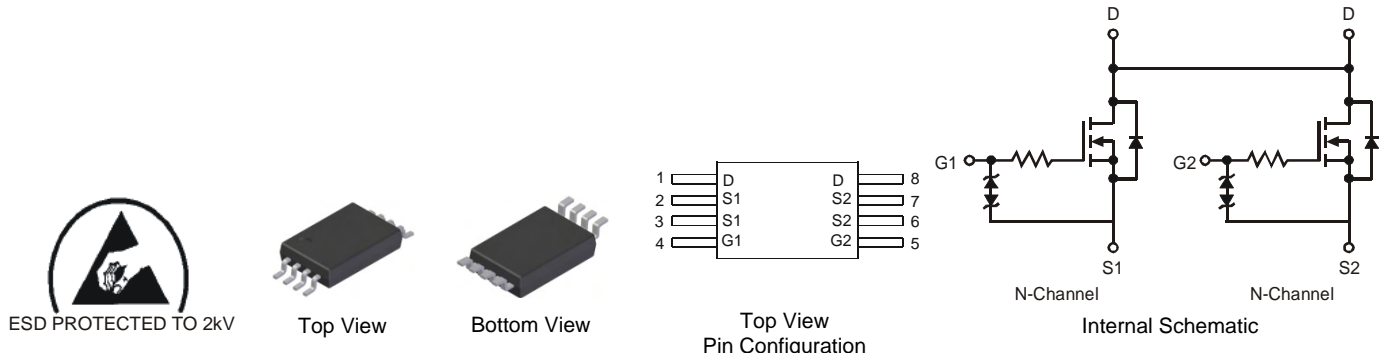


## Features

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

## Mechanical Data

- Case: TSSOP-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: 0.039 grams (approximate)

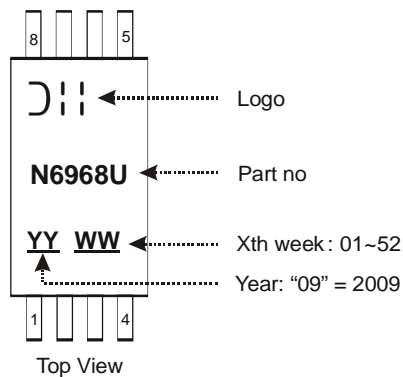


## Ordering Information (Note 3)

Part Number	Case	Packaging
DMG6968UTS-13	TSSOP-8	2500 / 13" Tape & Reel

- Notes:
1. No purposefully added lead.
  2. Diodes Inc.'s "Green" policy can be found on our website at <http://www.diodes.com>.
  3. For packaging details, go to our website at <http://www.diodes.com>.

## Marking Information



**Maximum Ratings** @T<sub>A</sub> = 25°C unless otherwise specified

Characteristic			Symbol	Value	Unit
Drain-Source Voltage			V <sub>DSS</sub>	20	V
Gate-Source Voltage			V <sub>GSS</sub>	±12	V
Continuous Drain Current (Note 4)	Steady State	T <sub>A</sub> = 25°C	I <sub>D</sub>	5.2	A
		T <sub>A</sub> = 70°C		3.5	
Pulsed Drain Current			I <sub>DM</sub>	30	A

