

**DUAL N-CHANNEL ENHANCEMENT MODE MOSFET**
**Product Summary**

BV <sub>DSS</sub>	R <sub>DS(ON)</sub>	I <sub>D</sub> T <sub>A</sub> = +25°C
30V	4.2Ω @ V <sub>GS</sub> = 4.5V	200mA
	2.8Ω @ V <sub>GS</sub> = 10V	260mA

**Description**

This new generation MOSFET has been designed to minimize the on-state resistance (R<sub>DS(ON)</sub>) yet maintain superior switching performance, making it ideal for high efficiency power management applications.

**Applications**

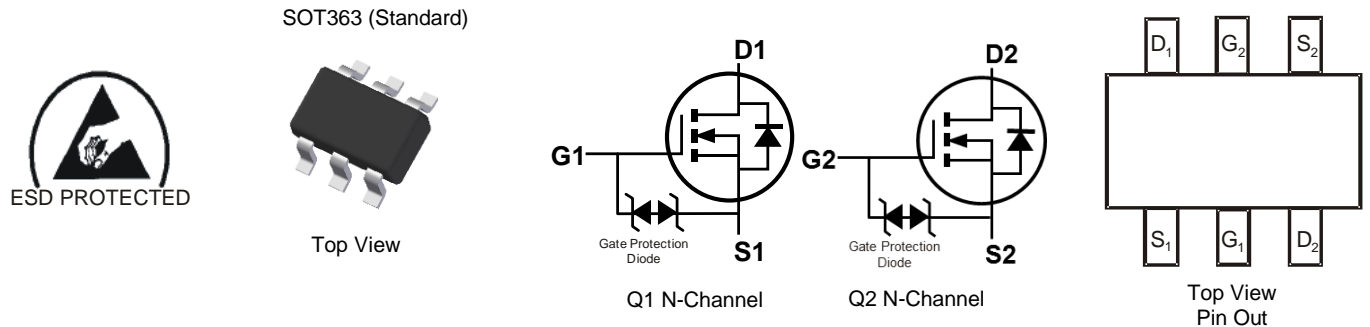
- DC-DC Converters
- Power Management Functions
- Battery Operated Systems and Solid-State Relays
- Drivers: Relays, Solenoids, Lamps, Hammers, Displays, Memories, Transistors, etc.

**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)**
- **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/>

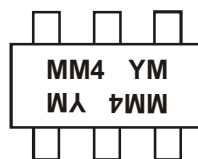
**Mechanical Data**

- Case: SOT363
- 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 (e)
- Terminal Connections: See Diagram
- Weight: 0.006 grams (Approximate)


**Ordering Information** (Note 4)

Part Number	Case	Packaging
DMN63D8LDW-7	SOT363 (Standard)	3000/Tape & Reel
DMN63D8LDW-13	SOT363 (Standard)	10000/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**


MM4 = Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year (ex: I = 2021)  
 M = Month (ex: 9 = September)

**Date Code Key**

Year	2012	...	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Code	Z	...	I	J	K	L	M	N	O	P	R	S

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<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic				Symbol	Value	Unit
Drain-Source Voltage				V <sub>DSS</sub>	30	V
Gate-Source Voltage				V <sub>GSS</sub>	±20	V
Continuous Drain Current (Note 5)	V <sub>GS</sub> = 10V	Steady State	T <sub>A</sub> = +25°C	I <sub>D</sub>	220	mA
			T <sub>A</sub> = +70°C		170	
Continuous Drain Current (Note 6)	V <sub>GS</sub> = 10V	Steady State	T <sub>A</sub> = +25°C	I <sub>D</sub>	260	mA
			T <sub>A</sub> = +70°C		210	
Pulsed Drain Current (10μs Pulse, Duty Cycle = 1%)				I <sub>DM</sub>	800	mA

**Thermal Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic		Symbol	Value	Unit
Total Power Dissipation	(Note 5)	P <sub>D</sub>	300	mW
	(Note 6)		400	
Thermal Resistance, Junction to Ambient	(Note 5)	R <sub>θJA</sub>	435	°C/W
	(Note 6)		330	
Thermal Resistance, Junction to Case	(Note 6)	R <sub>θJC</sub>	139	
Operating and Storage Temperature Range		T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

**Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS (Note 7)</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	30	—	—	V	V <sub>GS</sub> = 0V, I <sub>D</sub> = 250μA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	—	—	1.0	μA	V <sub>DS</sub> = 30V, V <sub>GS</sub> = 0V
Gate-Body Leakage	I <sub>GSS</sub>	—	—	±10.0	μA	V <sub>GS</sub> = ±20V, V <sub>DS</sub> = 0V
<b>ON CHARACTERISTICS (Note 7)</b>						
Gate Threshold Voltage	V <sub>GS(TH)</sub>	0.8	—	1.5	V	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA
Static Drain-Source On-Resistance	R <sub>DS(ON)</sub>	—	—	2.8	Ω	V <sub>GS</sub> = 10.0V, I <sub>D</sub> = 250mA
		—	—	3.8		V <sub>GS</sub> = 5V, I <sub>D</sub> = 250mA
		—	—	4.2		V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 250mA
		—	—	4.5		V <sub>GS</sub> = 4.0V, I <sub>D</sub> = 250mA
		—	—	13		V <sub>GS</sub> = 2.5V, I <sub>D</sub> = 10mA
Forward Transconductance	g <sub>FS</sub>	80	—	—	mS	V <sub>DS</sub> = 10V, I <sub>D</sub> = 0.115A
Diode Forward Voltage	V <sub>SD</sub>	—	0.8	1.2	V	V <sub>GS</sub> = 0V, I <sub>S</sub> = 115mA
<b>DYNAMIC CHARACTERISTICS (Note 8)</b>						
Input Capacitance	C <sub>iss</sub>	—	22.0	—	pF	V <sub>DS</sub> = 25V, V <sub>GS</sub> = 0V, f = 1.0MHz
Output Capacitance	C <sub>oss</sub>	—	3.2	—		
Reverse Transfer Capacitance	C <sub>rss</sub>	—	2.0	—		
Gate Resistance	R <sub>G</sub>	—	79.9	—	Ω	V <sub>DS</sub> = 0V, V <sub>GS</sub> = 0V, f = 1.0MHz
Total Gate Charge (V <sub>GS</sub> = 10V)	Q <sub>g</sub>	—	0.87	—	nC	V <sub>DS</sub> = 30V, I <sub>D</sub> = 150mA
Total Gate Charge (V <sub>GS</sub> = 4.5V)	Q <sub>g</sub>	—	0.43	—		
Gate-Source Charge	Q <sub>gs</sub>	—	0.11	—		
Gate-Drain Charge	Q <sub>gd</sub>	—	0.11	—		
Turn-On Delay Time	t <sub>D(ON)</sub>	—	3.3	—	ns	V <sub>DD</sub> = 30V, I <sub>D</sub> = 0.115A, V <sub>GEN</sub> = 10V, R <sub>GEN</sub> = 25Ω
Turn-On Rise Time	t <sub>r</sub>	—	3.2	—		
Turn-Off Delay Time	t <sub>D(OFF)</sub>	—	12.0	—		
Turn-Off Fall Time	t <sub>f</sub>	—	6.3	—		

- Notes:
- Device mounted on FR-4 PC board, with minimum recommended pad layout, single sided.
  - Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper pad layout.
  - Short duration pulse test used to minimize self-heating effect.
  - Guaranteed by design. Not subject to production testing.

