DUAL N-CHANNEL ENHANCEMENT MODE MOSFET

NEW PRODUCT

Features

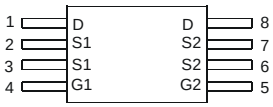
- Low On-Resistance
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- **Lead Free By Design/RoHS Compliant (Note 3)**
- **"Green" Device (Note 4)**
- **Qualified to AEC-Q101 Standards for High Reliability**

Mechanical Data

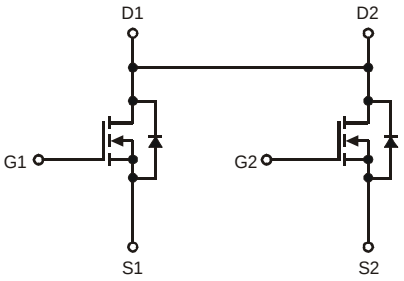
- Case: TSSOP-8L
- Case Material: Molded Plastic, “Green” Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020D
- Terminal Connections: See Diagram Below
- Marking Information: See Page 4
- Ordering Information: See Page 4
- Weight: 0.039 grams (approximate)

TOP VIEW

BOTTOM VIEW



Top View
Pin Configuration



Internal Schematic

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}	±8	V
Continuous Drain Current (Note 1)	Steady State	T_A = 25°C T_A = 70°C	I_D	4.9 3.9	A
Pulsed Drain Current (Note 2)			I_{DM}	31	A

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 1)	P_D	0.87	W
Thermal Resistance, Junction to Ambient @T_A = 25°C	$R_{\theta JA}$	143	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

Notes:
1. Device mounted on FR-4 PCB with minimum recommended pad layout.
2. Repetitive rating, pulse width limited by junction temperature.
3. No purposefully added lead.
4. Diodes Inc.'s "Green" policy can be found on our website at http://www.diodes.com/products/lead_free/index.php.

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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}	-	-	±100	nA	V_{GS} = ±8V, V_{DS} = 0V
ON CHARACTERISTICS (Note 5)						
Gate Threshold Voltage	$V_{GS(th)}$	0.5	-	0.9	V	V_{DS} = V_{GS}, I_D = 250µA
Static Drain-Source On-Resistance	$R_{DS\ (ON)}$	-	19	25	mΩ	V_{GS} = 4.5V, I_D = 8.2A
			22	29		V_{GS} = 2.5V, I_D = 3.3A
			28	37		V_{GS} = 1.8V, I_D = 2.0A
Forward Transfer Admittance	$\|Y_{fs}\|$	-	7	-	S	V_{DS} = 10V, I_D = 4A
Diodes Forward Voltage	V_{SD}	-	0.7	0.9	V	Is = 2.25A, V_{GS} = 0V
DYNAMIC CHARACTERISTICS (Note 6)						
Input Capacitance	C_{iss}	-	841	-	pF	V_{DS} = 10V, V_{GS} = 0V, f = 1.0MHz
Output Capacitance	C_{oss}	-	88	-	pF	
Reverse Transfer Capacitance	C_{rss}	-	81	-	pF	
Gate Resistance	R_g	-	1.24	-	Ω	V_{DS} =0V, V_{GS} = 0V, f = 1MHz
SWITCHING CHARACTERISTICS						
Total Gate Charge	Q_g	-	9.6	-	nC	V_{GS} = 4.5V, V_{DS} = 10V, I_D = 8.2A
Gate-Source Charge	Q_{gs}	-	1.4	-	nC	
Gate-Drain Charge	Q_{gd}	-	2.1	-	nC	
Turn-On Delay Time	$t_{D(on)}$	-	7.8	-	ns	V_{DD} = 10V, V_{GS} = 4.5V, R_L = 10Ω, R_G = 6Ω
Turn-On Rise Time	t_r	-	21.1	-	ns	
Turn-Off Delay Time	$t_{D(off)}$	-	38.6	-	ns	
Turn-Off Fall Time	t_f	-	10.1	-	ns	

Notes: 5. Short duration pulse test used to minimize self-heating effects.
6. Guaranteed by design. Not subject to production testing.

