



Product Summary

BV _{DSS}	R _{DS(ON)} max	I _D max T _A = +25°C
60V	2Ω @ V _{GS} = 5.0V	340mA
000	2.5Ω @ V _{GS} = 2.5V	300mA

Description and Applications

This new generation MOSFET is designed to minimize the on-state resistance (R_{DS(ON)}) and yet maintain superior switching performance, making it ideal for high efficiency power management applications:

- Motor Control
- **Power Management Functions**
- Backlighting

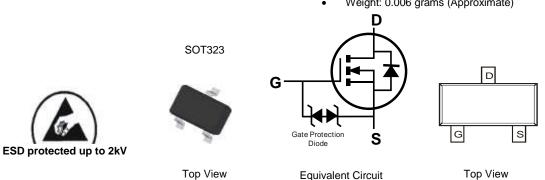
N-CHANNEL ENHANCEMENT MODE MOSFET

Features and Benefits

- Low On-Resistance
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- ESD Protected Up To 2kV
- 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
- **PPAP Capable (Note 4)**

Mechanical Data

- Case: SOT323
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish Matte Tin Annealed over Alloy 42 Leadframe. Solderable per MIL-STD-202, Method 208 e3
- Weight: 0.006 grams (Approximate)



Ordering Information (Note 4)

Part Number	Case	Packaging
DMN61D9UWQ-7	SOT323	3,000/Tape & Reel
DMN61D9UWQ-13	SOT323	10,000/Tape & Reel

1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant. Notes: 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. Automotive products are AEC-Q101 qualified and are PPAP capable. Refer to http://www.diodes.com/product_compliance_definitions.html.

5. For packaging details, go to our website at http://www.diodes.com/products/packages.html.

Marking Information

Date Code Ke	ev			1AC	MX	YM Y o	<u>=</u> Date C r Y = Yea	ct Type Mark Code Marking r (ex: E = 20 ex: 9 = Septe) 17)			
Year	2017	20	18	2019	2020	20	21	2022	2023	20	24	2025
Code	E	I	F	G	Н			J	K	l	_	М
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	1	8	9	0	N	D



Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Characteristic		Symbol	Value	Unit	
Drain-Source Voltage			V _{DSS}	60	V
Gate-Source Voltage		V _{GSS}	±20	V	
	Steady State	T _A = +25°C T _A = +70°C	Ι _D	340 270	mA
Continuous Drain Current (Note 7) $V_{GS} = 5.0V$	t<5s	T _A = +25°C T _A = +70°C	ID	400 300	mA
Maximum Continuous Body Diode Forward Curren	t (Note 7)	Is	0.4	A	
Pulsed Drain Current (10µs Pulse, Duty Cycle = 19	%) (Note 7	I _{DM}	1.2	А	

Thermal Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic		Symbol	Value	Unit
Total Power Dissipation (Note 6)		PD	320	mW
Thermal Resistance, Junction to Ambient (Note 6)	Steady State	D	393	°C/W
Thermal Resistance, Junction to Amblent (Note 6)	t<5s	R _{0JA}	306	C/W
Total Power Dissipation (Note 7)	·	PD	440	mW
Thermal Registeres, Junction to Ambient (Note 7)	Steady State	D	289	°C/W
Thermal Resistance, Junction to Ambient (Note 7)	t<5s	R _{θJA}	235	°C/VV
Operating and Storage Temperature Range		TJ, T _{STG}	-55 to +150	°C

