N-CHANNEL ENHANCEMENT MODE MOSFET

NEW PRODUCT

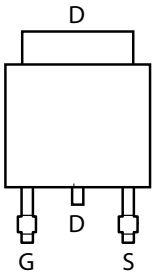
Features

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

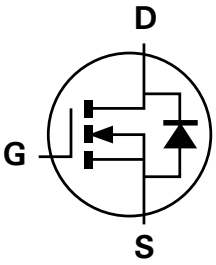
Mechanical Data

- Case: TO252-3L
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals Connections: See Diagram
- Terminals: Matte Tin Finish annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208
- Marking Information: See Page 5
- Ordering Information: See Page 5
- Weight: 0.33 grams (approximate)

TOP VIEW



PIN OUT -TOP VIEW



Equivalent Circuit

Maximum Ratings @T_A = 25°C unless otherwise specified

Characteristic			Symbol	Value	Unit
Drain-Source Voltage			V_{DSS}	30	V
Gate-Source Voltage			V_{GSS}	±25	V
Continuous Drain Current (Note 3)	Steady State	T_A = 25°C T_A = 85°C	I_D	10.0 6.5	A
Pulsed Drain Current (Note 4)			I_{DM}	48	A

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 3)	P_D	1.71	W
Thermal Resistance, Junction to Ambient @T_A = 25°C	$R_{\theta JA}$	72.9	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

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

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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}	30	-	-	V	V_{GS} = 0V, I_D = 250μA
Zero Gate Voltage Drain Current T_J = 25°C	I_{DSS}	-	-	1.0	μA	V_{DS} = 30V, V_{GS} = 0V
Gate-Source Leakage	I_{GSS}	-	-	±100	nA	V_{GS} = ±25V, V_{DS} = 0V
ON CHARACTERISTICS (Note 5)						
Gate Threshold Voltage	$V_{GS(th)}$	0.8	-	1.6	V	V_{DS} = V_{GS}, I_D = 250μA
Static Drain-Source On-Resistance	$R_{DS\ (ON)}$	-	12 16	17 24	mΩ	V_{GS} = 10V, I_D = 9A V_{GS} = 4.5V, I_D = 7A
Forward Transfer Admittance	$\|Y_{fs}\|$	-	10	-	S	V_{DS} = 10V, I_D = 9A
Diode Forward Voltage	V_{SD}	-	0.7	1.0	V	V_{GS} = 0V, I_S = 1A
DYNAMIC CHARACTERISTICS (Note 6)						
Input Capacitance	C_{iss}	-	798	-	pF	V_{DS} = 10V, V_{GS} = 0V, f = 1.0MHz
Output Capacitance	C_{oss}	-	128	-	pF	
Reverse Transfer Capacitance	C_{rss}	-	122	-	pF	
Gate Resistance	R_g	-	1.37	-	Ω	V_{DS} = 0V, V_{GS} = 0V, f = 1MHz
Total Gate Charge	Q_g	-	8.7	-	nC	V_{GS} = 5V, V_{DS} = 15V, I_D = 9A
Gate-Source Charge	Q_{gs}	-	1.7	-	nC	
Gate-Drain Charge	Q_{gd}	-	2.4	-	nC	
Turn-On Delay Time	$t_{D(on)}$	-	5.03	-	ns	V_{DD} = 15V, V_{GS} = 10V, R_L = 15Ω, R_G = 6Ω, I_D = 1A
Turn-On Rise Time	t_r	-	4.50	-	ns	
Turn-Off Delay Time	$t_{D(off)}$	-	26.33	-	ns	
Turn-Off Fall Time	t_f	-	8.55	-	ns	

