

## Features

- Low On-Resistance:
  - 3.0  $\Omega$  @ 4.5V
  - 4.0  $\Omega$  @ 2.5V
  - 6.0  $\Omega$  @ 1.8V
  - 10  $\Omega$  @ 1.5V
- Very Low Gate Threshold Voltage, 1.0V max
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- Ultra-Small Surface Mount Package
- ESD Protected Gate
- **Lead, Halogen, and Antimony Free By Design/RoHS Compliant (Note 2)**
- **"Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**



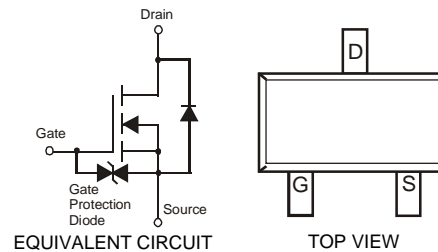
ESD PROTECTED



TOP VIEW

## Mechanical Data

- Case: SOT-523
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections: See Diagram
- Terminals: Finish – Matte Tin annealed over Alloy 42 leadframe. Solderable per MIL-STD-202, Method 208
- Marking Information: See Page 4
- Ordering Information: See Page 4
- Weight: 0.002 grams (approximate)



EQUIVALENT CIRCUIT

TOP VIEW

## 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 (Note 1)	$I_D$	230	mA
Pulsed Drain Current	$I_{DM}$	805	mA

 $T_P = 10\mu\text{s}$ 

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

Total Power Dissipation (Note 1)	$P_D$	300	mW
Thermal Resistance, Junction to Ambient (Note 1)	$R_{\theta JA}$	417	$^\circ\text{C}/\text{W}$
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	$^\circ\text{C}$

- Notes:
1. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch; pad layout as shown on Diodes Inc. suggested pad layout document AP02001, which can be found on our website at <http://www.diodes.com/datasheets/ap02001.pdf>.
  2. No purposefully added lead.
  3. Diodes Inc.'s "Green" policy can be found on our website at [http://www.diodes.com/products/lead\\_free/index.php](http://www.diodes.com/products/lead_free/index.php).

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS (Note 4)</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	20	—	—	V	$V_{GS} = 0V, I_D = 100\mu\text{A}$
Zero Gate Voltage Drain Current @ $T_C = 25^\circ\text{C}$	$I_{DSS}$	—	—	500	nA	$V_{DS} = 20V, V_{GS} = 0V$
Gate-Body Leakage	$I_{GSS}$	—	—	$\pm 1$	$\mu\text{A}$	$V_{GS} = \pm 10V, V_{DS} = 0V$
				$\pm 500$	nA	$V_{GS} = \pm 8V, V_{DS} = 0V$
				$\pm 100$	nA	$V_{GS} = \pm 5V, V_{DS} = 0V$
<b>ON CHARACTERISTICS (Note 4)</b>						
Gate Threshold Voltage	$V_{GS(th)}$	0.5	—	1.0	V	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$
Static Drain-Source On-Resistance	$R_{DS(ON)}$	—	1.8	3.0	$\Omega$	$V_{GS} = 4.5V, I_D = 100\text{mA}$
		—	2.4	4.0		$V_{GS} = 2.5V, I_D = 50\text{mA}$
		—	2.9	6.0		$V_{GS} = 1.8V, I_D = 20\text{mA}$
		—	3.7	10.0		$V_{GS} = 1.5V, I_D = 10\text{mA}$
		—	5.4	15.0		$V_{GS} = 1.2V, I_D = 1\text{mA}$
Forward Transconductance	$ Y_{fs} $	—	242	—	mS	$V_{DS} = 10V, I_D = 0.1\text{A}$
Source-Drain Diode Forward Voltage	$V_{SD}$	0.5	—	1.0	V	$V_{GS} = 0V, I_S = 115\text{mA}$
<b>DYNAMIC CHARACTERISTICS</b>						
Input Capacitance	$C_{iss}$	—	14.1	—	pF	$V_{DS} = 15V, V_{GS} = 0V$ $f = 1.0\text{MHz}$
Output Capacitance	$C_{oss}$	—	2.9	—	pF	
Reverse Transfer Capacitance	$C_{rss}$	—	1.6	—	pF	
<b>SWITCHING CHARACTERISTICS, <math>V_{GS} = 4.5V</math> (Note 5)</b>						
Turn-On Delay Time	$t_{d(on)}$	—	3.8	—	ns	$V_{GS} = 4.5V, V_{DD} = 10V$ $I_D = 200\text{mA}, R_G = 2.0\Omega$
Rise Time	$t_r$	—	7.9	—		
Turn-Off Delay Time	$t_{d(off)}$	—	13.4	—		
Fall Time	$t_f$	—	15.2	—		