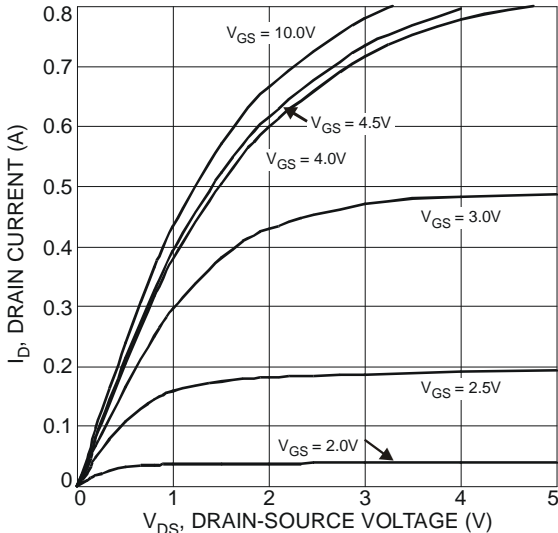


Figure 1 Typical Output Characteristic

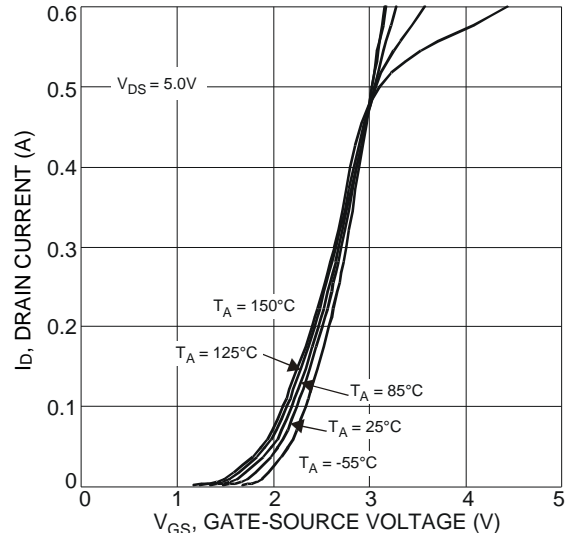


Figure 2 Typical Transfer Characteristics

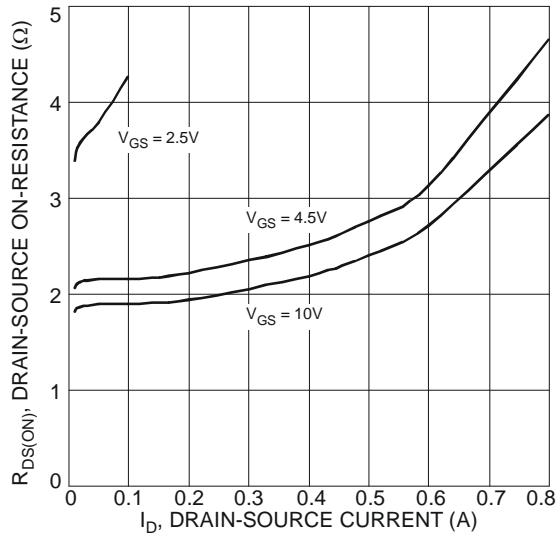


Figure 3 Typical On-Resistance vs. Drain Current and Gate Voltage

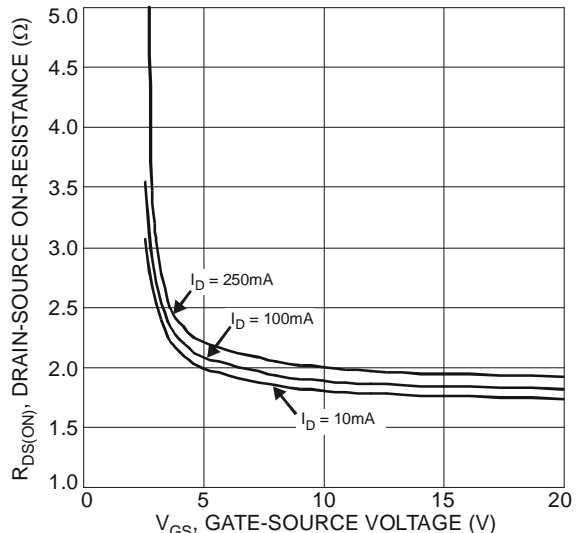


Figure 4 Typical Drain-Source On-Resistance vs. Gate-Source Voltage

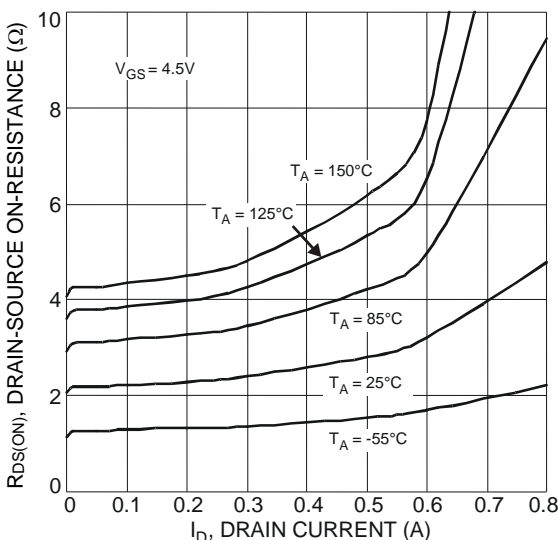


Figure 5 Typical On-Resistance vs. Drain Current and Temperature

