

Features

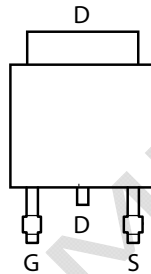
- Low On-Resistance
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- **ESD Protected**
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

Mechanical Data

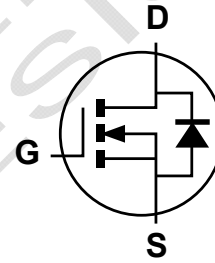
- Case: TO252
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals Connections: See Diagram
- Terminals: Matte Tin Finish annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208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



Top View



Pin Out -Top View



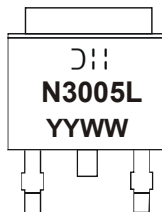
Equivalent Circuit

Ordering Information (Note 4)

Part Number	Case	Packaging
DMN3005LK3-13	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/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



- ⌋⌋⌋ = Manufacturer's Marking
- N3005L = Product Type Marking Code
- YYWW = Date Code Marking
- YY = Year (ex: 09 = 2009)
- WW = Week (01 - 53)

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) V _{GS} = 10V	Steady State	T _A = +25°C	I _D	14.5	A
		T _A = +85°C		10.5	
Continuous Drain Current (Note 6) V _{GS} = 10V	Steady State	T _A = +25°C	I _D	22	A
		T _A = +85°C		16	
Pulsed Drain Current (Note 7)			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 (Note 5)	R _{θJA}	74.3	°C/W
Power Dissipation (Note 6)	P _D	4.1	W
Thermal Resistance, Junction to Ambient @T _A = +25°C (Note 6)	R _{θJA}	30.8	°C/W
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	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 8)						
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 8)						
Gate Threshold Voltage	V _{GS(th)}	1.0	1.5	2.0	V	V _{DS} = V _{GS} , I _D = 250μA
Static Drain-Source On-Resistance	R _{DS(on)}	-	2.5	4.5	mΩ	V _{GS} = 10V, I _D = 20A
			3.8	6.5		V _{GS} = 4.5V, I _D = 20A
Forward Transfer Admittance	Y _{fs}	-	22	-	S	V _{DS} = 15V, I _D = 15A
Diode Forward Voltage	V _{SD}	-	0.8	1.0	V	V _{GS} = 0V, I _S = 20A
DYNAMIC CHARACTERISTICS (Note 9)						
Input Capacitance	C _{iss}	-	4342	-	pF	V _{DS} = 15V, V _{GS} = 0V, f = 1.0MHz
Output Capacitance	C _{oss}	-	1801	-	pF	
Reverse Transfer Capacitance	C _{rss}	-	669	-	pF	
Gate Resistance	R _g	-	1.76	-	Ω	V _{DS} = 0V, V _{GS} = 0V, f = 1MHz
Total Gate Charge	Q _g	-	46.9	-	nC	V _{GS} = 4.5V, V _{DS} = 15V, I _D = 15A
Gate-Source Charge	Q _{gs}	-	14.3	-	nC	
Gate-Drain Charge	Q _{gd}	-	18.6	-	nC	
Turn-On Delay Time	t _{D(on)}	-	7.9	-	ns	V _{DS} = 15V, V _{GS} = 10V, R _L = 1.3Ω R _G = 3Ω
Turn-On Rise Time	t _r	-	22.8	-	ns	
Turn-Off Delay Time	t _{D(off)}	-	73.4	-	ns	
Turn-Off Fall Time	t _f	-	43.5	-	ns	
Body Diode Reverse Recovery Time	t _{rr}	-	23.5	-	ns	I _F = 20A, dI/dt = 100A/μs
Body Diode Reverse Recovery Charge	Q _{rr}	-	15.6	-	nC	I _F = 20A, dI/dt = 100A/μs

- Notes:
5. Device mounted on FR-4 PCB, with minimum recommended pad layout, single sided.
 6. Device mounted on 2" x 2" FR-4 PCB with high coverage 2oz. copper, single sided.
 7. Repetitive rating, pulse width limited by junction temperature and current limited by package.
 8. Short duration pulse test used to minimize self-heating effect.
 9. Guaranteed by design. Not subject to production testing.