- Notes:
- Short duration pulse test used to minimize self-heating effect.
  - Switching characteristics are independent of operating junction temperature.

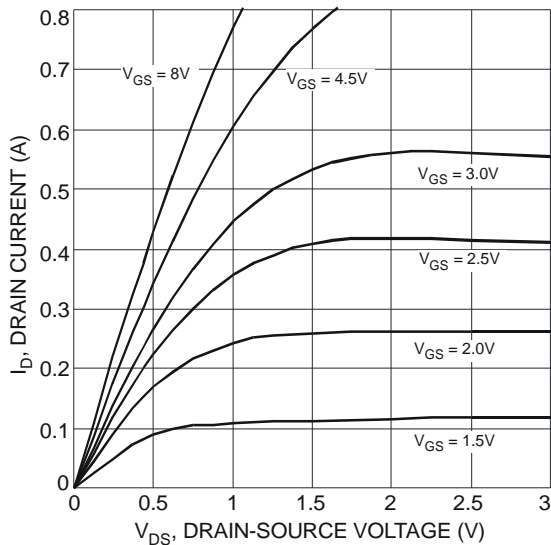


Fig. 1 Typical Output Characteristic

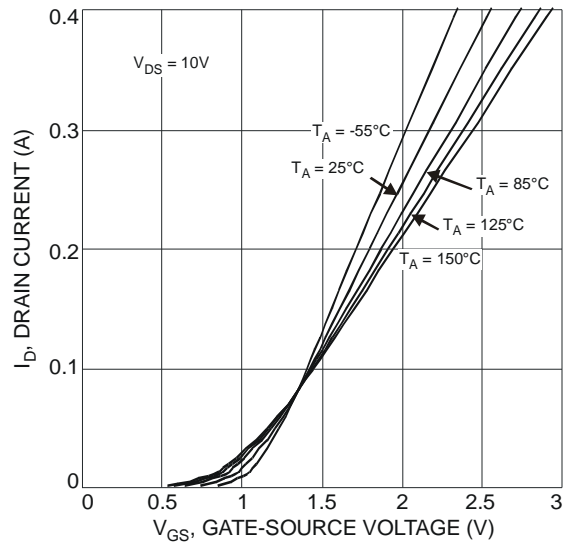


Fig. 2 Typical Transfer Characteristic

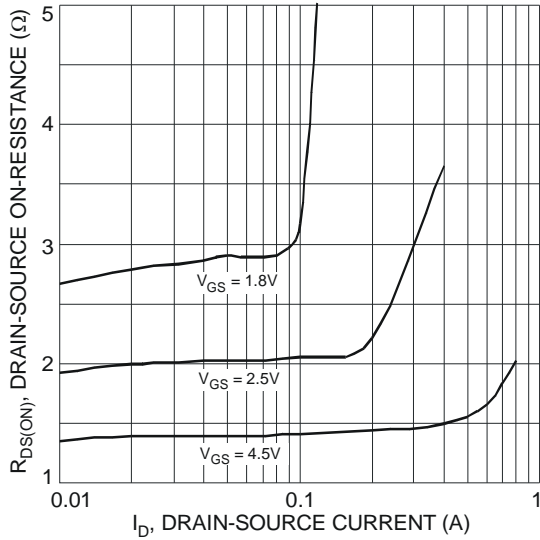


Fig. 3 Typical On-Resistance vs. Drain Current and Gate Voltage

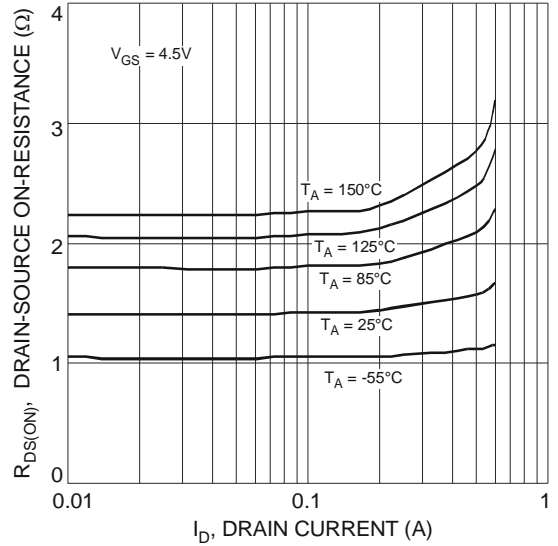


Fig. 4 Typical On-Resistance vs. Drain Current and Temperature

