



N-CHANNEL ENHANCEMENT MODE MOSFET

Product Summary

BV _{DSS}	R _{DS(ON)} max	I _D max T _A = +25°C
001/	60mΩ @ V _{GS} = 10V	2.6A
30V	100mΩ @ V _{GS} = 4.5V	2.1A

Features and Benefits

- Low On-Resistance
- Low Input Capacitance
- Fast Switching Speed
- Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)
- Halogen and Antimony Free. "Green" Device (Note 3)
- For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please contact us or your local Diodes representative. https://www.diodes.com/quality/product-definitions/

Description and Applications

This MOSFET has been designed to minimize the on-state resistance (RDS(ON)) yet maintain superior switching performance, making it ideal for high efficiency power management applications.

- General Purpose Interfacing Switch
- Power Management Functions
- DC-DC Converters
- Analog Switch

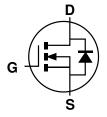
Mechanical Data

- Case: SOT323
- Case Material: Molded Plastic, "Green" Molding Compound.
 UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections Indicator: See Diagram
- Terminals: Finish Matte Tin Annealed over Copper Leadframe.
 Solderable per MIL-STD-202, Method 208 (3)
- Weight: 0.027 grams (Approximate)

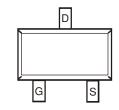


Top View

SOT323



Equivalent Circuit



Top View

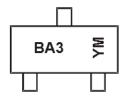
Ordering Information (Note 4)

Part Number	Case	Packaging
DMN3060LW-7	SOT323	3,000/Tape & Reel
DMN3060LW-13	SOT323	10,000/Tape & Reel

Notes:

- 1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
- 2. See https://www.diodes.com/quality/lead-free/ 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 https://www.diodes.com/design/support/packaging/diodes-packaging/.

Marking Information



BA3 = Product Type Marking Code YM or $\overline{Y}M$ = Date Code Marking Y or \overline{Y} = Year (ex: H = 2020) M = Month (ex: 9 = September)

Date Code Key

Date Code Noy												
Year	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Code	G	Н	- 1	J	K	L	М	N	0	Р	R	S
Month	Jan	Feb	Mar	Apr	Mav	Jun	Jul	Aug	Sep	Oct	Nov	Dec



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

Characteristic	Symbol	Value	Unit		
Drain-Source Voltage	VDSS	30	V		
Gate-Source Voltage	V_{GSS}	±12	V		
Continuous Drain Current (Note 6) V _{GS} = 4.5V	Steady State	T _A = +25°C T _A = +70°C	lo	2.6 2.1	А
Pulsed Drain Current (10µs Pulse, Duty Cycle = 1%)	I _{DM}	18	Α		
Maximum Body Diode Forward Current (Note 5)			Is	0.68	Α

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

Characteristic		Symbol	Value	Unit
Total Power Dissipation (Note 5)		PD	0.5	W
Thermal Resistance, Junction to Ambient (Note 5)	Steady State	RθJA	251	°C/W
Total Power Dissipation (Note 6)		PD	0.64	W
Thermal Resistance, Junction to Ambient (Note 6)	Steady State	$R_{\theta JA}$	195	°C/W
Operating and Storage Temperature Range		TJ, TSTG	-55 to +150	°C

