

Product Summary

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D $T_A = 25^\circ C$
30V	4.2Ω @ $V_{GS} = 5V$	200mA
	2.8Ω @ $V_{GS} = 10V$	260mA

Description

This new generation MOSFET has been 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

- DC-DC Converters
- Power management functions
- Battery Operated Systems and Solid-State Relays
- Drivers: Relays, Solenoids, Lamps, Hammers, Displays, Memories, Transistors, etc

Features

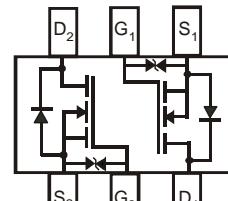
- Dual N-Channel MOSFET
- Low On-Resistance
- Low Input Capacitance
- Fast Switching Speed
- Small Surface Mount Package
- ESD Protected Gate
- Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- Halogen and Antimony Free. "Green" Device (Note 3)
- Qualified to AEC-Q101 Standards for High Reliability

Mechanical Data

- Case: SOT563
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish annealed over Alloy 42 leadframe (Lead Free Plating). Solderable per MIL-STD-202, Method 208 (e3)
- Terminal Connections: See Diagram
- Weight: 0.006 grams (approximate)



Top View



Top View
Internal Schematic

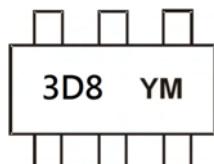
Ordering Information (Note 4)

Part Number	Case	Packaging
DMN63D8LV-7	SOT563	3,000/Tape & Reel
DMN63D8LV-13	SOT563	10,000/Tape & Reel

Notes:

- No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
- See <http://www.diodes.com> for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
- Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
- For packaging details, go to our website at <http://www.diodes.com>.

Marking Information



3D8 = Product Type Marking Code

YM = Date Code Marking

Y = Year (ex: Z = 2012)

M = Month (ex: 9 = September)

Date Code Key

Year	2011	2012	2013	2014	2015	2016	2017					
Code	Y	Z	A	B	C	D	E					
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

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

Characteristic				Symbol	Value	Units
Drain-Source Voltage				V_{DSS}	30	V
Gate-Source Voltage				V_{GSS}	± 20	V
Continuous Drain Current (Note 5)	$V_{GS} = 10\text{V}$	Steady State	$T_A = 25^\circ\text{C}$ $T_A = 70^\circ\text{C}$	I_D	260 200	mA
Continuous Drain Current (Note 5)	$V_{GS} = 5\text{V}$	Steady State	$T_A = 25^\circ\text{C}$ $T_A = 70^\circ\text{C}$	I_D	220 160	mA
Pulsed Drain Current (10 μs pulse, duty cycle = 1%)				I_{DM}	800	mA

Thermal Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic		Symbol	Value	Units
Total Power Dissipation	(Note 5)	P_D	450	mW
Thermal Resistance, Junction to Ambient	(Note 5)	R_{JJA}	281	$^\circ\text{C}/\text{W}$
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to 150	$^\circ\text{C}$

Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 6)						
Drain-Source Breakdown Voltage	BV_{DSS}	30	—	—	V	$V_{GS} = 0\text{V}, I_D = 250\mu\text{A}$
Zero Gate Voltage Drain Current	I_{DSS}	—	—	1.0	μA	$V_{DS} = 30\text{V}, V_{GS} = 0\text{V}$
Gate-Body Leakage	I_{GSS}	—	—	± 10.0	μA	$V_{GS} = \pm 20\text{V}, V_{DS} = 0\text{V}$
ON CHARACTERISTICS (Note 6)						
Gate Threshold Voltage	$V_{GS(\text{th})}$	0.8	—	1.5	V	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$
Static Drain-Source On-Resistance	$R_{DS(\text{ON})}$	—	—	2.8	Ω	$V_{GS} = 10.0\text{V}, I_D = 250\text{mA}$
		—	—	3.8		$V_{GS} = 5.0\text{V}, I_D = 250\text{mA}$
		—	—	4.2		$V_{GS} = 4.5\text{V}, I_D = 250\text{mA}$
		—	—	4.5		$V_{GS} = 4.0\text{V}, I_D = 250\text{mA}$
		—	—	13		$V_{GS} = 2.5\text{V}, I_D = 10\text{mA}$
Forward Transconductance	g_{FS}	80	—	—	mS	$V_{DS} = 10\text{V}, I_D = 0.115\text{A}$
Diode Forward Voltage	V_{SD}	-	0.8	1.2	V	$V_{GS} = 0\text{V}, I_S = 115\text{mA}$
DYNAMIC CHARACTERISTICS (Note 7)						
Input Capacitance	C_{iss}	—	22.0	—	pF	$V_{DS} = 25\text{V}, V_{GS} = 0\text{V}, f = 1.0\text{MHz}$
Output Capacitance	C_{oss}	—	3.2	—		
Reverse Transfer Capacitance	C_{rss}	—	2.0	—		
Gate Resistance	R_G	—	79.9	—	Ω	$V_{DS} = 0\text{V}, V_{GS} = 0\text{V}, f = 1.0\text{MHz}$
Total Gate Charge $V_{GS} = 10\text{V}$	Q_g	—	0.87	—	nC	$V_{GS} = 10\text{V}, V_{DS} = 30\text{V}, I_D = 150\text{mA}$
Total Gate Charge $V_{GS} = 4.5\text{V}$	Q_g	—	0.43	—		
Gate-Source Charge	Q_{gs}	—	0.11	—		
Gate-Drain Charge	Q_{qd}	—	0.11	—		
Turn-On Delay Time	$t_{D(\text{on})}$	—	3.3	—	nS	$V_{DD} = 30\text{V}, I_D = 0.115\text{A}, V_{GEN} = 10\text{V}, R_{GEN} = 25\Omega$
Turn-On Rise Time	t_r	—	3.2	—		
Turn-Off Delay Time	$t_{D(\text{off})}$	—	12.0	—		
Turn-Off Fall Time	t_f	—	6.3	—		