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

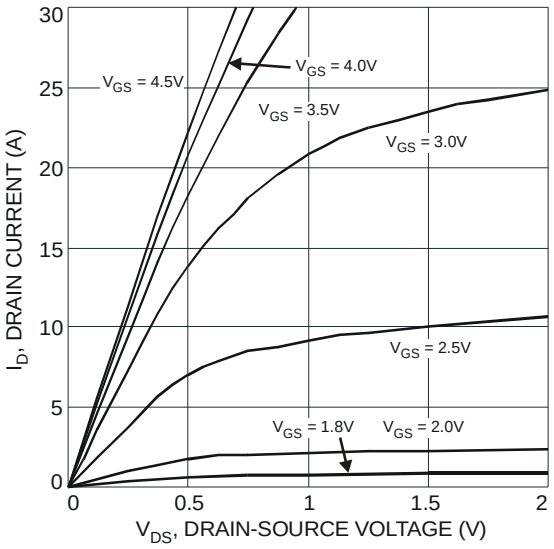

Fig.1 Typical Output Characteristics

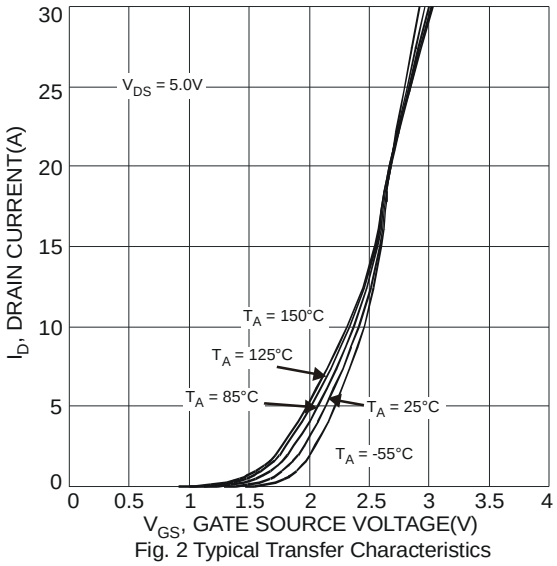

Fig. 2 Typical Transfer Characteristics

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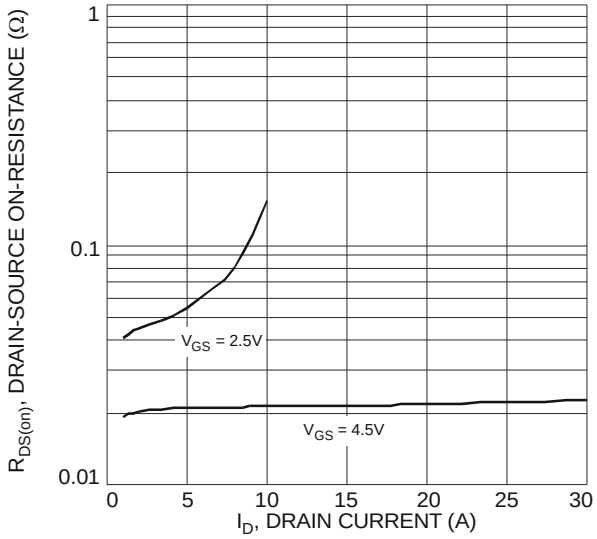

