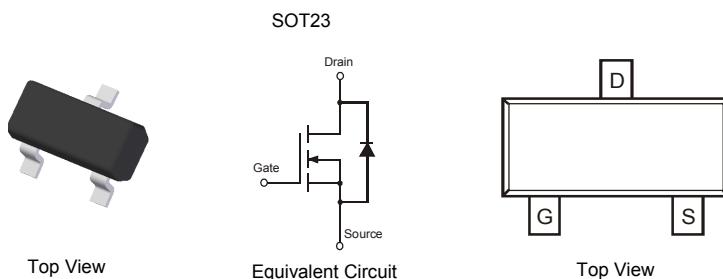


Features

- Low On-Resistance
 - 29mΩ @ V_{GS} = 4.5V
 - 50mΩ @ V_{GS} = 2.5V
 - 100mΩ @ V_{GS} = 2.0V
- Very Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- **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: SOT23
- Case Material: Molded Plastic, "Green" Molding Compound.
- UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020D
- Terminal Connections: See Diagram
- Terminals: Finish — Matte Tin annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208 (E3)
- Weight: 0.008 grams (approximate)



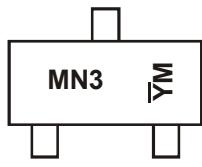
Ordering Information (Note 4)

Part Number	Case	Packaging
DMN2050L-7	SOT23	3000/Tape & Reel

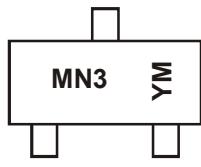
Notes:

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 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



Chengdu A/T Site



Shanghai A/T Site

MN3 = Marking Code

YM = Date Code Marking for SAT (Shanghai Assembly/ Test site)

YM = Date Code Marking for CAT (Chengdu Assembly/ Test site)

Y or YM = Year (ex: A = 2013)

M = Month (ex: 9 = September)

Date Code Key

Year	2008	2009	2010	2011	2012	2013	2014	2015				
Code	V	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

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

Characteristic	Symbol	Value	Units
Drain-Source Voltage	V_{DSS}	20	V
Gate-Source Voltage	V_{GSS}	± 12	V
Drain Current (Note 5)	I_D	5.9	A
Pulsed Drain Current (Note 6)	I_{DM}	21	A

