

Features

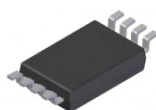
- Low On-Resistance
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- **Lead Free By Design/RoHS Compliant (Note 1)**
- "Green" Device (Note 2)
- ESD Protected Up To 2KV
- Qualified to AEC-Q101 Standards for High Reliability

Mechanical Data

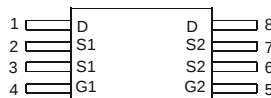
- Case: TSSOP-8
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections: See Diagram Below
- Weight: 0.039 grams (approximate)



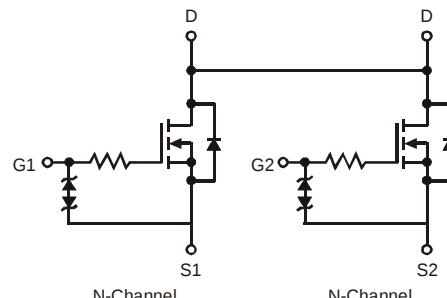
Top View



Bottom View



Top View
Pin Configuration



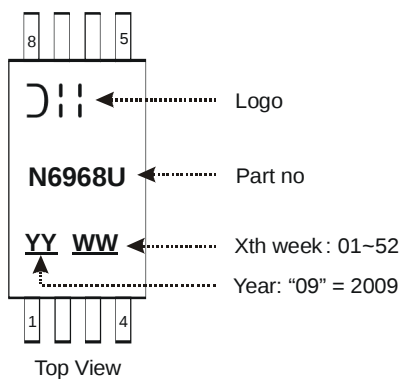
Internal Schematic

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_A = 25°C unless otherwise specified

Characteristic			Symbol	Value	Unit
Drain-Source Voltage			V _{DSS}	20	V
Gate-Source Voltage			V _{GSS}	±12	V
Continuous Drain Current (Note 4)	Steady State	T _A = 25°C	I _D	5.2	A
		T _A = 70°C		3.5	
Pulsed Drain Current			I _{DM}	30	A

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 4)	P _D	1.0	W
Thermal Resistance, Junction to Ambient @T _A = 25°C	R _{θJA}	125	°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 5)						
Drain-Source Breakdown Voltage	BV _{DSS}	20	-	-	V	V _{GS} = 0V, I _D = 250μA
Zero Gate Voltage Drain Current	I _{DSS}	-	-	1.0	μA	V _{DS} = 20V, V _{GS} = 0V
Gate-Source Leakage	I _{GSS}	-	-	10	μA	V _{GS} = ±10V, V _{DS} = 0V
Gate-Source Breakdown Voltage	BV _{SGS}	±12	-	-	V	V _{DS} = 0V, I _G = ±250μA
ON CHARACTERISTICS (Note 5)						
Gate Threshold Voltage	V _{GS(th)}	0.35	-	0.95	V	V _{DS} = V _{GS} , I _D = 250μA
Static Drain-Source On-Resistance	R _{DS(on)}	-	18	23	mΩ	V _{GS} = 4.5V, I _D = 6.5A
		-	21	27		V _{GS} = 2.5V, I _D = 5.5A
		-	26	34		V _{GS} = 1.8V, I _D = 3.5A
Forward Transfer Admittance	Y _{fs}	-	13	-	S	V _{DS} = 5V, I _D = 5A
Diode Forward Voltage	V _{SD}	-	0.7	1.0	V	V _{GS} = 0V, I _S = 1A
DYNAMIC CHARACTERISTICS						
Input Capacitance	C _{iss}	-	143	-	pF	V _{DS} = 10V, V _{GS} = 0V f = 1.0MHz
Output Capacitance	C _{oss}	-	74	-	pF	
Reverse Transfer Capacitance	C _{rss}	-	29	-	pF	
Gate Resistance	R _g	-	202	-	Ω	V _{DS} = 0V, V _{GS} = 0V, f = 1MHz
Total Gate Charge	Q _g	-	8.8	-	nC	V _{GS} = 4.5V, V _{DS} = 10V, I _D = 6.5A
Gate-Source Charge	Q _{gs}	-	1.4	-	nC	
Gate-Drain Charge	Q _{gd}	-	3.0	-	nC	
Turn-On Delay Time	t _{D(on)}	-	53	-	ns	V _{DD} = 10V, V _{GS} = 4.5V, R _L = 10Ω, R _G = 6Ω
Turn-On Rise Time	t _r	-	78	-	ns	
Turn-Off Delay Time	t _{D(off)}	-	562	-	ns	
Turn-Off Fall Time	t _f	-	234	-	ns	

