

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

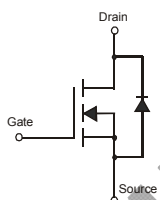
- Low On-Resistance:  
 $R_{DS(ON)} < 32m\Omega @ V_{GS} = 10V$   
 $R_{DS(ON)} < 42m\Omega @ V_{GS} = 4.5V$   
 $R_{DS(ON)} < 64m\Omega @ V_{GS} = 2.5V$
- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- **Lead Free By Design/RoHS Compliant (Note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

**Mechanical Data**

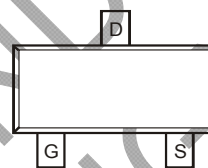
- Case: SOT-23
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020D
- Terminals: Finish – Matte Tin annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208
- Terminal Connections: See Diagram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



TOP VIEW



Equivalent Circuit



TOP VIEW

**Maximum Ratings** @ $T_A = 25^\circ\text{C}$  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 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 @ $T_A = 25^\circ\text{C}$ (Note 1)	$R_{\theta JA}$	90	$^\circ\text{C/W}$
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	$^\circ\text{C}$

- Notes:
1. Device mounted on FR-4 PCB.  $t \leq 5$  sec.
  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<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.

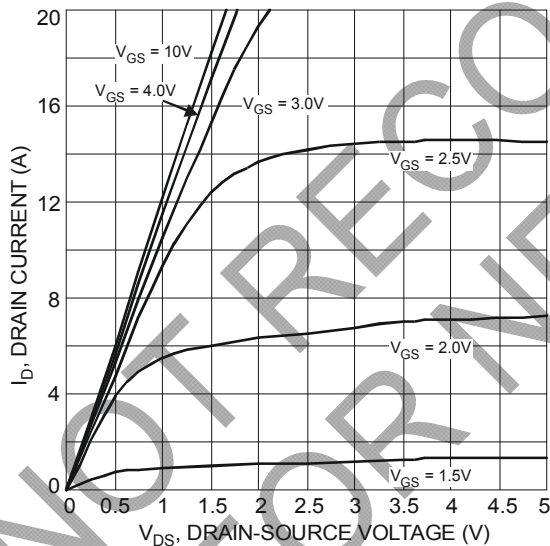


Fig. 1 Typical Output Characteristics

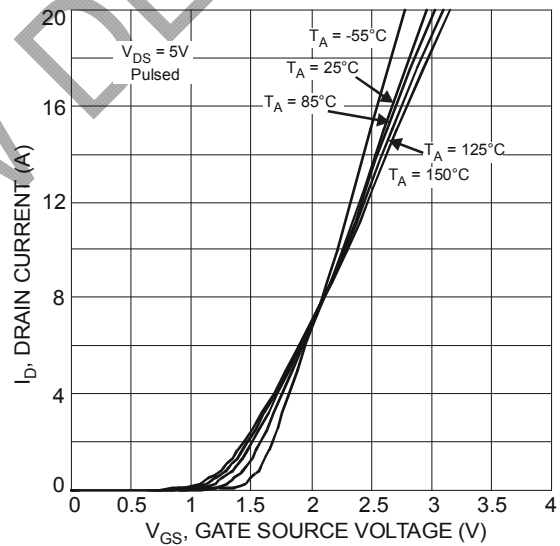


Fig. 2 Typical Transfer Characteristics

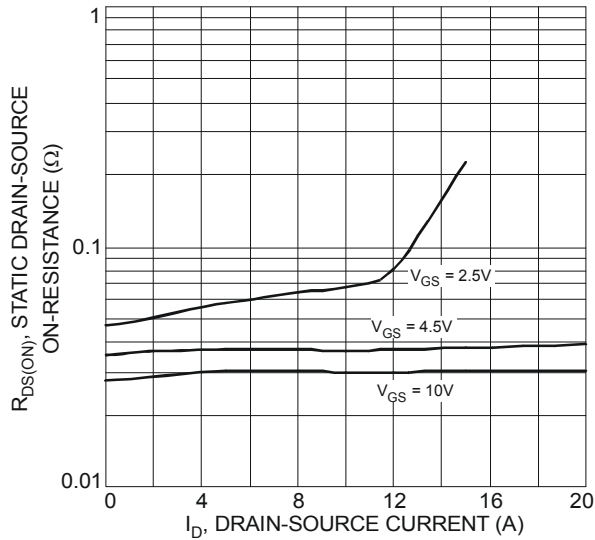


Fig 3 On-Resistance vs. Drain Current & Gate Voltage

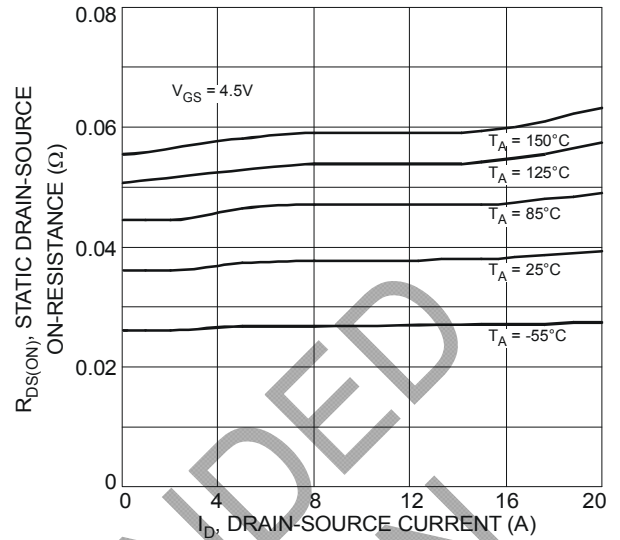


Fig 4 On-Resistance vs. Drain Current & Temperature

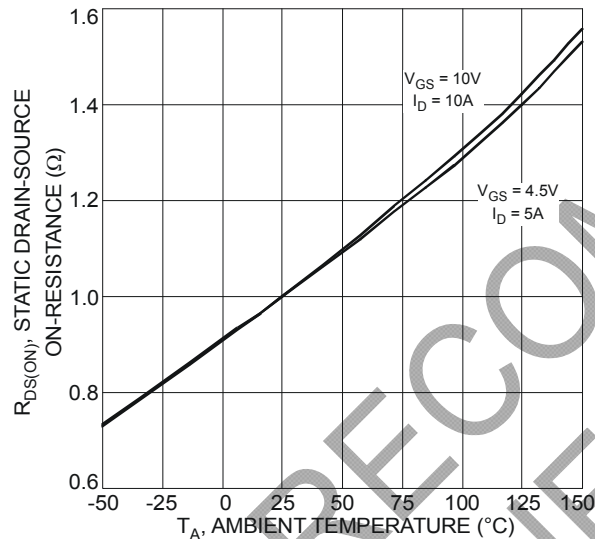


Fig 5 Static Drain-Source On-Resistance vs. Ambient Temperature

