

Features

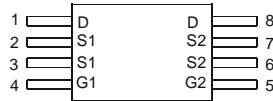
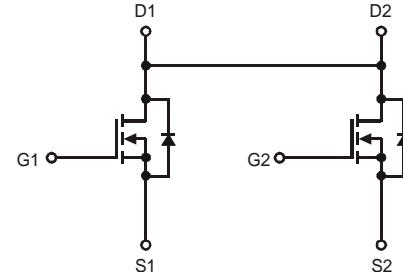
- Low On-Resistance
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- **Lead Free By Design/RoHS Compliant (Note 3)**
- **"Green" Device (Note 4)**
- Qualified to AEC-Q101 Standards for High Reliability



TOP VIEW



BOTTOM VIEW


 Top View
 Pin Configuration


Internal Schematic

Maximum Ratings

@ $T_A = 25^\circ\text{C}$ 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	$T_A = 25^\circ\text{C}$ $T_A = 70^\circ\text{C}$	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 @ $T_A = 25^\circ\text{C}$	$R_{\theta JA}$	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.

Electrical Characteristics @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 5)						
Drain-Source Breakdown Voltage	BV_{DSS}	20	-	-	V	$\text{V}_{\text{GS}} = 0\text{V}$, $\text{I}_D = 250\mu\text{A}$
Zero Gate Voltage Drain Current	I_{DSS}	-	-	1.0	μA	$\text{V}_{\text{DS}} = 20\text{V}$, $\text{V}_{\text{GS}} = 0\text{V}$
Gate-Source Leakage	I_{GSS}	-	-	± 100	nA	$\text{V}_{\text{GS}} = \pm 8\text{V}$, $\text{V}_{\text{DS}} = 0\text{V}$
ON CHARACTERISTICS (Note 5)						
Gate Threshold Voltage	$\text{V}_{\text{GS(th)}}$	0.5	-	0.9	V	$\text{V}_{\text{DS}} = \text{V}_{\text{GS}}$, $\text{I}_D = 250\mu\text{A}$
Static Drain-Source On-Resistance	$\text{R}_{\text{DS (ON)}}$	-	19 22 28	25 29 37	$\text{m}\Omega$	$\text{V}_{\text{GS}} = 4.5\text{V}$, $\text{I}_D = 8.2\text{A}$ $\text{V}_{\text{GS}} = 2.5\text{V}$, $\text{I}_D = 3.3\text{A}$ $\text{V}_{\text{GS}} = 1.8\text{V}$, $\text{I}_D = 2.0\text{A}$
Forward Transfer Admittance	$ \text{Y}_{\text{fs}} $	-	7	-	S	$\text{V}_{\text{DS}} = 10\text{V}$, $\text{I}_D = 4\text{A}$
Diodes Forward Voltage	V_{SD}	-	0.7	0.9	V	$\text{I}_s = 2.25\text{A}$, $\text{V}_{\text{GS}} = 0\text{V}$
DYNAMIC CHARACTERISTICS (Note 6)						
Input Capacitance	C_{iss}	-	841	-	pF	$\text{V}_{\text{DS}} = 10\text{V}$, $\text{V}_{\text{GS}} = 0\text{V}$, $f = 1.0\text{MHz}$
Output Capacitance	C_{oss}	-	88	-	pF	
Reverse Transfer Capacitance	C_{rss}	-	81	-	pF	
Gate Resistance	R_{g}	-	1.24	-	Ω	
SWITCHING CHARACTERISTICS						
Total Gate Charge	Q_{g}	-	9.6	-	nC	$\text{V}_{\text{GS}} = 4.5\text{V}$, $\text{V}_{\text{DS}} = 10\text{V}$, $\text{I}_D = 8.2\text{A}$
Gate-Source Charge	Q_{gs}	-	1.4	-	nC	
Gate-Drain Charge	Q_{gd}	-	2.1	-	nC	
Turn-On Delay Time	$\text{t}_{\text{D(on)}}$	-	7.8	-	ns	
Turn-On Rise Time	t_{r}	-	21.1	-	ns	
Turn-Off Delay Time	$\text{t}_{\text{D(off)}}$	-	38.6	-	ns	
Turn-Off Fall Time	t_{f}	-	10.1	-	ns	$\text{V}_{\text{DD}} = 10\text{V}$, $\text{V}_{\text{GS}} = 4.5\text{V}$, $\text{R}_{\text{L}} = 10\Omega$, $\text{R}_{\text{G}} = 6\Omega$

