

## Features

- Low On-Resistance
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- Qualified to AEC-Q101 Standards for High Reliability

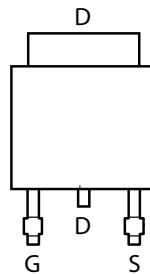
## Mechanical Data

- Case: TO252 (DPAK)
- 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 (3)
- Weight: 0.33 grams (approximate)

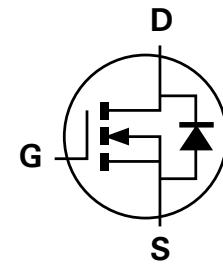
TO252



Top View



Top View  
Pin-Out



Equivalent Circuit

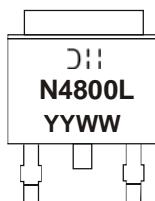
## Ordering Information (Note 4)

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

Notes:

1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
2. See <http://www.diodes.com> for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
4. For packaging details, go to our website at <http://www.diodes.com>.

## Marking Information



DII = Manufacturer's Marking  
 N4800L = Product Type Marking Code  
 YYWW = Date Code Marking  
 YY = Year (ex: 09 = 2009)  
 WW = Week (01 - 53)

**Maximum Ratings** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

Characteristic			Symbol	Value	Unit
Drain-Source Voltage			$V_{DSS}$	30	V
Gate-Source Voltage			$V_{GSS}$	$\pm 25$	V
Continuous Drain Current (Note 5)	Steady State	$T_A = +25^\circ\text{C}$ $T_A = +85^\circ\text{C}$	$I_D$	10.0 6.5	A
Pulsed Drain Current (Note 6)			$I_{DM}$	48	A