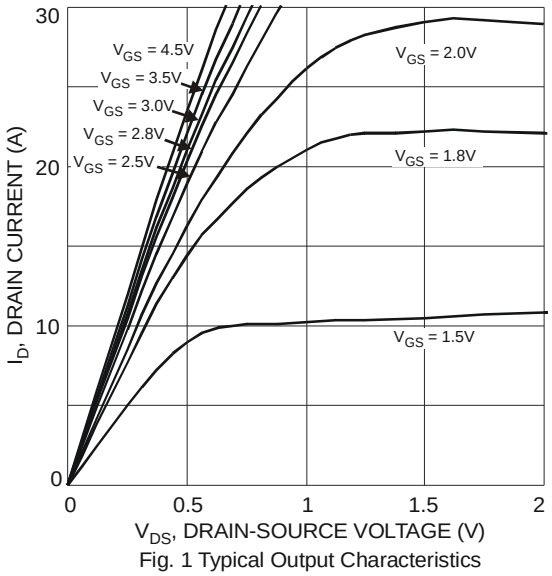

Fig. 1 Typical Output Characteristics

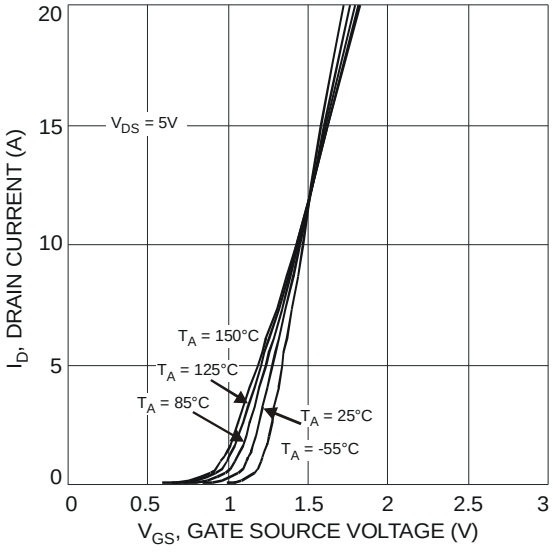

Fig. 2 Typical Transfer Characteristics

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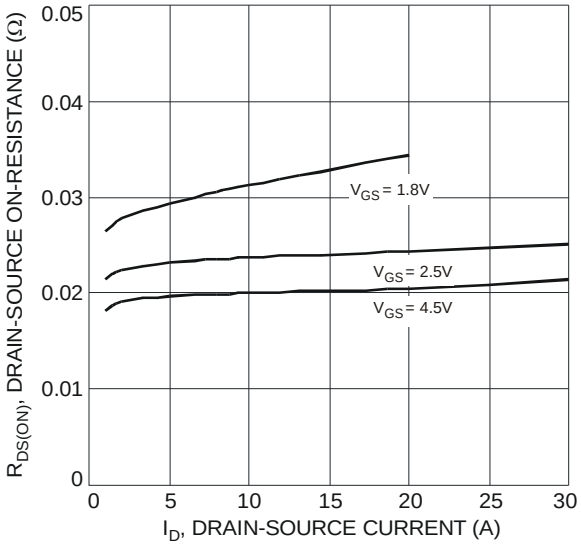