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

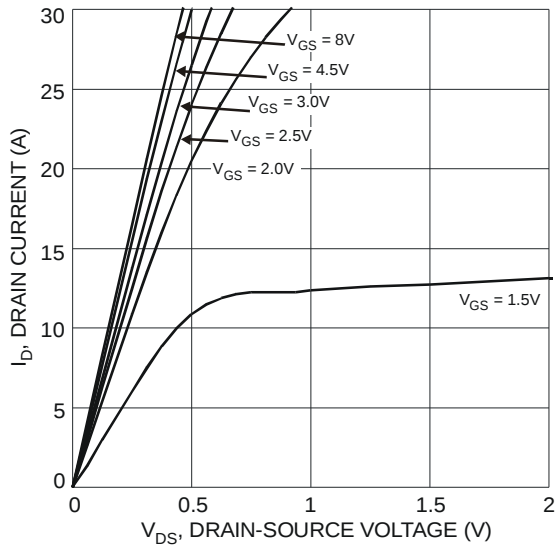


Fig. 1 Typical Output Characteristic

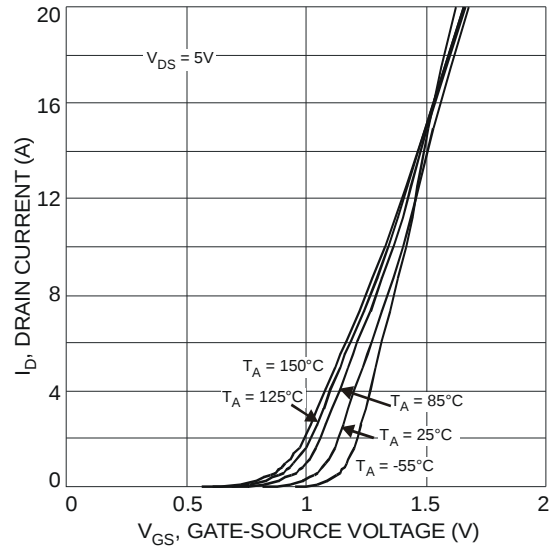


Fig. 2 Typical Transfer Characteristic

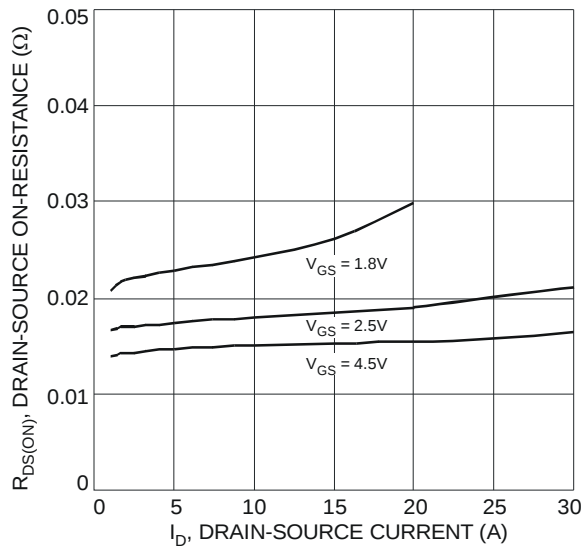


Fig. 3 Typical On-Resistance vs. Drain Current and Gate Voltage

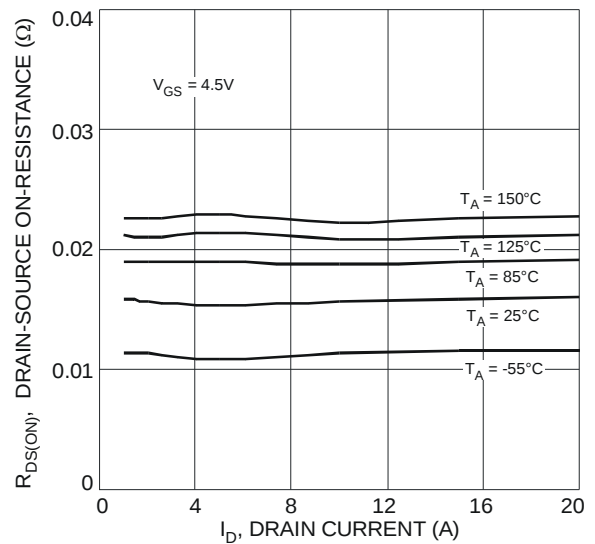


