 250\mu A$
Static Drain-Source On-Resistance	$R_{DS(on)}$	-	15	23	m $\Omega$	$V_{GS} = 10V, I_D = 10A$
		-	25	33		$V_{GS} = 4.5V, I_D = 7.5A$
Forward Transfer Admittance	$ Y_{fs} $	-	2.5	-	S	$V_{DS} = 5V, I_D = 10A$
Diode Forward Voltage	$V_{SD}$	-	0.69	1	V	$V_{GS} = 0V, I_S = 1A$
<b>DYNAMIC CHARACTERISTICS (Note 7)</b>						
Input Capacitance	$C_{iss}$	-	478.9	-	pF	$V_{DS} = 15V, V_{GS} = 0V, f = 1.0MHz$
Output Capacitance	$C_{oss}$	-	96.7	-	pF	
Reverse Transfer Capacitance	$C_{rss}$	-	61.4	-	pF	
Gate Resistance	$R_g$	0.4	1.1	1.6	$\Omega$	$V_{DS} = 0V, V_{GS} = 0V, f = 1MHz$
Total Gate Charge ( $V_{GS} = 4.5V$ )	$Q_g$	-	5.0	8	nC	$V_{DS} = 15V, V_{GS} = 10V, I_D = 10A$
Total Gate Charge ( $V_{GS} = 10V$ )	$Q_g$	-	10.5	17	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	$V_{GS} = 10V, V_{DS} = 15V, R_G = 3\Omega, R_L = 1.5\Omega$
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: 6. Short duration pulse test used to minimize self-heating effect.  
7. Guaranteed by design. Not subject to production testing.