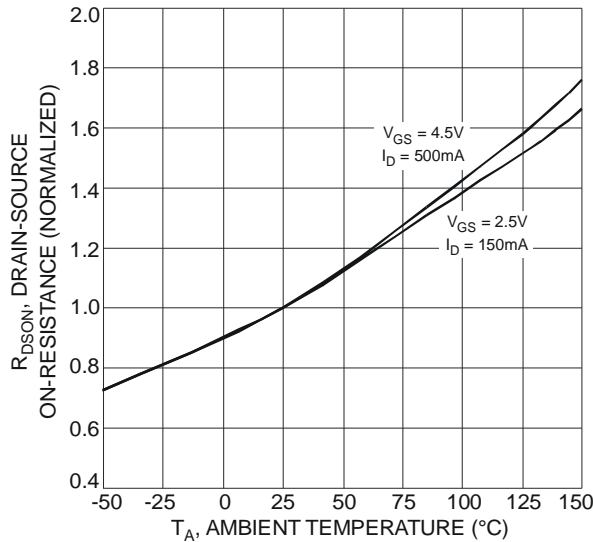


Fig. 5 On-Resistance Variation with Temperature

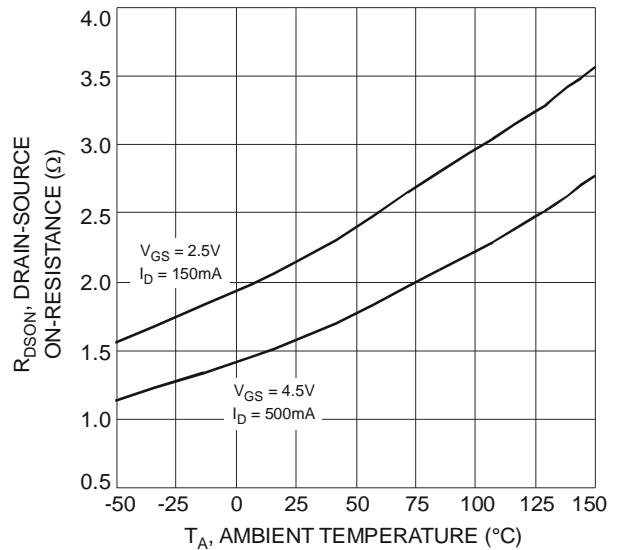


Fig. 6 On-Resistance Variation with Temperature

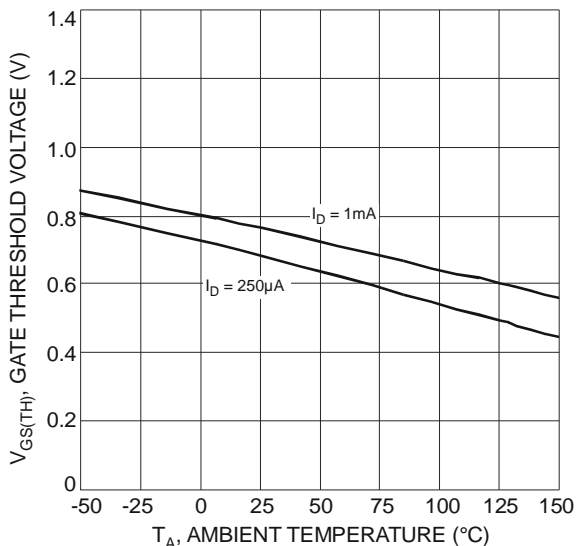


Fig. 7 Gate Threshold Variation vs. Ambient Temperature

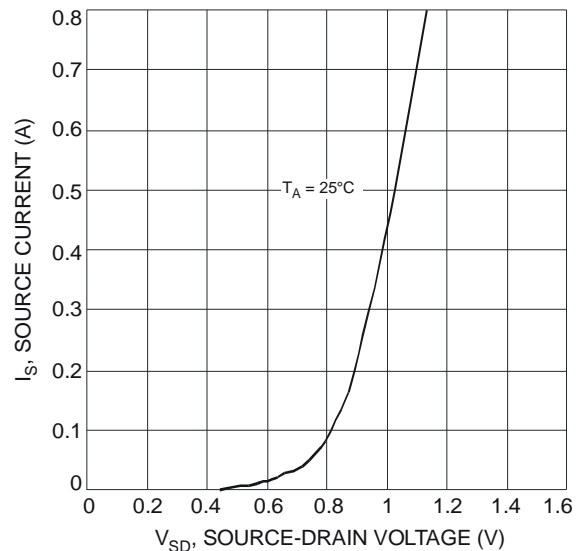


Fig. 8 Diode Forward Voltage vs. Current

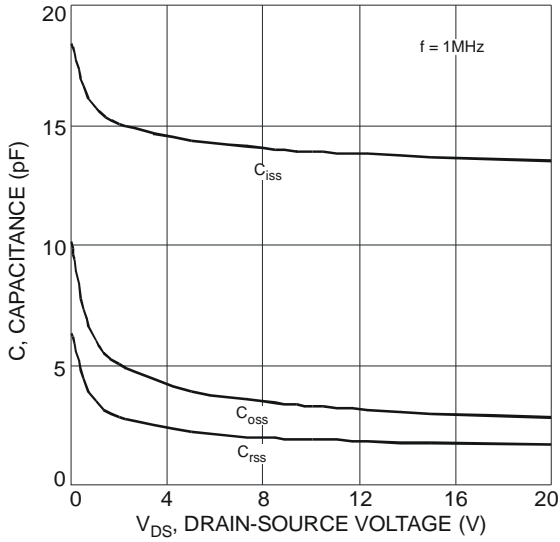


Fig. 9 Typical Total Capacitance

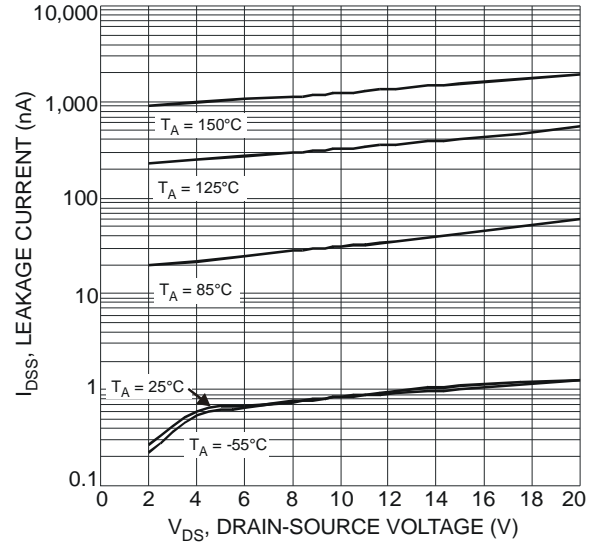


Fig. 10 Typical Leakage Current vs. Drain-Source Voltage