Notes: 5. Device mounted on FR-4 PC board, with minimum recommended pad layout, single sided.

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

7. Guaranteed by design. Not subject to production testing.

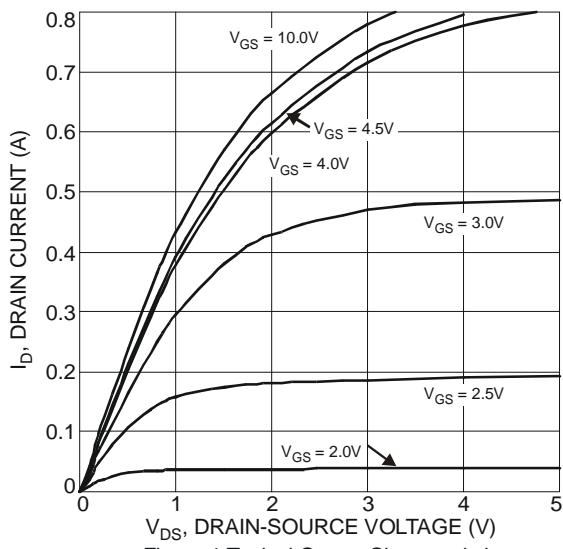


Figure 1 Typical Output Characteristic

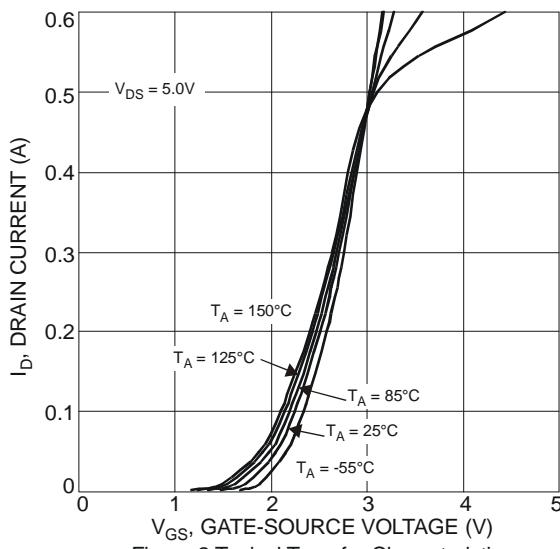


Figure 2 Typical Transfer Characteristics

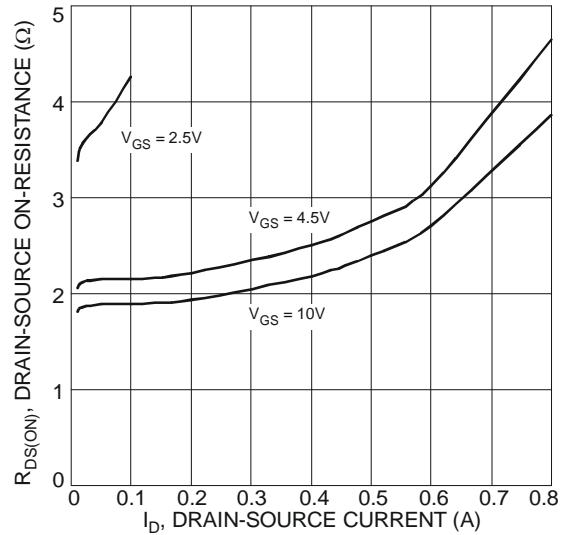


Figure 3 Typical On-Resistance vs.