Thermal Characteristics

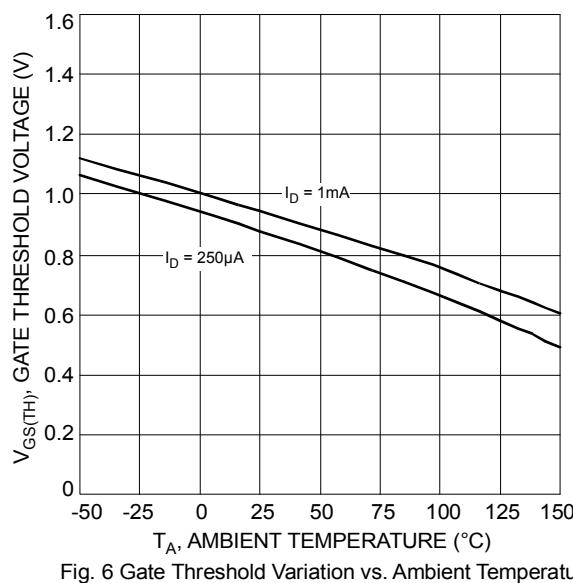
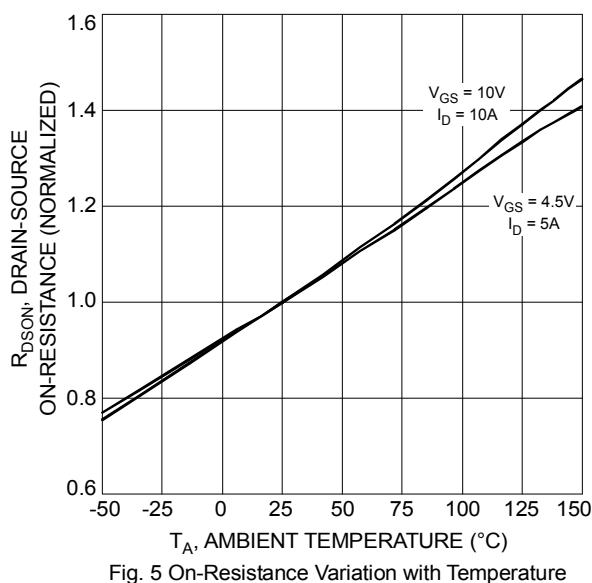
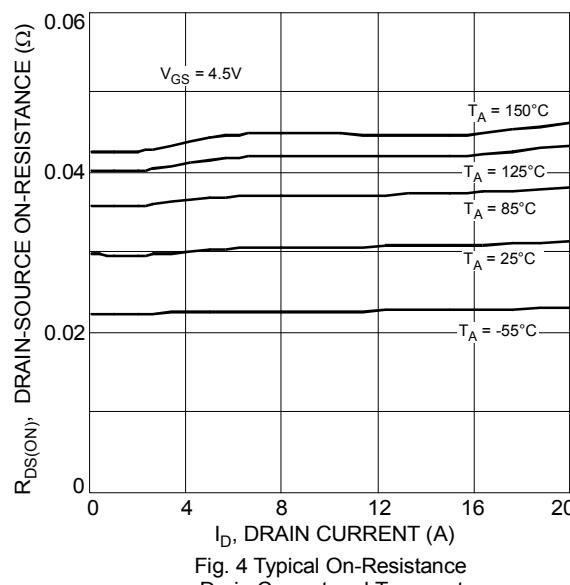
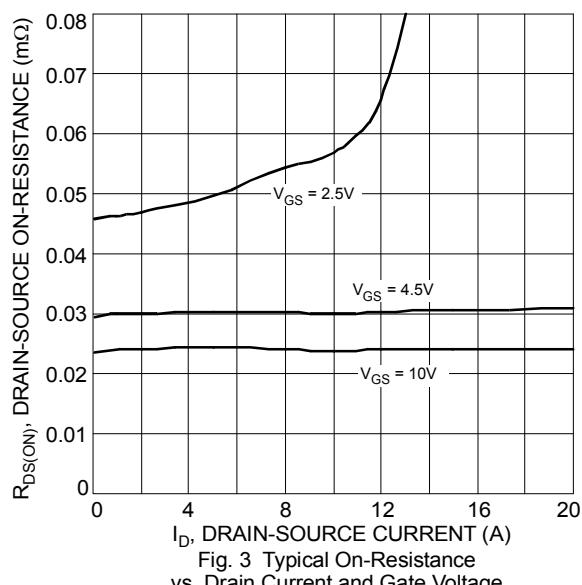
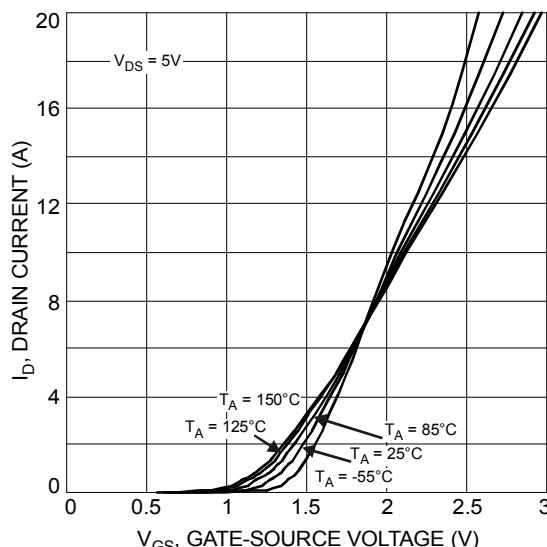
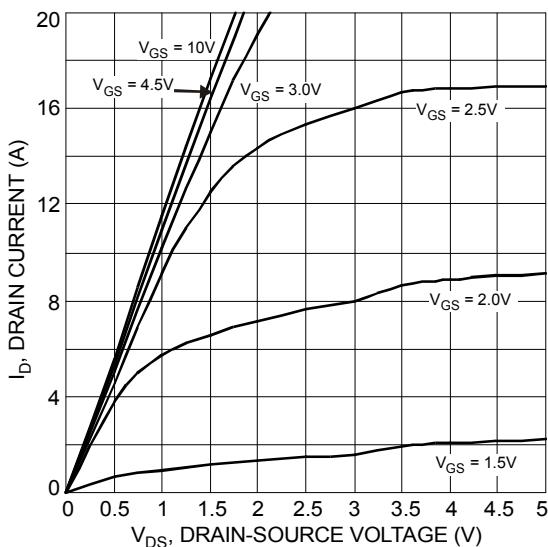
Characteristic	Symbol	Value	Units
Total Power Dissipation (Note 5)	P_D	1.4	W
Thermal Resistance, Junction to Ambient (Note 5)	$R_{\theta JA}$	90	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 7)						
Drain-Source Breakdown Voltage	BV_{DSS}	20	—	—	V	$V_{GS} = 0\text{V}$, $I_D = 250\mu\text{A}$
Zero Gate Voltage Drain Current	I_{DSS}	—	—	1	μA	$V_{DS} = 20\text{V}$, $V_{GS} = 0\text{V}$
Gate-Source Leakage	I_{GSS}	—	—	± 100	nA	$V_{GS} = \pm 12\text{V}$, $V_{DS} = 0\text{V}$
ON CHARACTERISTICS (Note 7)						
Gate Threshold Voltage	$V_{GS(\text{th})}$	0.45	—	1.4	V	$V_{DS} = V_{GS}$, $I_D = 250\mu\text{A}$
