Green

N-CHANNEL ENHANCEMENT MODE MOSFET

NEW PRODUCT

Features

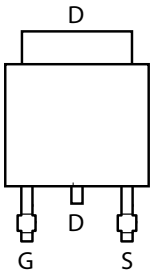
- Low On-Resistance
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

Mechanical Data

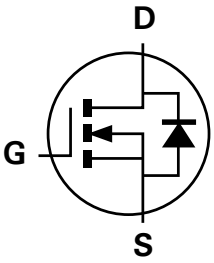
- Case: TO252
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals Connections: See Diagram
- Terminals: Matte Tin Finish annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208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



TOP VIEW



PIN OUT -TOP VIEW



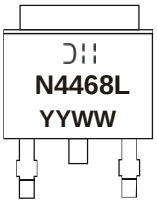
Equivalent Circuit

Ordering Information (Note 4)

Part Number	Case	Packaging
DMG4468LK3-13	TO252	2500 / Tape & Reel

Notes:
1. EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant. All applicable RoHS exemptions applied.
2. See http://www.diodes.com/quality/lead_free.html 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/datasheets/ap02007.pdf.

Marking Information



= Manufacturer's Marking
N4468L = Product Type Marking Code
YYWW = Date Code Marking
YY = Year (ex: 13 = 2013)
WW = Week (01-52)

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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}	±20	V
Continuous Drain Current (Note 5)	Steady State	T_A = +25°C T_A = +85°C	I_D	9.7 6.3	A
Pulsed Drain Current (Note 6)			I_{DM}	48	A

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P_D	1.68	W
Thermal Resistance, Junction to Ambient @T_A = +25°C	$R_{\theta JA}$	74.3	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

Notes: 5. Device mounted on FR-4 PCB, with minimum recommended pad layout.
6. Repetitive rating, pulse width limited by junction temperature.

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 7)						
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} = ±20V, V_{DS} = 0V
ON CHARACTERISTICS (Note 7)						
Gate Threshold Voltage	$V_{GS(th)}$	1.05	-	1.95	V	V_{DS} = V_{GS}, I_D = 250µA
Static Drain-Source On-Resistance	$R_{DS\ (ON)}$	-	11 17	16 25	mΩ	V_{GS} = 10V, I_D = 11.6A V_{GS} = 4.5V, I_D = 10A
Forward Transfer Admittance	$\|Y_{fs}\|$	-	8	-	S	V_{DS} = 10V, I_D = 9A
Diode Forward Voltage	V_{SD}	-	0.73	1.0	V	V_{GS} = 0V, I_S = 1A
DYNAMIC CHARACTERISTICS (Note 8)						
Input Capacitance	C_{iss}	-	867	-	pF	V_{DS} = 15V, V_{GS} = 0V, f = 1.0MHz
Output Capacitance	C_{oss}	-	85	-	pF	
Reverse Transfer Capacitance	C_{rss}	-	81	-	pF	
Gate Resistance	R_g	-	1.39	-	Ω	V_{DS} = 0V, V_{GS} = 0V, f = 1MHz
Total Gate Charge	Q_g	-	18.85	-	nC	V_{GS} = 10V, V_{DS} = 15V, I_D = 11.6A
Gate-Source Charge	Q_{gs}	-	2.59	-	nC	
Gate-Drain Charge	Q_{gd}	-	6.15	-	nC	
Turn-On Delay Time	$t_{D(on)}$	-	5.46	-	ns	V_{DD} = 15V, V_{GS} = 10V, R_L = 1.3Ω, R_G = 3Ω
Turn-On Rise Time	t_r	-	14.53	-	ns	
Turn-Off Delay Time	$t_{D(off)}$	-	18.84	-	ns	
Turn-Off Fall Time	t_f	-	6.01	-	ns	

Notes: 7. Short duration pulse test used to minimize self-heating effect.
8. Guaranteed by design. Not subject to production testing.

