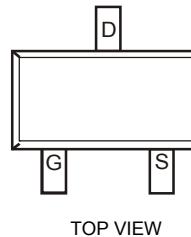
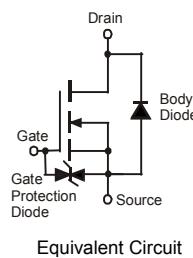


## Features

- Low On-Resistance
- Very Low Gate Threshold Voltage, 0.9V Max.
- Fast Switching Speed
- Low Input/Output Leakage
- Ultra-Small Surface Mount Package
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **ESD Protected Gate**

## Mechanical Data

- Case: SOT23
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminal Connections: See Diagram
- Terminals: Finish — Matte Tin annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208 (E3)
- Marking Information: See Page 3
- Ordering & Date Code Information: See Below
- Weight: 0.008 grams (approximate)



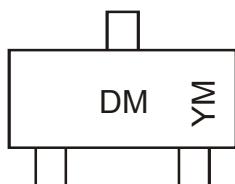
## Ordering Information (Note 4)

Part Number	Case	Packaging
DMN2005K-7	SOT23	3000/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](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



DM = Product Type Marking Code

YM = Date Code Marking

Y = Year ex: T = 2006

M = Month ex: 9 = September

## Date Code Key

Year	2006	2007	2008	2009	2010	2011	2012					
Code	T	U	V	W	X	Y	Z					
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	$V_{DSS}$	20	V
Gate-Source Voltage	$V_{GSS}$	$\pm 10$	V
Drain Current per element (Note 5)	$I_D$	300 600	mA

**Thermal Characteristics** @ $T_A = 25^\circ\text{C}$  unless otherwise specified

Characteristic	Symbol	Value	Unit
Total Power Dissipation (Note 5)	$P_D$	350	mW
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	357	°C/W
Operating and Storage Temperature Range	$T_j, T_{STG}$	-65 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 7)</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	20	—	—	V	$V_{GS} = 0\text{V}$ , $I_D = 100\mu\text{A}$
Zero Gate Voltage Drain Current	$I_{DSS}$	—	—	10	$\mu\text{A}$	$V_{DS} = 17\text{V}$ , $V_{GS} = 0\text{V}$
Gate-Source Leakage	$I_{GSS}$	—	—	$\pm 5$	$\mu\text{A}$	$V_{GS} = \pm 8\text{V}$ , $V_{DS} = 0\text{V}$
<b>ON CHARACTERISTICS (Note 7)</b>						
Gate Threshold Voltage	$V_{GS(\text{th})}$	0.53	—	0.9	V	$V_{DS} = V_{GS}$ , $I_D = 100\mu\text{A}$
Static Drain-Source On-Resistance	$R_{DS(\text{ON})}$	— —	0.55 0.4	3.5 1.7	$\Omega$	$V_{GS} = 1.8\text{V}$ , $I_D = 200\text{mA}$ $V_{GS} = 2.7\text{V}$ , $I_D = 200\text{mA}$
Forward Transfer Admittance	$ Y_{fs} $	40	—	—	$\text{mS}$	$V_{DS} = 3\text{V}$ , $I_D = 10\text{mA}$

Notes:

5. Device mounted on FR-4 PCB.
6. Pulse width  $\leq 10\mu\text{s}$ , Duty Cycle  $\leq 1\%$ .
7. Short duration pulse test used to minimize self-heating effect.

