N-CHANNEL ENHANCEMENT MODE FIELD EFFECT TRANSISTOR

Product Summary

$V_{(BR)DSS}$	$R_{DS(ON)}$	Package	$I_{D\ max}$ T_A = +25°C
30V	52mΩ @ V_{GS} = 10V	SOT323	4A
	65mΩ @ V_{GS} = 4.5V		
	85mΩ @ V_{GS} = 2.5V		

Features

- Low On-Resistance
- Low Gate Threshold Voltage
- 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**

Applications

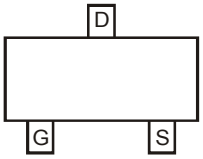
- DC-DC Converters
- Power Management Functions
- Battery Operated Systems and Solid-State Relays

Mechanical Data

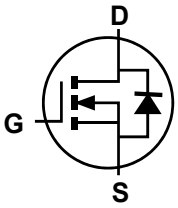
- Case: SOT323
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin annealed over Alloy 42 leadframe. Solderable per MIL-STD-202, Method 208 e3
- Terminal Connections: See Diagram
- Weight: 0.006 grams (approximate)

SOT323

Top View



Pin Configuration
Top View



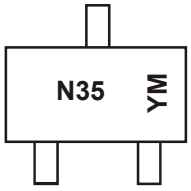
Equivalent Circuitl

Ordering Information (Note 4)

Part Number	Case	Packaging
DMN3065LW-7	SOT323	3000/Tape & Reel
DMN3065LW-13	SOT323	10000/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



N35 = Product Type Marking Code
YM = Date Code Marking
Y = Year (ex: A = 2013)
M = Month (ex: 9 = September)

Date Code Key

Year	2012	2013	2014	2015	2016	2017	2018
Code	Z	A	B	C	D	E	F

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

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}	±12	V
Drain Current (Note 5)	I_D	4	A
Body-Diode Continuous Current (Note 5)	I_S	1	A

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Total Power Dissipation (Note 5)	P_D	770	mW
Thermal Resistance, Junction to Ambient @T_A = +25°C (Note 5)	$R_{\theta JA}$	162	°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 6)						
Drain-Source Breakdown Voltage	BV_{DSS}	30	—	—	V	V_{GS} = 0V, I_D = 250μA
Zero Gate Voltage Drain Current	I_{DSS}	—	—	1	μA	V_{DS} = 30V, V_{GS} = 0V
Gate-Body Leakage	I_{GSS}	—	—	±100	nA	V_{GS} = ±12V, V_{DS} = 0V
ON CHARACTERISTICS (Note 6)						
Gate Threshold Voltage	$V_{GS(th)}$	0.5	—	1.5	V	V_{DS} = V_{GS}, I_D = 250μA
Static Drain-Source On-Resistance	$R_{DS\ (ON)}$	— —	— — —	52 65 85	mΩ	V_{GS} = 10V, I_D = 4A V_{GS} = 4.5V, I_D = 3A V_{GS} = 2.5V, I_D = 2A
Source-Drain Diode Forward Voltage	V_{SD}	—	—	1.2	V	V_{GS} = 0V, I_S = 2.0A
DYNAMIC CHARACTERISTICS(7)						
Input Capacitance	Ciss	—	465	—	pF	VDS = 15V, VGS = 0V, f = 1.0MHz
Output Capacitance	Coss	—	49.5	—	pF	
Reverse Transfer Capacitance	Crss	—	43.8	—	pF	
Gate Resistance	R_g	—	2.3	—	Ω	V_{DS} =0V, V_{GS} = 0V, f = 1MHz
Total Gate Charge (V_{GS}=10V)	Q_g	—	11.7	—	nC	V_{DS} = 15V, I_D = 4 A
Total Gate Charge (V_{GS}=4.5V)	Q_g	—	5.5	—	nC	V_{DS} = 15V, I_D = 4 A
Gate-Source Charge	Q_{gs}	—	1.1	—	nC	
Gate-Drain Charge	Q_{gd}	—	1.8	—	nC	
Turn-On Delay Time	$t_{D(on)}$	—	1.9	—	ns	V_{DD} = 15V, V_{GEN} = 10V, R_{GEN} =3Ω, R_L = 3.75Ω
Turn-On Rise Time	t_r	—	1.6	—	ns	
Turn-Off Delay Time	$t_{D(off)}$	—	10.3	—	ns	
Turn-Off Fall Time	t_f	—	2.0	—	ns	

Notes: 5. Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper pad layout
6. Short duration pulse test used to minimize self-heating effect.
7. Guaranteed by design. Not subject to production testing.