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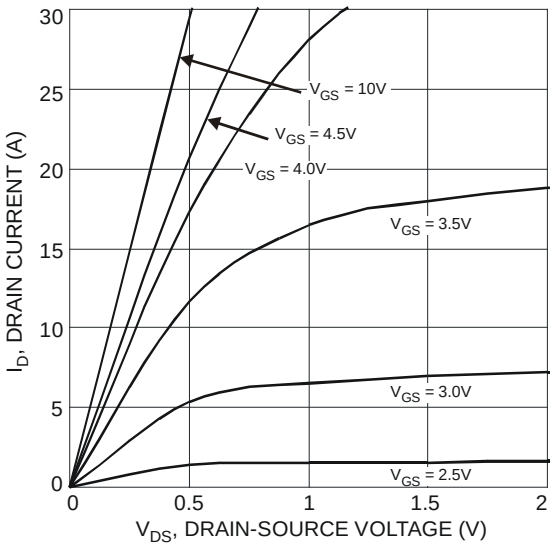


Fig.1 Typical Output Characteristics

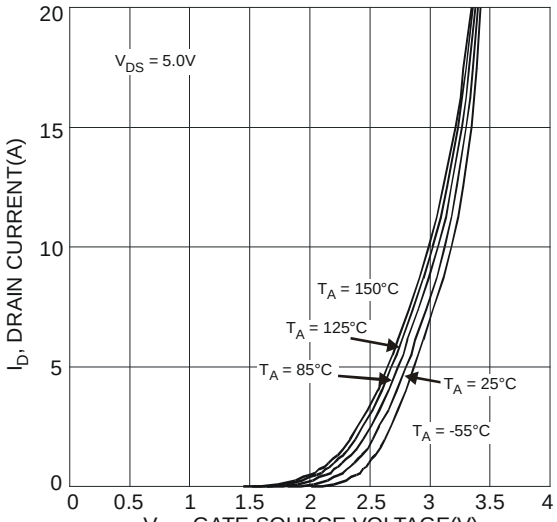


Fig. 2 Typical Transfer Characteristics

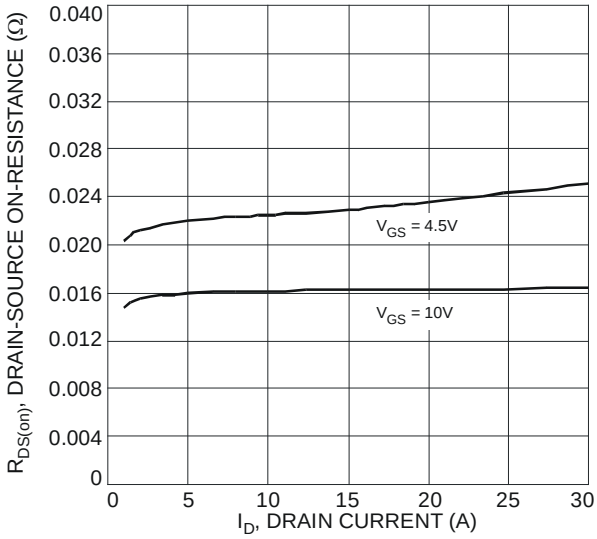


Fig. 3 Typical On-Resistance
vs. Drain Current and Gate Voltage

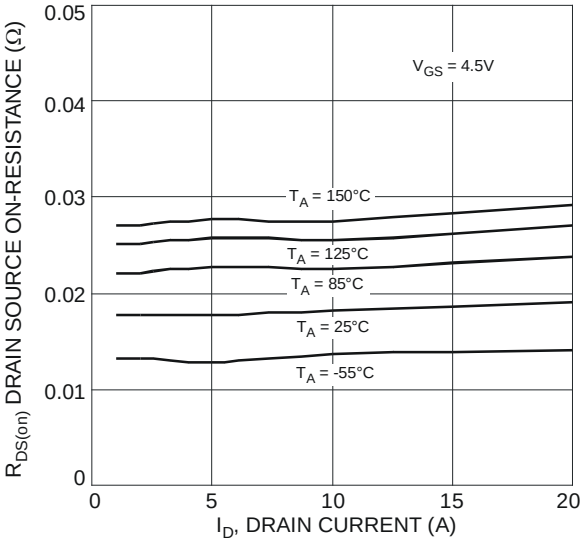


