



N-CHANNEL ENHANCEMENT MODE MOSFET

Product Summary

V _{(BR)DSS}	R _{DS(ON)} max	I _D max T _A = +25°C
60V	2Ω @ V _{GS} = 4.5V	380mA
007	2.5Ω @ V _{GS} = 2.5V	340mA

Description

This 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.

Applications

- Motor Control
- Power Management Functions
- Backlighting

Features and Benefits

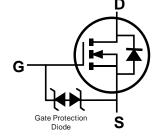
- Low On-Resistance
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- ESD Protected Up To 1kV
- Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)
- Halogen and Antimony Free. "Green" Device (Note 3)
- Qualified to AEC-Q101 Standards for High Reliability

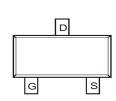
Mechanical Data

- Case: SOT23
- Case Material: Molded Plastic, "Green" Molding Compound.
 UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish Matte Tin Annealed over Alloy 42
 Leadframe. Solderable per MIL-STD-202, Method 208 @3
- Weight: 0.008 grams (Approximate)









Top View

Equivalent Circuit

Top View

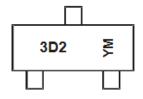
Ordering Information (Note 4)

Part Number	Case	Packaging
DMN62D0U-7	SOT23	3000/Tape & Reel
DMN62D0U-13	SOT23	10000/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



3D2 = Product Type Marking Code YM or \overline{Y} M = Date Code Marking Y or \overline{Y} = Year (ex: B = 2014) M = Month (ex: 9 = September)

Date Code Key

Year	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Code	В	С	D	Е	F	G	Н		J	K	L	М
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec



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		
Continuous Pusis Courset (Note C) // 4.5/	Steady State	$T_A = +25^{\circ}C$ $T_A = +70^{\circ}C$	I _D	380 300	mA	
Continuous Drain Current (Note 6) V _{GS} = 4.5V	t<5s	$T_A = +25^{\circ}C$ $T_A = +70^{\circ}C$	I _D	430 340	mA	
Maximum Continuous Body Diode Forward Current	(Note 6)	Is	0.4	Α		
Pulsed Drain Current (10µs Pulse, Duty Cycle = 1%	b) (Note 6)	I _{DM}	1.2	Α		

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

Characteristic		Symbol	Value	Unit	
Total Power Dissipation (Note 5)		P_{D}	380	mW	
Thermal Desigtance Junction to Ambient (Note E)	Steady State	Б	338	°C/W	
Thermal Resistance, Junction to Ambient (Note 5)	t<5s	$R_{\theta JA}$	292	*C/VV	
Total Power Dissipation (Note 6)		P_{D}	590	mW	
Thormal Basistones, Junation to Ambient (Note 6) Steady Stat		D	216	°C/W	
Thermal Resistance, Junction to Ambient (Note 6)	t<5s	$R_{\theta JA}$	177	C/VV	
Operating and Storage Temperature Range		$T_{J_i} T_{STG}$	-55 to +150	°C	

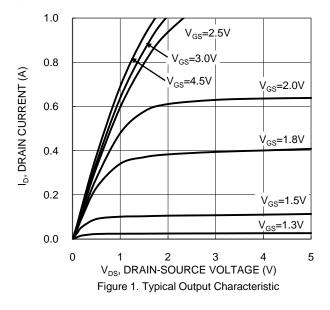
Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