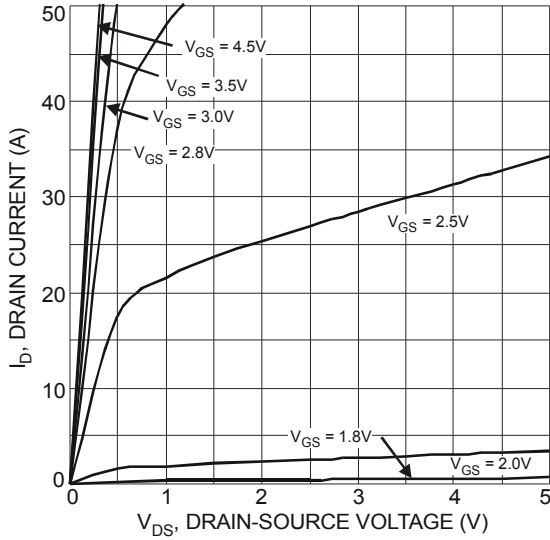


Fig. 1 Typical Output Characteristics

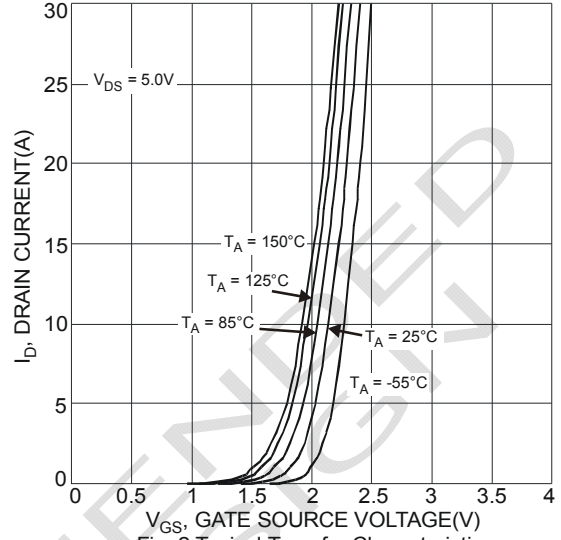


Fig. 2 Typical Transfer Characteristics

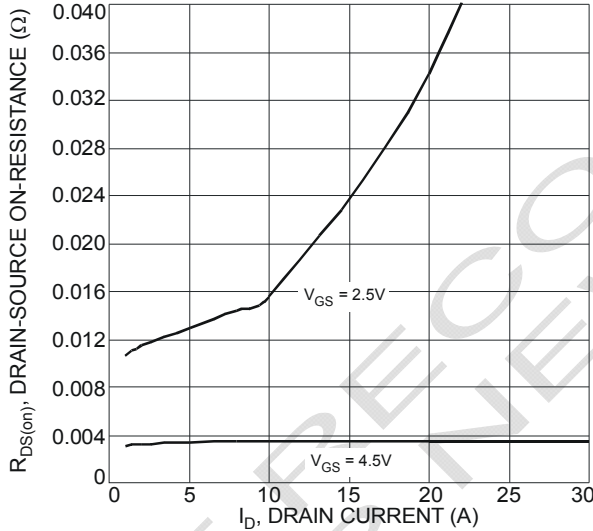


Fig. 3 Typical On-Resistance vs. Drain Current and Gate Voltage

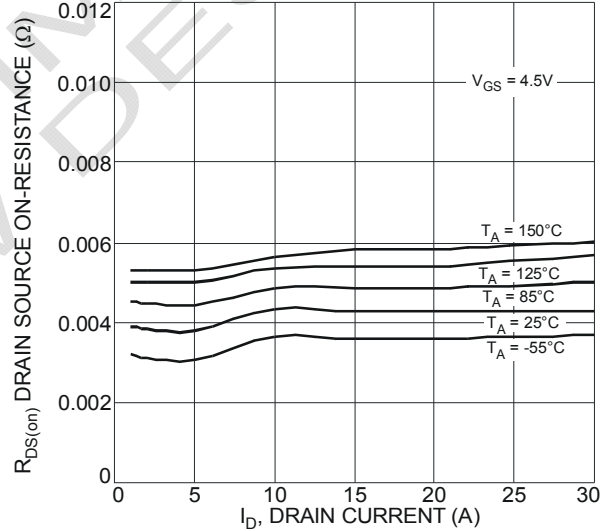


Fig. 4 Typical Drain-Source On-Resistance vs. Drain Current and Temperature

