



N-CHANNEL ENHANCEMENT MODE MOSFET

Product Summary

V _{(BR)DSS}	R _{DS(ON)} max	I _D max T _A = +25°C
60V	7.5Ω @ V _{GS} = 5V	210mA

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**

Features

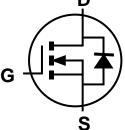
- Low On-Resistance
- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)
- Halogen and Antimony Free. "Green" Device (Note 3)
- Qualified to AEC-Q101 Standards for High Reliability

Mechanical Data

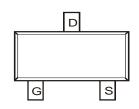
- Case: SOT23
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish Annealed over Alloy 42 Leadframe. Solderable per MIL-STD-202, Method 208 (3)
- Terminal Connections: See Diagram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











Top View

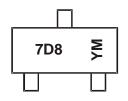
Ordering Information (Note 4)

Part Number	Case	Packaging
DMN67D8L-7	SOT23	3,000/Tape & Reel
DMN67D8L-13	SOT23	10,000/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



7D8 = Product Type Marking Code YM = Date Code Marking Y or \overline{Y} = Year (ex: C = 2015) M = Month (ex: 9 = September)

Date Code Key

Year	2015		2016	2017		2018	2019		2020	2021		2022
Code	С		D	Е		F	G		Н			J
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	0	N	D



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

Characteristic		Symbol	Value	Unit
Drain-Source Voltage	V_{DSS}	60	V	
Gate-Source Voltage	V _{GSS}	±30	V	
Continuous Drain Current (Note 6) $V_{GS} = 10V$ Steady $T_A = +25^{\circ}C$ State $T_A = +85^{\circ}C$		I _D	210 150	mA
Maximum Body Diode Forward Current (Note 6)		Is	500	mA
Pulsed Drain Current (10µs Pulse, Duty Cycle = 10	%)	I _{DM}	800	mA

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

Characteristic		Symbol	Value	Unit
Total Power Dissipation (Note 5)		P_{D}	340	mW
Thermal Resistance, Junction to Ambient (Note 5)	Steady State	$R_{\theta JA}$	376	°C/W
Total Power Dissipation (Note 6)		P _D	570	mW
Thermal Resistance, Junction to Ambient (Note 6)	Steady State	R _{0JA}	224	°C/W
Operating and Storage Temperature Range		$T_{J_{I}}T_{STG}$	-55 to +150	°C

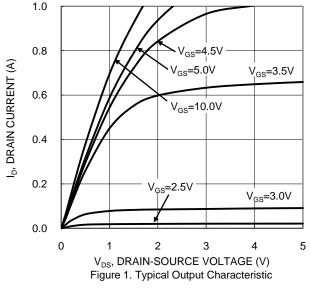
Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

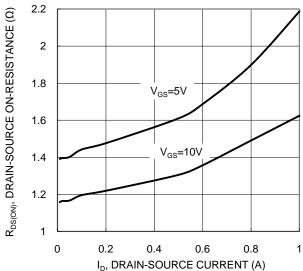
Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 7)						
Drain-Source Breakdown Voltage	BV _{DSS}	60	—	—	V	$V_{GS} = 0V, I_D = 10\mu A$
Zero Gate Voltage Drain Current	I _{DSS}	_	_	1.0	μΑ	$V_{DS} = 60V$, $V_{GS} = 0V$
Gate-Source Leakage	I _{GSS}	_	_	±100	nA	$V_{GS} = \pm 20V, V_{DS} = 0V$
ON CHARACTERISTICS (Note 7)						
Gate Threshold Voltage	V _{GS(TH)}	1.0	_	2.5	V	$V_{DS} = V_{GS}, I_{D} = 250 \mu A$
Static Drain-Source On-Resistance	D		3.2	7.5	Ω	$V_{GS} = 5.0V, I_D = 0.05A$
Static Drain-Source On-INESistance	R _{DS(ON)}	_	1.5	5.0	52	$V_{GS} = 10V, I_D = 0.5A$
Forward Transconductance	g FS	80	_	_	mS	$V_{DS} = 10V, I_D = 0.2A$
Diode Forward Voltage	V_{SD}	_	0.78	1.5	V	$V_{GS} = 0V, I_S = 115mA$
DYNAMIC CHARACTERISTICS (Note 8)						
Input Capacitance	C _{iss}	_	22	_	pF), OE),), O),
Output Capacitance	Coss	_	4.1	_	рF	V _{DS} = 25V, V _{GS} = 0V, f = 1.0MHz
Reverse Transfer Capacitance	C _{rss}	_	2.5	_	pF	
Gate Resistance	R_{g}	_	120	_	Ω	$V_{DS} = 0V, V_{GS} = 0V, f = 1.0MHz$
Total Gate Charge (V _{GS} = 4.5V)	Q_g	_	361	_		
Total Gate Charge (V _{GS} = 10V)	Q_{g}	_	821	_	200	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
Gate-Source Charge	Q_{gs}	_	162	_	рC	$V_{DS} = 10V, I_{D} = 250mA$
Gate-Drain Charge	Q_{gd}	_	116	_		
Turn-On Delay Time	t _{D(ON)}	_	2.8	_		\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
Turn-On Rise Time	t _R	_	3.0	_	ns	$V_{DD} = 30V, I_D = 0.2A,$
Turn-Off Delay Time	t _{D(OFF)}	_	7.6		115	$R_L = 150\Omega$, $V_{GEN} = 10V$, $R_{GEN} = 25\Omega$
Turn-Off Fall Time	t _F	_	5.6	_		2022

