



30V N-CHANNEL ENHANCEMENT MODE MOSFET

Product Summary

V _{(BR)DSS}	R _{DS(on)}	I _D T _C = +25°C
30V	12mΩ @ V _{GS} = 10V	37.8A
30 V	16mΩ @ V _{GS} = 4.5V	32.8A

Description

This MOSFET is designed to minimize the on-state resistance (R_{DS(ON)}) and yet maintain superior switching performance, making it ideal for high efficiency power management applications.

Applications

- Backlighting
- **DC-DC Converters**
- **Power Management Functions**

Features

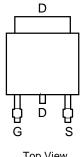
- 100% Unclamped Inductive Switch (UIS) Test in Production
- Low On-Resistance
- Fast Switching Speed
- Totally Lead-Free & Fully RoHS Compliant (Note 1 & 2)
- Halogen and Antimony Free. "Green" Device (Note 3)

Mechanical Data

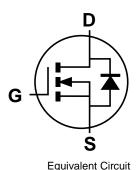
- Case: TO252
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208 (3)
- Weight: 0.33 grams (Approximate)







Top View Pin-Out



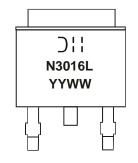
-	-		
	Product	Case	Packaging
	DMN3016LK3-13	TO252	2.500/Tape & Reel

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/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/products/packages.html.

Marking Information

Ordering Information (Notes 4)



⊃¦¦ = Manufacturer's Marking N3016L= Product Type Marking Code YYWW = Date Code Marking YY = Year (ex: 14 = 2014) WW = Week (01 - 53)



Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Characteristic			Symbol	Value	Units
Drain-Source Voltage			V _{DSS}	30	V
Gate-Source Voltage			V _{GSS}	±20	V
	Steady State	$T_A = +25$ °C $T_A = +70$ °C	I _D	12.4 10	А
Continuous Drain Current (Note 6) V _{GS} = 10V	Steady State	$T_C = +25$ °C $T_C = +70$ °C	I _D	37.8 30.3	А
	t<10s	$T_A = +25$ °C $T_A = +70$ °C	I _D	17 13.6	А
Maximum Body Diode Continuous Current	I _S	2	Α		
Pulsed Drain Current (10µs pulse, duty cycle = 1%)	I _{DM}	90	Α		
Avalanche Current (Note 7) L = 0.1mH			I _{AS}	22	Α
Avalanche Energy (Note 7) L = 0.1mH			E _{AS}	24	mJ

Thermal Characteristics (@TA = +25°C, unless otherwise specified.)

Characteristic		Symbol	Value	Units
Total Davias Discinsting (Note 5)	T _A = +25°C	<u> </u>	1.6	W
Total Power Dissipation (Note 5)	T _A = +70°C	P_{D}	1.0	
Thermal Resistance, Junction to Ambient (Note 5)	Steady State	Б	75	°C/W
	t<10s	$R_{\theta JA}$	34	
Total Payer Dissination (Note 6)	T _A = +25°C	٥	2.8	W
Total Power Dissipation (Note 6)	T _A = +70°C	P_{D}	1.8	
Thermal Projectance Junction to Ambient (Note 6)	Steady State	D	46	°C/W
Thermal Resistance, Junction to Ambient (Note 6)	t<10s	$R_{ heta JA}$	24	
Thermal Resistance, Junction to Case (Note 6)		R ₀ JC	3.1	
Operating and Storage Temperature Range		T _J , T _{STG}	-55 to +150	°C



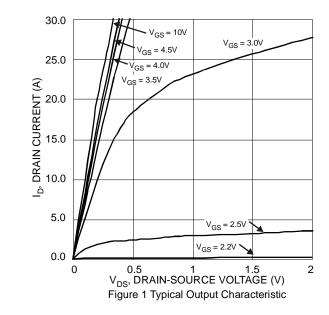
Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