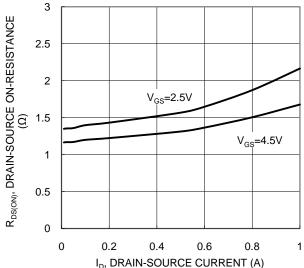
Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 7)						
Drain-Source Breakdown Voltage	BV _{DSS}	60	_	_	V	$V_{GS} = 0V, I_D = 10\mu A$
Zero Gate Voltage Drain Current	I _{DSS}	_		1.0	μΑ	$V_{DS} = 60V, V_{GS} = 0V$
Gate-Source Leakage	I _{GSS}	_	_	±10	μΑ	$V_{GS} = \pm 20V, V_{DS} = 0V$
ON CHARACTERISTICS (Note 7)						
Gate Threshold Voltage	V _{GS(TH)}	0.5	_	1.0	V	$V_{DS} = 10V, I_D = 250\mu A$
			1.2	2.0		$V_{GS} = 4.5V, I_D = 0.1A$
Static Drain-Source On-Resistance	R _{DS(ON)}	_	1.4	2.5	Ω	$V_{GS} = 2.5V, I_D = 0.05A$
			1.8	3.0		$V_{GS} = 1.8V, I_D = 0.05A$
Forward Transconductance	Y _{fs}	_	1.8	_	mS	$V_{DS} = 10V, I_D = 0.2A$
Diode Forward Voltage	V_{SD}	_	8.0	1.3	V	$V_{GS} = 0V, I_S = 115mA$
DYNAMIC CHARACTERISTICS (Note 8)						
Input Capacitance	C _{iss}	_	32	_	pF	.,
Output Capacitance	Coss	_	3.9	_	pF	$V_{DS} = 30V, V_{GS} = 0V$ f = 1.0MHz
Reverse Transfer Capacitance	C _{rss}	_	2.4	_	pF	1 = 1.0WI 12
Gate Resistance	R_g	_	101	_	Ω	$f = 1MHz$, $V_{GS} = 0V$, $V_{DS} = 0V$
Total Gate Charge	Qg	_	0.5	_	nC	4.51/.1/
Gate-Source Charge	Q _{qs}	_	0.09	_	nC	$V_{GS} = 4.5V, V_{DS} = 10V,$
Gate-Drain Charge	Q_{gd}	_	0.09	_	nC	$I_D = 250 \text{mA}$
Turn-On Delay Time	t _{D(ON)}	_	2.4	_	ns	
Turn-On Rise Time	t _R		2.5	_	ns	$V_{DD} = 30V, V_{GS} = 10V,$
Turn-Off Delay Time	t _{D(OFF)}	_	22.6	_	ns	$R_G = 25\Omega$, $I_D = 200mA$
Turn-Off Fall Time	t _F	_	12.5	_	ns	

Notes:

- Device mounted on FR-4 PCB, with minimum recommended pad layout.
 Device mounted on 1" x 1" FR-4 PCB with high coverage 2oz. Copper, single sided.
 Short duration pulse test used to minimize self-heating effect.
- 8. Guaranteed by design. Not subject to product testing.







I_D, DRAIN-SOURCE CURRENT (A)
Figure 3. Typical On-Resistance vs. Drain Current and
Gate Voltage

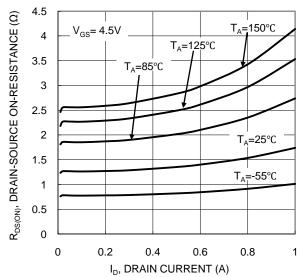
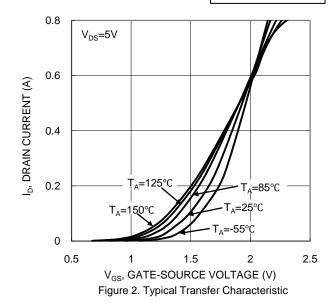
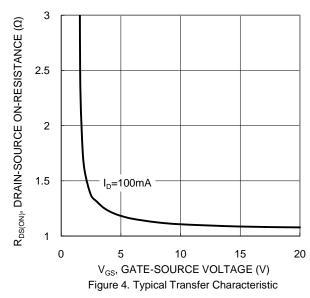


Figure 5. Typical On-Resistance vs. Drain Current and Temperature





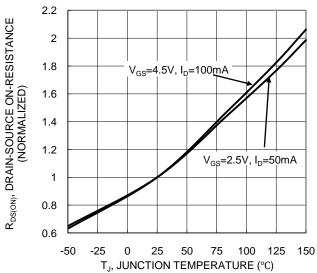
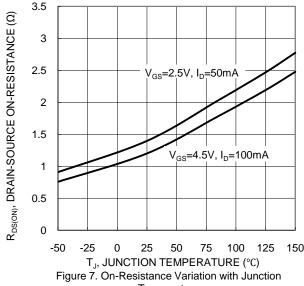
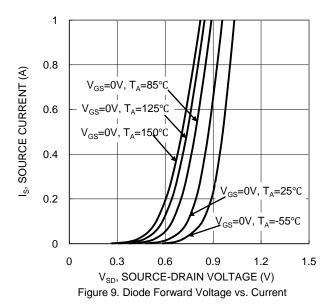