Fig. 3 Typical On-Resistance vs. Drain Current and Gate Voltage

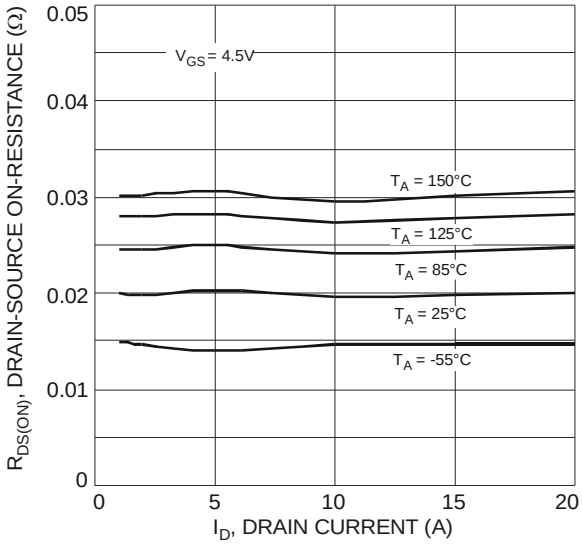

Fig. 4 Typical Drain-Source On-Resistance vs. Drain Current and Temperature

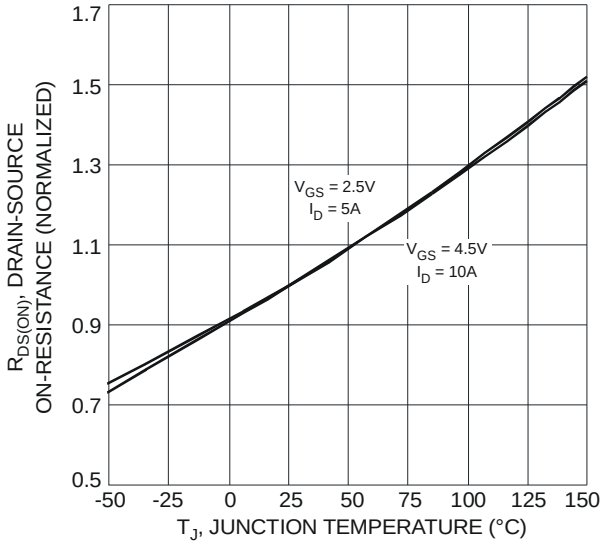

Fig. 5 On-Resistance Variation with Temperature

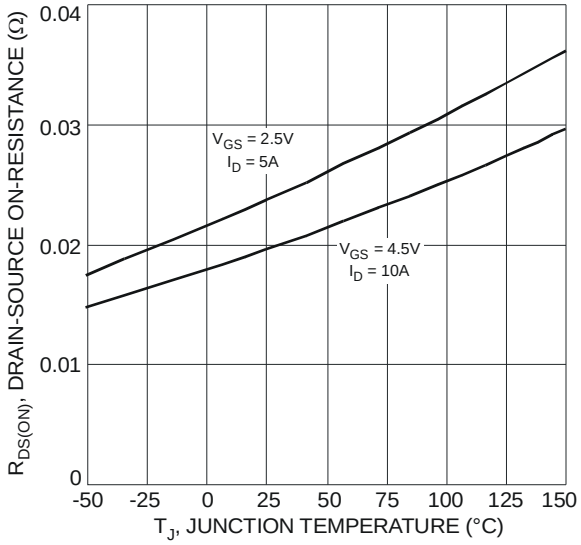

Fig. 6 On-Resistance Variation with Temperature

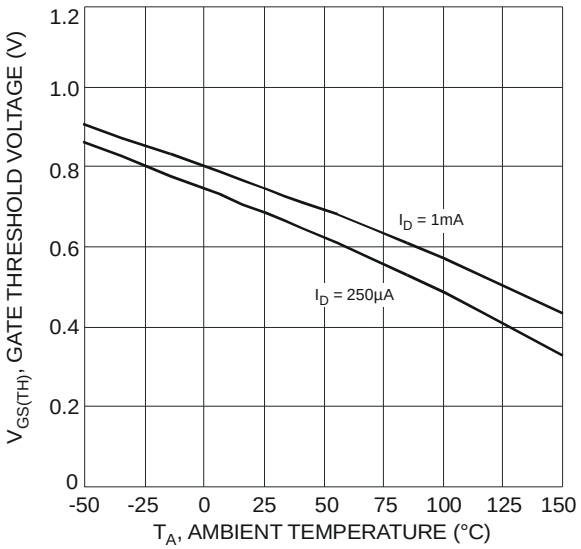

Fig. 7 Gate Threshold Variation vs. Ambient Temperature

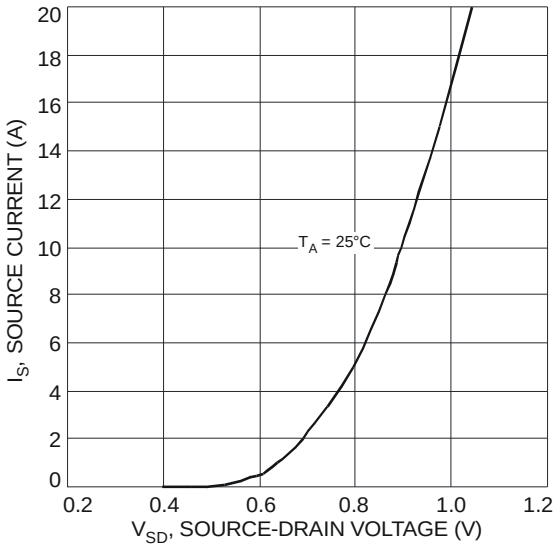

Fig. 8 Diode Forward Voltage vs. Current

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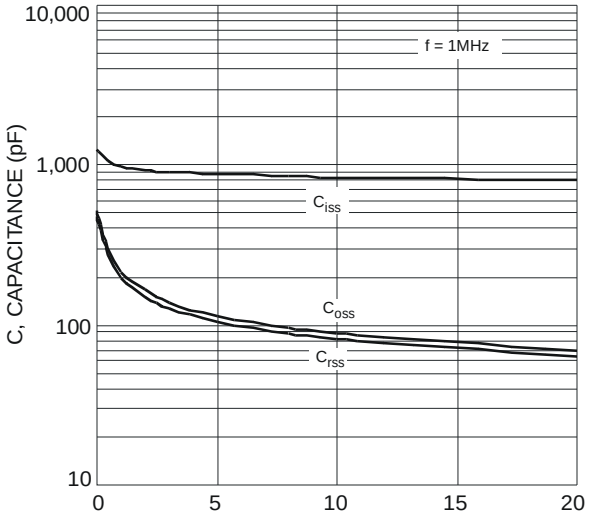