Fig. 4 Typical Drain-Source On-Resistance
vs. Drain Current and Temperature

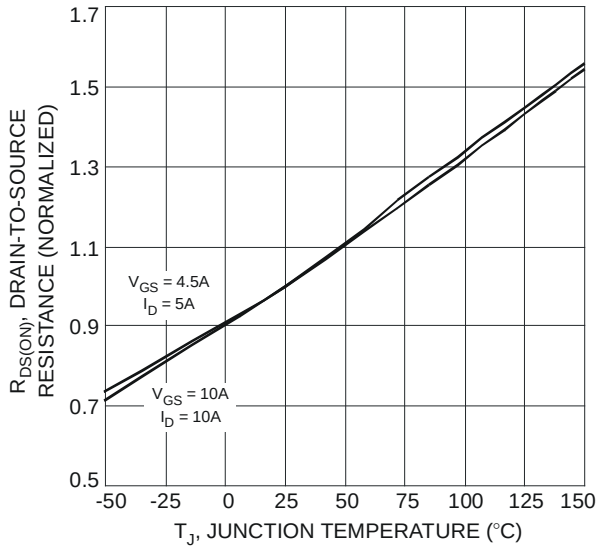


Fig. 5 On-Resistance Variation with Temperature

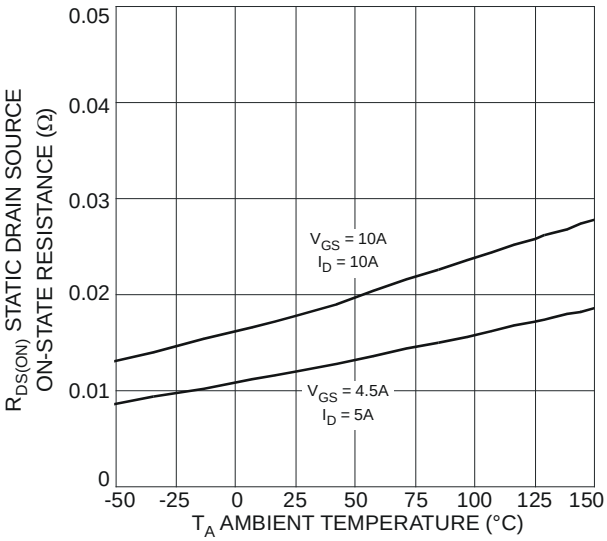


Fig. 6 Typical Static Drain-Source On-State Resistance
vs. Ambient Temperature

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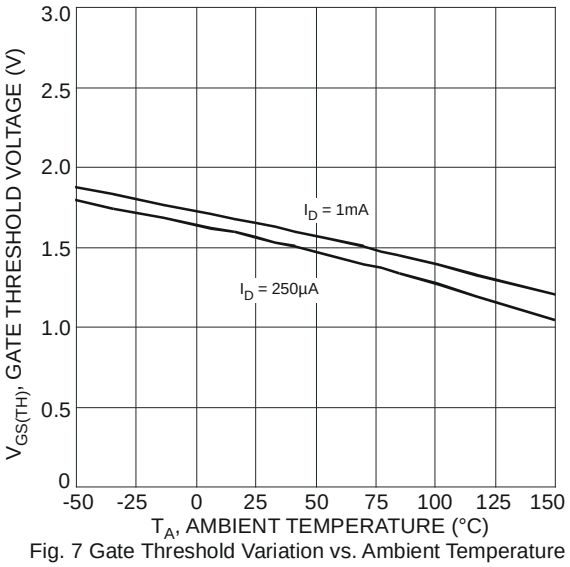