**Thermal Characteristics**

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 4)	P <sub>D</sub>	1.0	W
Thermal Resistance, Junction to Ambient @T <sub>A</sub> = 25°C	R <sub>θJA</sub>	125	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS (Note 5)</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	20	-	-	V	V <sub>GS</sub> = 0V, I <sub>D</sub> = 250μA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	-	-	1.0	μA	V <sub>DS</sub> = 20V, V <sub>GS</sub> = 0V
Gate-Source Leakage	I <sub>GSS</sub>	-	-	10	μA	V <sub>GS</sub> = ±10V, V <sub>DS</sub> = 0V
Gate-Source Breakdown Voltage	BV <sub>GS</sub>	±12	-	-	V	V <sub>DS</sub> = 0V, I <sub>G</sub> = ±250μA
<b>ON CHARACTERISTICS (Note 5)</b>						
Gate Threshold Voltage	V <sub>GS(th)</sub>	0.35	-	0.95	V	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA
Static Drain-Source On-Resistance	R <sub>DS(on)</sub>	-	18	23	mΩ	V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 6.5A
		-	21	27		V <sub>GS</sub> = 2.5V, I <sub>D</sub> = 5.5A
		-	26	34		V <sub>GS</sub> = 1.8V, I <sub>D</sub> = 3.5A
		-	-	-		V <sub>GS</sub> = 1.8V, I <sub>D</sub> = 3.5A
Forward Transfer Admittance	Y <sub>fs</sub>	-	13	-	S	V <sub>DS</sub> = 5V, I <sub>D</sub> = 5A
Diode Forward Voltage	V <sub>SD</sub>	-	0.7	1.0	V	V <sub>GS</sub> = 0V, I <sub>S</sub> = 1A
<b>DYNAMIC CHARACTERISTICS</b>						
Input Capacitance	C <sub>iss</sub>	-	143	-	pF	V <sub>DS</sub> = 10V, V <sub>GS</sub> = 0V f = 1.0MHz
Output Capacitance	C <sub>oss</sub>	-	74	-	pF	
Reverse Transfer Capacitance	C <sub>rss</sub>	-	29	-	pF	
Gate Resistance	R <sub>g</sub>	-	202	-	Ω	V <sub>DS</sub> = 0V, V <sub>GS</sub> = 0V, f = 1MHz
Total Gate Charge	Q <sub>g</sub>	-	8.8	-	nC	V <sub>GS</sub> = 4.5V, V <sub>DS</sub> = 10V, I <sub>D</sub> = 6.5A
Gate-Source Charge	Q <sub>gs</sub>	-	1.4	-	nC	
Gate-Drain Charge	Q <sub>gd</sub>	-	3.0	-	nC	
Turn-On Delay Time	t <sub>D(on)</sub>	-	53	-	ns	V <sub>DD</sub> = 10V, V <sub>GS</sub> = 4.5V, R <sub>L</sub> = 10Ω, R <sub>G</sub> = 6Ω
Turn-On Rise Time	t <sub>r</sub>	-	78	-	ns	
Turn-Off Delay Time	t <sub>D(off)</sub>	-	562	-	ns	
Turn-Off Fall Time	t <sub>f</sub>	-	234	-	ns	

Notes: 4. Device mounted on FR-4 PCB.  
5. Short duration pulse test used to minimize self-heating effect.

