

## Product Summary

$V_{(BR)DSS}$	$R_{DS(ON)}$	Package	$I_D \max$ $T_A = +25^\circ C$
30V	52m $\Omega$ @ $V_{GS} = 10V$	SOT323	4A
	65m $\Omega$ @ $V_{GS} = 4.5V$		
	85m $\Omega$ @ $V_{GS} = 2.5V$		

## Applications

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

## 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**

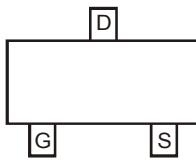
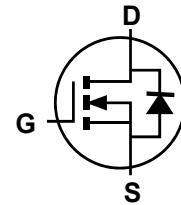
## Mechanical Data

- 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 
- Terminal Connections: See Diagram
- Weight: 0.006 grams (approximate)

SOT323



Top View

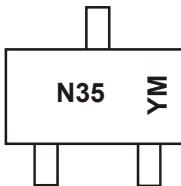

 Pin Configuration  
Top View

 Equivalent Circuit<sup>1</sup>

## Ordering Information (Note 4)

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

- Notes:
- No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
  - See [http://www.diodes.com/quality/lead\\_free.html](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.
  - Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
  - 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** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Drain Source Voltage	$V_{DSS}$	30	V
Gate-Source Voltage	$V_{GSS}$	$\pm 12$	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 @ $T_A = +25^\circ\text{C}$ (Note 5)	$R_{\theta JA}$	162	°C/W
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	°C

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS (Note 6)</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	$I_{DSS}$	—	—	1	$\mu\text{A}$	$V_{DS} = 30\text{V}, V_{GS} = 0\text{V}$
Gate-Body Leakage	$I_{GSS}$	—	—	$\pm 100$	nA	$V_{GS} = \pm 12\text{V}, V_{DS} = 0\text{V}$
<b>ON CHARACTERISTICS (Note 6)</b>						
Gate Threshold Voltage	$V_{GS(th)}$	0.5	—	1.5	V	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$
Static Drain-Source On-Resistance	$R_{DS(\text{ON})}$	—	—	52	$\text{m}\Omega$	$V_{GS} = 10\text{V}, I_D = 4\text{A}$
		—	—	65		$V_{GS} = 4.5\text{V}, I_D = 3\text{A}$
		—	—	85		$V_{GS} = 2.5\text{V}, I_D = 2\text{A}$
Source-Drain Diode Forward Voltage	$V_{SD}$	—	—	1.2	V	$V_{GS} = 0\text{V}, I_S = 2.0\text{A}$
<b>DYNAMIC CHARACTERISTICS(7)</b>						
Input Capacitance	$C_{iss}$	—	465	—	pF	$V_{DS} = 15\text{V}, V_{GS} = 0\text{V}, f = 1.0\text{MHz}$
Output Capacitance	$C_{oss}$	—	49.5	—	pF	
Reverse Transfer Capacitance	$C_{rss}$	—	43.8	—	pF	
Gate Resistance	$R_g$	—	2.3	—	$\Omega$	$V_{DS} = 0\text{V}, V_{GS} = 0\text{V}, f = 1\text{MHz}$
Total Gate Charge ( $V_{GS}=10\text{V}$ )	$Q_g$	—	11.7	—	nC	$V_{DS} = 15\text{V}, I_D = 4\text{ A}$
Total Gate Charge ( $V_{GS}=4.5\text{V}$ )	$Q_g$	—	5.5	—	nC	$V_{DS} = 15\text{V}, I_D = 4\text{ A}$
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	$V_{DD} = 15\text{V}, V_{GEN} = 10\text{V}, R_{GEN} = 3\Omega, R_L = 3.75\Omega$
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.