**Thermal Characteristics**

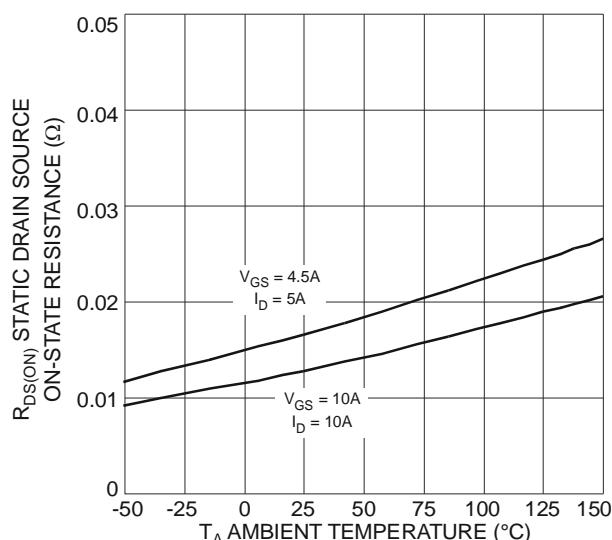
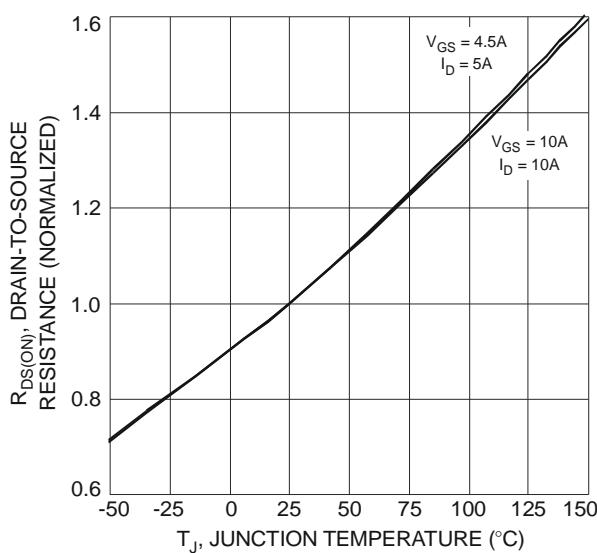
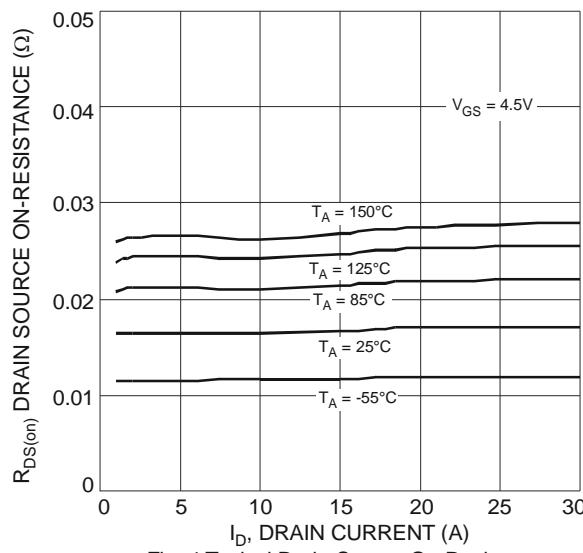
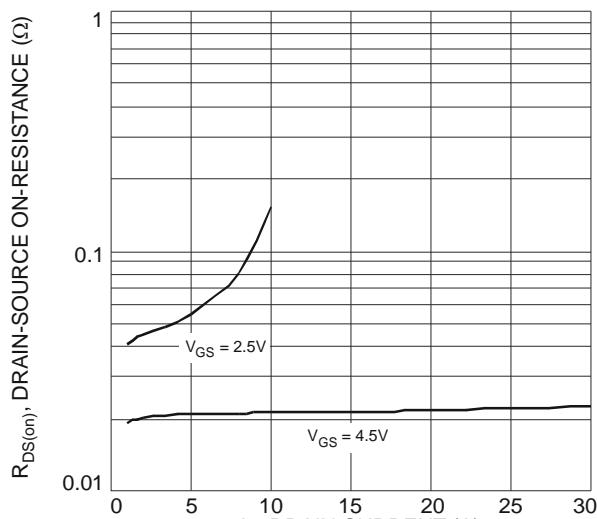
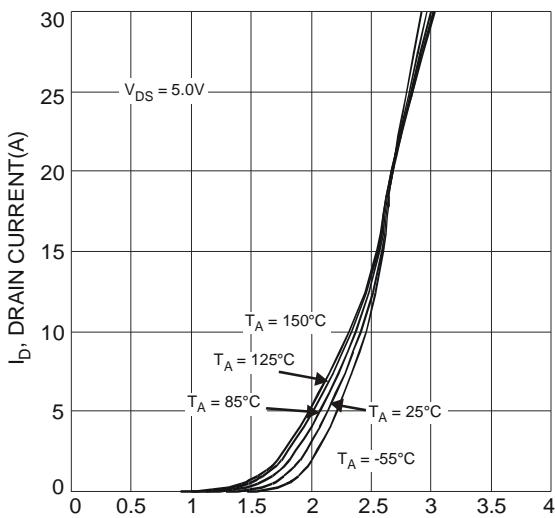
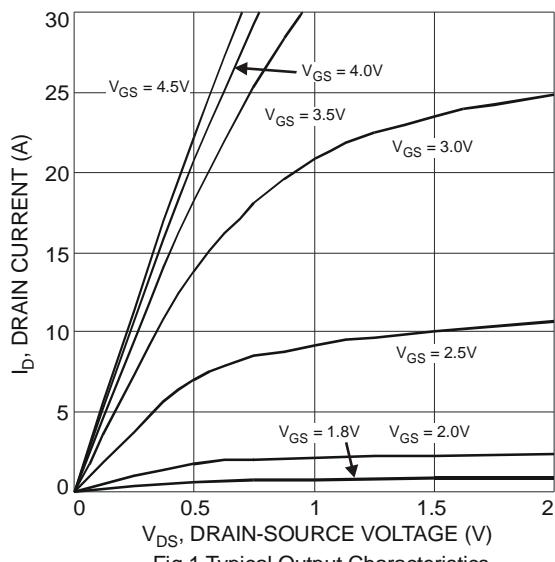
Characteristic			Symbol	Value	Unit
Power Dissipation (Note 5)			$P_D$	1.71	W
Thermal Resistance, Junction to Ambient @ $T_A = +25^\circ\text{C}$			$R_{\text{BJA}}$	72.9	$^\circ\text{C}/\text{W}$
Operating and Storage Temperature Range			$T_J, T_{\text{STG}}$	-55 to +150	$^\circ\text{C}$