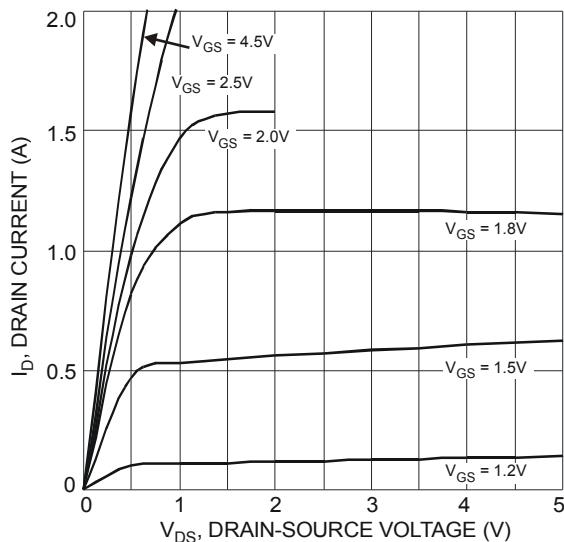


Fig. 1 Typical Output Characteristics

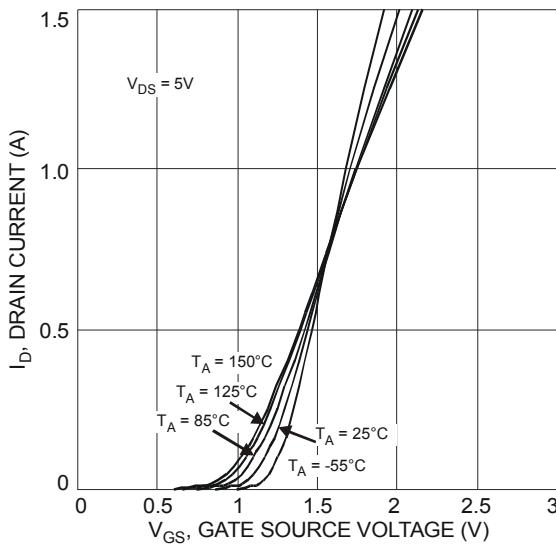


Fig. 2 Typical Transfer Characteristics

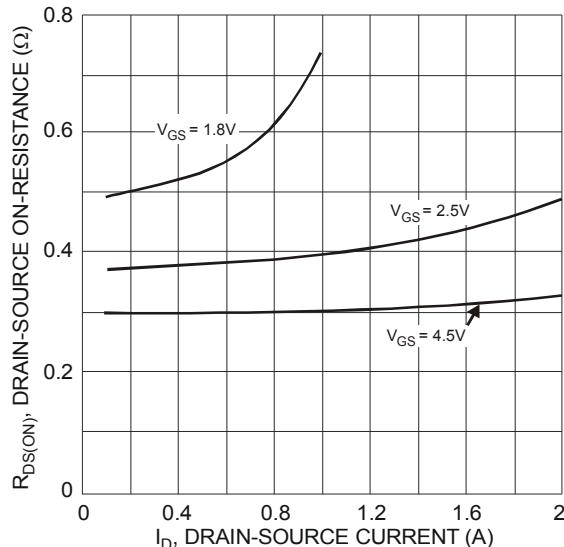


Fig. 3 Typical On-Resistance  
vs. Drain Current and Gate Voltage

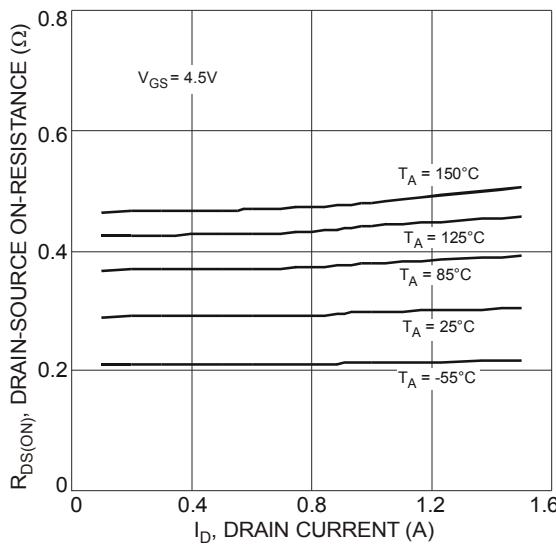


Fig. 4 Typical Drain-Source On-Resistance  
vs. Drain Current and Temperature

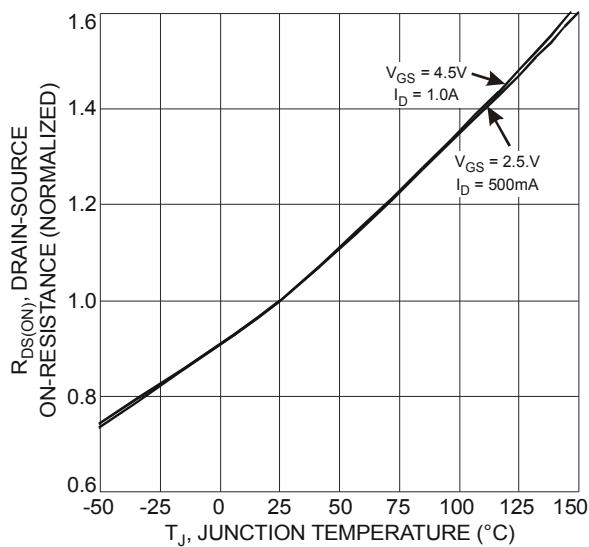


Fig. 5 On-Resistance Variation with Temperature