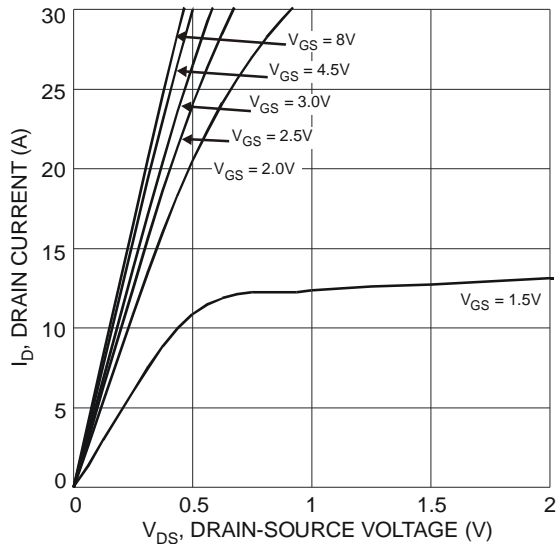


Fig. 1 Typical Output Characteristic

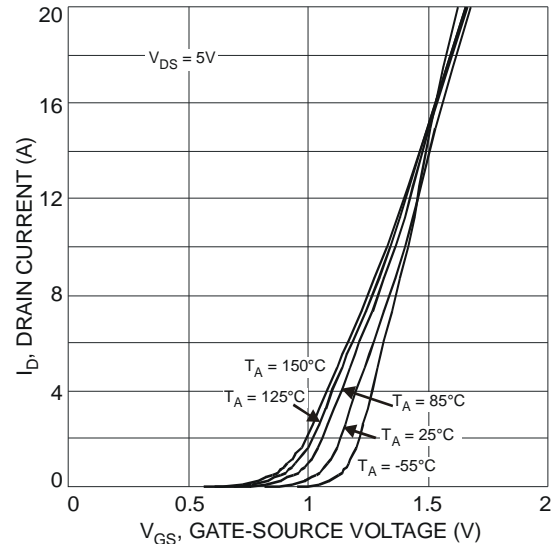


Fig. 2 Typical Transfer Characteristic

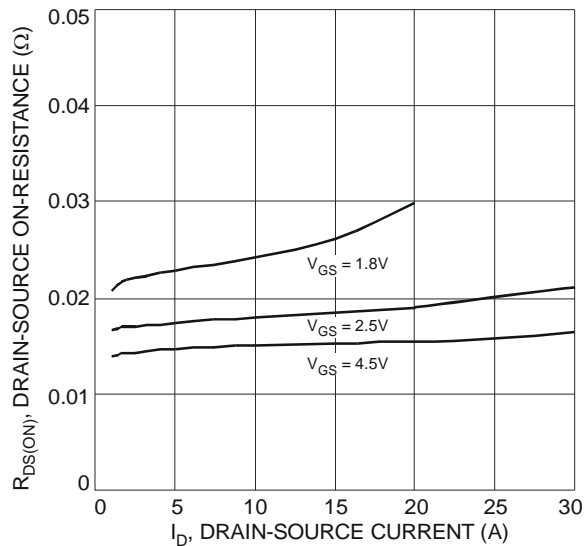


Fig. 3 Typical On-Resistance vs. Drain Current and Gate Voltage

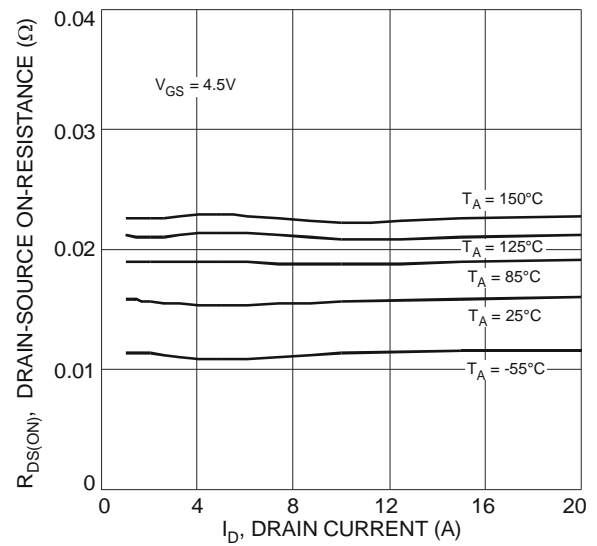


Fig. 4 Typical On-Resistance vs. Drain Current and Temperature

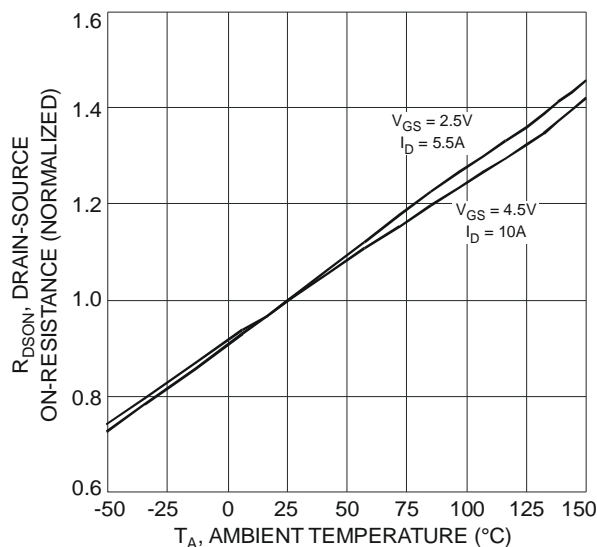