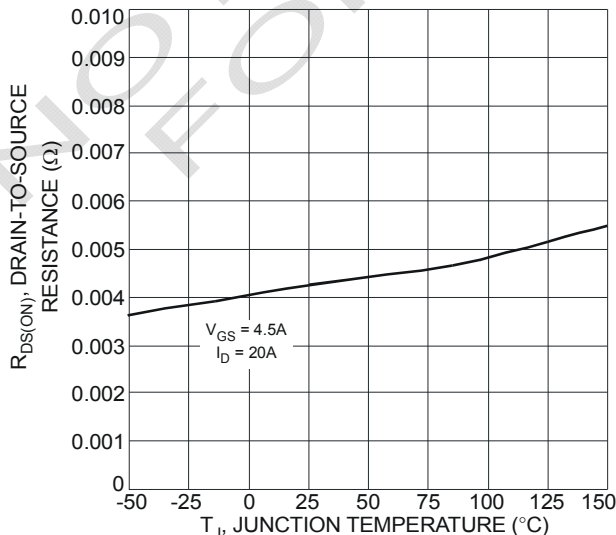


Fig. 5 On-Resistance Variation with Temperature

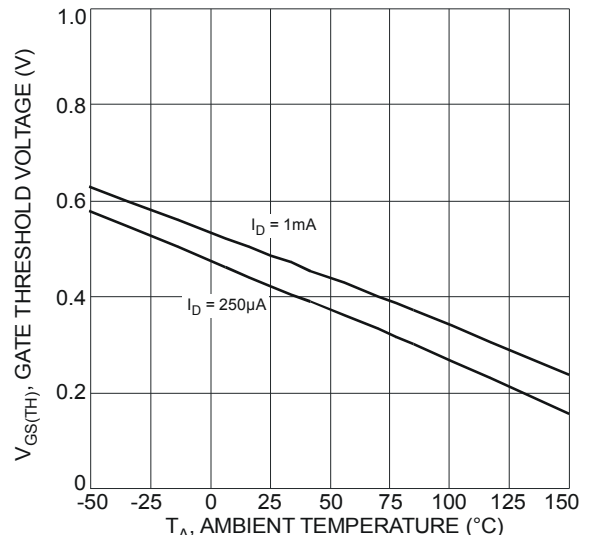


Fig. 6 Gate Threshold Variation vs. Ambient Temperature

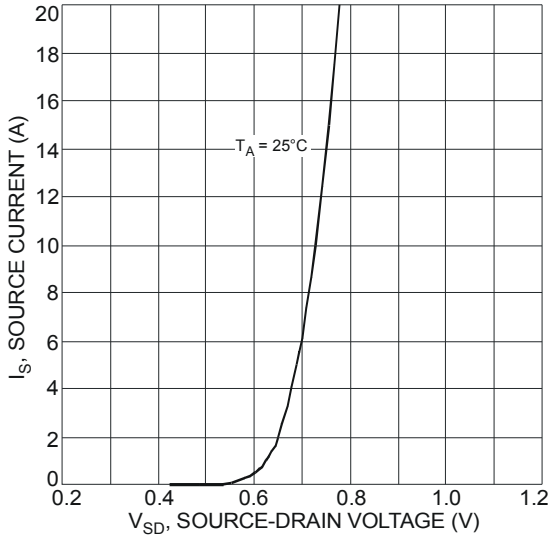


Fig. 7 Diode Forward Voltage vs. Current

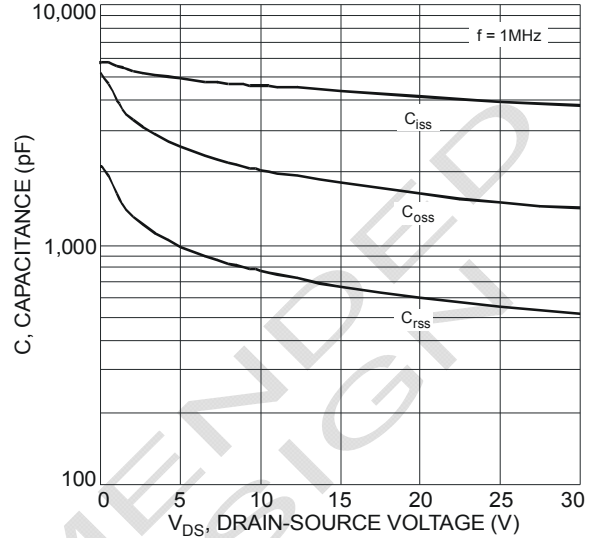


Fig. 8 Typical Capacitance

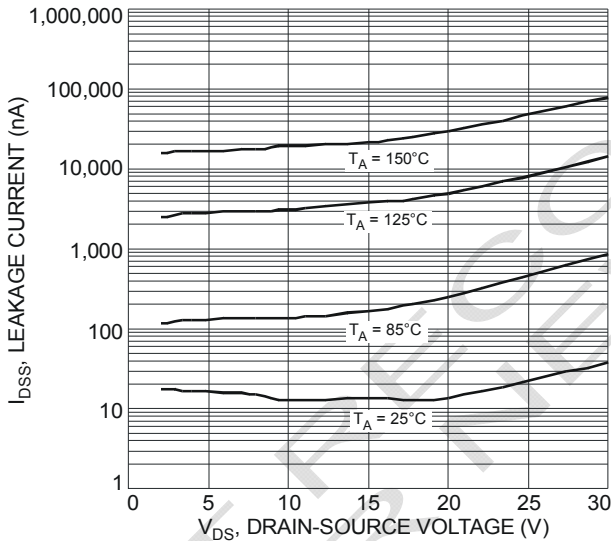