Fig. 7 Gate Threshold Variation vs. Ambient Temperature

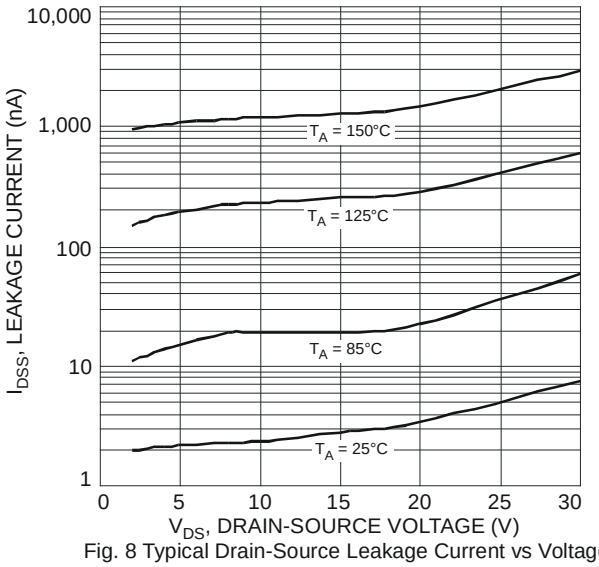


Fig. 8 Typical Drain-Source Leakage Current vs Voltage

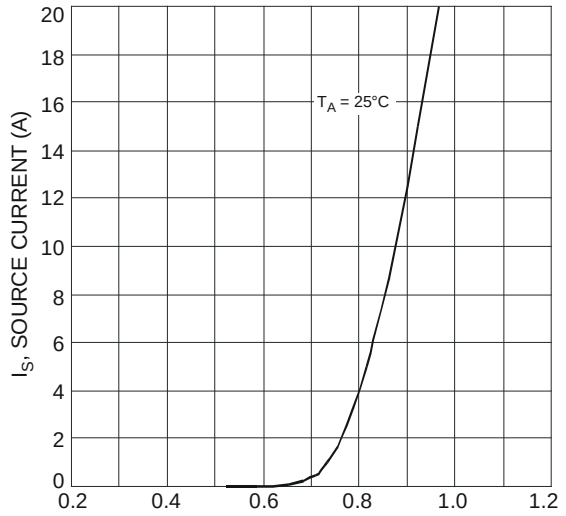


Fig. 9 Diode Forward Voltage vs. Current

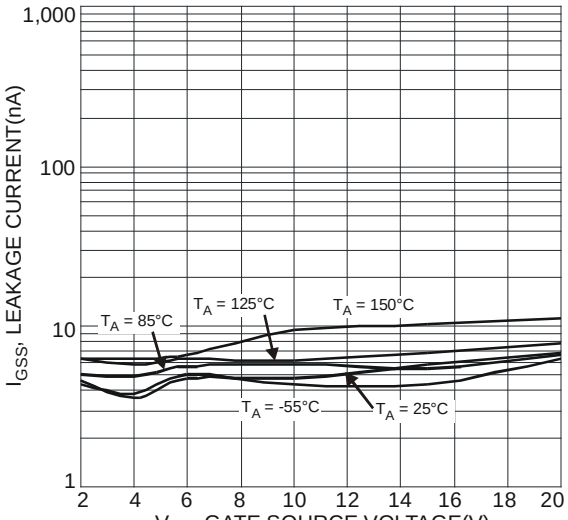


Fig. 10 Gate-Source Leakage Current vs. Voltage

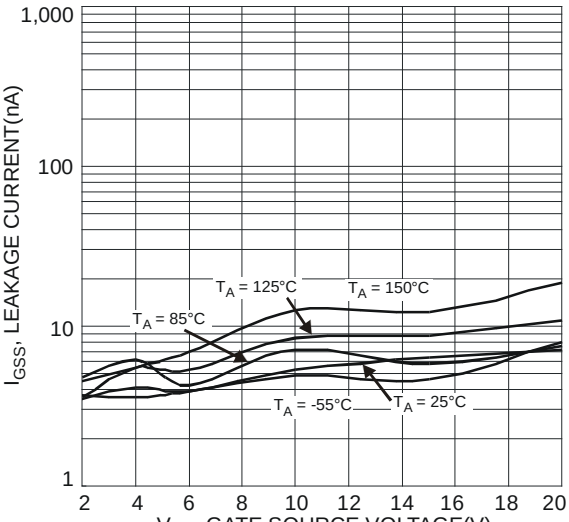


Fig. 11 Gate-Source Leakage Current vs. Voltage

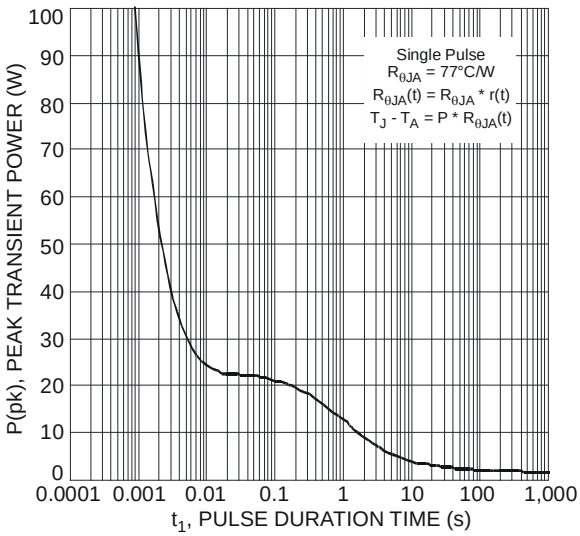


Fig. 12 Single Pulse Maximum Power Dissipation

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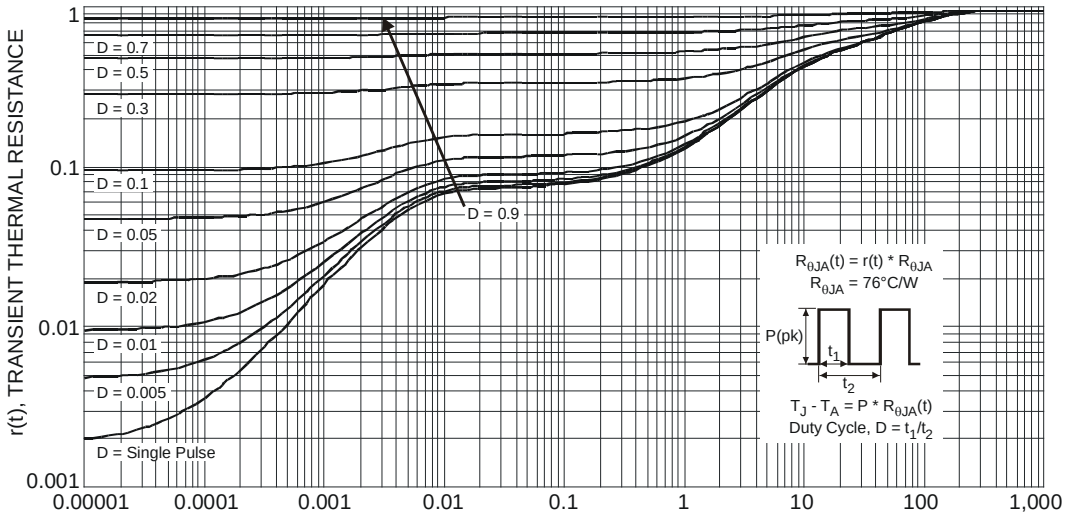
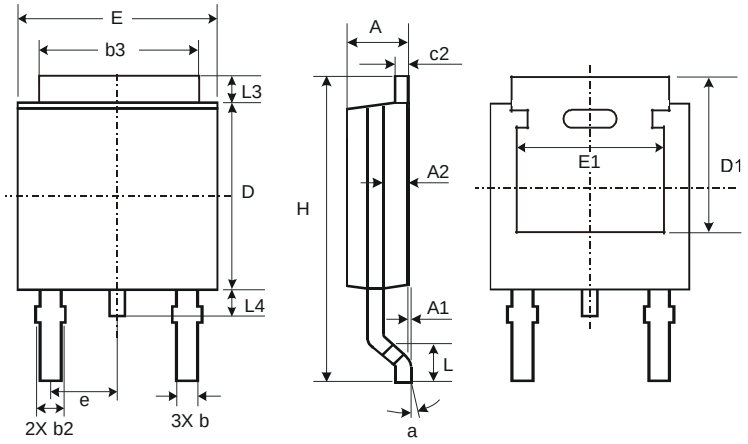


Fig. 13 Transient Thermal Response

Package Outline Dimensions

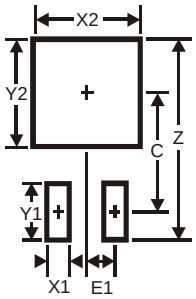
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for latest version.



TO252			
Dim	**Min**	**Max**	**Typ**
A	2.19	2.39	2.29
A1	0.00	0.13	0.08
A2	0.97	1.17	1.07
b	0.64	0.88	0.783
b2	0.76	1.14	0.95
b3	5.21	5.46	5.33
c2	0.45	0.58	0.531
D	6.00	6.20	6.10
D1	5.21	–	–
e	–	–	2.286
E	6.45	6.70	6.58
E1	4.32	–	–
H	9.40	10.41	9.91
L	1.40	1.78	1.59
L3	0.88	1.27	1.08
L4	0.64	1.02	0.83
a	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)
Z	11.6
X1	1.5
X2	7.0
Y1	2.5
Y2	7.0
C	6.9
E1	2.3

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