Fig. 5 On-Resistance Variation with Temperature

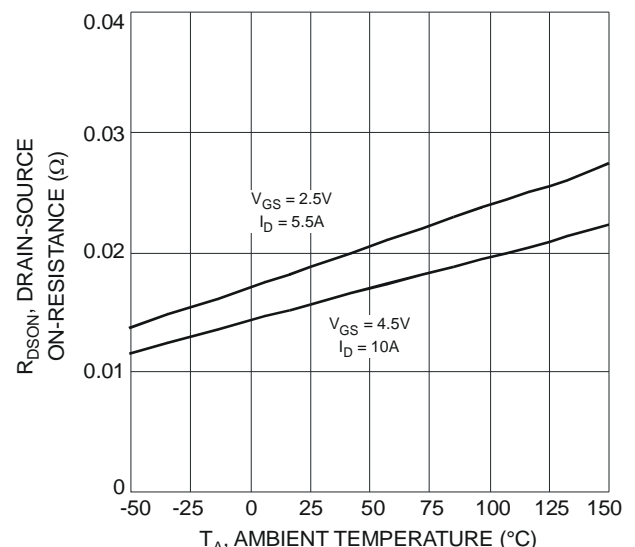


Fig. 6 On-Resistance Variation with Temperature

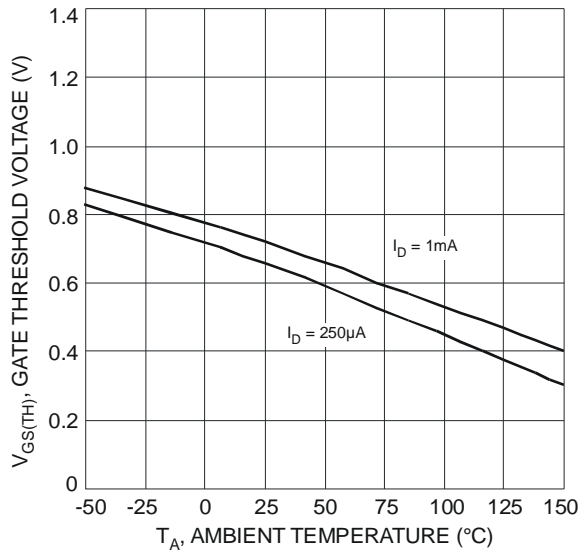


Fig. 7 Gate Threshold Variation vs. Ambient Temperature

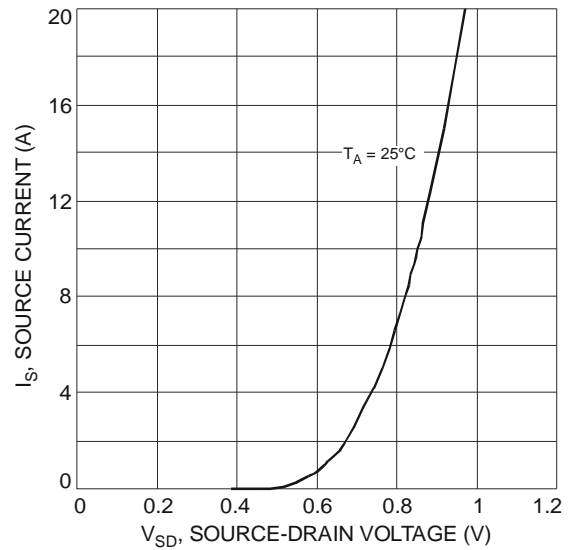


Fig. 8 Diode Forward Voltage vs. Current

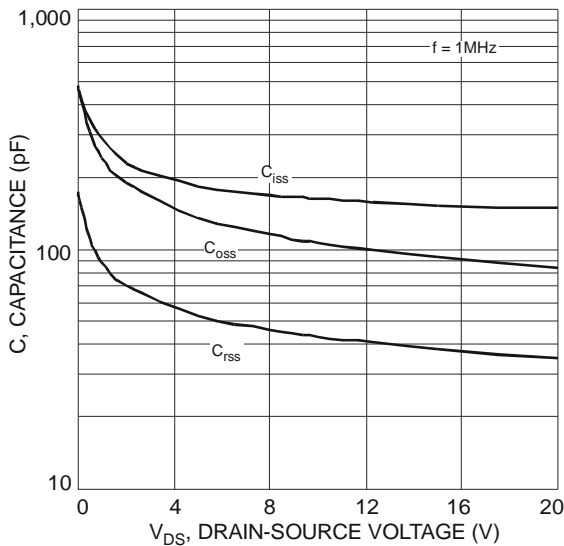


Fig. 9 Typical Total Capacitance