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

D						
Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 7)						
Drain-Source Breakdown Voltage	BVDSS	30	_	_	٧	$V_{GS} = 0V, I_{D} = 250\mu A$
Zero Gate Voltage Drain Current @Tc = +25°C	IDSS	_	_	1.0	μΑ	$V_{DS} = 30V$, $V_{GS} = 0V$
Gate-Source Leakage	Igss	_	_	±100	nA	$V_{GS} = \pm 12V$, $V_{DS} = 0V$
ON CHARACTERISTICS (Note 7)						
Gate Threshold Voltage	V _{GS(TH)}	0.7	_	1.8	V	$V_{DS} = V_{GS}$, $I_D = 250\mu A$
Otatia Busin Ossuus Os Basistansa	_	_	48	60	0	V _{GS} = 10V, I _D = 3.1A
Static Drain-Source On-Resistance	R _{DS(ON)}	_	51	100	mΩ	V _G S = 4.5V, I _D = 2A
Diode Forward Voltage	V _{SD}	_	0.8	1.2	V	V _{GS} = 0V, I _S = 1A
DYNAMIC CHARACTERISTICS (Note 8)						
Input Capacitance	Ciss	_	395	_	pF	151/1/
Output Capacitance	Coss	_	39	_	pF	V _{DS} = 15V, V _{GS} = 0V, -f = 1.2MHz
Reverse Transfer Capacitance	Crss	_	26	_	рF	1 – 1.21/1112
Gate Resistance	R_g	_	3.1	_	Ω	$V_{DS} = 0V$, $V_{GS} = 0V$, $f = 1MHz$
Total Gate Charge	Qg	_	5.6	_	nC	\\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
Gate-Source Charge	Qgs	_	0.2	_	nC	$V_{GS} = 4.5V, V_{DS} = 10V,$ $I_{D} = 6A$
Gate-Drain Charge	Qgd	_	1.8	_	nC	TID = 6A
Turn-On Delay Time	t _{D(ON)}	_	5.8	_	ns	
Turn-On Rise Time	tr	_	30.8	_	ns	V _{DD} = 10V, V _{GS} = 15V,
Turn-Off Delay Time	tD(OFF)	_	18.3	_	ns	$R_L = 4.7\Omega$, $R_G = 3\Omega$
Turn-Off Fall Time	t _F	_	2.7	_	ns	

Notes:

- Device mounted on FR-4 substrate PC board, with minimum recommended pad layout.
 Device mounted on FR-4 substrate PC board, 2oz copper, with thermal bias to bottom layer 1inch square copper plate.
 Short duration pulse test used to minimize self-heating effect.
- 8. Guaranteed by design. Not subject to product testing.