Drain Current and Gate Voltage

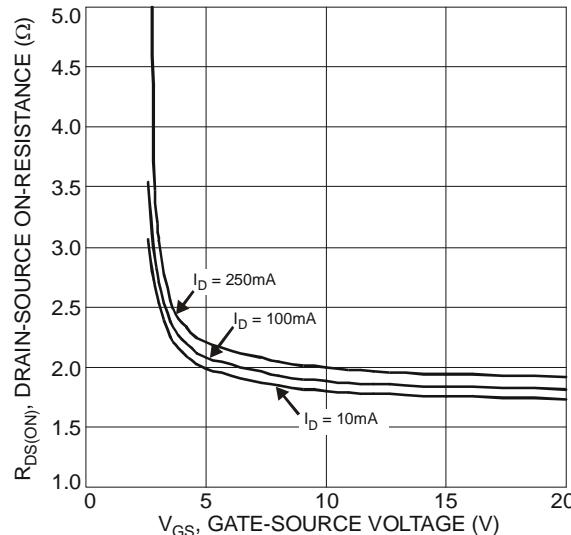


Figure 4 Typical Drain-Source On-Resistance
vs. Gate-Source Voltage

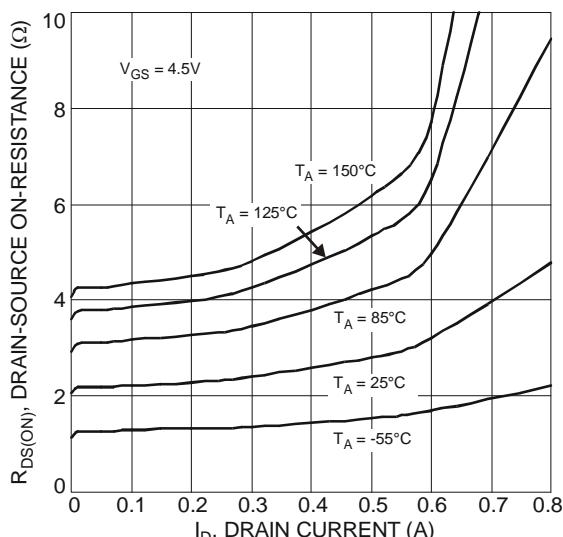


Figure 5 Typical On-Resistance vs.
Drain Current and Temperature

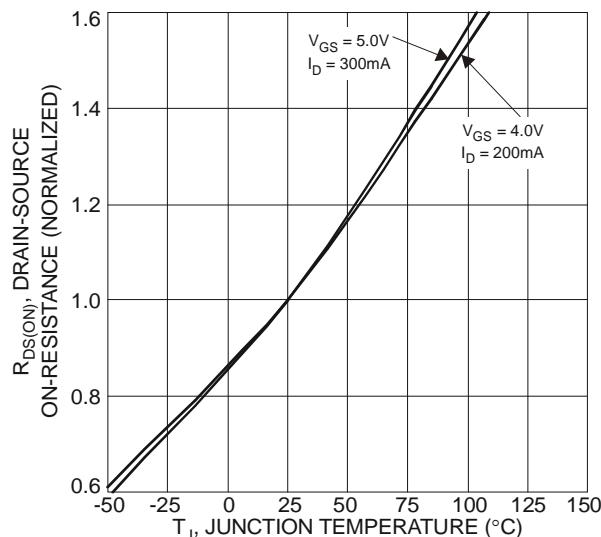


Figure 6 On-Resistance Variation with Temperature

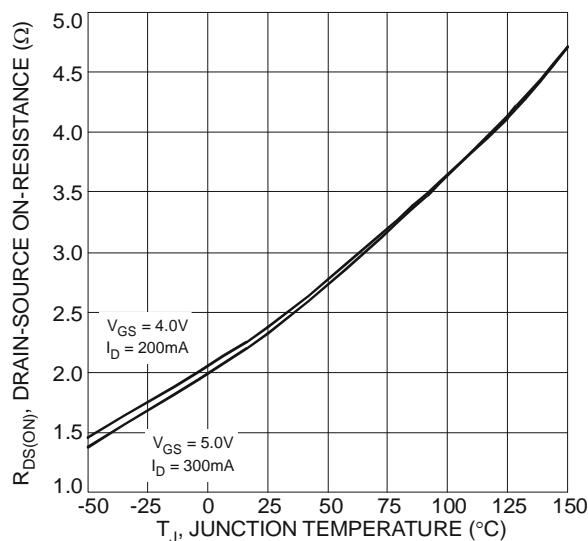


Figure 7 On-Resistance Variation with Temperature

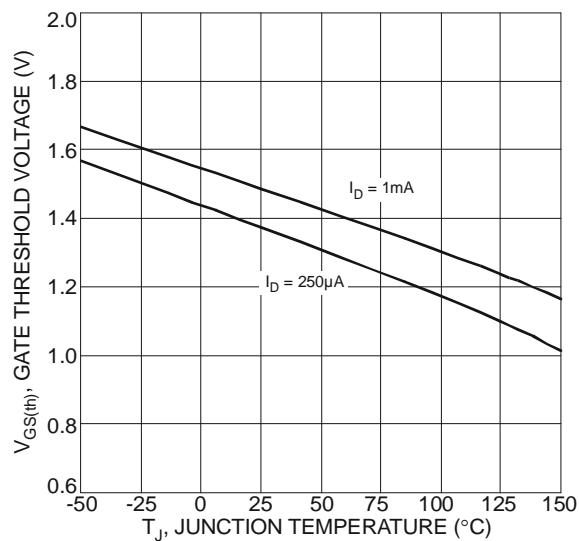