Static Drain-Source On-Resistance	$R_{DS(\text{ON})}$	—	24 42 68	29 50 100	$\text{m}\Omega$	$V_{GS} = 4.5\text{V}$, $I_D = 5.0\text{A}$ $V_{GS} = 2.5\text{V}$, $I_D = 3.1\text{A}$ $V_{GS} = 2.0\text{V}$, $I_D = 1.5\text{A}$
Forward Transfer Admittance	$ Y_{fs} $	—	8	—	S	$V_{DS} = 5\text{V}$, $I_D = 2.1\text{A}$
Diode Forward Voltage (Note 7)	V_{SD}	—	0.9	1.4	V	$V_{GS} = 0\text{V}$, $I_S = 2.0\text{A}$
DYNAMIC CHARACTERISTICS (Note 8)						
Input Capacitance	C_{iss}	—	532	—	pF	$V_{DS} = 10\text{V}$, $V_{GS} = 0\text{V}$ $f = 1.0\text{MHz}$
Output Capacitance	C_{oss}	—	144	—	pF	
Reverse Transfer Capacitance	C_{rss}	—	117	—	pF	
Gate Resistance	R_G	—	1.3	—	Ω	$V_{DS} = 0\text{V}$, $V_{GS} = 0\text{V}$, $f = 1.0\text{MHz}$
SWITCHING CHARACTERISTICS (Note 8)						
Total Gate Charge	Q_g	—	6.7	—	nC	$V_{DS} = 10\text{V}$, $V_{GS} = 4.5\text{V}$, $I_D = 5.0\text{A}$
Gate-Source Charge	Q_{gs}	—	0.8	—		$V_{DS} = 10\text{V}$, $V_{GS} = 4.5\text{V}$, $I_D = 5.0\text{A}$
Gate-Drain Charge	Q_{gd}	—	3.0	—		$V_{DS} = 10\text{V}$, $V_{GS} = 4.5\text{V}$, $I_D = 5.0\text{A}$