Notes: 5. Short duration pulse test used to minimize self-heating effects.

6. Guaranteed by design. Not subject to production testing.

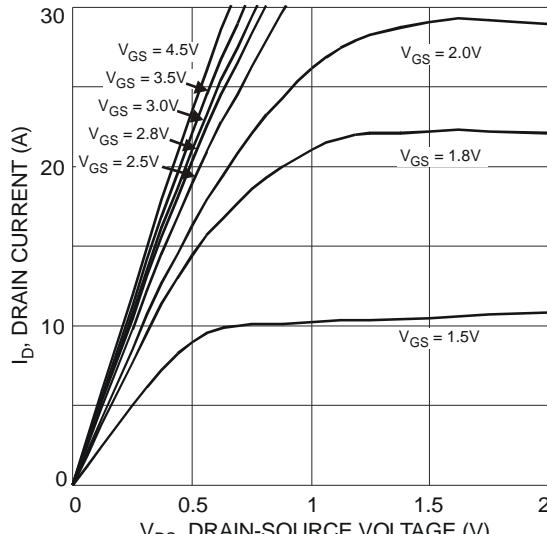


Fig. 1 Typical Output Characteristics

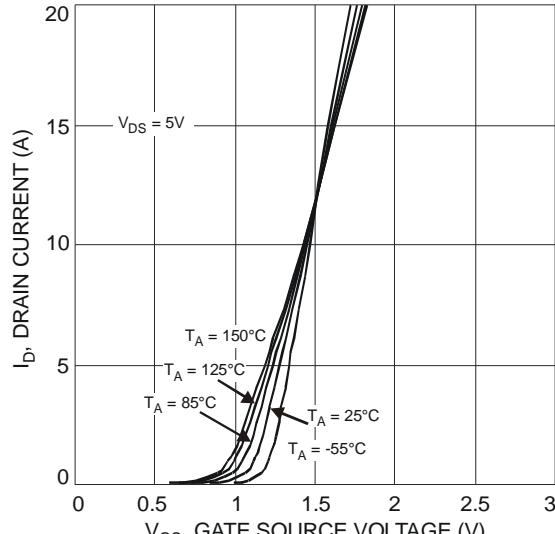


Fig. 2 Typical Transfer Characteristics

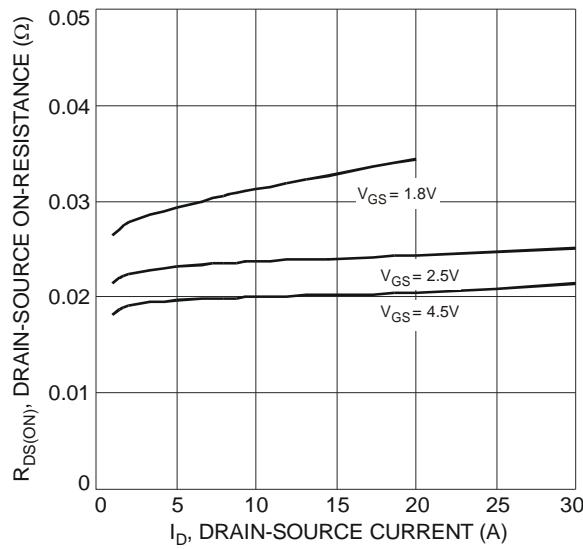
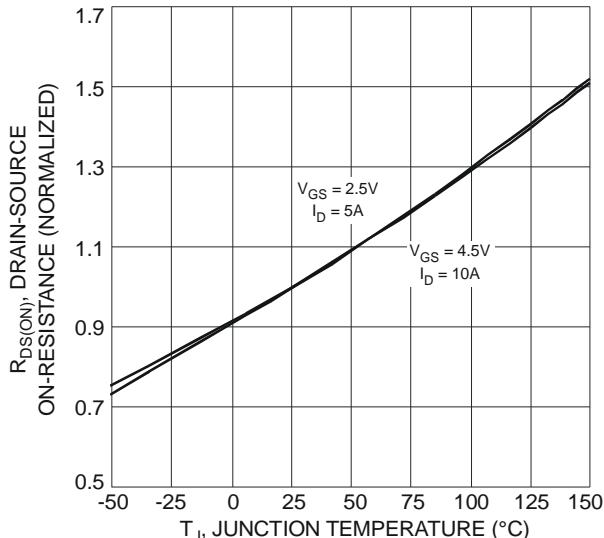