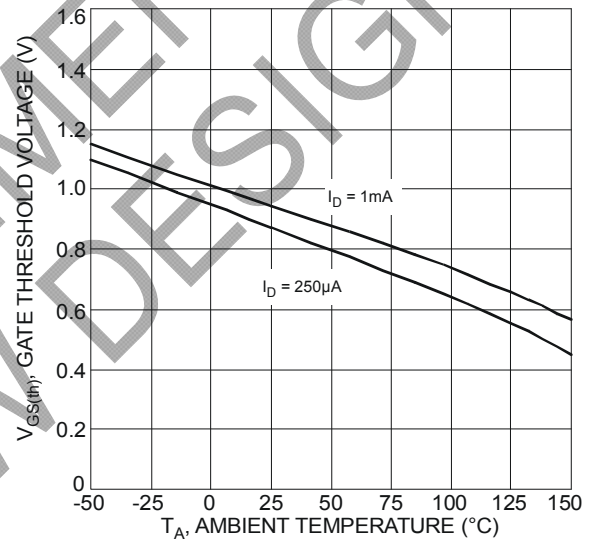


Fig 6 Gate Threshold Variation vs. Ambient Temperature

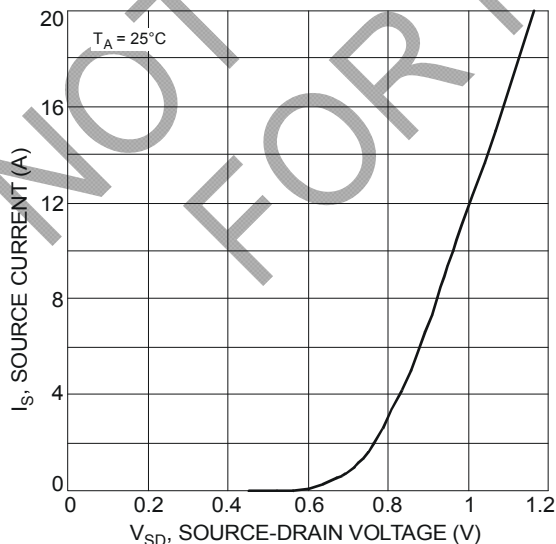


Fig 7 Reverse Drain Current vs. Source-Drain Voltage

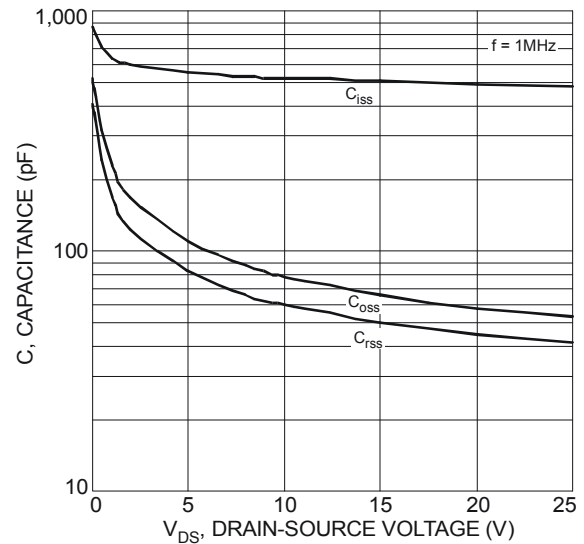
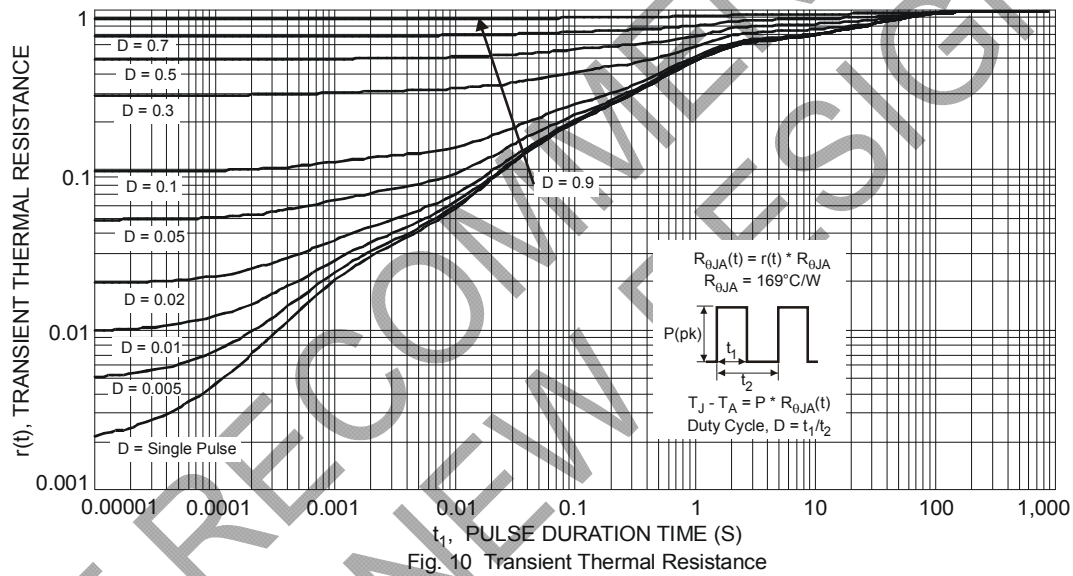
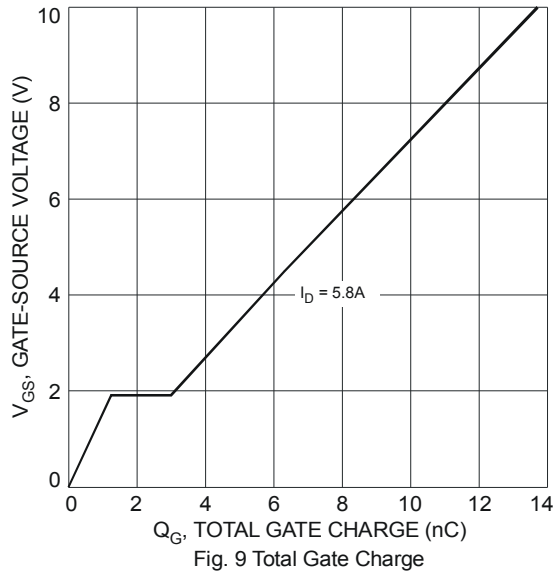


Fig 8 Typical Total Capacitance

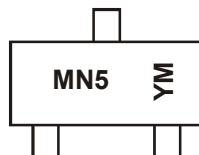


## Ordering Information (Note 5)

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)

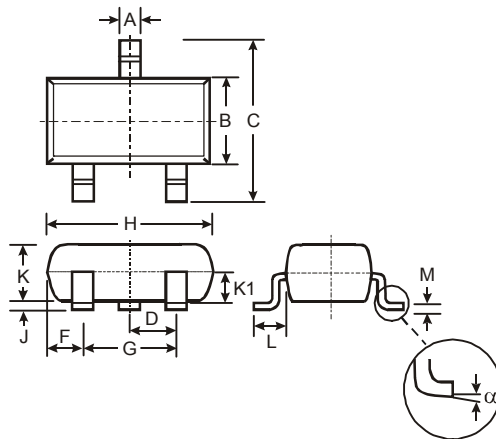
### Date Code Key

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

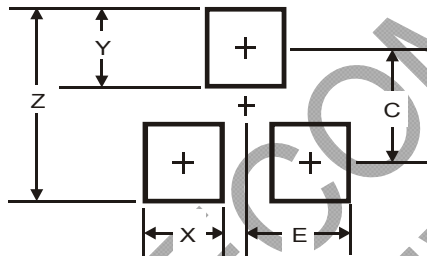
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

**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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