Fig. 4 Typical On-Resistance vs. Drain Current and Temperature

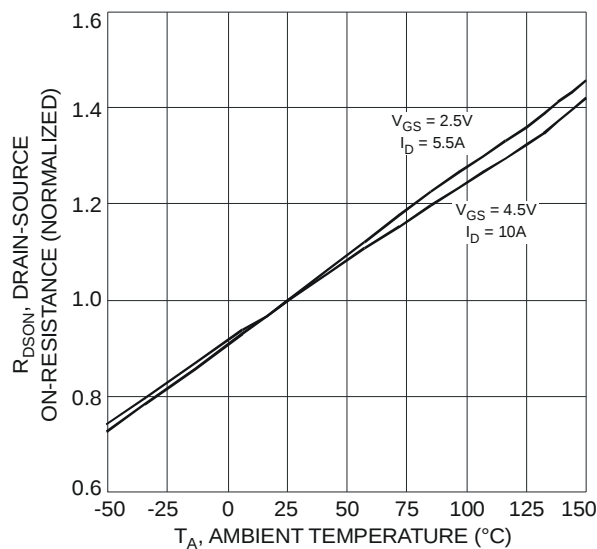


Fig. 5 On-Resistance Variation with Temperature

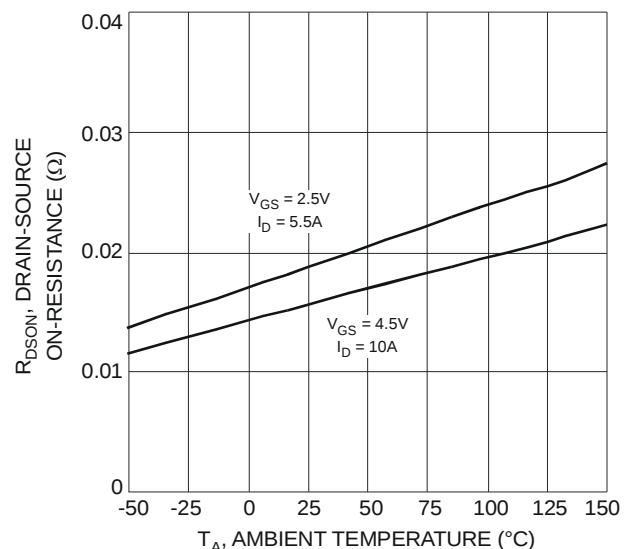


Fig. 6 On-Resistance Variation with Temperature

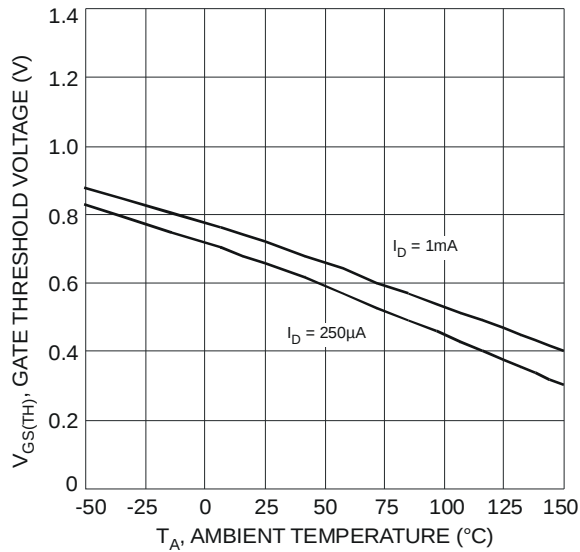


Fig. 7 Gate Threshold Variation vs. Ambient Temperature