Figure 8 Gate Threshold Variation vs. Ambient Temperature

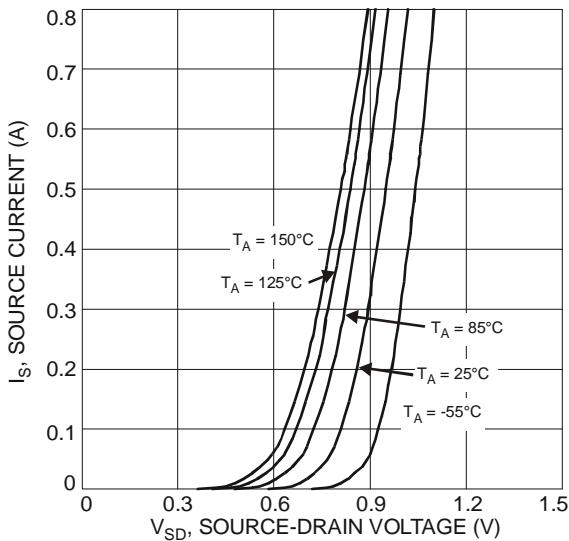
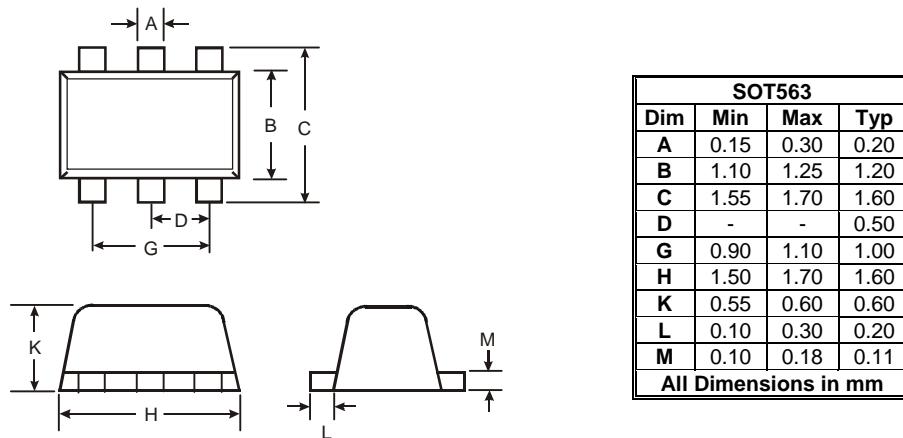


Figure 9 Diode Forward Voltage vs. Current

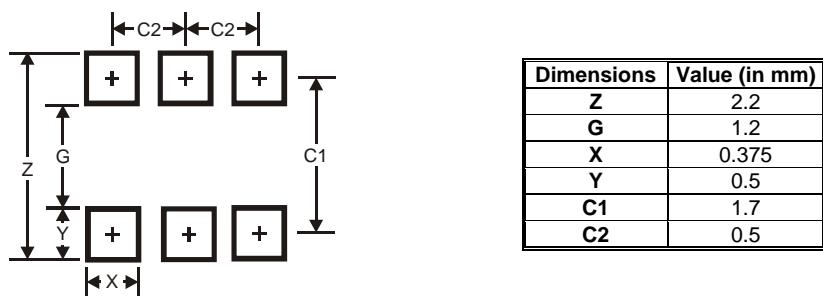
Package Outline Dimensions

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



Suggested Pad Layout

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



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