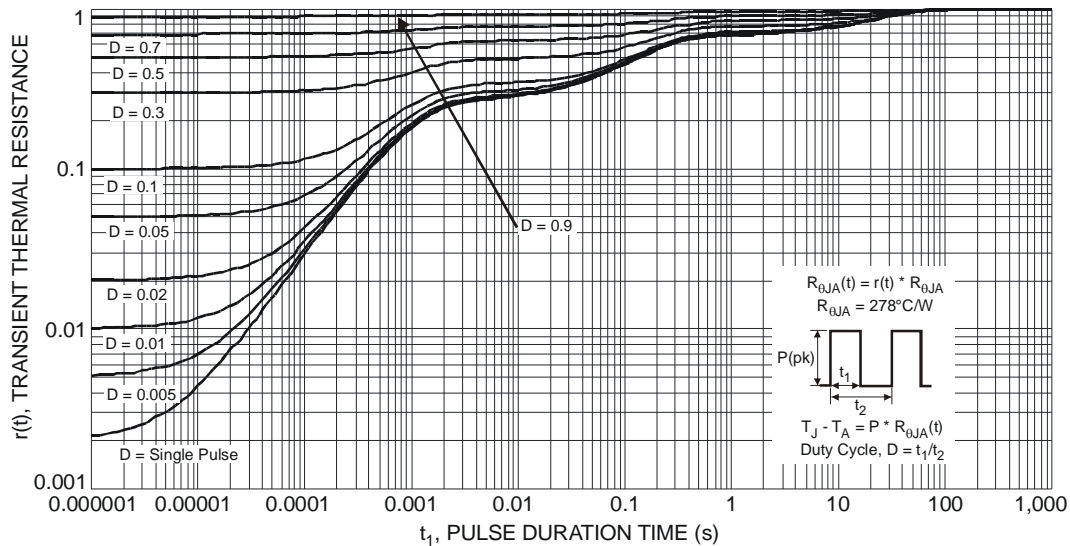


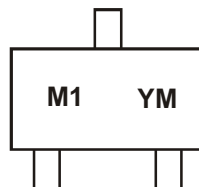
Fig. 11 Transient Thermal Response

**Ordering Information** (Note 6)

Part Number	Case	Packaging
DMN26D0UT-7	SOT-523	3,000/Tape & Reel

Notes: 6. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

**Marking Information**

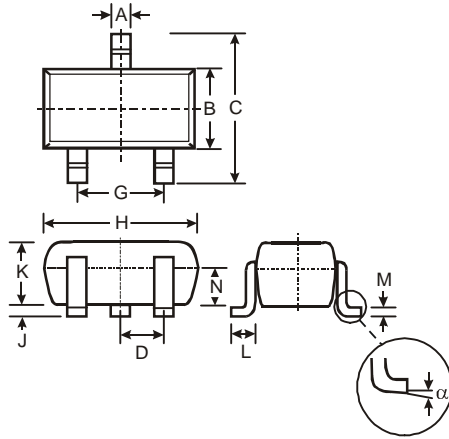


M1 = Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year (ex: W = 2009)  
 M = Month (ex: 9 = September)

Date Code Key

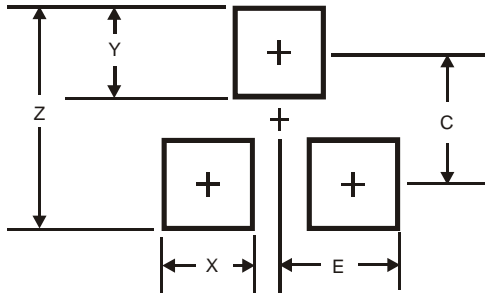
Year	2009	2010	2011	2012	2013	2014	2015					
Code	W	X	Y	Z	A	B	C					
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

**Package Outline Dimensions**



SOT-523			
Dim	Min	Max	Typ
A	0.15	0.30	0.22
B	0.75	0.85	0.80
C	1.45	1.75	1.60
D	—	—	0.50
G	0.90	1.10	1.00
H	1.50	1.70	1.60
J	0.00	0.10	0.05
K	0.60	0.80	0.75
L	0.10	0.30	0.22
M	0.10	0.20	0.12
N	0.45	0.65	0.50
α	0°	8°	—
All Dimensions in mm			

**Suggested Pad Layout**



Dimensions	Value (in mm)
Z	1.8
X	0.4
Y	0.51
C	1.3
E	0.7

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