

**N-CHANNEL ENHANCEMENT MODE FIELD EFFECT TRANSISTOR**
**Features**

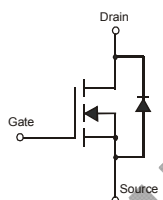
- Low On-Resistance:
  - $R_{DS(ON)} < 32m\Omega$  @  $V_{GS} = 10V$
  - $R_{DS(ON)} < 42m\Omega$  @  $V_{GS} = 4.5V$
  - $R_{DS(ON)} < 64m\Omega$  @  $V_{GS} = 2.5V$
- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- Lead Free By Design/RoHS Compliant (Note 2)
- "Green" Device (Note 3)
- Qualified to AEC-Q101 Standards for High Reliability

**Mechanical Data**

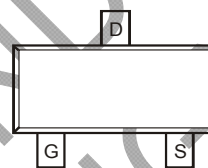
- Case: SOT-23
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020D
- Terminals: Finish – Matte Tin annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208
- Terminal Connections: See Diagram
- Marking Information: See Page 4
- Ordering Information: See Page 4
- Weight: 0.008 grams (approximate)



TOP VIEW



Equivalent Circuit



TOP VIEW

**Maximum Ratings** @ $T_A = 25^\circ C$  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 1)	$I_D$	5.4	A
		4.6	A
Drain Current (Note 1)	$I_{DM}$	19	A
Body-Diode Continuous Current (Note 1)	$I_S$	2.0	A

**Thermal Characteristics**

Characteristic	Symbol	Value	Unit
Total Power Dissipation (Note 1)	$P_D$	1.4	W
Thermal Resistance, Junction to Ambient @ $T_A = 25^\circ C$ (Note 1)	$R_{\theta JA}$	90	$^\circ C/W$
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	$^\circ C$

- Notes:
- Device mounted on FR-4 PCB.  $t \leq 5$  sec.
  - No purposefully added lead.
  - 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<sub>A</sub> = 25°C unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS (Note 4)</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	30	—	—	V	V <sub>GS</sub> = 0V, I <sub>D</sub> = 250μA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	—	—	1	μA	V <sub>DS</sub> = 30V, V <sub>GS</sub> = 0V
Gate-Body Leakage	I <sub>GSS</sub>	—	—	±80 ±800	nA	V <sub>GS</sub> = ±12V, V <sub>DS</sub> = 0V V <sub>GS</sub> = ±19V, V <sub>DS</sub> = 0V
<b>ON CHARACTERISTICS (Note 4)</b>						
Gate Threshold Voltage	V <sub>GS(th)</sub>	0.62	0.9	1.2	V	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA
Static Drain-Source On-Resistance	R <sub>DS(on)</sub>	—	26	32	mΩ	V <sub>GS</sub> = 10V, I <sub>D</sub> = 5.8A
		—	33	42		V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 5.0A
		—	52	64		V <sub>GS</sub> = 2.5V, I <sub>D</sub> = 3.8A
		—	78	100		V <sub>GS</sub> = 2.0V, I <sub>D</sub> = 2.0A
Forward Transconductance	Y <sub>fs</sub>	—	8	—	S	V <sub>DS</sub> = 5V, I <sub>D</sub> = 3.1A
Source-Drain Diode Forward Voltage	V <sub>SD</sub>	—	0.75	1.2	V	V <sub>GS</sub> = 0V, I <sub>S</sub> = 2.0A
<b>DYNAMIC CHARACTERISTICS</b>						
Input Capacitance	C <sub>iss</sub>	—	555	—	pF	V <sub>DS</sub> = 5V, V <sub>GS</sub> = 0V f = 1.0MHz
Output Capacitance	C <sub>oss</sub>	—	109	—	pF	
Reverse Transfer Capacitance	C <sub>rss</sub>	—	82	—	pF	
Total Gate Charge	Q <sub>g</sub>	—	6.3	—	nC	V <sub>GS</sub> = 4.5V, V <sub>DS</sub> = 15V, I <sub>D</sub> = 5.8A
Gate-Source Charge	Q <sub>gs</sub>	—	1.3	—		
Gate-Drain Charge	Q <sub>gd</sub>	—	1.7	—		

Notes: 4. Short duration pulse test used to minimize self-heating effect.