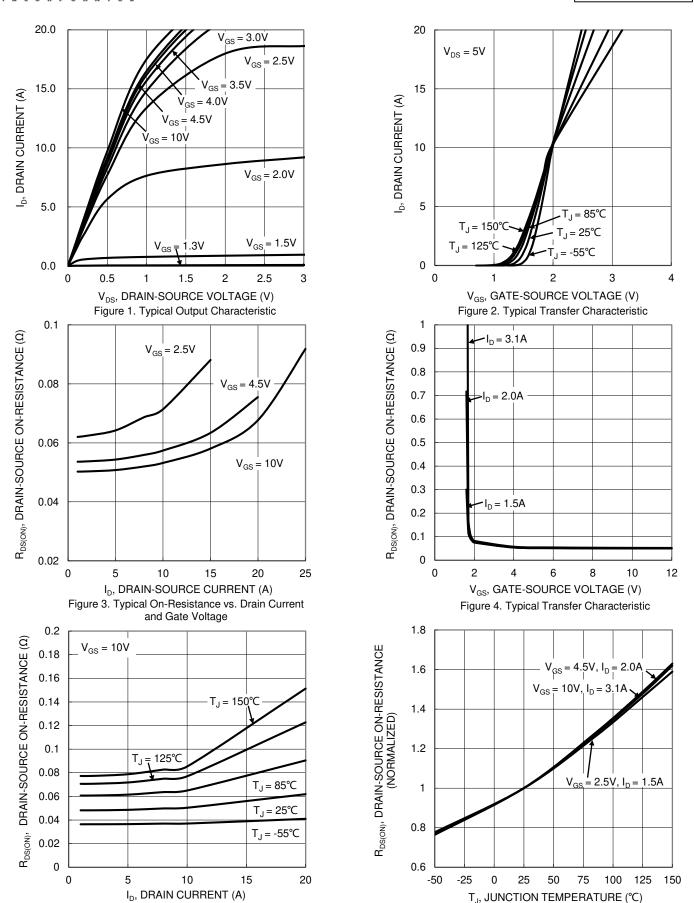


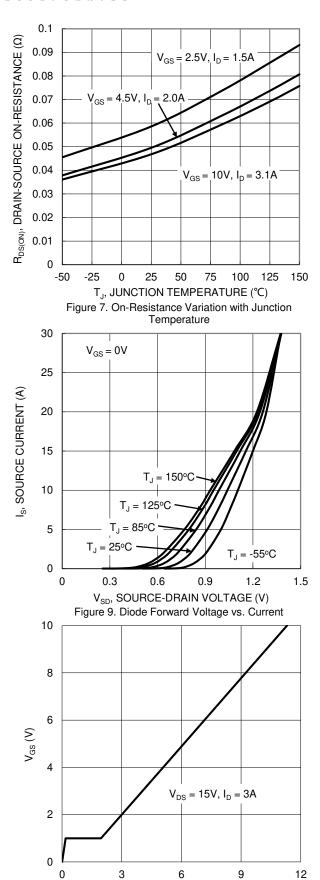
Figure 5. Typical On-Resistance vs. Drain

Current and Junction Temperature

Figure 6. On-Resistance Variation with Junction

Temperature





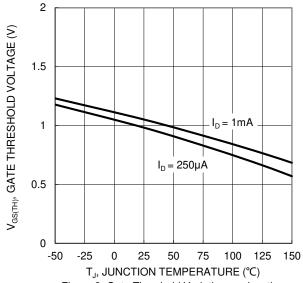


Figure 8. Gate Threshold Variation vs. Junction Temperature

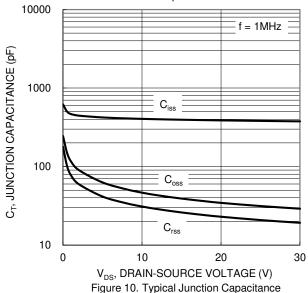


Figure 12. SOA, Safe Operation Area

 Q_g (nC) Figure 11. Gate Charge



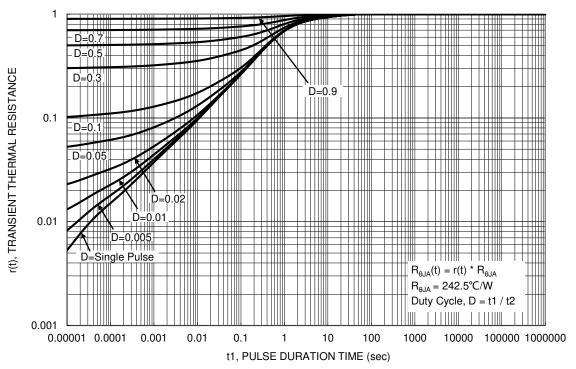


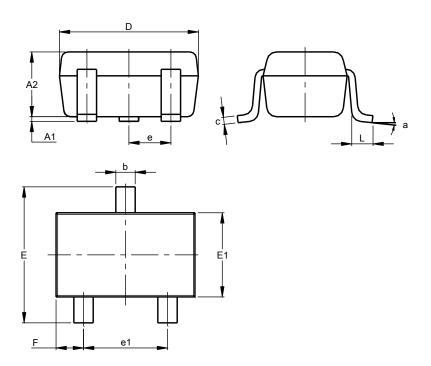
Figure 13. Transient Thermal Resistance



Package Outline Dimensions

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

SOT323

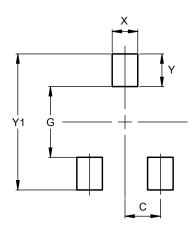


SOT323							
Dim	Min Max Typ						
A1	0.00	0.10	0.05				
A2	0.90	1.00	0.95				
b	0.25	0.40	0.30				
С	0.10	0.18	0.11				
D	1.80	2.20	2.15				
E	2.00	2.20	2.10				
E1	1.15	1.35	1.30				
е	C).650 B	SC				
e1	1.20	1.40	1.30				
F	0.375 0.475 0.425						
L	0.25	0.40	0.30				
а	0°	8°					
All Dimensions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

Suggested Pad Layout

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

SOT323



	Value
Dimensions	(in mm)
С	0.650
G	1.300
Х	0.470
Υ	0.600
Y1	2 500



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