Fig. 9 Typical Drain-Source Leakage Current vs Voltage

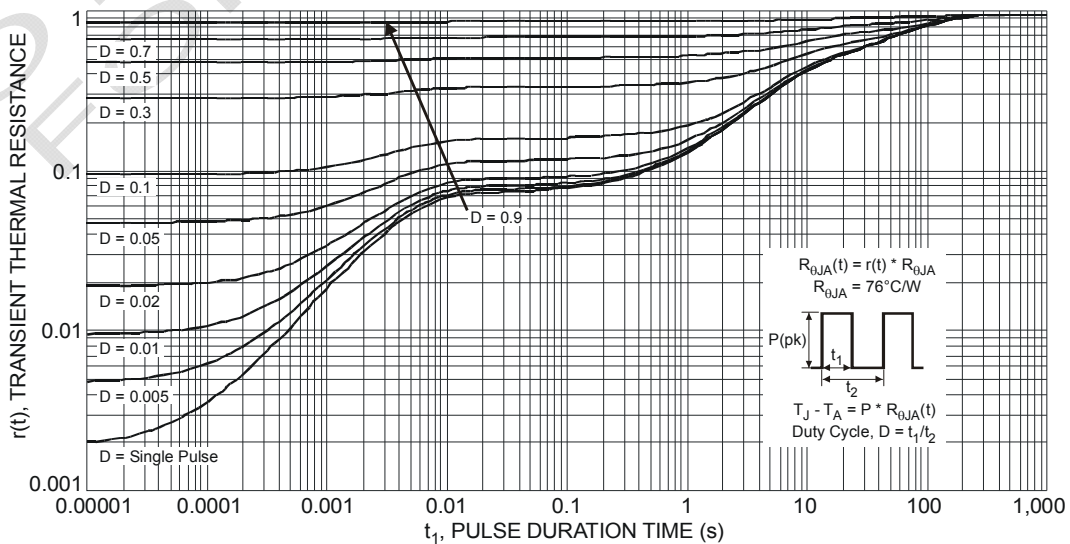
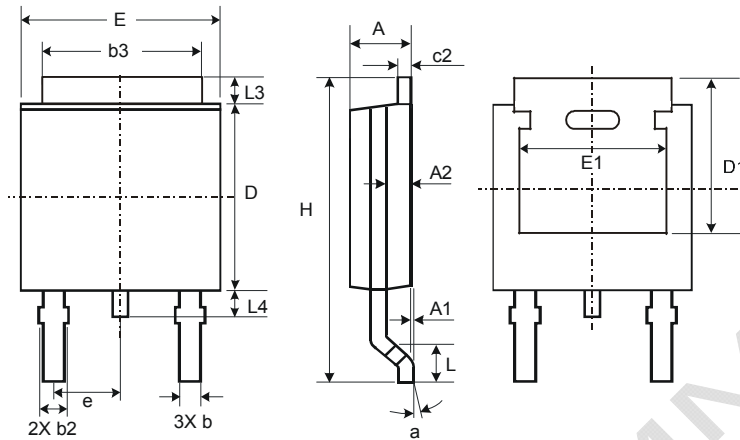


Fig. 10 Transient Thermal Response

Package Outline Dimensions

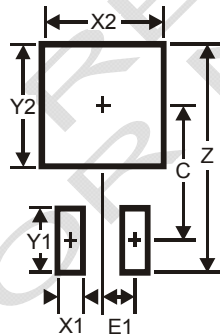
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for latest version.



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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