





25V DUAL N-CHANNEL ENHANCEMENT MODE MOSFET

Product Summary

V _{(BR)DSS}	R _{DS(ON)}	I _D T _A = +25°C
25V	4Ω @ $V_{GS} = 4.5V$	0.24A
237	5Ω @ V _{GS} = 2.7V	0.22A

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

- Low On-Resistance
- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- Small Surface Mount Package
- ESD Protected Gate (>6kV Human Body Model)
- 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

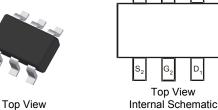
Mechanical Data

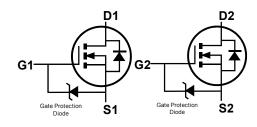
- Case: SOT363
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish annealed over Alloy 42 leadframe (Lead Free Plating). Solderable per MIL-STD-202, Method 208 (3)
- Terminal Connections: See Diagram
- Weight: 0.006 grams (approximate)





SOT363





Equivalent circuit

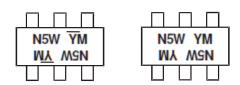
Ordering Information (Note 4)

Part Number	Compliance	Case	Packaging
DMG6301UDW-7	Standard	SOT363	3,000/Tape & Reel
DMG6301UDW-13	Standard	SOT363	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



N5W= Product Type Marking Code YM = Date Code Marking for SAT (Shanghai Assembly/ Test site) YM = Date Code Marking for CAT (Chengdu Assembly/ Test site) Y or Y = Year (ex: A = 2013) M = Month (ex: 9 = September)

Date Code Key

Year	201	2	2013		2014	20	15	2016		2017	2	2018
Code	Z		Α		В	(0	D		Е		F
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°C, unless otherwise specified.)

Characteristic	Symbol	Value	Units
Drain-Source Voltage	V_{DSS}	25	V
Gate-Source Voltage	V_{GSS}	8	V
Continuous Drain Current, V _{GS} = 4.5V (Note 6)	Ι _D	0.24 0.19	А
Continuous Drain Current, V _{GS} = 2.7V (Note 6)	I _D	0.22 0.17	А
Pulsed Drain Current (10µs pulse, duty cycle = 1%)	I _{DM}	1.5	A

Thermal Characteristics

Characteristic	Symbol	Value	Units		
Total Power Dissipation	(Note 5)	Б	0.3	W	
Total Fower Dissipation	(Note 6)	P_D	0.37		
Thermal Decistores, Junction to Ambient	(Note 5)	Б	409		
Thermal Resistance, Junction to Ambient	(Note 6)	$R_{\Theta JA}$	334	°C/W	
Thermal Resistance, Junction to Case	Rejc	137			
Operating and Storage Temperature Range		T _J , T _{STG}	-55 to +150	°C	

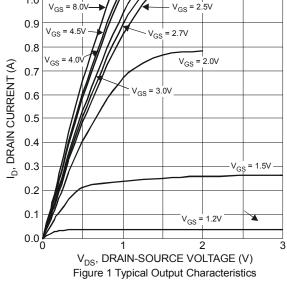
Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

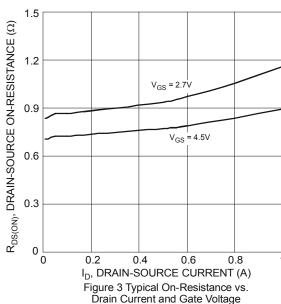
Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition		
OFF CHARACTERISTICS (Note 7)								
Drain-Source Breakdown Voltage	BV _{DSS}	25	_	_	V	V _{GS} = 0V, I _D = 250μA		
Zero Gate Voltage Drain Current	I _{DSS}	_	_	1	μA	V _{DS} = 20V, V _{GS} = 0V		
Gate-Body Leakage	I _{GSS}	_	_	100	nA	V_{GS} = 8V, V_{DS} = 0V		
ON CHARACTERISTICS (Note 7)								
Gate Threshold Voltage	V _{GS(th)}	0.65	0.85	1.5	>	$V_{DS} = V_{GS}$, $I_D = 250\mu A$		
Static Drain-Source On-Resistance	0		3.8	4	Ω	$V_{GS} = 4.5V, I_D = 0.4A$		
Static Drain-Source On-Resistance	R _{DS(ON)}	_	3.1	5	Ω	V _{GS} = 2.7V, I _D = 0.2A		
Forward Transconductance	Y _{fs}	_	1	_	S	V _{DS} = 5V, I _D =0.4A		
Diode Forward Voltage	V_{SD}	_	0.76	1.2	V	$V_{DS} = V_{GS}, I_{D} = 0.25A$		
DYNAMIC CHARACTERISTICS (Note 8)								
Input Capacitance	C _{iss}	_	27.9	_				
Output Capacitance	Coss	_	6.1	_	pF	$V_{DS} = 10V, V_{GS} = 0V,$ f = 1MHz		
Reverse Transfer Capacitance	Crss	_	2	_		1 - 1101112		
Total Gate Charge	Qg	_	0.36	_				
Gate-Source Charge	Q _{gs}	_	0.06	_	nC	$V_{GS} = 4.5V, V_{DS} = 5V,$		
Gate-Drain Charge	Q _{gd}	_	0.04	_		I _D = 0.2A		
Turn-On Delay Time	t _{D(on)}		2.9					
Turn-On Rise Time	t _r	_	1.8	_	~0	V _{GS} = 4.5V, V _{DS} = 6V		
Turn-Off Delay Time	t _{D(off)}	_	6.6	_	nS	$I_D = 0.5A, R_G = 50\Omega$		
Turn-Off Fall Time	t _f	_	2.3	_				