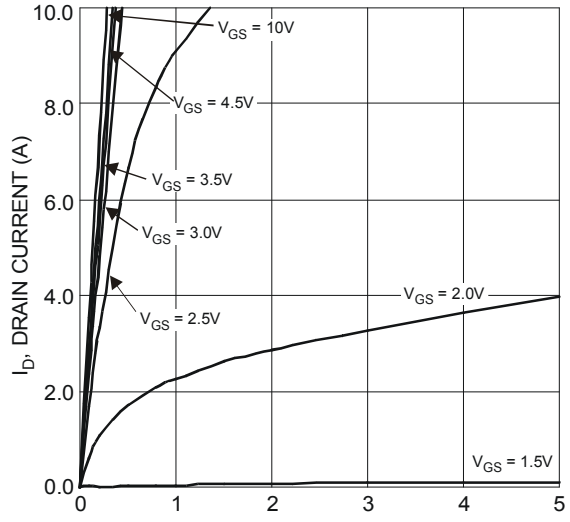


Figure 1 Typical Output Characteristics

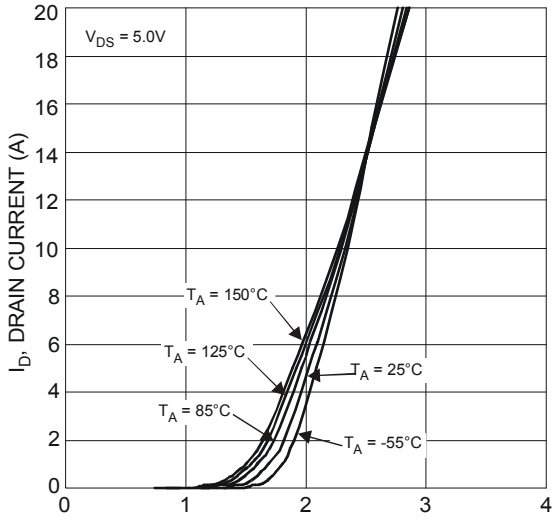


Figure 2 Typical Transfer Characteristics

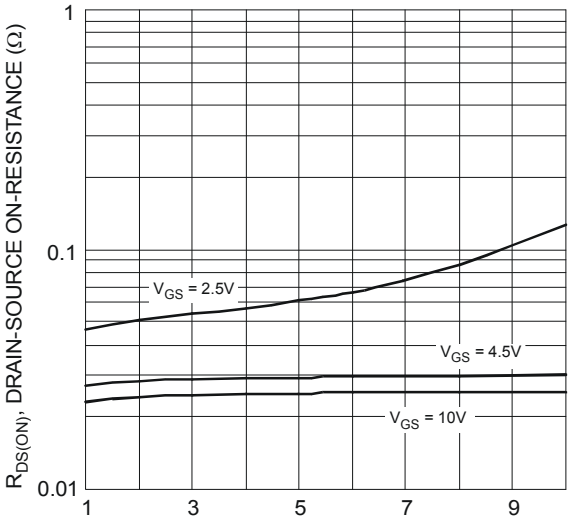


Figure 3 Typical On-Resistance vs. Drain Current and Gate Voltage

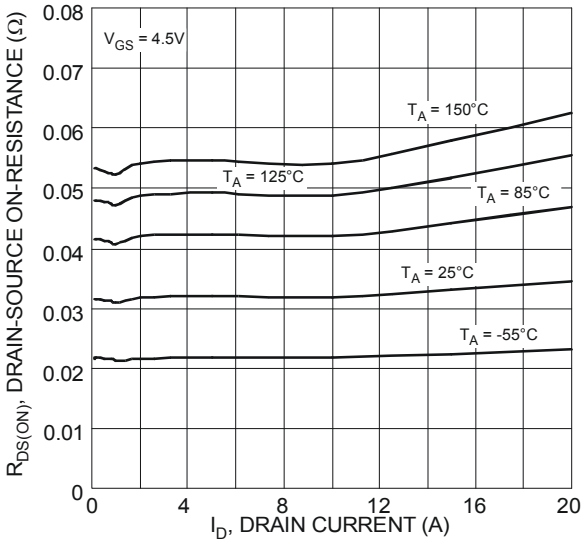


Figure 4 Typical On-Resistance vs. Drain Current and Temperature

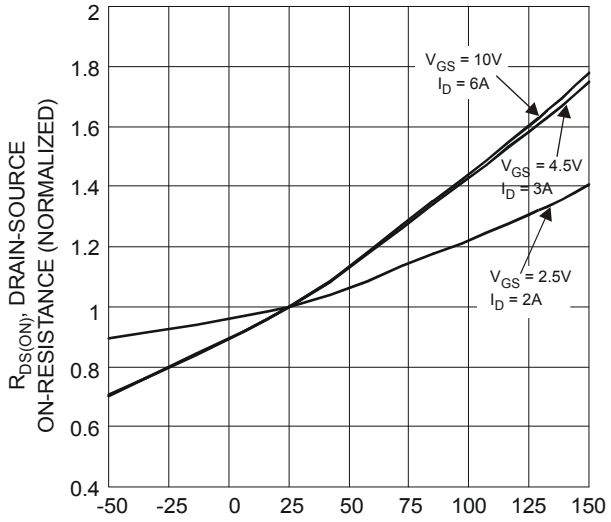


Figure 5 On-Resistance Variation with Temperature