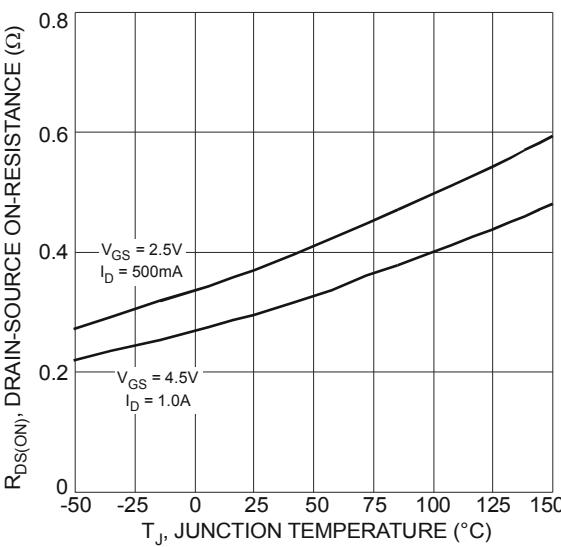


Fig. 6 On-Resistance Variation with Temperature

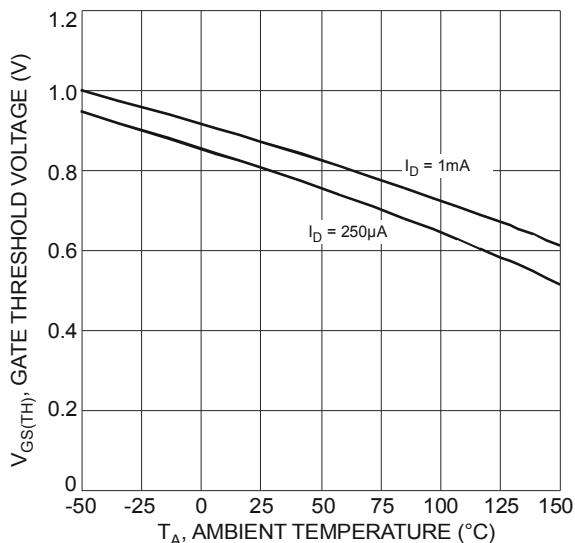


Fig. 7 Gate Threshold Variation vs. Ambient Temperature

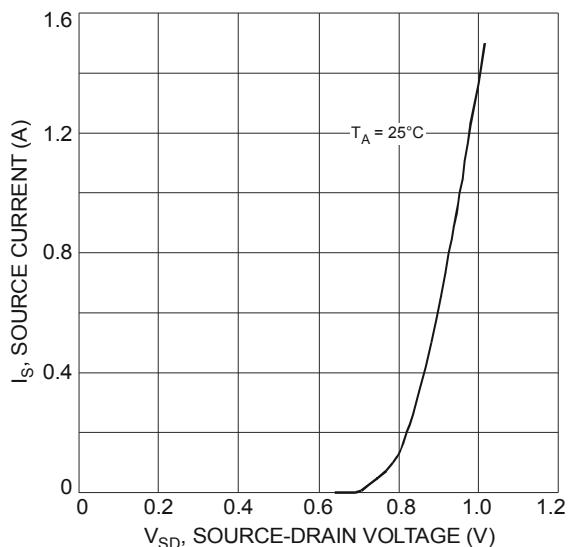


Fig. 8 Diode Forward Voltage vs. Current

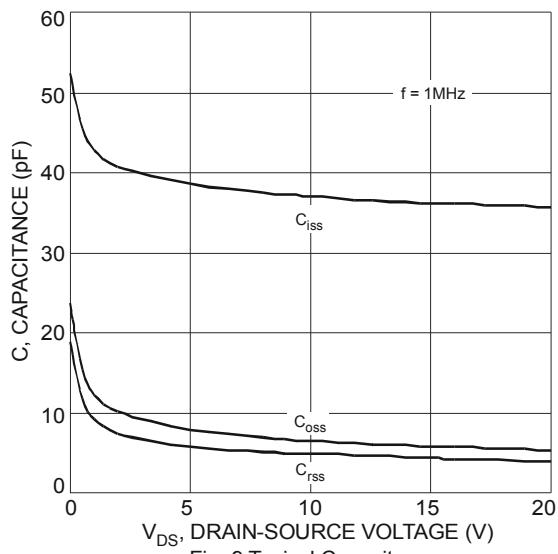
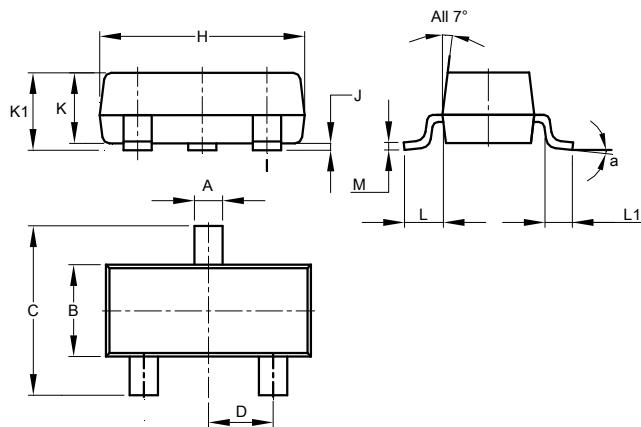


Fig. 9 Typical Capacitance

## Package Outline Dimensions

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

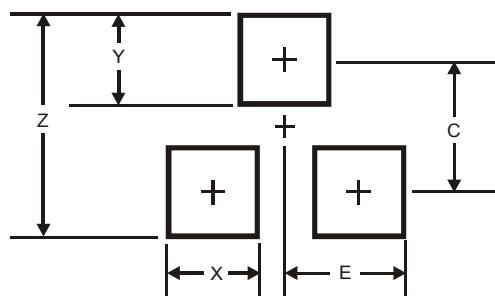


SOT23			
Dim	Min	Max	Typ
<b>A</b>	0.37	0.51	0.40
<b>B</b>	1.20	1.40	1.30
<b>C</b>	2.30	2.50	2.40
<b>D</b>	0.89	1.03	0.915
<b>F</b>	0.45	0.60	0.535
<b>G</b>	1.78	2.05	1.83
<b>H</b>	2.80	3.00	2.90
<b>J</b>	0.013	0.10	0.05
<b>K</b>	0.890	1.00	0.975
<b>K1</b>	0.903	1.10	1.025
<b>L</b>	0.45	0.61	0.55
<b>L1</b>	0.25	0.55	0.40
<b>M</b>	0.085	0.150	0.110
<b>a</b>	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	2.9
X	0.8
Y	0.9
C	2.0
E	1.35

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