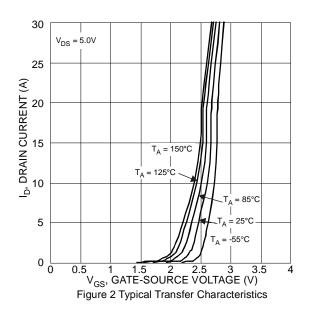
Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition	
OFF CHARACTERISTICS (Note 8)							
Drain-Source Breakdown Voltage	BV _{DSS}	30	_	_	V	$V_{GS} = 0V, I_D = 250\mu A$	
Zero Gate Voltage Drain Current T _J = +25°C	I _{DSS}	_	_	1	μΑ	V _{DS} = 30V, V _{GS} = 0V	
Gate-Source Leakage	I _{GSS}	_	-	±100	nA	$V_{GS} = \pm 20V, V_{DS} = 0V$	
ON CHARACTERISTICS (Note 8)							
Gate Threshold Voltage	V _{GS(th)}	1.3	_	2.3	V	$V_{DS} = V_{GS}, I_{D} = 250 \mu A$	
Static Drain-Source On-Resistance	-	_	8	12	0	V _{GS} = 10V, I _D = 11A	
Static Drain-Source On-Resistance	R _{DS(ON)}	_	12	16	mΩ	V _{GS} = 4.5V, I _D = 9A	
Diode Forward Voltage	V_{SD}	_	0.70	1.0	V	V _{GS} = 0V, I _S = 1A	
DYNAMIC CHARACTERISTICS (Note 9)							
Input Capacitance	Ciss		1415	_	pF		
Output Capacitance	Coss	1	119	_	pF	$V_{DS} = 15V, V_{GS} = 0V,$ f = 1.0MHz	
Reverse Transfer Capacitance	Crss		82	_	рF	1 = 1.000112	
Gate Resistance	R_{G}	1	2.2	_	Ω	$V_{DS} = 0V, V_{GS} = 0V, f = 1.0MHz$	
Total Gate Charge (V _{GS} = -10V)	Qg		25.1	_	nC		
Total Gate Charge (V _{GS} = -4.5V)	Qg	_	11.3	_	nC	1, 45, 40,	
Gate-Source Charge	Q_{gs}	_	3.5	_	nC	$V_{DS} = 15V, I_{D} = 12A$	
Gate-Drain Charge	Q_{gd}	_	3.6	_	nC		
Turn-On Delay Time	t _{D(on)}	_	4.8	_	ns		
Turn-On Rise Time	t _r	_	16.5	_	ns	V _{DD} = 15V, V _{GS} = 10V,	
Turn-Off Delay Time	t _{D(off)}	_	26.1	_	ns	$R_L = 1.25\Omega$, $R_G = 3\Omega$,	
Turn-Off Fall Time	t _f		5.6	_	ns]	
Body Diode Reverse Recovery Time	t _{rr}		12.3	_	ns	1 404 11/11 5004/22	
Body Diode Reverse Recovery Charge	Qrr	_	10.4	_	nC	$I_F = 12A$, di/dt = 500A/ μ s	

Notes:

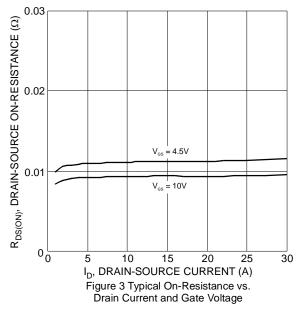
- 5. Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.
 6. Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate.
 7. UIS in production with L = 0.1mH, starting T_A = +25°C.
 8. Short duration pulse test used to minimize self-heating effect.

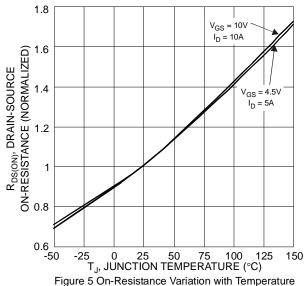
- 9. Guaranteed by design. Not subject to product testing.

