



DUAL N-CHANNEL ENHANCEMENT MODE MOSFET

Product Summary

V _{(BR)DSS}	R _{DS(ON)}	I _D T _A = +25°C
60V	1.8Ω @ $V_{GS} = 10V$	440mA
000	2.1Ω @ $V_{GS} = 4.5V$	410mA

Description

This new generation 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

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

Features

- Low On-Resistance
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- 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, "Green" Molding Compound.
 UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish Matte Tin Annealed over Copper Leadframe.
 Solderable per MIL-STD-202, Method 208 63
- Terminal Connections: See Diagram Below
- Weight: 0.006 grams (Approximate)



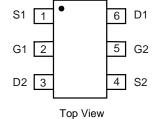


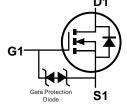
Top View

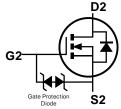


SOT563









Q2 N-CHANNEL

Top View Q1 N-CHANNEL
Pin Definition

Equivalent Circuit

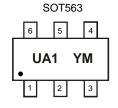
Ordering Information (Note 4)

Part Number	Case	Packaging
DMG1026UV-7	SOT563	3,000 / 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 (Note 5)



UA1 = Product Type Marking Code YM = Date Code Marking Y = Year (ex: D = 2016) M = Month (ex: 9 = September)

Date Code Key

Year	2009	~	20	16	2017	2018	2019	2020	20	21	2022	2023
Code	W	~		D	Е	F	G	Н		I	J	K
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

Note: 5. Product manufactured with Date Code D9 (September, 2016) and newer are built with additional Pin 1 dot in marking information. Product manufactured prior to Date Code D9 are built without Pin 1 dot.



Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Character	Symbol	Value	Unit		
Drain-Source Voltage	V _{DSS}	60	V		
Gate-Source Voltage	V _{GSS}	±20	V		
Continuous Drain Current (Note 6) V _{GS} = 10V	Steady State	$T_A = +25^{\circ}C$ $T_A = +85^{\circ}C$	I _D	410 300	mA
Continuous Drain Current (Note 7) V _{GS} = 10V	t ≤ 10s	$T_A = +25^{\circ}C$ $T_A = +85^{\circ}C$	I _D	440 320	mA
Continuous Drain Current (Note 6) V _{GS} = 4.5V	Steady State	$T_A = +25^{\circ}C$ $T_A = +85^{\circ}C$	I _D	380 270	mA
Continuous Drain Current (Note 7) V _{GS} = 4.5V	t ≤ 10s	T _A = +25°C T _A = +85°C	ID	410 295	mA
Pulsed Drain Current (Note 8)	I _{DM}	1.0	А		