**Electrical Characteristics** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS (Note 7)</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	30	-	-	V	$V_{GS} = 0\text{V}, I_D = 250\mu\text{A}$
Zero Gate Voltage Drain Current $T_J = +25^\circ\text{C}$	$I_{DSS}$	-	-	1.0	$\mu\text{A}$	$V_{DS} = 30\text{V}, V_{GS} = 0\text{V}$
Gate-Source Leakage	$I_{GSS}$	-	-	$\pm 100$	nA	$V_{GS} = \pm 20\text{V}, V_{DS} = 0\text{V}$
<b>ON CHARACTERISTICS (Note 7)</b>						
Gate Threshold Voltage	$V_{GS(\text{th})}$	0.8	-	1.6	V	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$
Static Drain-Source On-Resistance	$R_{DS}(\text{ON})$	-	12 16	17 24	$\text{m}\Omega$	$V_{GS} = 10\text{V}, I_D = 9\text{A}$ $V_{GS} = 4.5\text{V}, I_D = 7\text{A}$
Forward Transfer Admittance	$ Y_{fs} $	-	10	-	S	$V_{DS} = 10\text{V}, I_D = 9\text{A}$
Diode Forward Voltage	$V_{SD}$	-	0.7	1.0	V	$V_{GS} = 0\text{V}, I_S = 1\text{A}$
<b>DYNAMIC CHARACTERISTICS (Note 8)</b>						
Input Capacitance	$C_{iss}$	-	798	-	$\text{pF}$	$V_{DS} = 10\text{V}, V_{GS} = 0\text{V}, f = 1.0\text{MHz}$
Output Capacitance	$C_{oss}$	-	128	-	$\text{pF}$	
Reverse Transfer Capacitance	$C_{rss}$	-	122	-	$\text{pF}$	$V_{DS} = 0\text{V}, V_{GS} = 0\text{V}, f = 1\text{MHz}$
Gate Resistance	$R_g$	-	1.37	-	$\Omega$	
Total Gate Charge	$Q_g$	-	8.7	-	$\text{nC}$	$V_{GS} = 5\text{V}, V_{DS} = 15\text{V}, I_D = 9\text{A}$
Gate-Source Charge	$Q_{gs}$	-	1.7	-	$\text{nC}$	
Gate-Drain Charge	$Q_{gd}$	-	2.4	-	$\text{nC}$	$V_{DD} = 15\text{V}, V_{GS} = 10\text{V}, R_L = 15\Omega, R_G = 6\Omega, I_D = 1\text{A}$
Turn-On Delay Time	$t_{D(\text{on})}$	-	5.03	-	$\text{ns}$	
Turn-On Rise Time	$t_r$	-	4.50	-	$\text{ns}$	
Turn-Off Delay Time	$t_{D(\text{off})}$	-	26.33	-	$\text{ns}$	
Turn-Off Fall Time	$t_f$	-	8.55	-	$\text{ns}$	

Notes:

- 5. Device mounted on FR-4 PCB, with minimum recommended pad layout.
- 6. Repetitive rating, pulse width limited by junction temperature.
- 7. Short duration pulse test used to minimize self-heating effect.
- 8. Guaranteed by design. Not subject to production testing.