Notes:

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







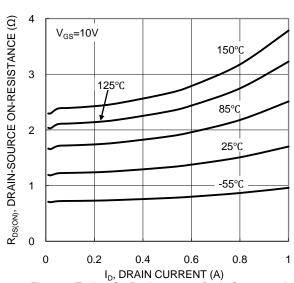
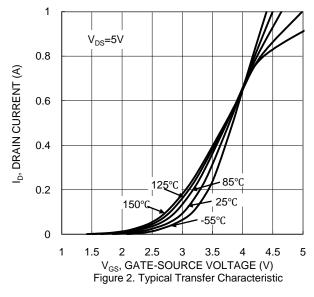
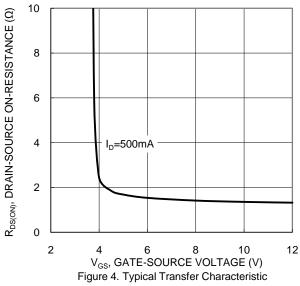


Figure 3. Typical On-Resistance vs. Drain Current and Gate Voltage

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





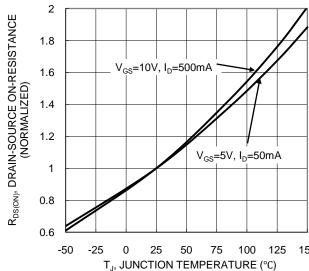


Figure 6. On-Resistance Variation with Junction Temperature



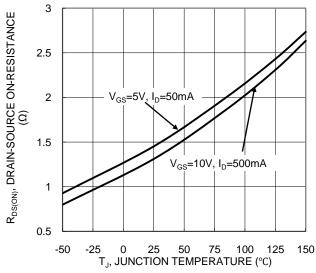
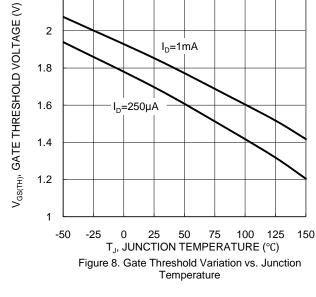
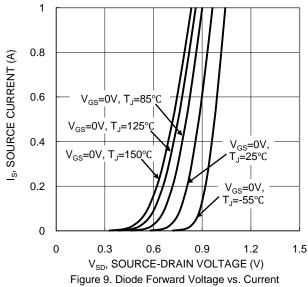
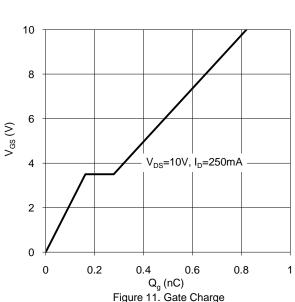


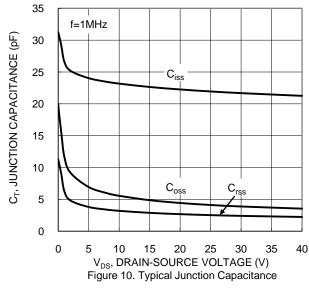
Figure 7. On-Resistance Variation with Junction Temperature

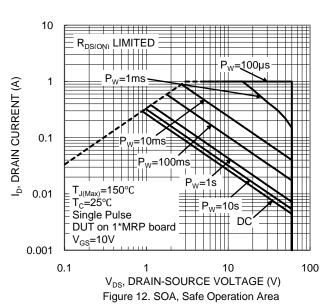


2.2

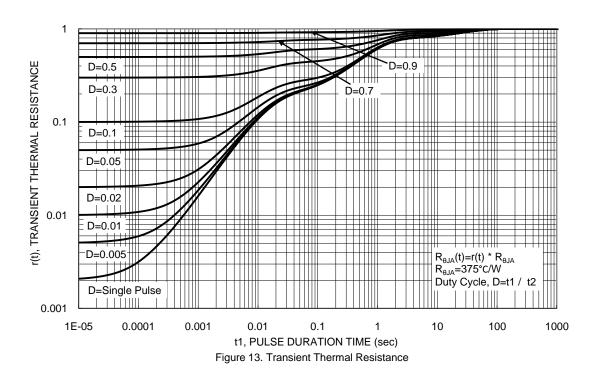






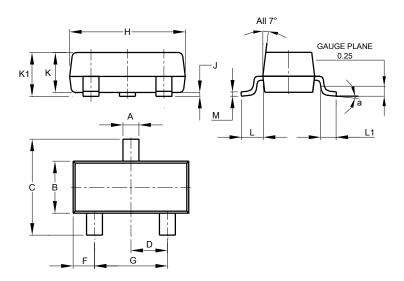






Package Outline Dimensions

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

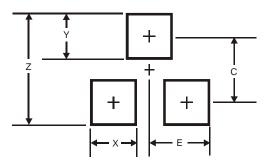


	SOT23							
Dim	Min	Max	Тур					
Α	0.37	0.51	0.40					
В	1.20	1.40	1.30					
С	2.30	2.50	2.40					
D	0.89	1.03	0.915					
F	0.45	0.60	0.535					
G	1.78	2.05	1.83					
Н	2.80	3.00	2.90					
J	0.013	0.10	0.05					
K	0.890	1.00	0.975					
K1	0.903	1.10	1.025					
L	0.45	0.61	0.55					
L1	0.25	0.55	0.40					
M	0.085	0.150	0.110					
α	α 8°							
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
Е	1.35

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