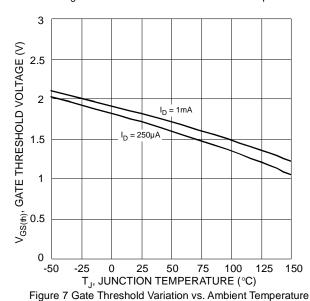


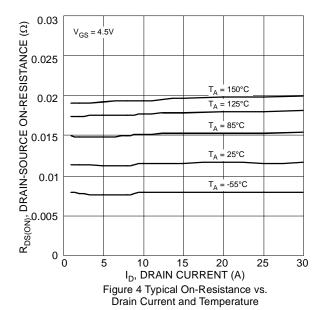


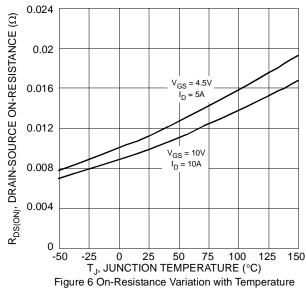


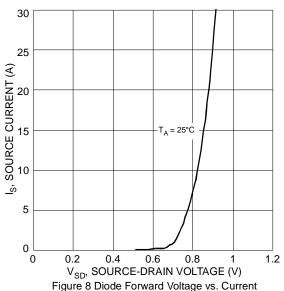














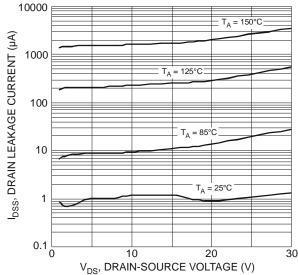
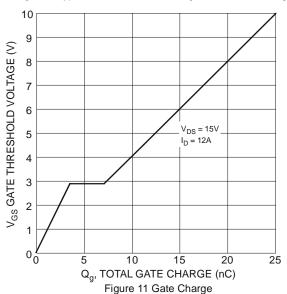
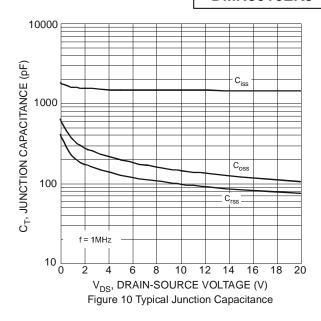
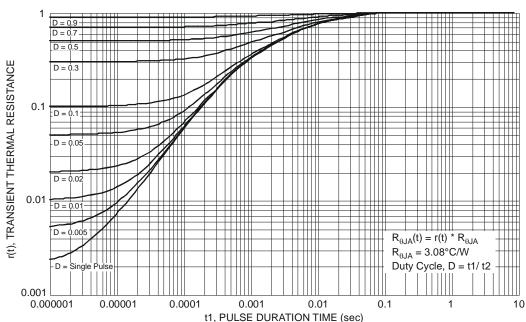


Figure 9 Typical Drain-Source Leakage Current vs. Voltage



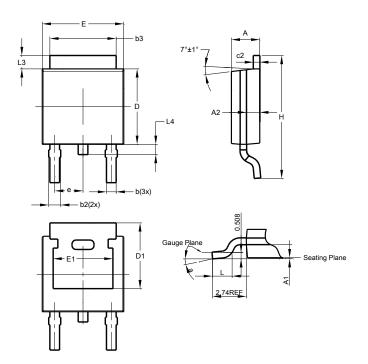






Package Outline Dimensions

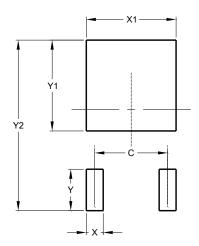
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for the latest version.



TO252					
Dim	Min	Max	Тур		
Α	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	_	_		
е	-	_	2.286		
Е	6.45	6.70	6.58		
E1	4.32	_	_		
Н	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		
а	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)		
С	4.572		
X	1.060		
X1	5.632		
Y	2.600		
Y1	5.700		
Y2	10.700		



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