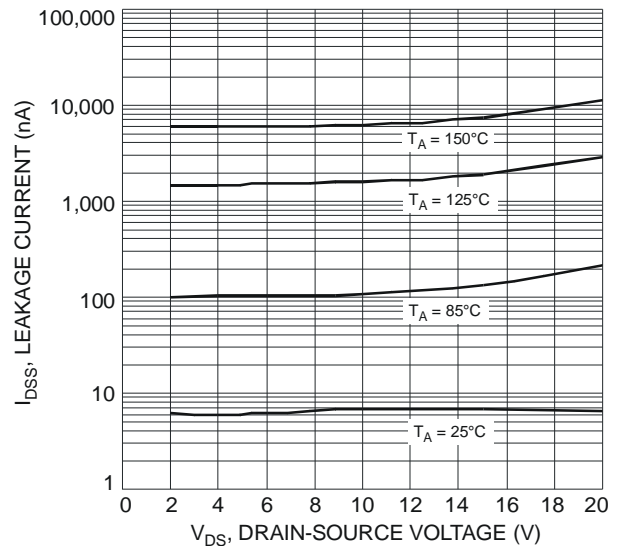


Fig. 10 Typical Leakage Current vs. Drain-Source Voltage

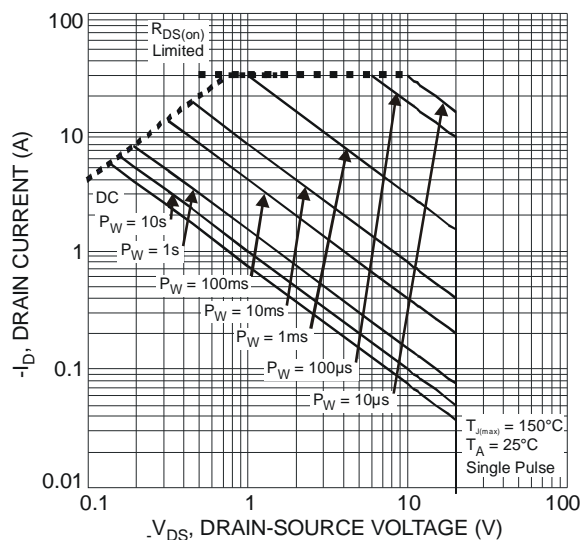


Fig. 11 Safe Operation Area

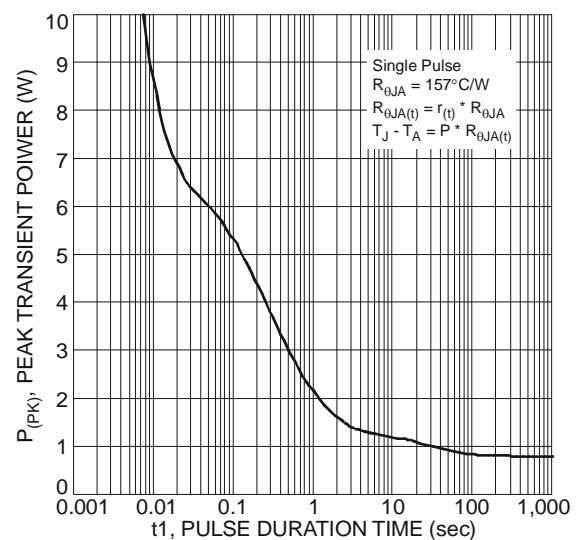


Fig. 12 Single Pulse Maximum Power Dissipation

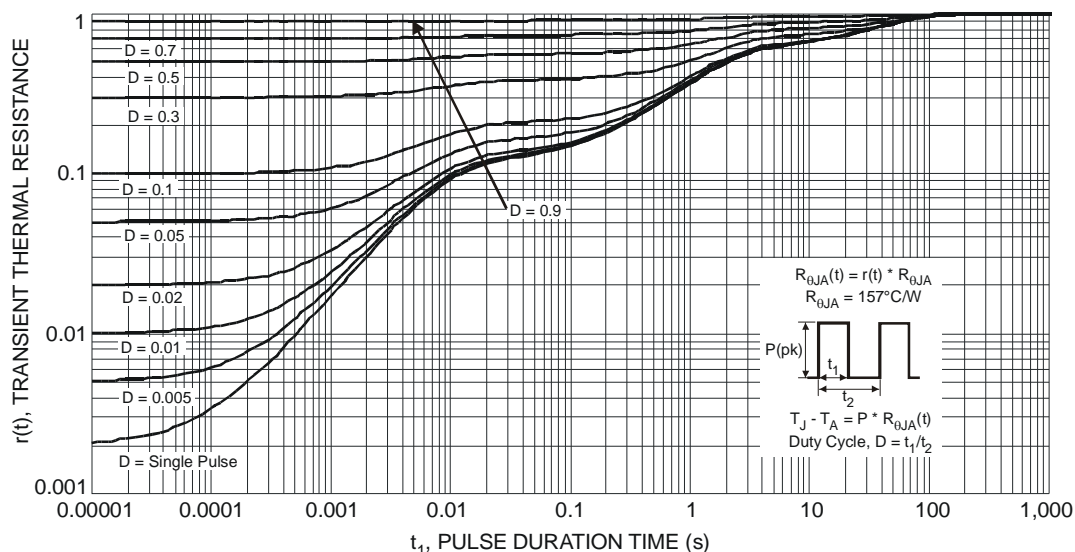
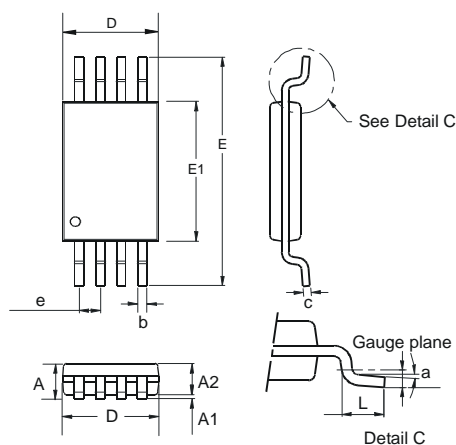


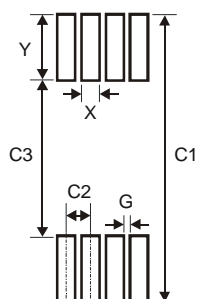
Fig. 13 Transient Thermal Response

## Package Outline Dimensions



TSSOP-8L			
Dim	Min	Max	Typ
a	0.09	—	—
A	—	1.20	—
A1	0.05	0.15	—
A2	0.825	1.025	0.925
b	0.19	0.30	—
c	0.09	0.20	—
D	2.90	3.10	3.025
e	—	—	0.65
E	—	—	6.40
E1	4.30	4.50	4.425
L	0.45	0.75	0.60
All Dimensions in mm			

## Suggested Pad Layout



Dimensions	Value (in mm)
X	0.45
Y	1.78
C1	7.72
C2	0.65
C3	4.16
G	0.20

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