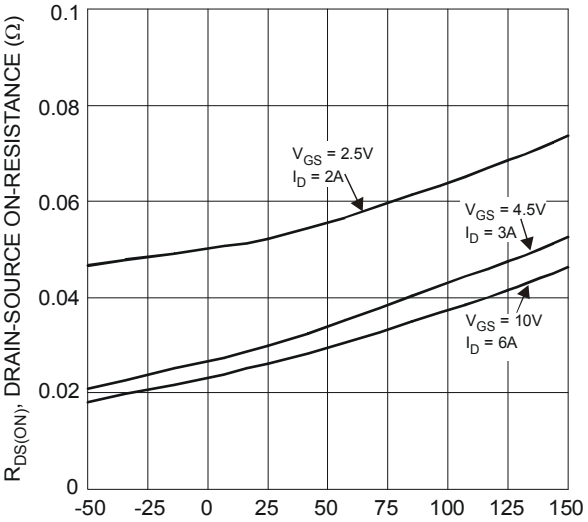


Figure 6 On-Resistance Variation with Temperature

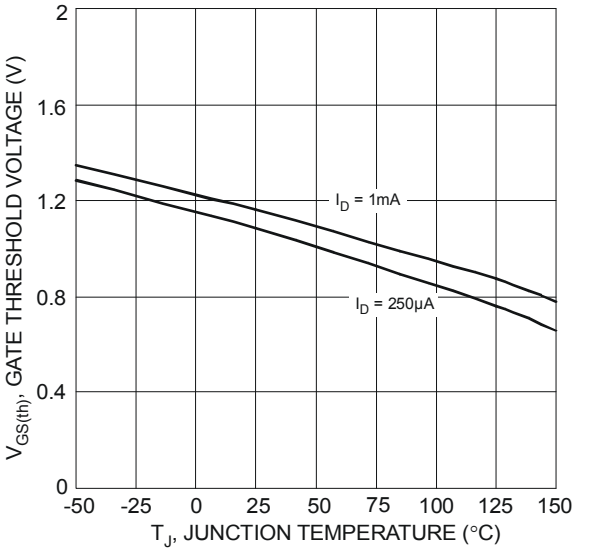


Figure 7 Gate Threshold Variation vs. Ambient Temperature

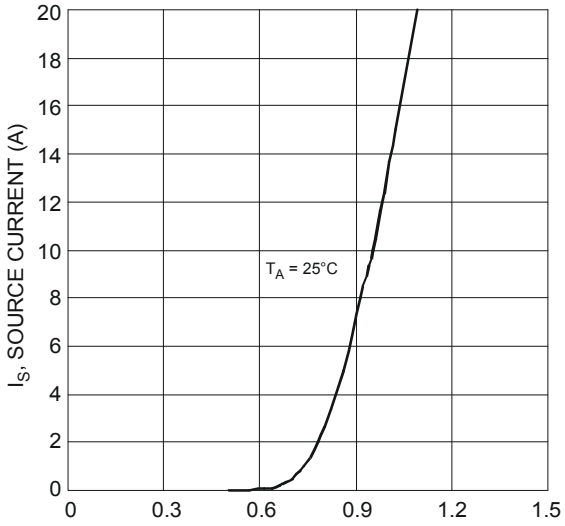


Figure 8 Diode Forward Voltage vs. Current

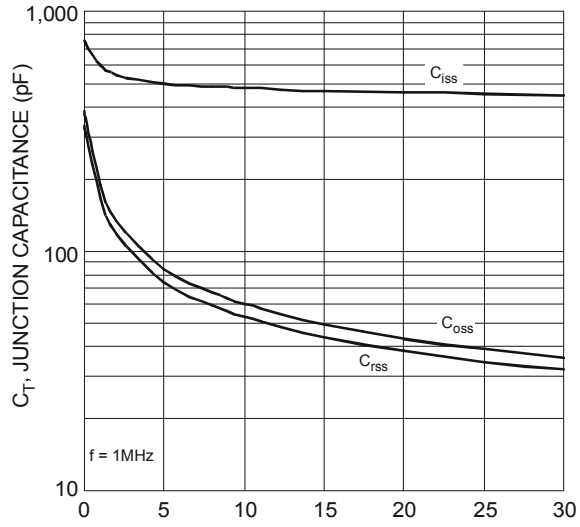


Figure 9 Typical Junction Capacitance

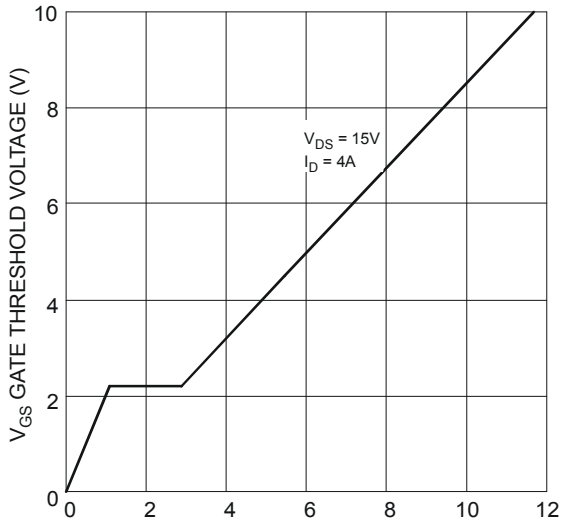
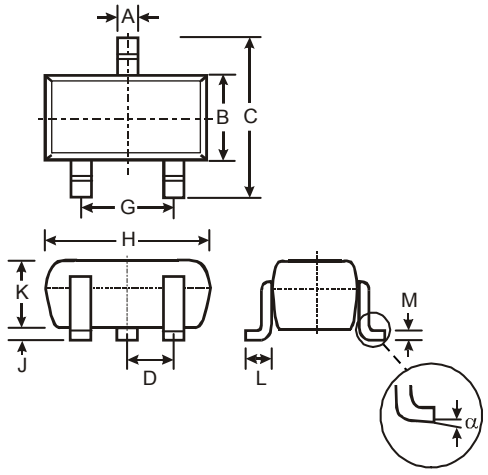


Figure 10 Gate Charge

Package Outline Dimensions

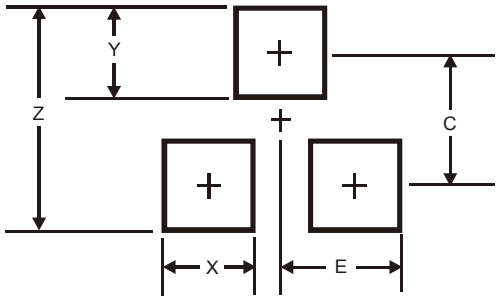
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for latest version.



SOT323			
Dim	**Min**	**Max**	**Typ**
A	0.25	0.40	0.30
B	1.15	1.35	1.30
C	2.00	2.20	2.10
D	-	-	0.65
G	1.20	1.40	1.30
H	1.80	2.20	2.15
J	0.0	0.10	0.05
K	0.90	1.00	1.00
L	0.25	0.40	0.30
M	0.10	0.18	0.11
α	0°	8°	-
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	2.8
X	0.7
Y	0.9
C	1.9
E	1.0

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