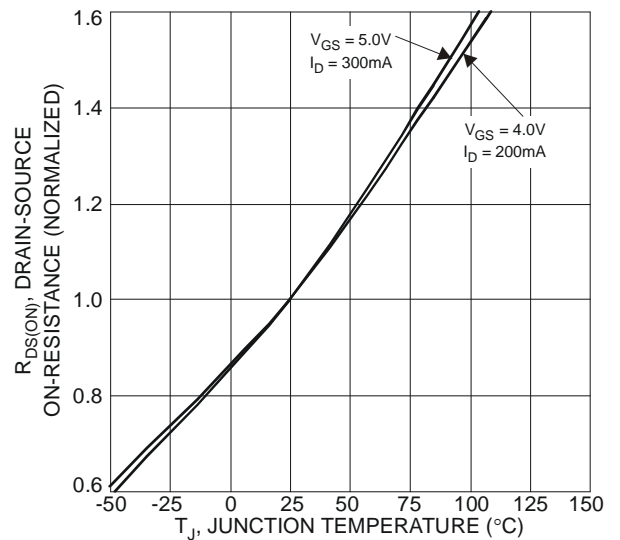


Figure 6 On-Resistance Variation with Temperature

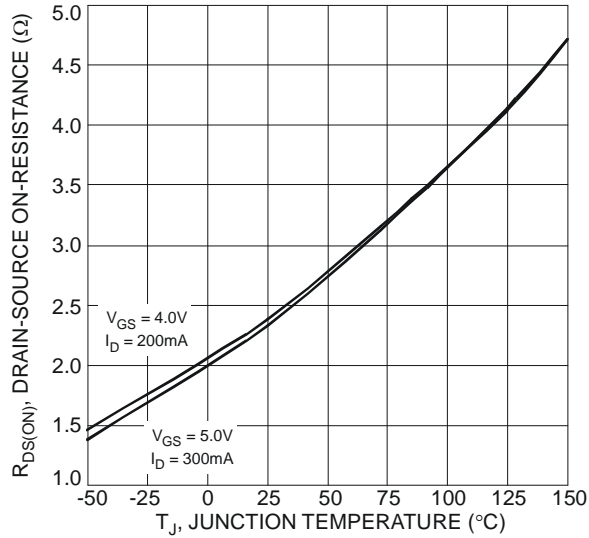


Figure 7 On-Resistance Variation with Temperature

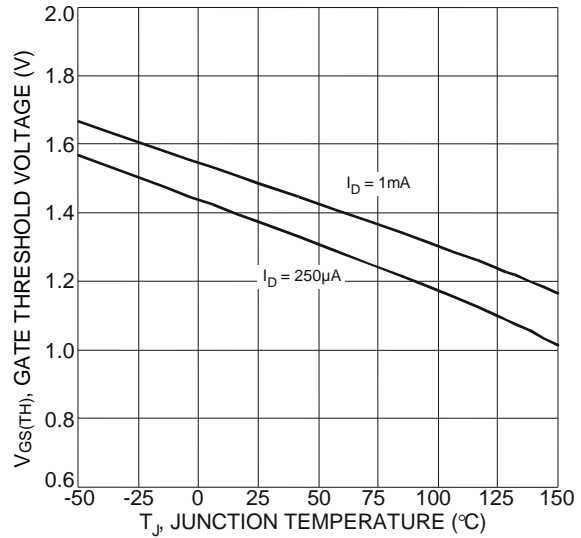


Figure 8 Gate Threshold Variation vs. Junction Temperature

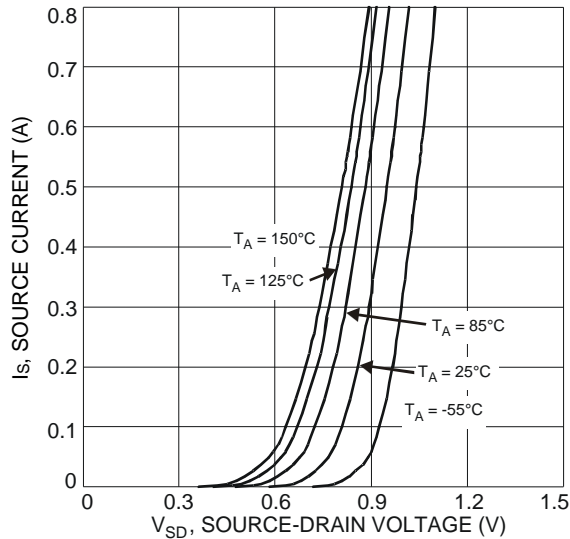
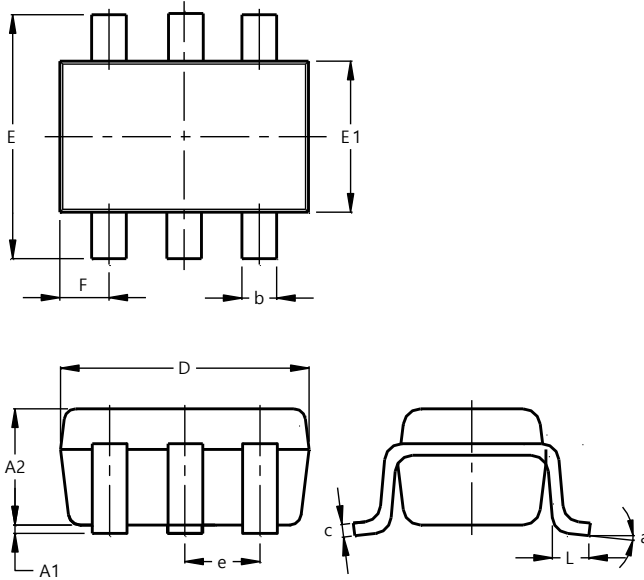


Figure 9 Diode Forward Voltage vs. Current

**Package Outline Dimensions**

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

**SOT363 (Standard)**

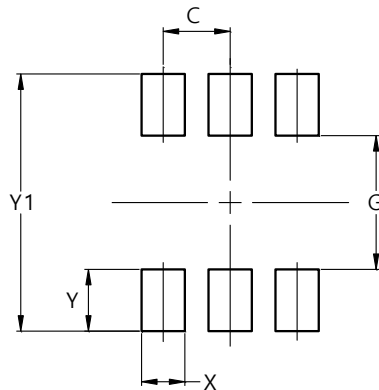


SOT363 (Standard)			
Dim	Min	Max	Typ
A1	0.00	0.10	0.05
A2	0.80	1.00	0.90
b	0.10	0.35	0.225
c	0.08	0.22	0.15
D	1.80	2.20	2.00
E	2.00	2.45	2.225
E1	1.15	1.35	1.25
e	--	--	0.65
F	0.25	0.45	0.35
L	0.25	0.46	0.355
a	0°	8°	--
<b>All Dimensions in mm</b>			

**Suggested Pad Layout**

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

**SOT363 (Standard)**



Dimensions	Value (in mm)
C	0.650
G	1.300
X	0.420
Y	0.600
Y1	2.500

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