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Тур	Мах	Unit	Test Condition
OFF CHARACTERISTICS (Note 8)						
Drain-Source Breakdown Voltage	BV _{DSS}	60	_		V	$V_{GS} = 0V, I_D = 250\mu A$
Zero Gate Voltage Drain Current	IDSS		_	1.0	μA	$V_{DS} = 60V, V_{GS} = 0V$
Gate-Source Leakage	I _{GSS}		_	±10	μA	$V_{GS} = \pm 20V, V_{DS} = 0V$
ON CHARACTERISTICS (Note 8)				-		
Gate Threshold Voltage	V _{GS(TH)}	0.5		1.0	V	$V_{DS} = 10V, I_D = 250\mu A$
			1.2	2.0		$V_{GS} = 5.0V, I_D = 0.05A$
Static Drain-Source On-Resistance	R _{DS(ON)}	—	1.6	2.5	Ω	$V_{GS} = 2.5 V, I_D = 0.05 A$
			2.5	3.5		$V_{GS} = 1.8V, I_D = 0.05A$
Forward Transconductance	Y _{fs}	200	_		mS	V _{DS} =10V, I _D = 0.2A
Diode Forward Voltage	V _{SD}	—	0.75	1.4	V	$V_{GS} = 0V, I_{S} = 115mA$
DYNAMIC CHARACTERISTICS (Note 9)				-		
Input Capacitance	Ciss		28.5	_	pF	
Output Capacitance	Coss		3.9	_	pF	V _{DS} = 30V, V _{GS} = 0V f = 1.0MHz
Reverse Transfer Capacitance	Crss	_	2.5		pF	1 = 1.00012
Gate Resistance	Rg	_	65		Ω	$f = 1MHz$, $V_{GS} = 0V$, $V_{DS} = 0V$
Total Gate Charge	Qg	_	0.4		nC	
Gate-Source Charge	Q _{gs}	_	0.1		nC	V _{GS} = 4.5V, V _{DS} = 10V, I _D = 250mA
Gate-Drain Charge	Q _{gd}		0.1		nC	ID = 23011A
Turn-On Delay Time	t _{D(ON)}	—	2.1	_	ns	
Turn-On Rise Time	t _R	_	1.8	_	ns	$V_{DD} = 30V, V_{GS} = 10V,$
Turn-Off Delay Time	t _{D(OFF)}	—	14.4		ns	$R_{G} = 25\Omega, I_{D} = 200 \text{mA}$
Turn-Off Fall Time	tF		8.4	_	ns	

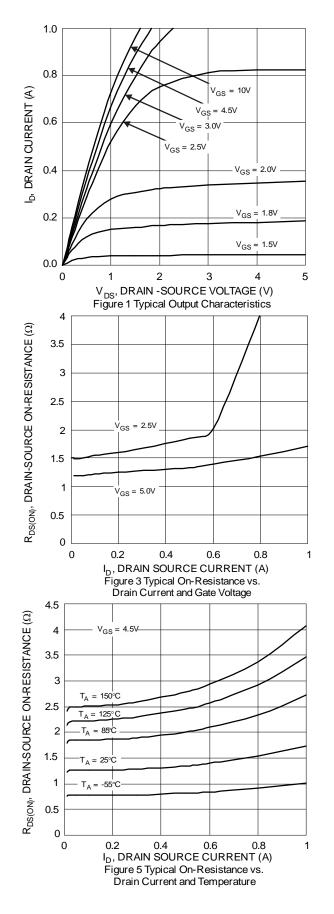
Notes: 6. Device mounted on FR-4 PCB, with minimum recommended pad layout.

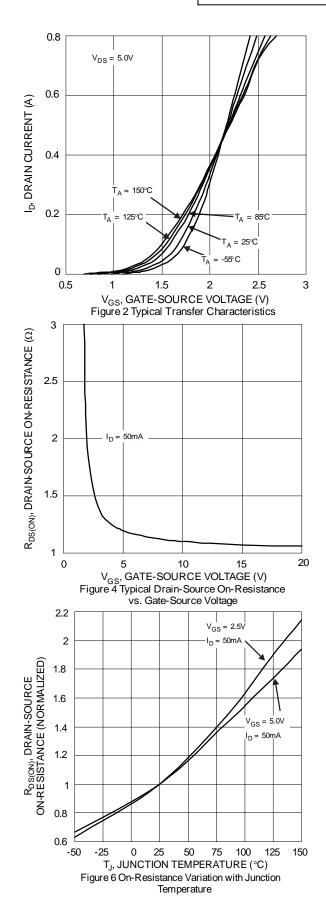
7. Device mounted on 1" x 1" FR-4 PCB with high coverage 2oz. Copper, single sided.