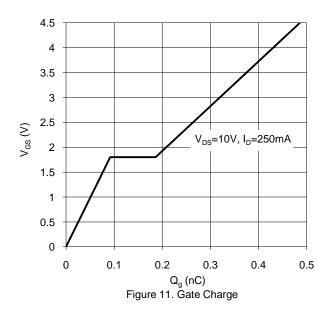
Figure 6. On-Resistance Variation with Junction Temperature

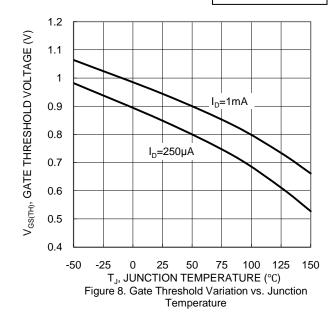


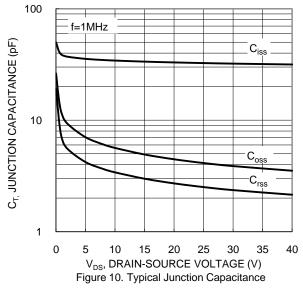


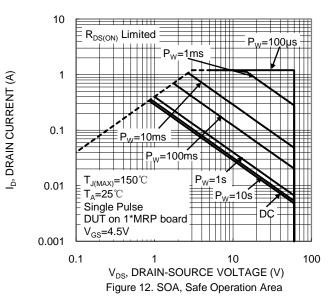
Temperature













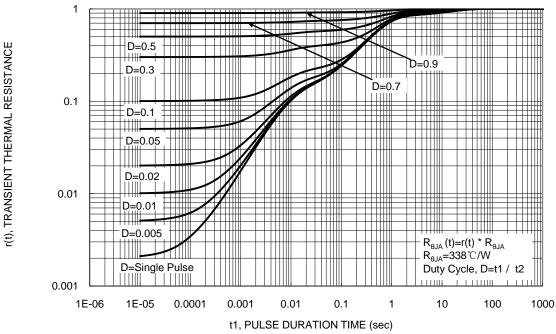
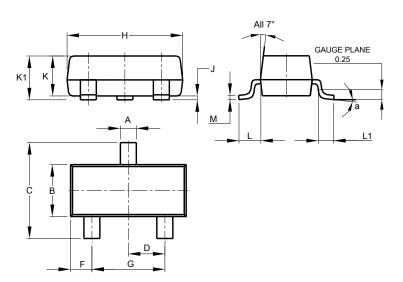


Figure 13. Transient Thermal Resistance

Package Outline Dimensions

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

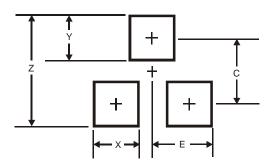


SOT23								
Dim	Min	Max	Тур					
Α	0.37	0.51	0.40					
В	1.20	1.40	1.30					
С	2.30	2.50	2.40					
D	0.89	1.03	0.915					
F	0.45	0.60	0.535					
G	1.78	2.05	1.83					
Н	2.80	3.00	2.90					
J	0.013	0.10	0.05					
K	0.890	1.00	0.975					
K1	0.903	1.10	1.025					
L	0.45	0.61	0.55					
L1	0.25	0.55	0.40					
М	0.085	0.150	0.110					
а		8°	•					
All	All Dimensions in mm							



Suggested Pad Layout

Please see AP02001 at http://www.diodes.com/datasheets/ap02001.pdf for the latest version



Dimensions	Value (in mm)
Z	2.9
Х	0.8
Υ	0.9
С	2.0
E	1.35

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