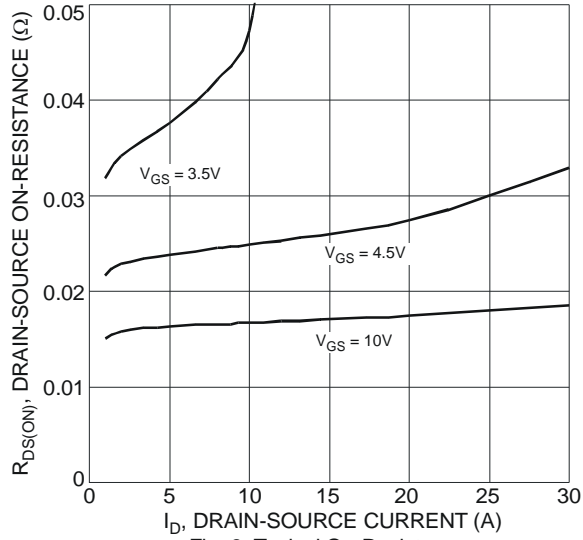


Fig. 3 Typical On-Resistance vs. Drain Current and Gate Voltage

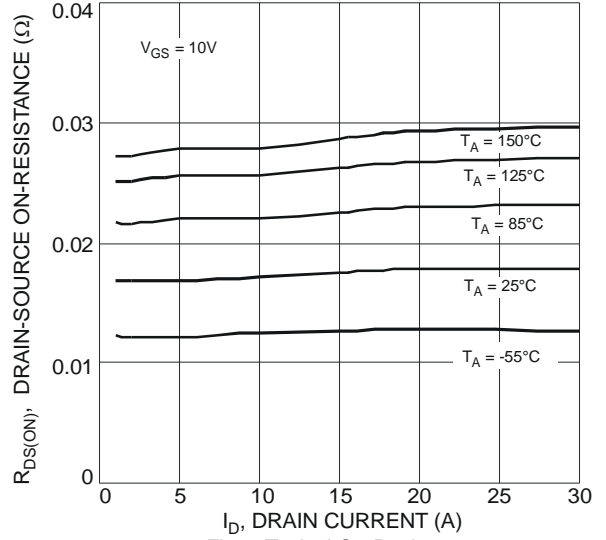


Fig. 4 Typical On-Resistance vs. Drain Current and Temperature

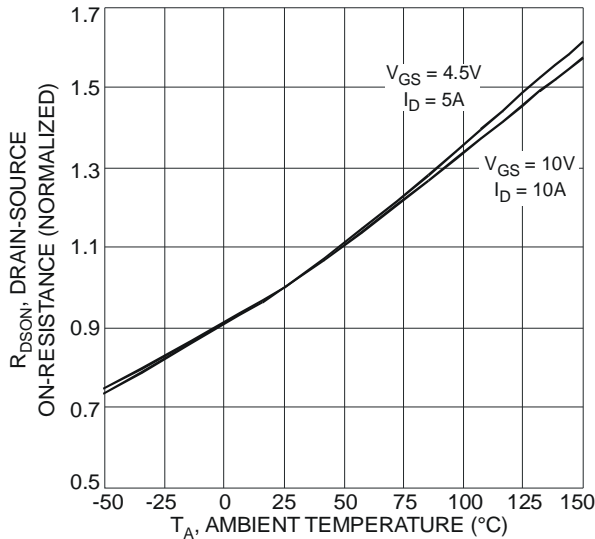


Fig. 5 On-Resistance Variation with Temperature

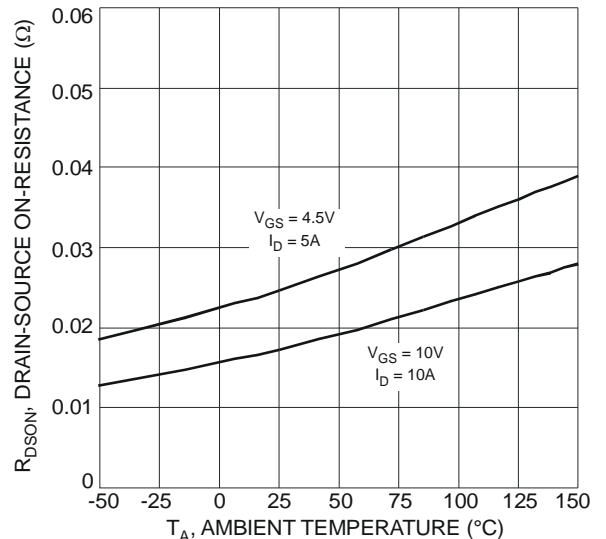


Fig. 6 On-Resistance Variation with Temperature

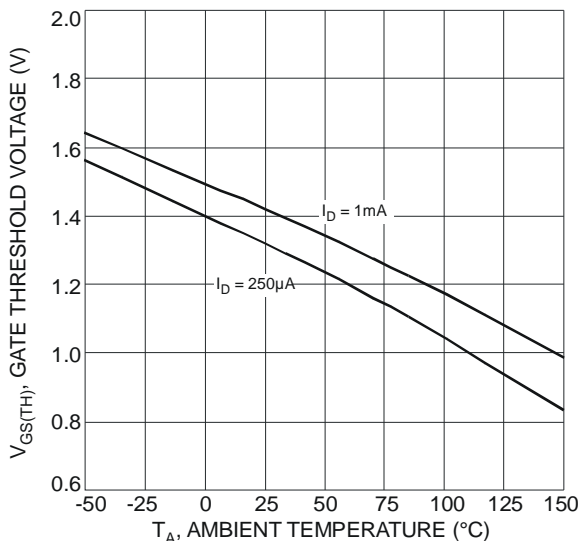


Fig. 7 Gate Threshold Variation vs. Ambient Temperature

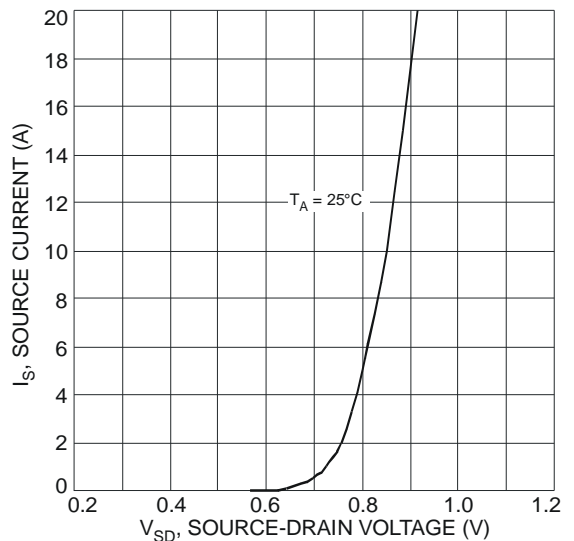