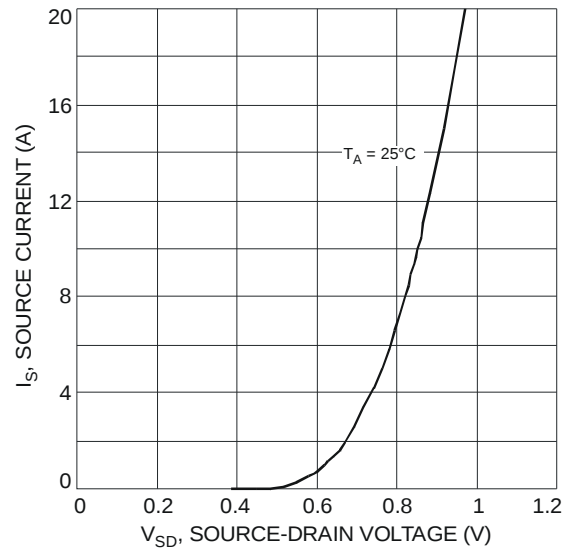


Fig. 8 Diode Forward Voltage vs. Current

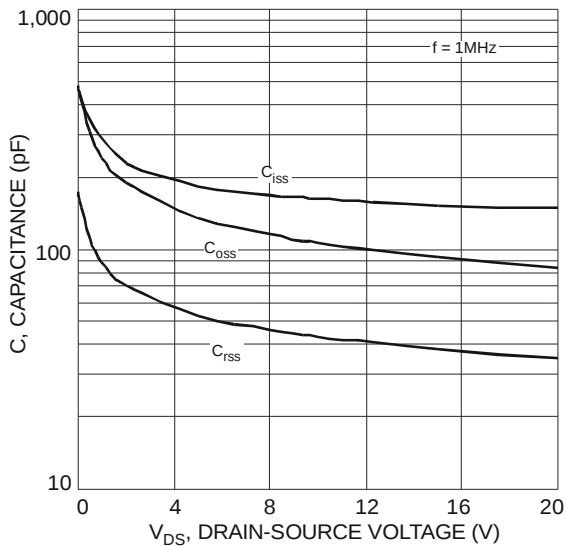


Fig. 9 Typical Total Capacitance

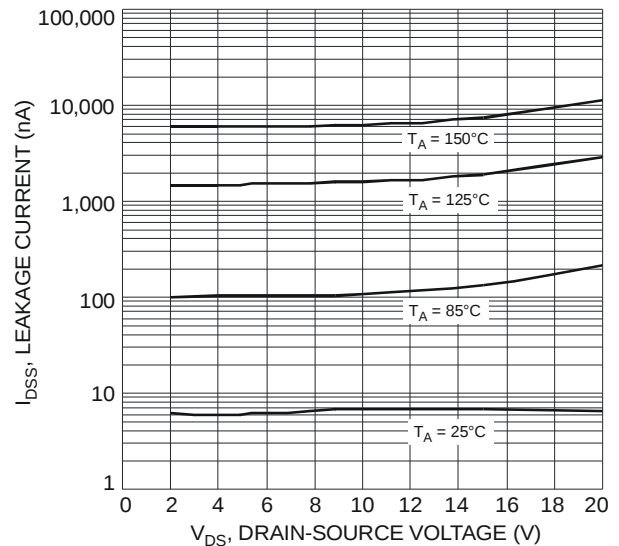


Fig. 10 Typical Leakage Current vs. Drain-Source Voltage

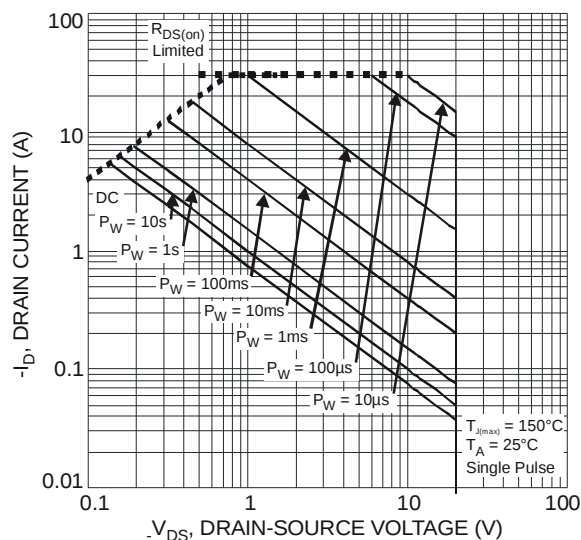


Fig. 11 Safe Operation Area