Fig. 3 Typical On-Resistance
vs. Drain Current and Gate Voltage

Fig. 5 On-Resistance Variation with Temperature

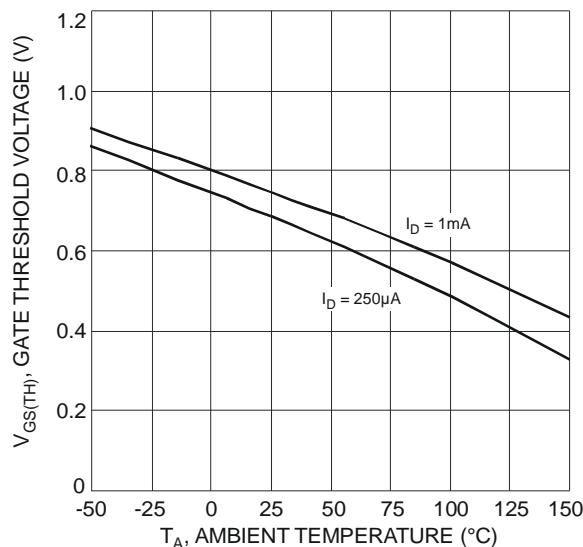


Fig. 7 Gate Threshold Variation vs. Ambient Temperature

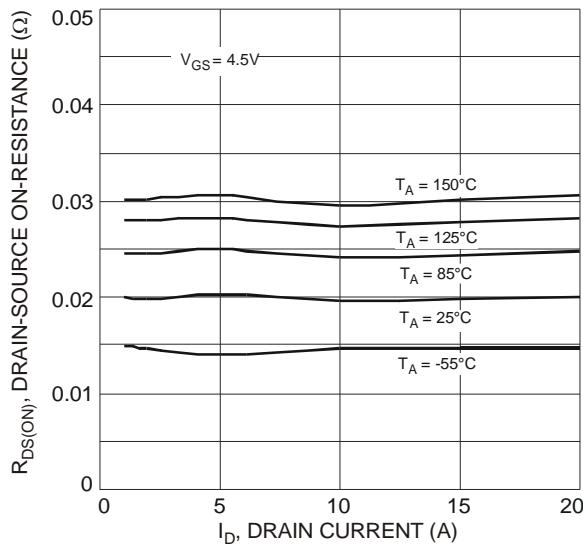
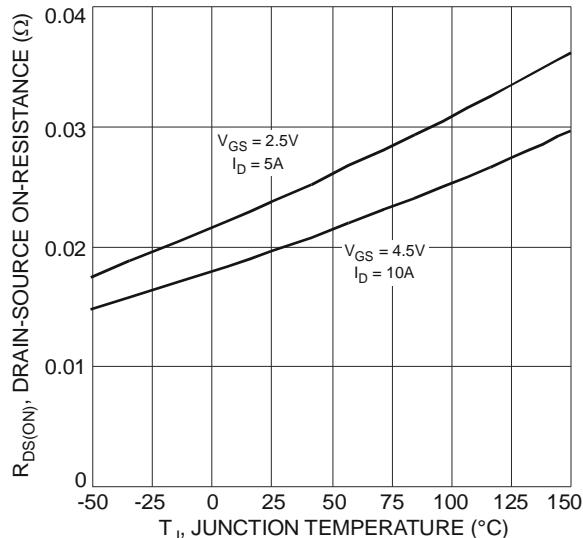
Fig. 4 Typical Drain-Source On-Resistance
vs. Drain Current and Temperature