Fig. 9 Typical Capacitance

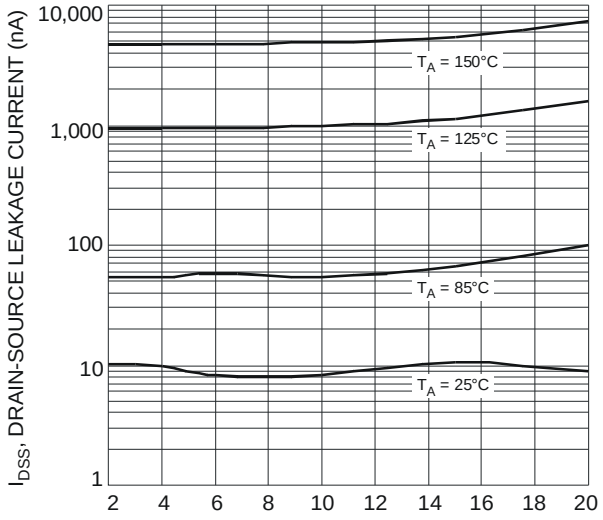


Fig. 10 Typical Drain-Source Leakage Current vs. Drain-Source Voltage

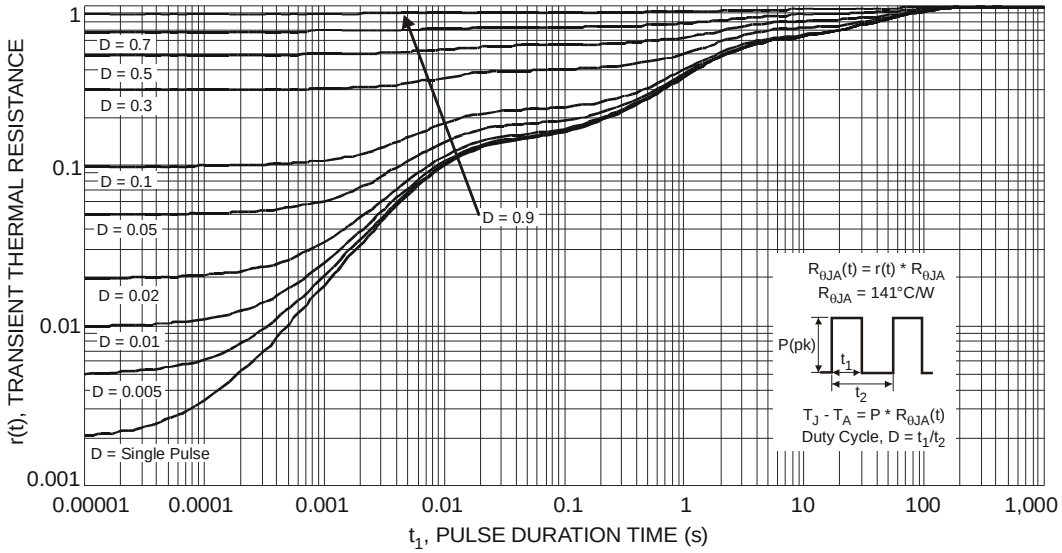


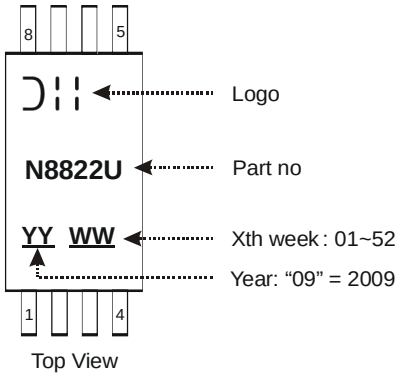
Fig. 11 Transient Thermal Response

Ordering Information (Note 7)

Part Number	Case	Packaging
DMG8822UTS-13	TSSOP-8L	2500 / Tape & Reel

Notes: 7. For packaging details, go to our website at http://www.diodes.com/datasheets/ap02007.pdf.

Marking Information



Top View

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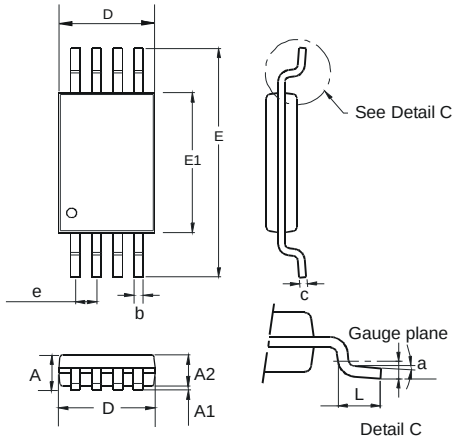
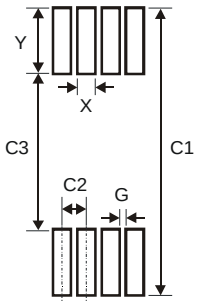
Package Outline Dimensions



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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