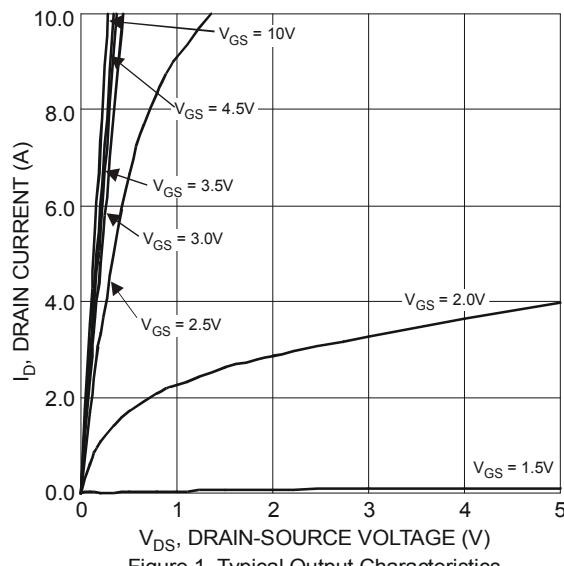


Figure 1 Typical Output Characteristics

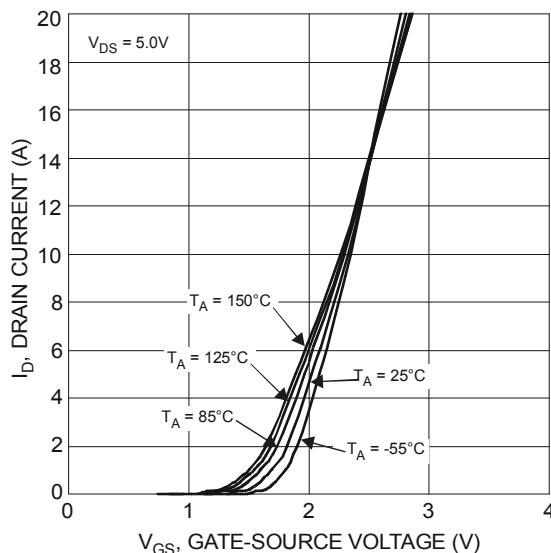


Figure 2 Typical Transfer Characteristics

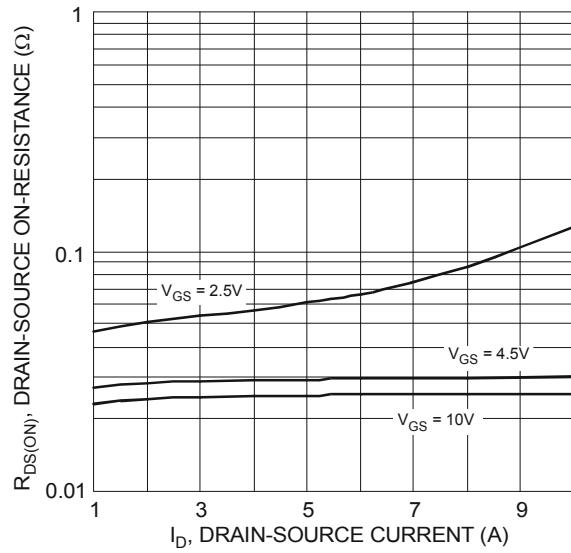


Figure 3 Typical On-Resistance vs.  
Drain Current and Gate Voltage

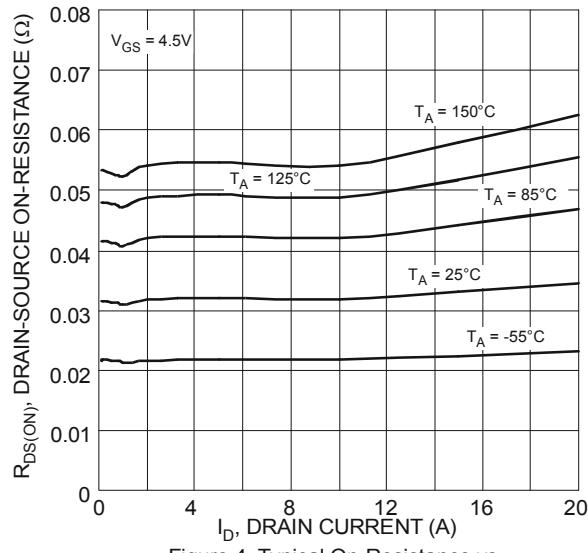


Figure 4 Typical On-Resistance vs.  
Drain Current and Temperature

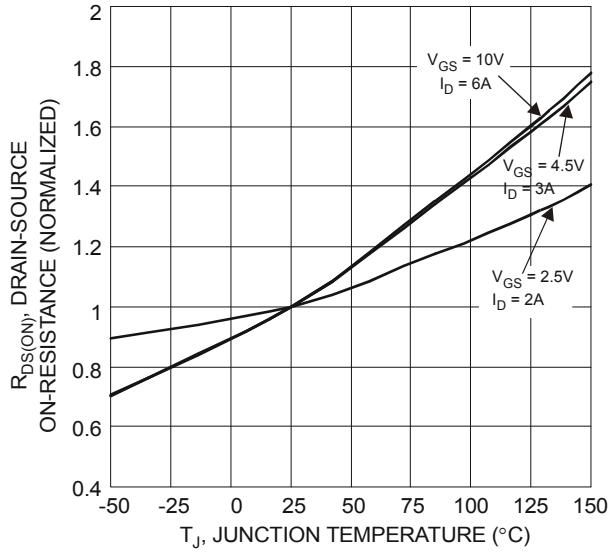


Figure 5 On-Resistance Variation with Temperature