Fig. 3 Typical On-Resistance vs. Drain Current and Gate Voltage

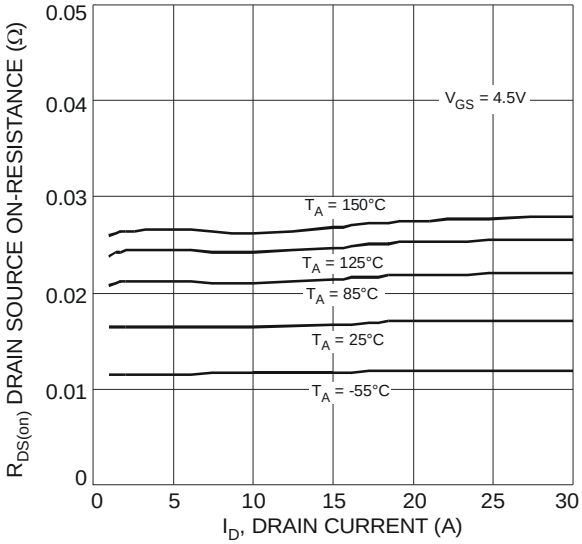

Fig. 4 Typical Drain-Source On-Resistance vs. Drain Current and Temperature

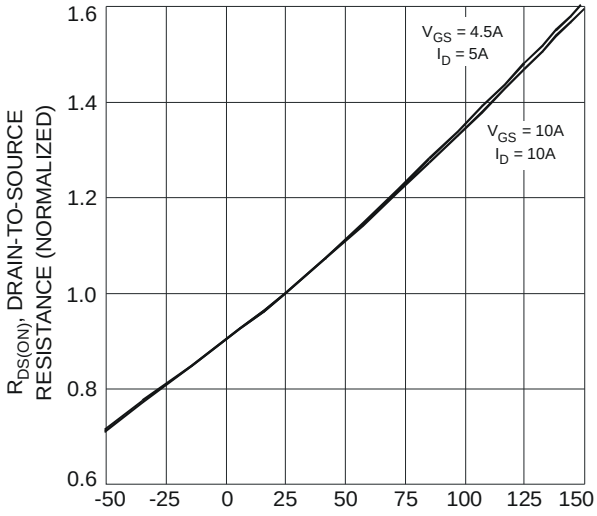

Fig. 5 On-Resistance Variation with Temperature

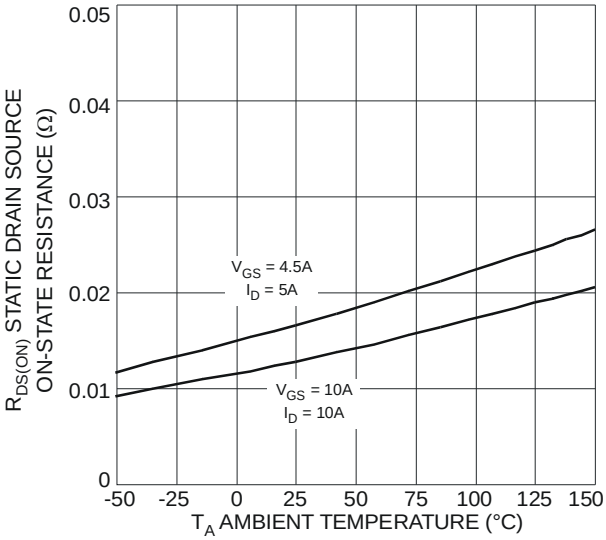

Fig. 6 Typical Static Drain-Source On-State Resistance vs. Ambient Temperature

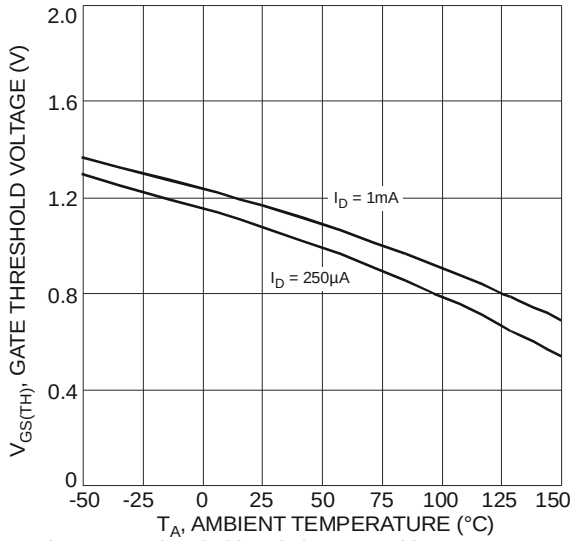

Fig. 7 Gate Threshold Variation vs. Ambient Temperature

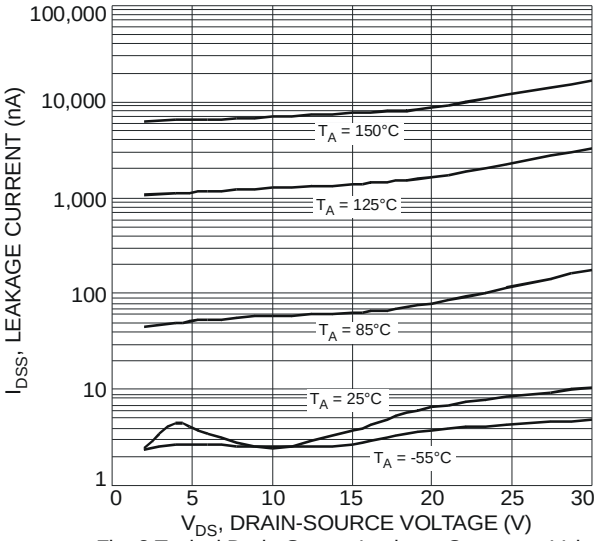

Fig. 8 Typical Drain-Source Leakage Current vs Voltage

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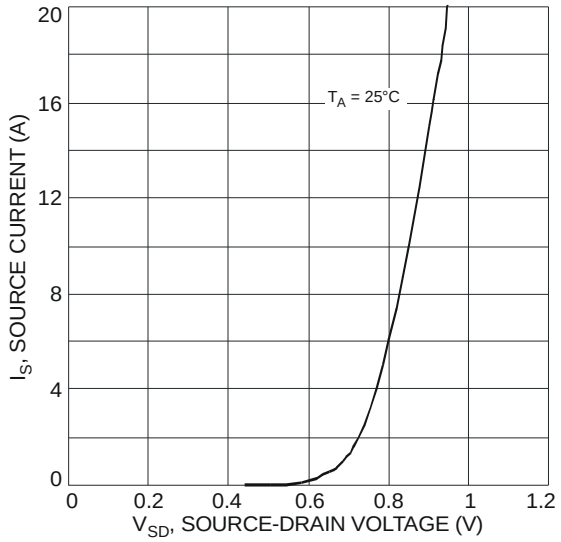