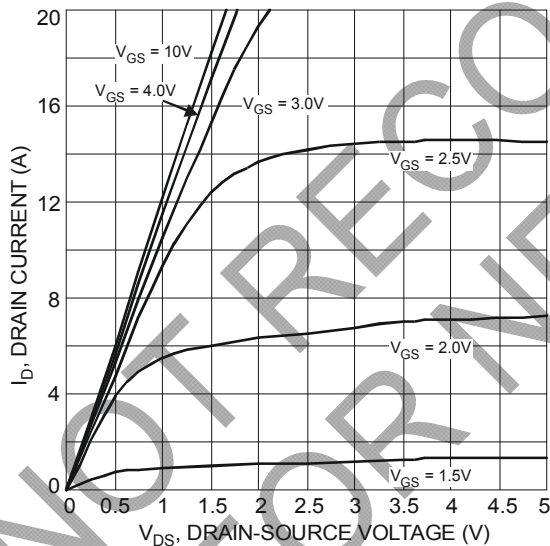


Fig. 1 Typical Output Characteristics

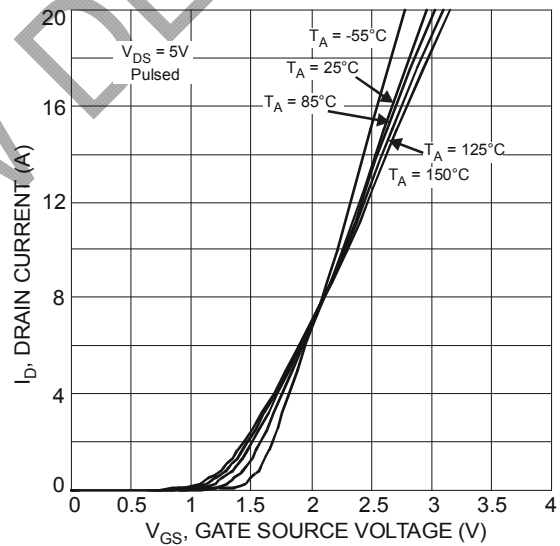


Fig. 2 Typical Transfer Characteristics

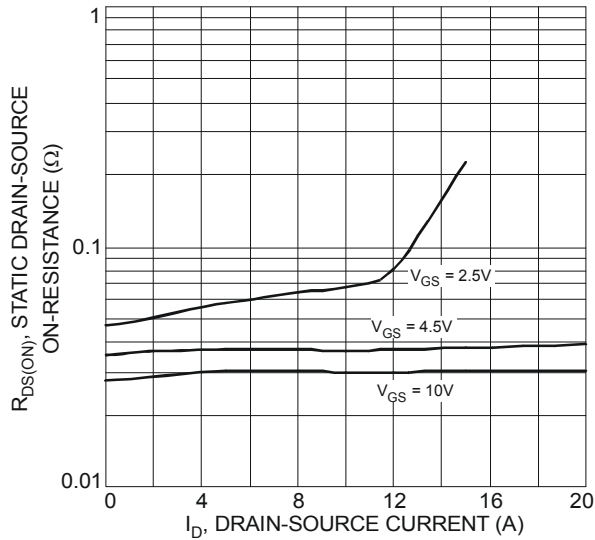


Fig 3 On-Resistance vs. Drain Current & Gate Voltage

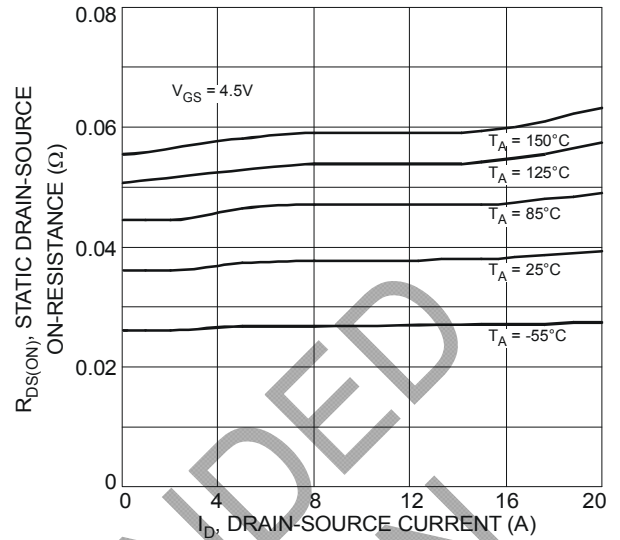


Fig 4 On-Resistance vs. Drain Current & Temperature

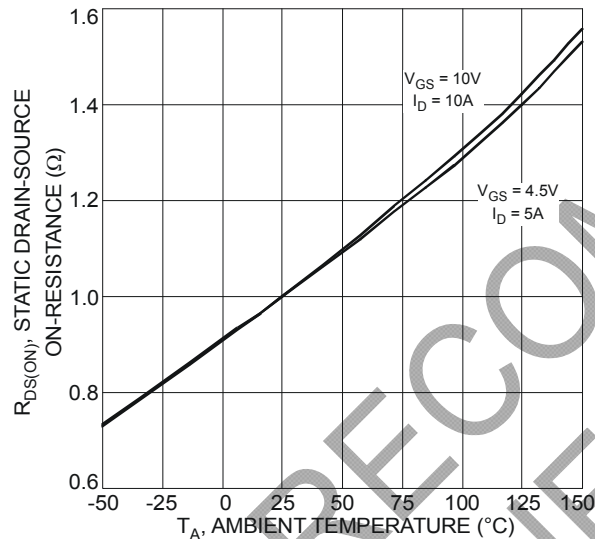


Fig 5 Static Drain-Source On-Resistance vs. Ambient Temperature

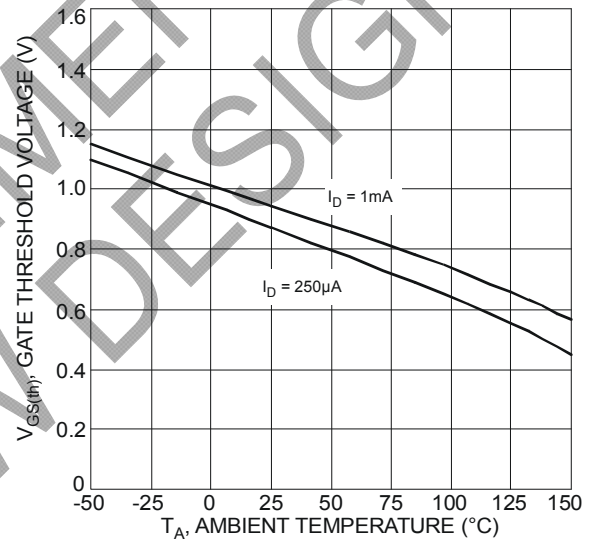


Fig 6 Gate Threshold Variation vs. Ambient Temperature

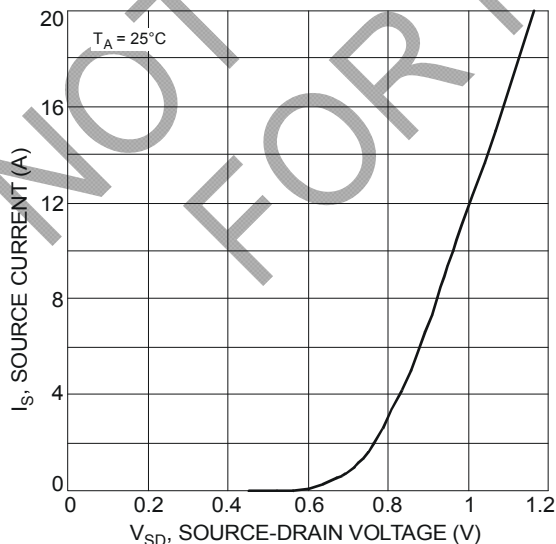


Fig 7 Reverse Drain Current vs. Source-Drain Voltage