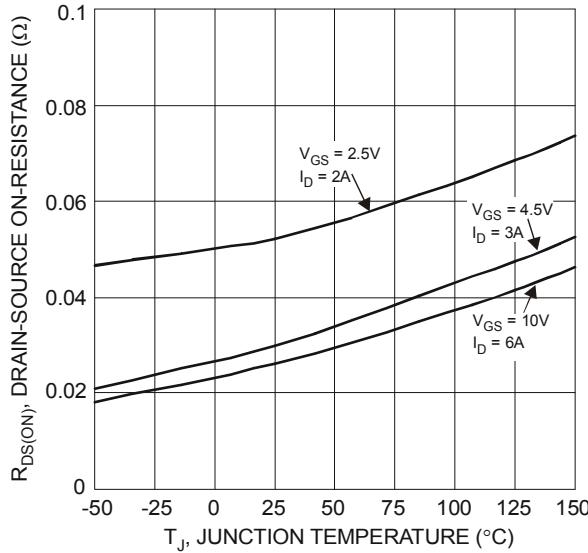


Figure 6 On-Resistance Variation with Temperature

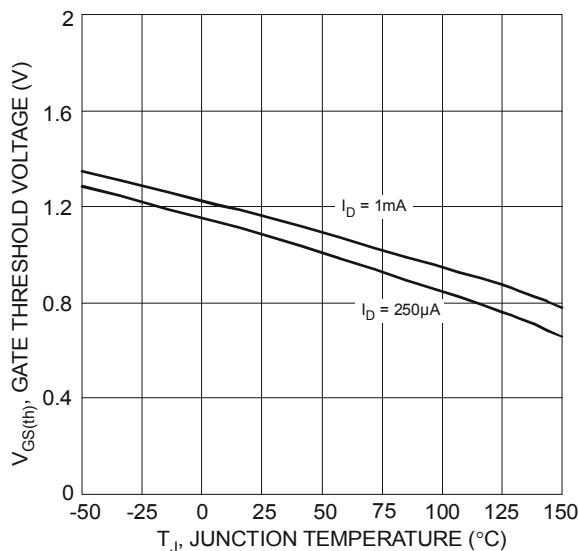


Figure 7 Gate Threshold Variation vs. Ambient Temperature

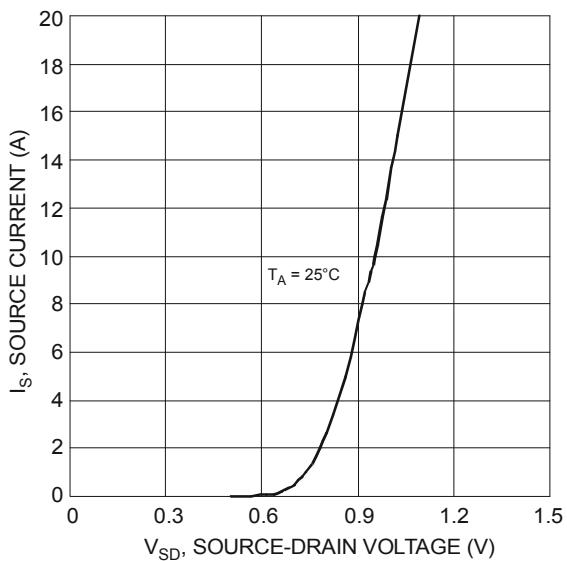


Figure 8 Diode Forward Voltage vs. Current

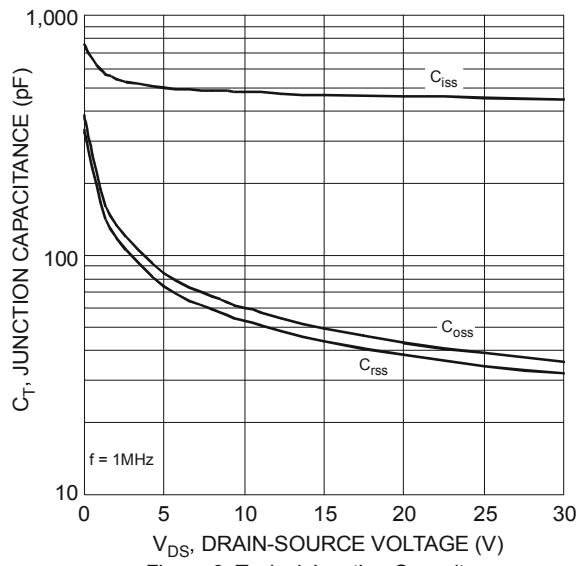


Figure 9 Typical Junction Capacitance

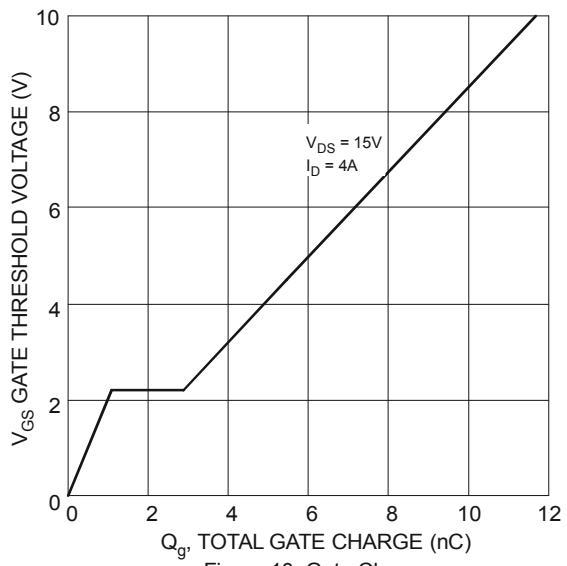
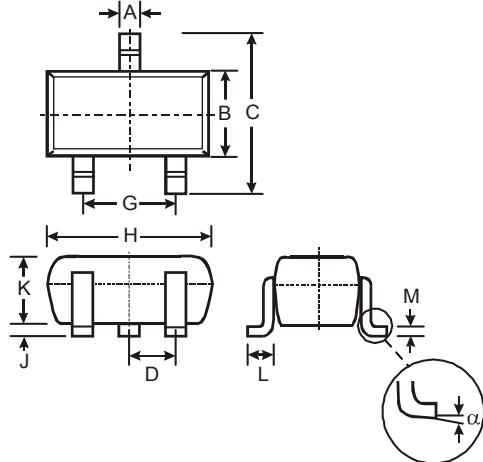


Figure 10 Gate Charge

## Package Outline Dimensions

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

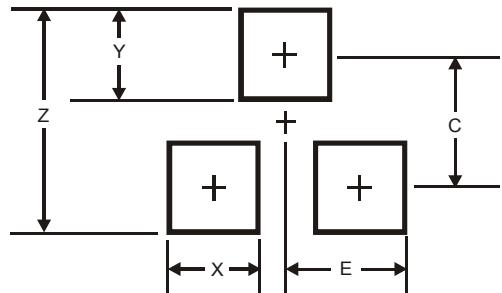


SOT323			
Dim	Min	Max	Typ
A	0.25	0.40	0.30
B	1.15	1.35	1.30
C	2.00	2.20	2.10
D	-	-	0.65
G	1.20	1.40	1.30
H	1.80	2.20	2.15
J	0.0	0.10	0.05
K	0.90	1.00	1.00
L	0.25	0.40	0.30
M	0.10	0.18	0.11
$\alpha$	0°	8°	-

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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