Fig. 6 On-Resistance Variation with Temperature

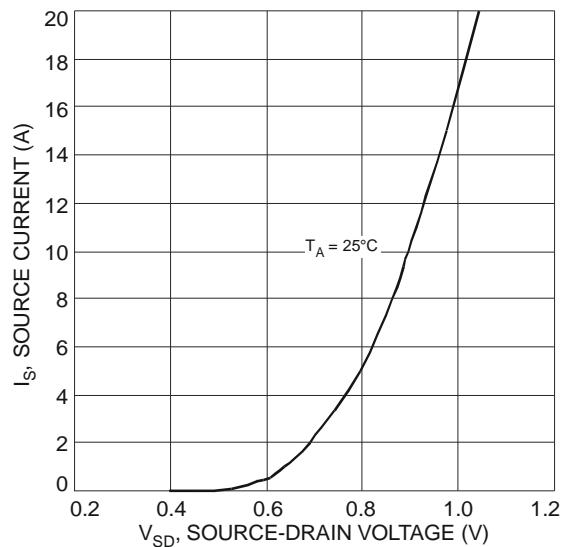


Fig. 8 Diode Forward Voltage vs. Current

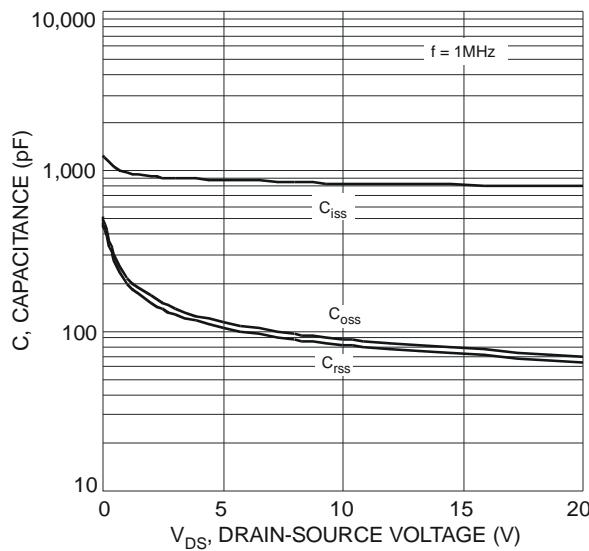


Fig. 9 Typical Capacitance

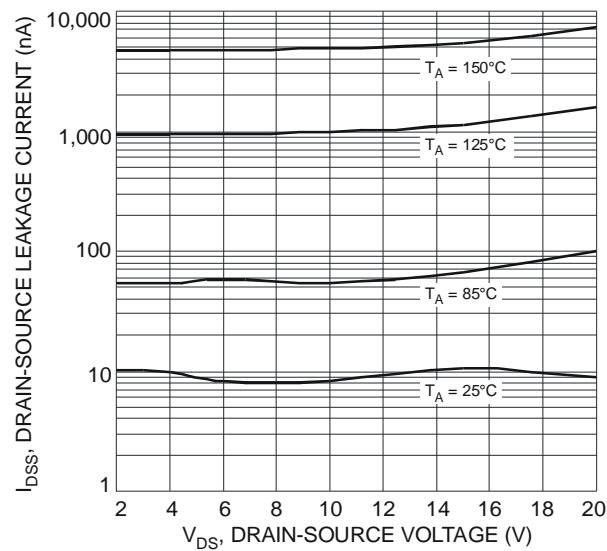


Fig. 10 Typical Drain-Source Leakage Current vs. Drain-Source Voltage

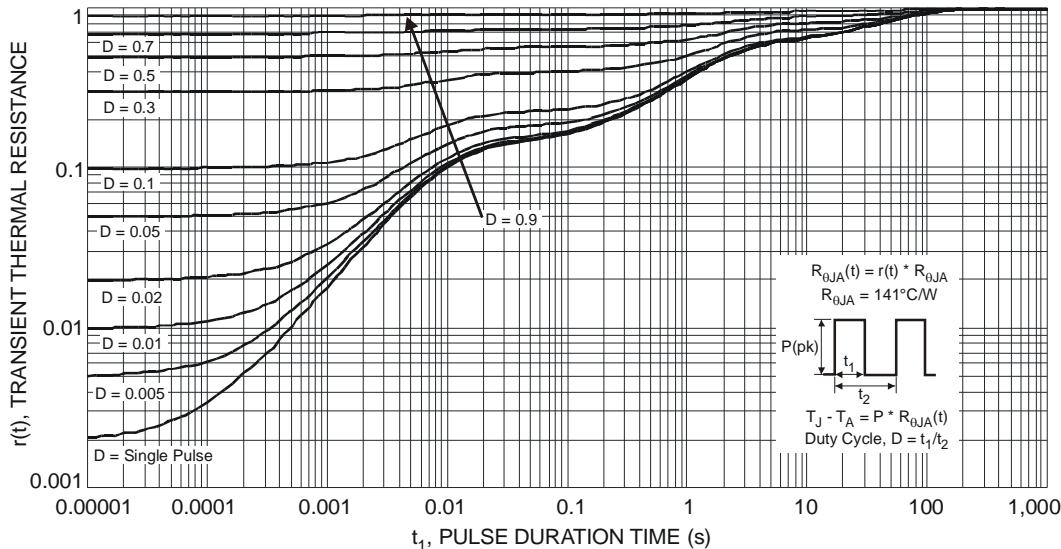


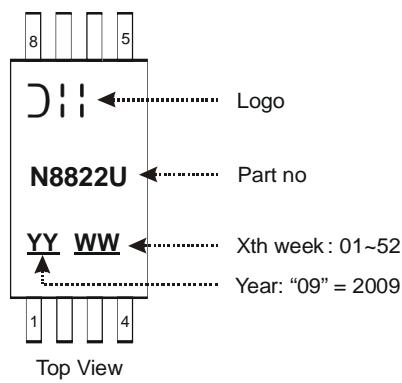
Fig. 11 Transient Thermal Response

Ordering Information (Note 7)

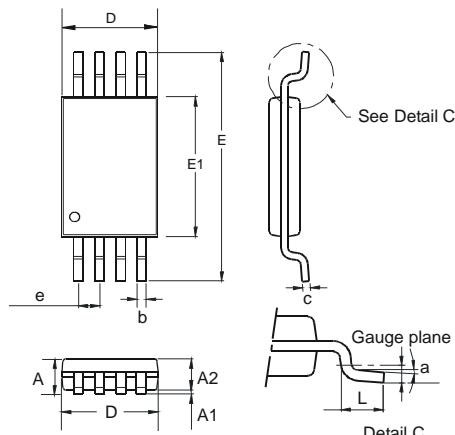
Part Number	Case	Packaging
DMG8822UTS-13	TSSOP-8L	2500 / Tape & Reel

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

Marking Information



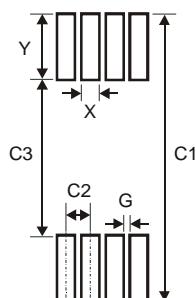
Package Outline Dimensions



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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