8. Short duration pulse test used to minimize self-heating effect.

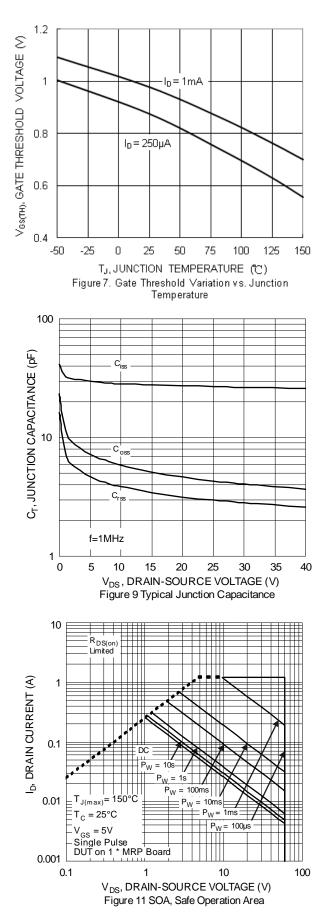
9. Guaranteed by design. Not subject to product testing.

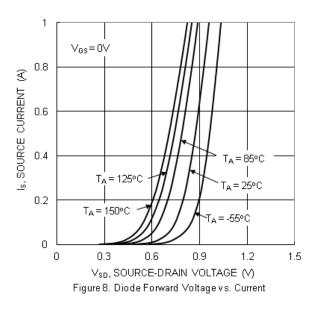


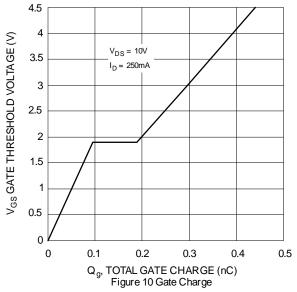




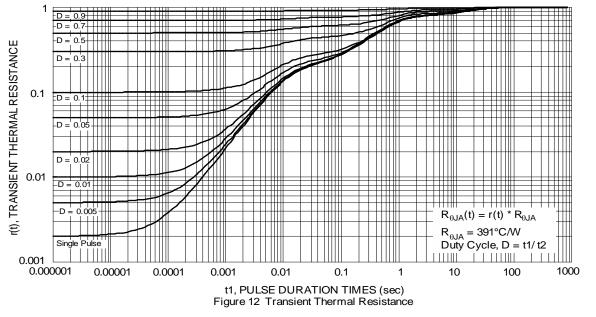






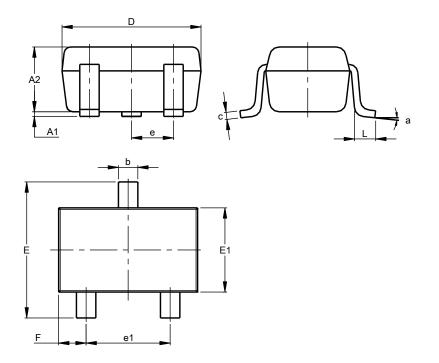






Package Outline Dimensions

Please see http://www.diodes.com/package-outlines.html for the latest version.

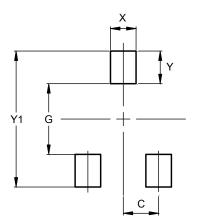


SOT323								
Dim	Min	Min Max Typ						
A1	0.00	0.10	0.05					
A2	0.90	1.00	0.95					
b	0.25	0.40	0.30					
c	0.10	0.18	0.11					
D	1.80	2.20	2.15					
Е	2.00	2.20	2.10					
E1	1.15	1.35	1.30					
е	0).650 B	SC					
e1	1.20	1.40	1.30					
F	0.375	0.475	0.425					
L	0.25	0.40	0.30					
а	0°	8°						
All	Dimen	sions i	in mm					



Suggested Pad Layout

Please see http://www.diodes.com/package-outlines.html for the latest version.



Dimensions	Value (in mm)
С	0.650
G	1.300
Х	0.470
Y	0.600
Y1	2.500

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