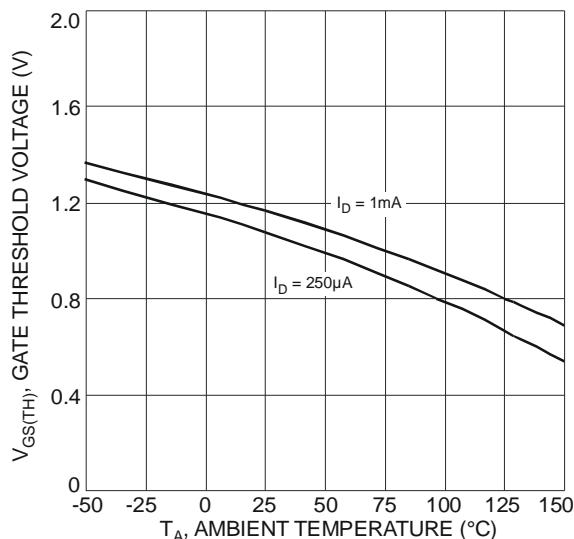


Fig. 7 Gate Threshold Variation vs. Ambient Temperature

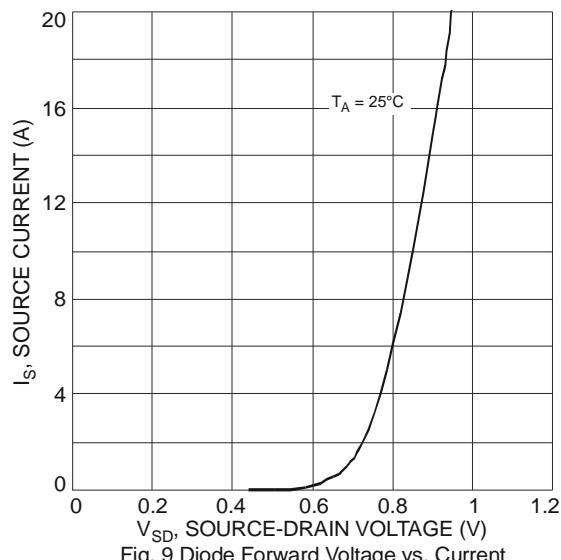


Fig. 9 Diode Forward Voltage vs. Current

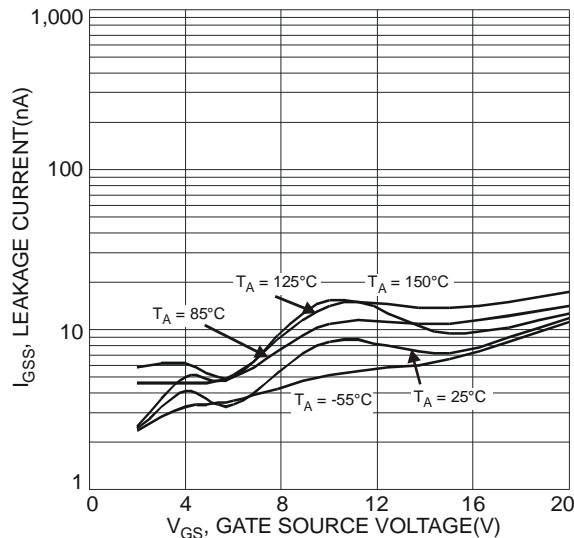


Fig. 11 Gate-Source Leakage Current vs. Voltage

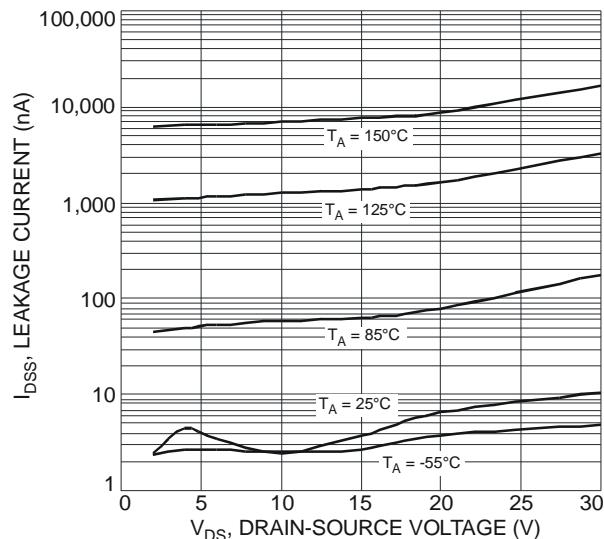


Fig. 8 Typical Drain-Source Leakage Current vs Voltage

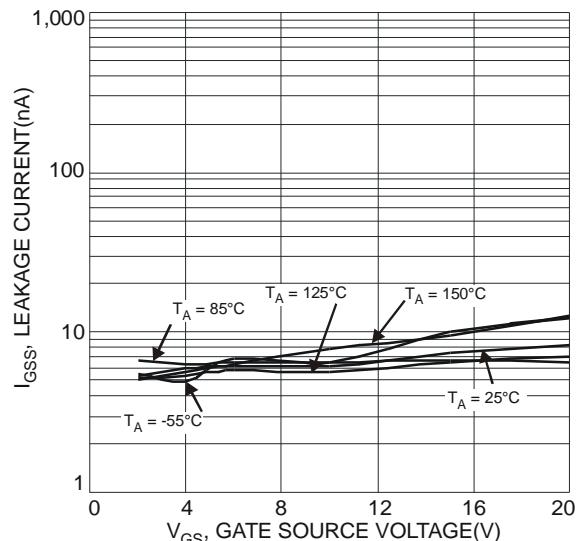


Fig. 10 Gate-Source Leakage Current vs. Voltage

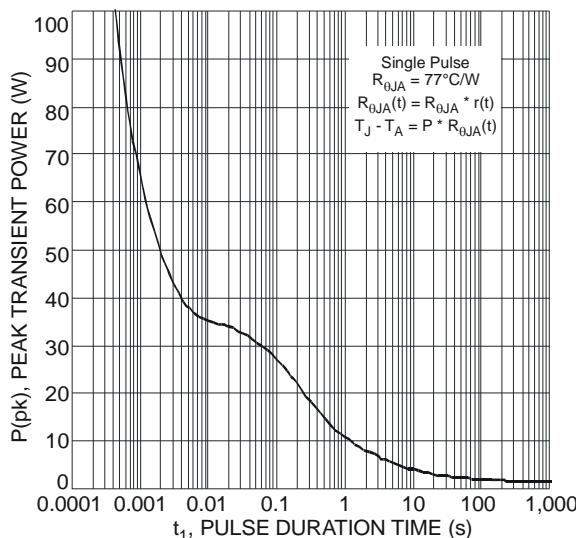


Fig. 12 Single Pulse Maximum Power Dissipation

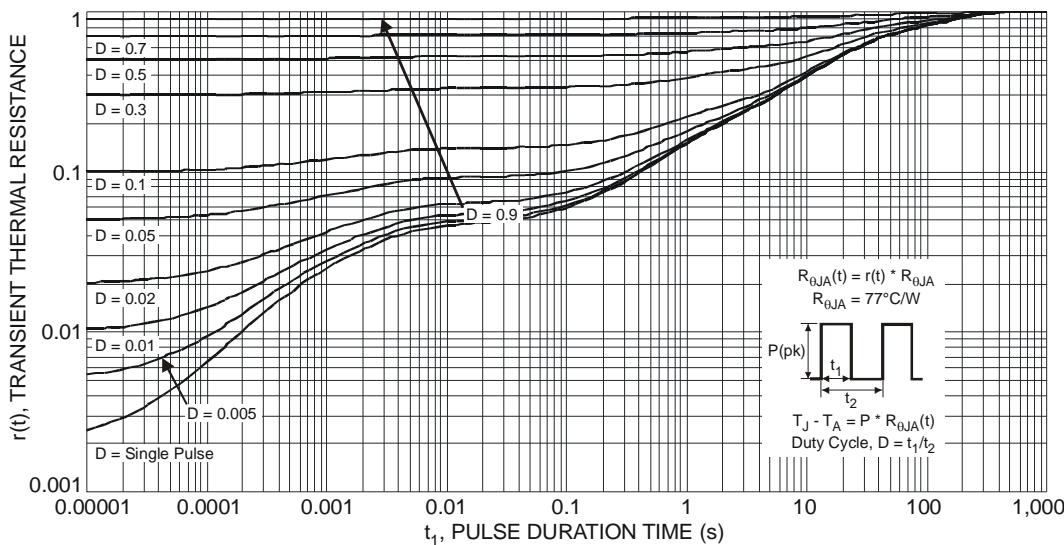
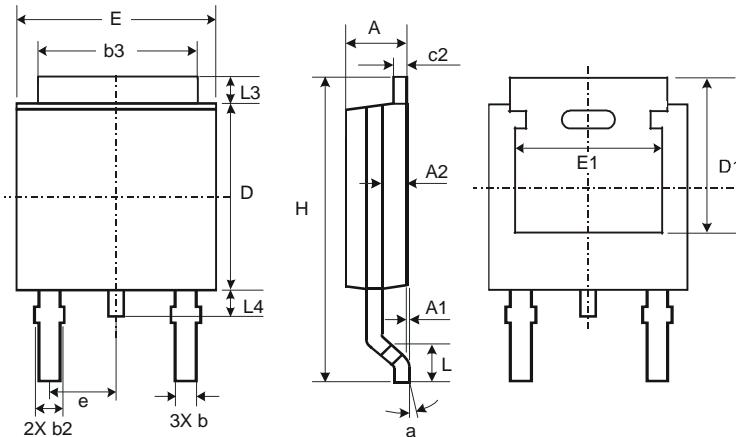


Fig. 13 Transient Thermal Response

## Package Outline Dimensions

Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for latest version.

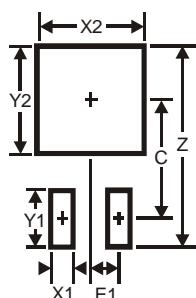


TO252			
Dim	Min	Max	Typ
<b>A</b>	2.19	2.39	2.29
<b>A1</b>	0.00	0.13	0.08
<b>A2</b>	0.97	1.17	1.07
<b>b</b>	0.64	0.88	0.783
<b>b2</b>	0.76	1.14	0.95
<b>b3</b>	5.21	5.46	5.33
<b>c2</b>	0.45	0.58	0.531
<b>D</b>	6.00	6.20	6.10
<b>D1</b>	5.21	—	—
<b>e</b>	—	—	2.286
<b>E</b>	6.45	6.70	6.58
<b>E1</b>	4.32	—	—
<b>H</b>	9.40	10.41	9.91
<b>L</b>	1.40	1.78	1.59
<b>L3</b>	0.88	1.27	1.08
<b>L4</b>	0.64	1.02	0.83
<b>a</b>	0°	10°	—

All Dimensions in mm

## Suggested Pad Layout

Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.



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

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