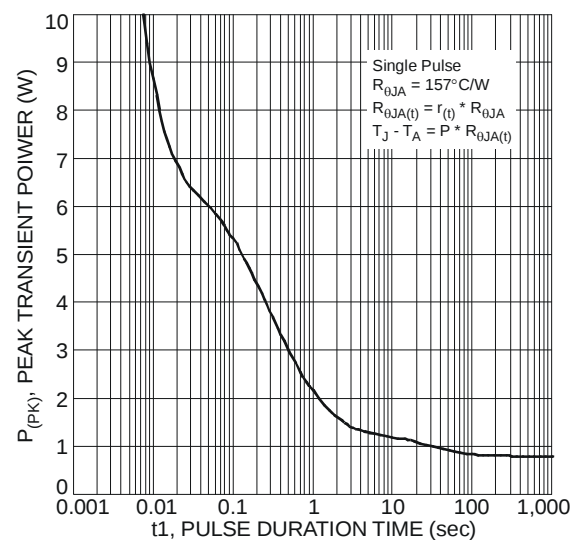
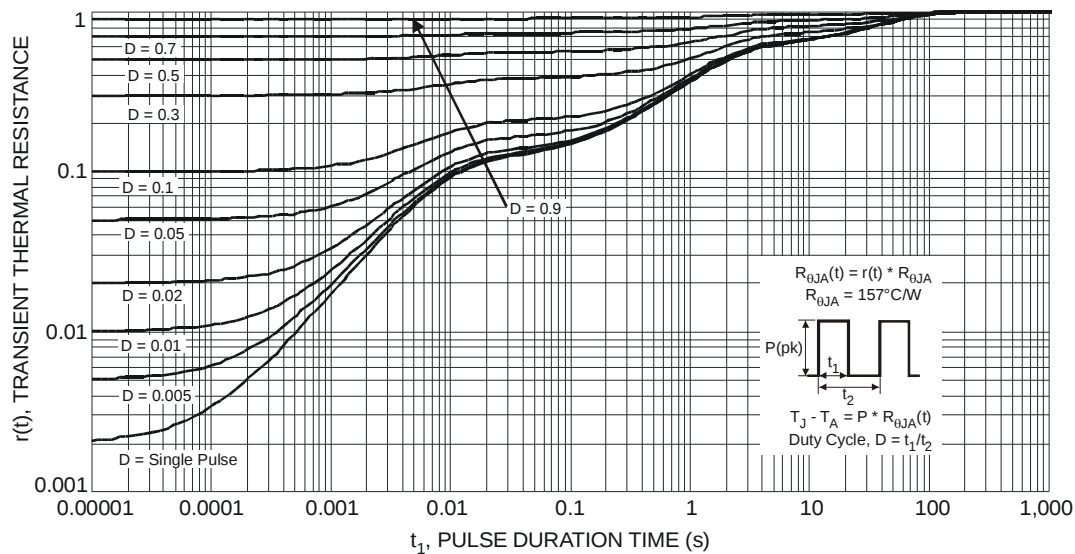
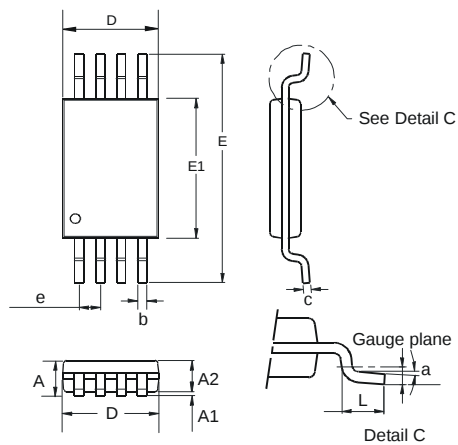


Fig. 12 Single Pulse Maximum Power Dissipation

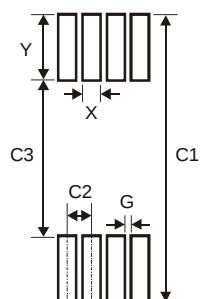


Package Outline Dimensions



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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