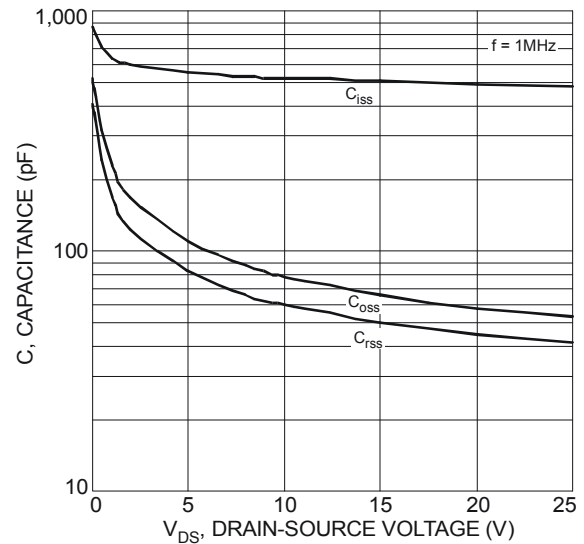
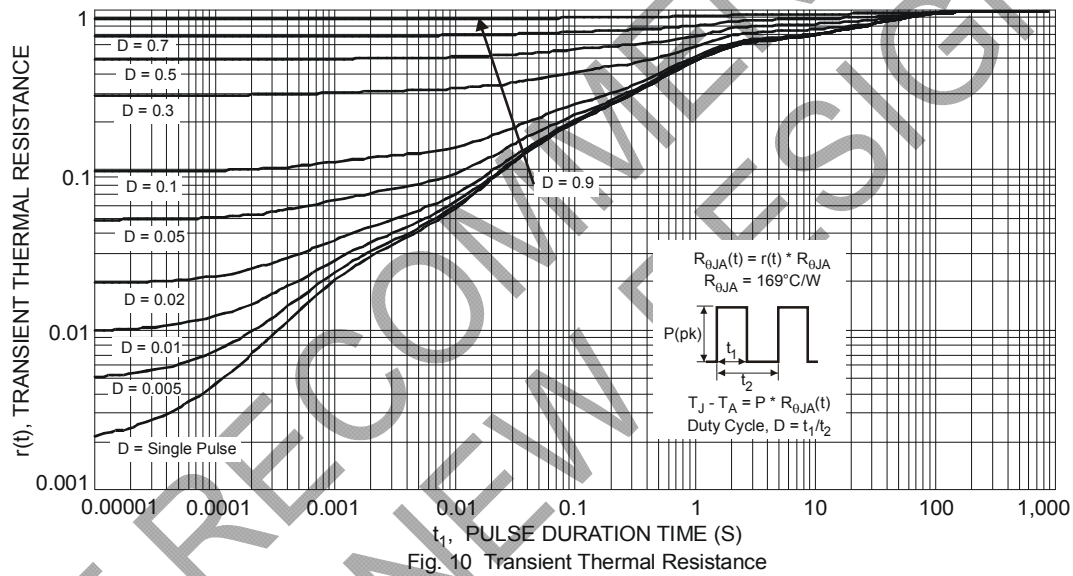
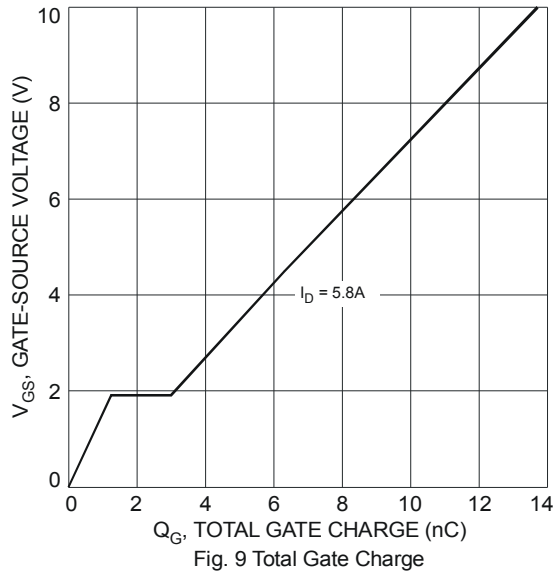


Fig 8 Typical Total Capacitance

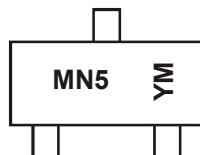


## Ordering Information (Note 5)

Part Number	Case	Packaging
DMN3052L-7	SOT-23	3000/Tape & Reel

Notes: 5. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

## Marking Information



MN5 = Product Type Marking Code  
YM = Date Code Marking  
Y = Year (ex: V = 2008)  
M = Month (ex: 9 = September)

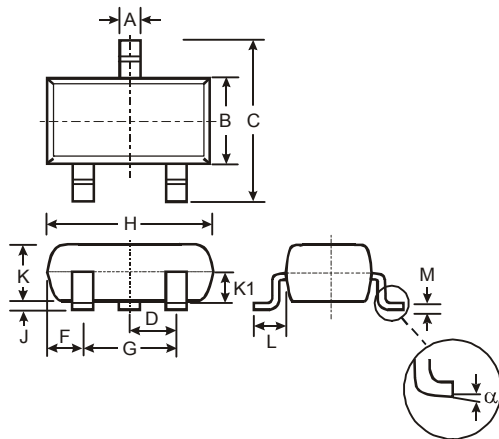
### Date Code Key

Year	2008	2009	2010	2011	2012	2013	2014	2015
Code	V	W	X	Y	Z	A	B	C

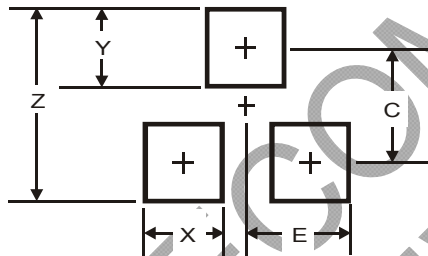
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

**Package Outline Dimensions**



SOT-23			
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
α	0°	8°	-
All Dimensions in mm			

**Suggested Pad Layout**



Dimensions	Value (in mm)
Z	2.9
X	0.8
Y	0.9
C	2.0
E	1.35

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2. support or sustain life and whose failure to perform when properly used in accordance with instructions for use provided in the labeling can be reasonably expected to result in significant injury to the user.

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