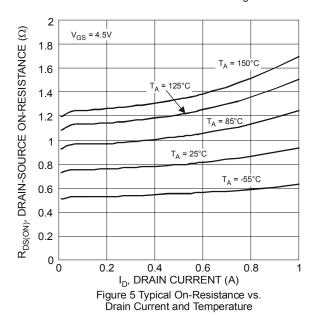
Notes:

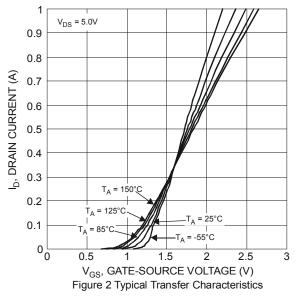
- 5. Device mounted on FR-4 PC board, with minimum recommended pad layout, single sided.
- 6. Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper pad layout 7. Short duration pulse test used to minimize self-heating effect.
- 8. Guaranteed by design. Not subject to production testing.

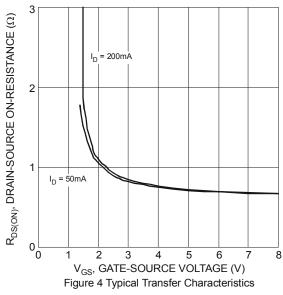


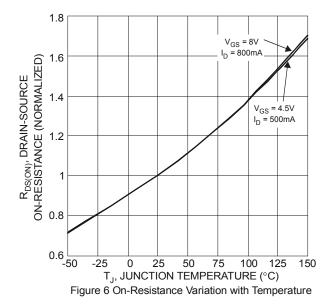












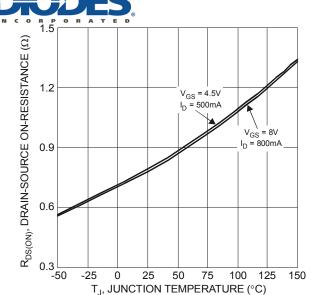
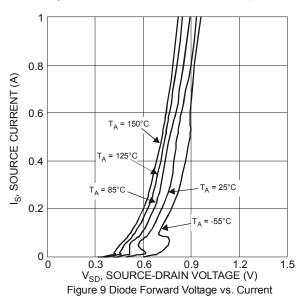
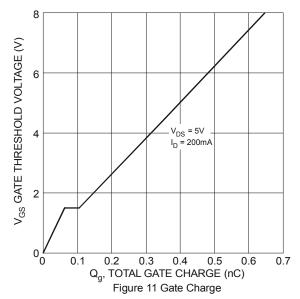


Figure 7 On-Resistance Variation with Temperature





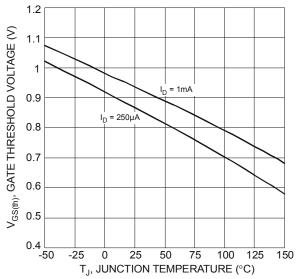
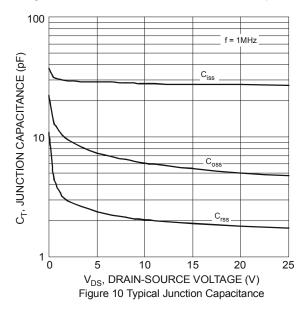


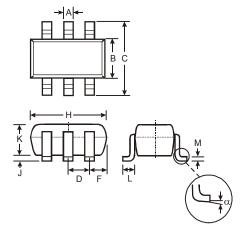
Figure 8 Gate Threshold Variation vs. Ambient Temperature





Package Outline Dimensions

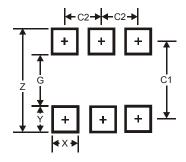
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for latest version.



SOT363						
Dim	Min	Max				
Α	0.10	0.30				
В	1.15	1.35				
С	2.00	2.20				
D	0.65	Тур				
F	0.40	0.45				
Н	1.80 2.20					
J	0 0.10					
K	0.90 1.00					
L	L 0.25 0.40					
M	0.10 0.22					
α	α 0° 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	2.5
G	1.3
Х	0.42
Υ	0.6
C1	1.9
C2	0.65



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