Thermal Characteristics

Characteristic	Symbol	Max	Unit
Power Dissipation (Note 6)	PD	0.58	W
Thermal Resistance, Junction to Ambient @T _A = +25°C (Note 6)	$R_{\theta JA}$	213	°C/W
Power Dissipation (Note 7) t ≤ 10s	P _D	0.65	W
Thermal Resistance, Junction to Ambient @T _A = +25°C (Note 7) t ≤ 10s	$R_{\theta JA}$	192	°C/W
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 9)							
Drain-Source Breakdown Voltage	BV _{DSS}	60	_	_	V	$V_{GS} = 0V, I_D = 250\mu A$	
Zero Gate Voltage Drain Current T _J = +25°C	I _{DSS}	_	_	1.0	μA	$V_{DS} = 50V, V_{GS} = 0V$	
Gate-Source Leakage		_	_	±50	nA	$V_{GS} = \pm 5V$, $V_{DS} = 0V$	
Gale-Source Leakage	I _{GSS}	_	_	±150	nA	$V_{GS} = \pm 10V, V_{DS} = 0V$	
ON CHARACTERISTICS (Note 9)						•	
Gate Threshold Voltage	$V_{GS(th)}$	0.5	_	1.8	V	$V_{DS} = V_{GS}, I_{D} = 250 \mu A$	
Static Drain-Source On-Resistance	0	_	1.2	1.8	Ω	$V_{GS} = 10V, I_D = 500mA$	
Static Dialii-Source Off-Resistance	R _{DS} (ON)	_	1.4	2.1	12	V _{GS} = 4.5V, I _D = 200mA	
Forward Transfer Admittance	Y _{fs}	80	580	_	mS	$V_{DS} = 10V, I_D = 200mA$	
Continuous Source Current (Note 9)	Is	_	_	200	mA	-	
Diode Forward Voltage	V _{SD}	_	0.8	1.3	V	V _{GS} = 0V, I _S = 200mA	
DYNAMIC CHARACTERISTICS (Note 10)						•	
Input Capacitance	C _{iss}	_	32			.,	
Output Capacitance	Coss	_	4.4		pF	$V_{DS} = 25V, V_{GS} = 0V,$ f = 1.0MHz	
Reverse Transfer Capacitance	Crss	_	2.9	_		1 – 1.00112	
Gate Resistance	R_g	_	126	_	Ω	$V_{DS} = 0V$, $V_{GS} = 0V$, $f = 1MHz$	
Total Gate Charge	Qg	_	0.45	_		\\ 45\\\\ 10\\	
Gate-Source Charge	Qgs	_	0.08	_	рC	$V_{GS} = 4.5V, V_{DS} = 10V,$	
Gate-Drain Charge	Q _{gd}	_	0.08	_		$I_D = 250 \text{mA}$	
Turn-On Delay Time	t _{D(on)}	_	3.4	_	ns	.,	
Turn-On Rise Time	ì,	_	3.4	_	ns	$V_{GS} = 10V, V_{DS} = 30V,$	
Turn-Off Delay Time	t _{D(off)}	_	26.4	_	ns	$R_L = 150\Omega, R_G = 25\Omega,$ $R_D = 200 \text{mA}$	
Turn-Off Fall Time	t _f	_	16.3	_	ns		

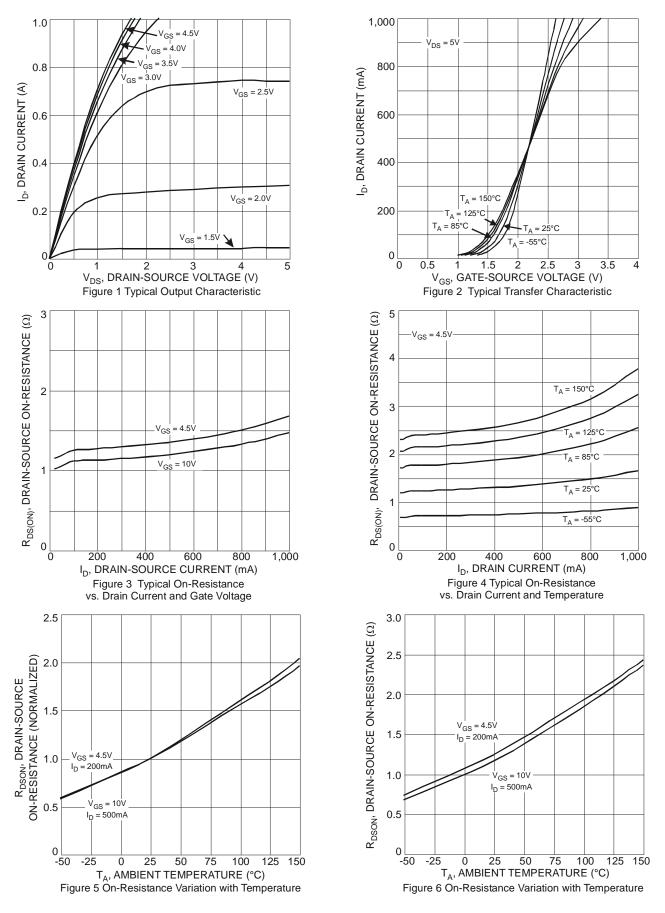
Notes:

- 6. Device mounted on FR-4 PCB with minimum recommended pad layout, single sided.
- 7. Device mounted on FR-4 PCB with minimum recommended pad layout, measured in $t \le 10s$.
- 9. Short duration pulse width limited by junction temperature, 10µs pulse, duty cycle = 1%.