Fig. 8 Diode Forward Voltage vs. Current

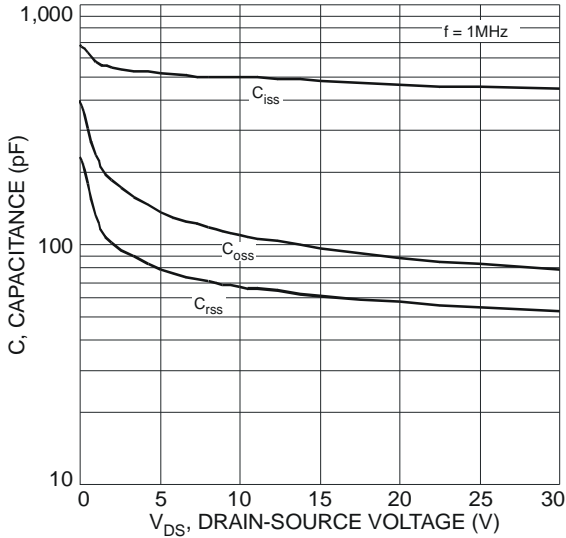


Fig. 9 Typical Total Capacitance

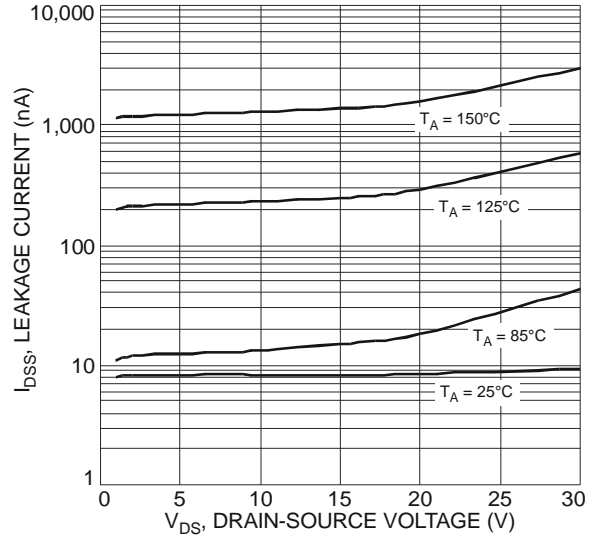


Fig. 10 Typical Leakage Current vs. Drain-Source Voltage

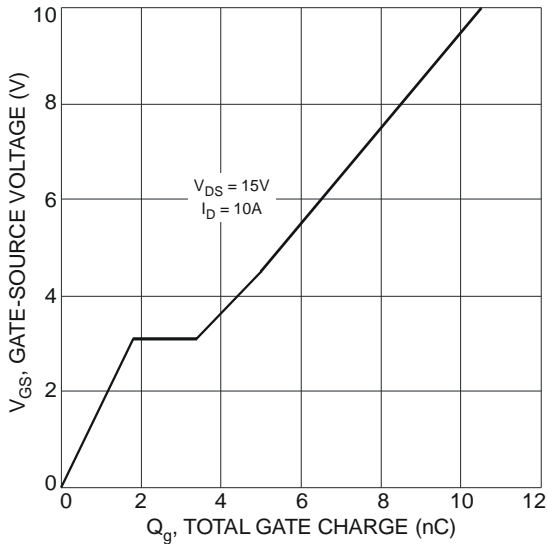


Fig. 11 Gate-Charge Characteristics

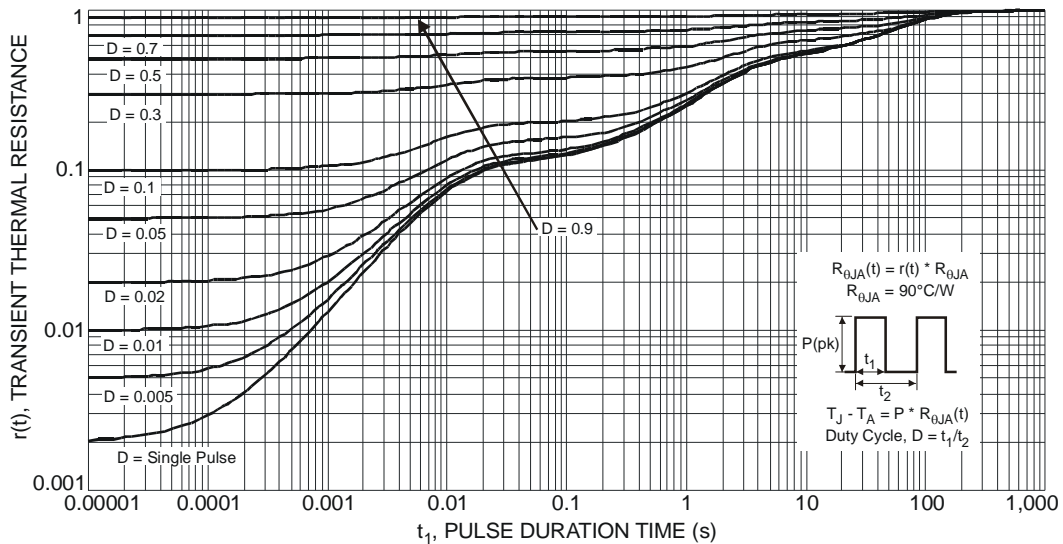


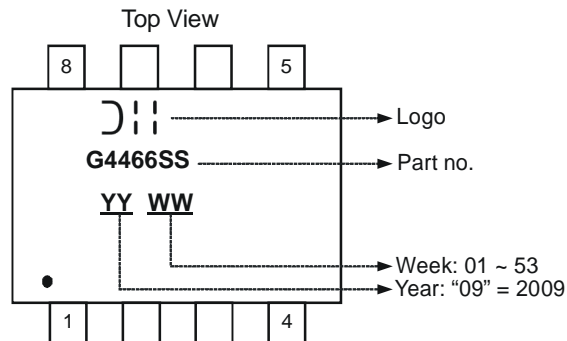
Fig. 12 Transient Thermal Response

**Ordering Information** (Note 8)

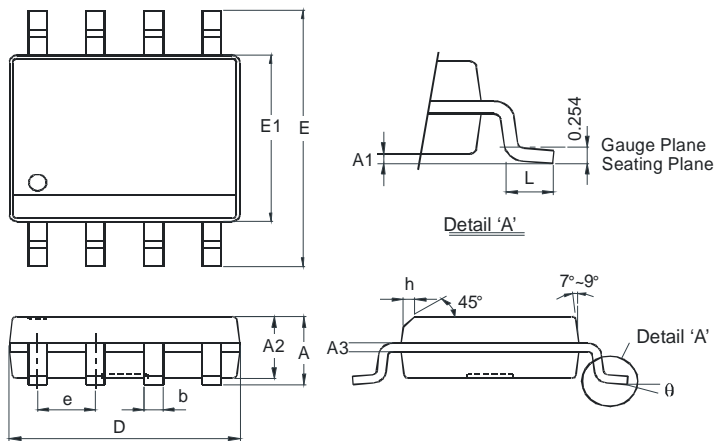
Part Number	Case	Packaging
DMG4466SSSL-13	SO-8	2500 / Tape & Reel

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

**Marking Information**

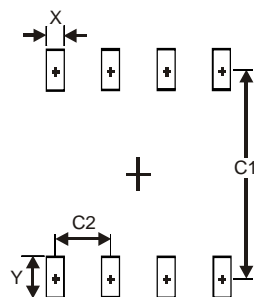


**Package Outline Dimensions**



SO-8		
Dim	Min	Max
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**



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

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Телефон: 8 (812) 309-75-97 (многоканальный)

Факс: 8 (812) 320-03-32

Электронная почта: [ocean@oceanchips.ru](mailto:ocean@oceanchips.ru)

Web: <http://oceanchips.ru/>

Адрес: 198099, г. Санкт-Петербург, ул. Калинина, д. 2, корп. 4, лит. А