Fig. 9 Diode Forward Voltage vs. Current

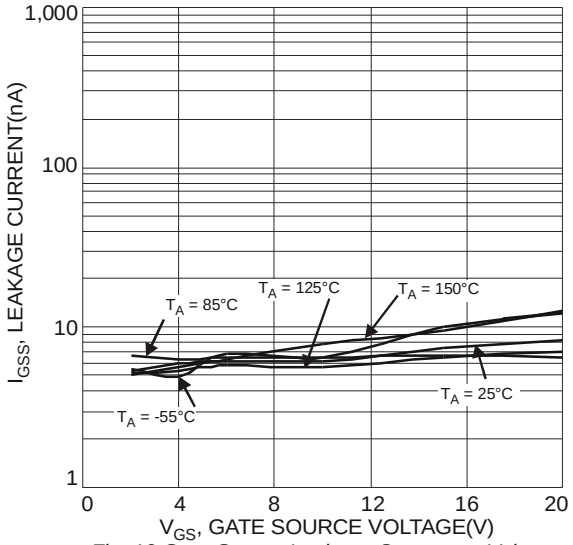

Fig. 10 Gate-Source Leakage Current vs. Voltage

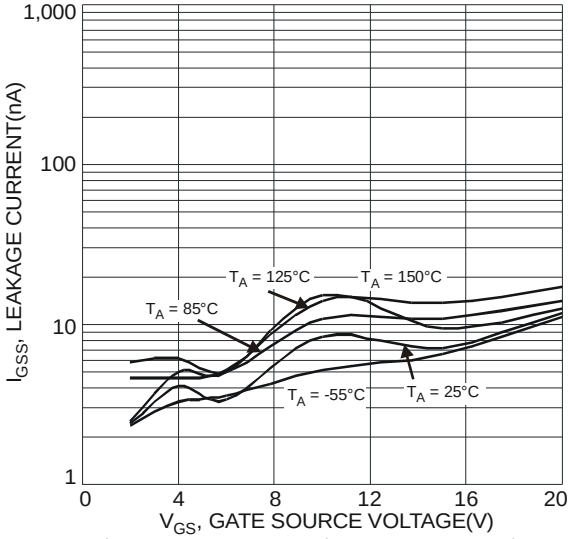

Fig. 11 Gate-Source Leakage Current vs. Voltage

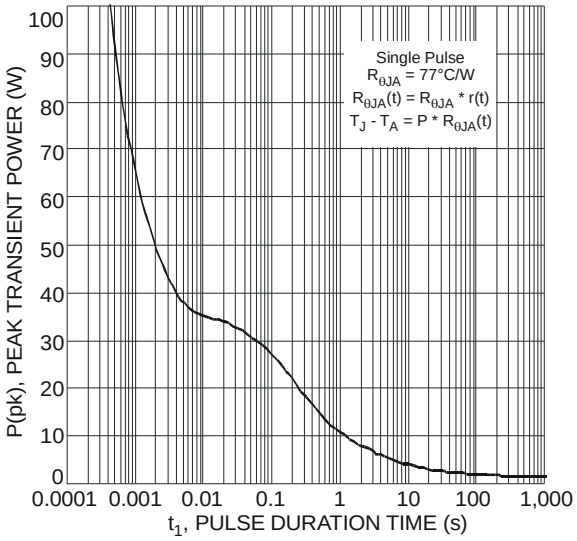

Fig. 12 Single Pulse Maximum Power Dissipation

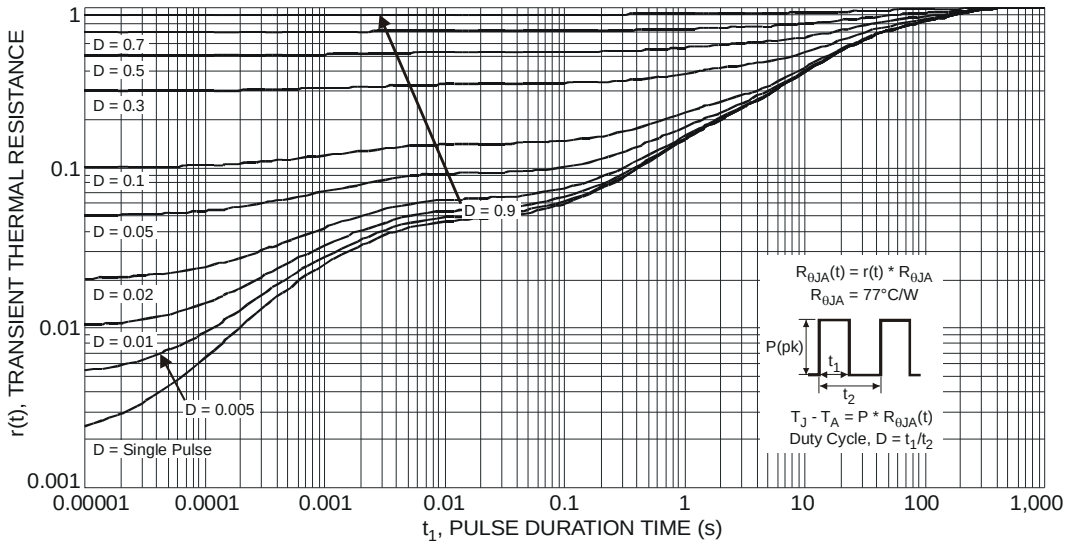

Fig. 13 Transient Thermal Response

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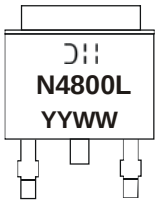
Ordering Information (Note 7)

Part Number	Case	Packaging
DMG4800LK3-13	TO252-3L	2500 / Tape & Reel

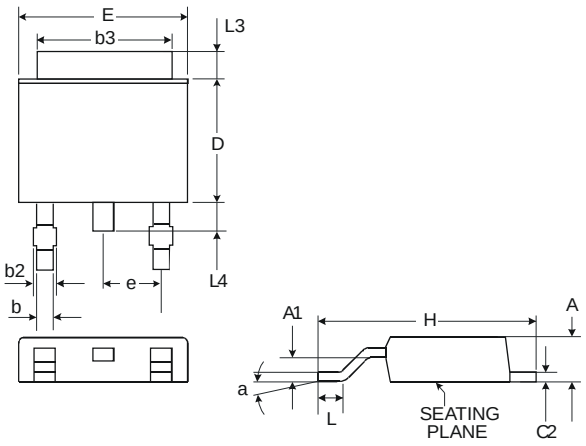
Notes: 7. For packaging details, go to our website at http://www.diodes.com/datasheets/ap02007.pdf.

Marking Information



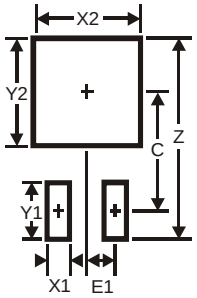
= Manufacturer's Marking
N4800L = Product Type Marking Code
YYWW = Date Code Marking
YY = Year (ex: 09 = 2009)
WW = Week (01-52)

Package Outline Dimensions



TO252-3L			
Dim	**Min**	**Typ**	**Max**
A	2.19	2.29	2.39
A1	0.97	1.07	1.17
b	0.64	0.76	0.88
b2	0.76	0.95	1.14
b3	5.21	5.33	5.50
C2	0.45	0.51	0.58
D	6.00	6.10	6.20
E	6.45	6.58	6.70
e	2.286 Typ.		
H	9.40	9.91	10.41
L	1.40	1.59	1.78
L3	0.88	1.08	1.27
L4	0.64	0.83	1.02
a	0°	-	10°
All Dimensions in mm			

Suggested Pad Layout



Dimensions	Value (in mm)
Z	11.6
X1	1.5
X2	7.0
Y1	2.5
Y2	7.0
C	6.9
E1	2.3

NEW PRODUCT

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