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

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







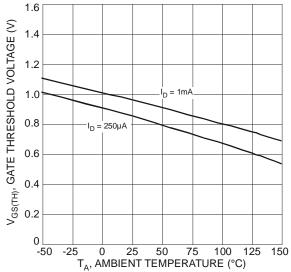
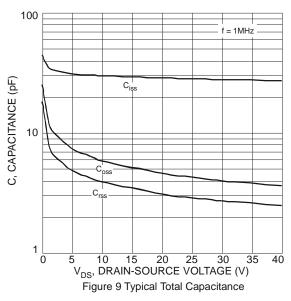
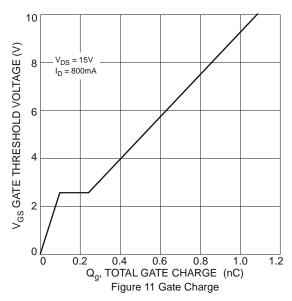
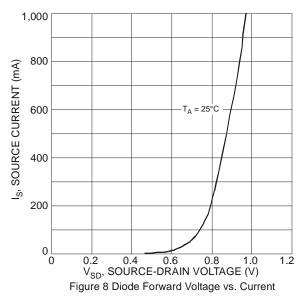
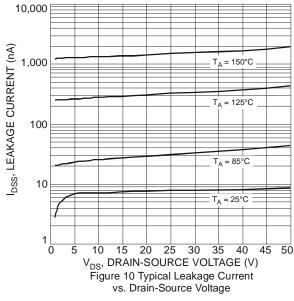


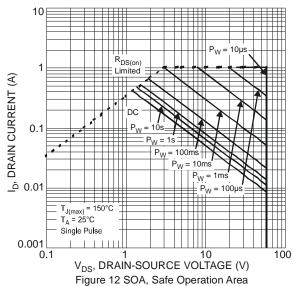
Figure 7 Gate Threshold Variation vs. Ambient Temperature



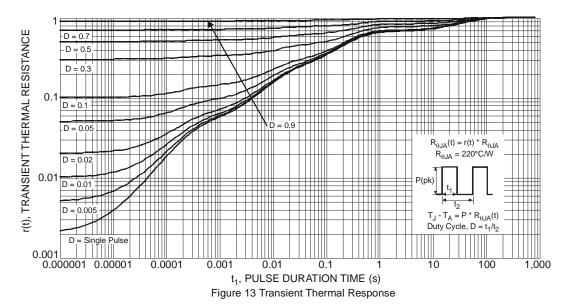






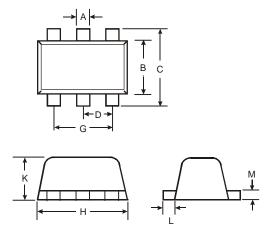






Package Outline Dimensions

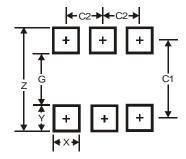
Please see http://www.diodes.com/package-outlines.html for the latest version.



SOT563							
Dim	Min	Max	Тур				
Α	0.15	0.30	0.20				
В	1.10	1.25	1.20				
С	1.55	1.70	1.60				
D	-	-	0.50				
G	0.90	1.10	1.00				
Н	1.50	1.70	1.60				
K	0.55	0.60	0.60				
٦	0.10	0.30	0.20				
М	0.10	0.18	0.11				
All Dimensions in mm							

Suggested Pad Layout

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



Dimensions	Value (in mm)
Z	2.2
G	1.2
Х	0.375
Υ	0.5
C1	1.7
C2	0.5



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