Notes:

5. Device mounted on FR-4 PCB, on 2oz Copper pad layout with $R_{\theta JA} = 90^\circ\text{C/W}$.
6. Repetitive rating, pulse width limited by junction temperature.
7. Short duration pulse test used to minimize self-heating effect.
8. Guaranteed by design. Not subject to production testing.



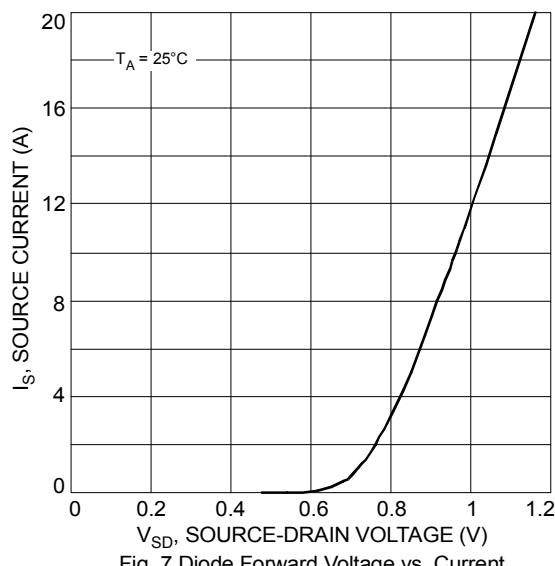


Fig. 7 Diode Forward Voltage vs. Current

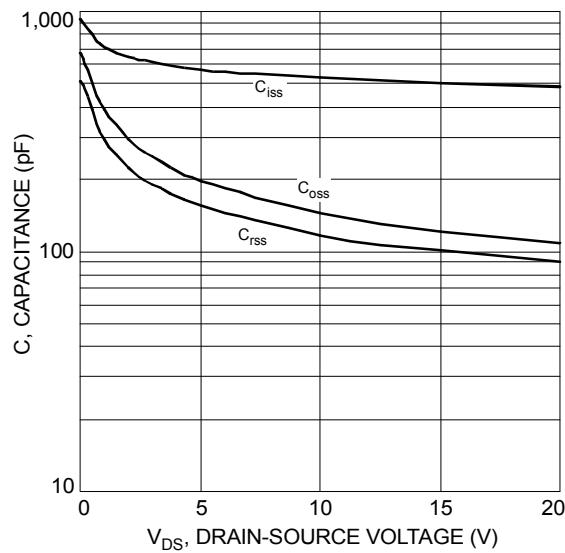


Fig. 8 Typical Total Capacitance

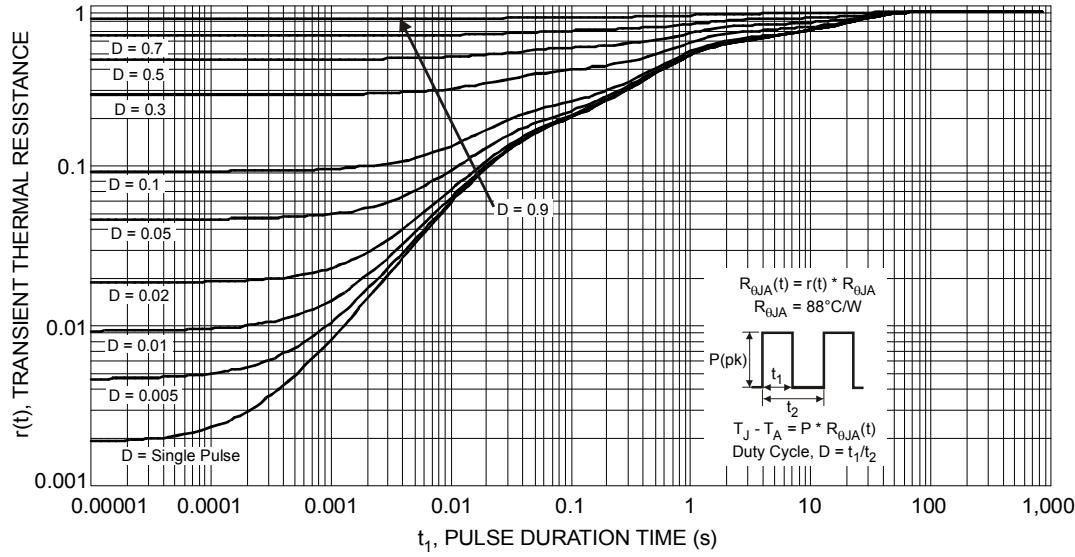
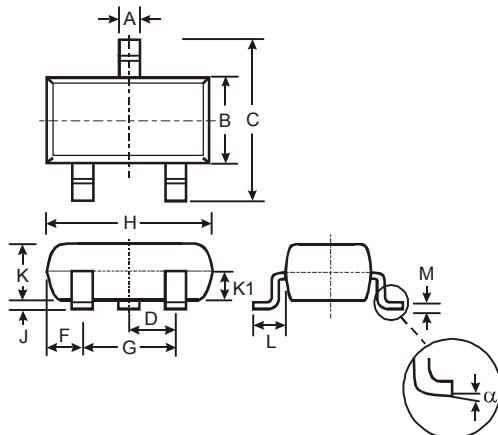


Fig. 9 Transient Thermal Response

Package Outline Dimensions

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

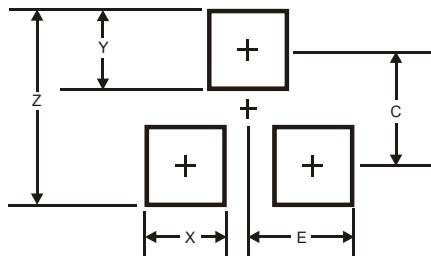


SOT23			
Dim	Min	Max	Typ
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.903	1.10	1.00
K1	-	-	0.400
L	0.45	0.61	0.55
M	0.085	0.18	0.11
alpha	0°	8°	-

All Dimensions in mm

Suggested Pad Layout

Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for 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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