

P-CHANNEL ENHANCEMENT MODE MOSFET

Features

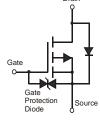
- Low On-Resistance
- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- ESD Protected
- Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)
- Halogen and Antimony Free. "Green" Device (Note 3)
- Qualified to AEC-Q101 Standards for High Reliability
- PPAP Capable (Note 4)

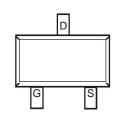
Mechanical Data

- 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: See Diagram Below
- Terminals: Finish Matte Tin Annealed over Alloy 42 Leadframe.
 Solderable per MIL-STD-202, Method 208 @3
- Weight: 0.006 grams (Approximate)









Top View

Equivalent Circuit

Top View

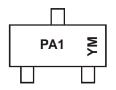
Ordering Information (Note 5)

h.		
Part Number	Case	Packaging
DMG1013UWQ-7	SOT323	3000 / Tape & Reel
DMG1013UWQ-13	SOT323	10000 / Tape & Reel

Notes:

- 1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
- 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. Automotive products are AEC-Q101 qualified and are PPAP capable. Refer to http://www.diodes.com/product_compliance_definitions.html.
- 5. For packaging details, go to our website at http://www.diodes.com/products/packages.html.

Marking Information



PA1 = Product Type Marking Code YM = Date Code Marking Y = Year (ex: D = 2016) M = Month (ex: 9 = September)

Date Code Key

Year	2008		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Code	V		С	D	Е	F	G	Н	ı	7	K	L
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.)

Chara	Symbol	Value	Unit		
Drain-Source Voltage	V _{DSS}	-20	V		
Gate-Source Voltage			V_{GSS}	±6	V
Continuous Drain Current (Note 6)	I _D	-0.82 -0.54	А		
Pulsed Drain Current (Note 7)	I _{DM}	-3	Α		

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 6)	P_{D}	0.31	W
Thermal Resistance, Junction to Ambient @T _A = +25°C (Note 6)	R _{θJA}	398	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

Notes:

- 6. Device mounted on FR-4 PCB, with minimum recommended pad layout. 7. Repetitive rating, pulse width limited by junction temperature.

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

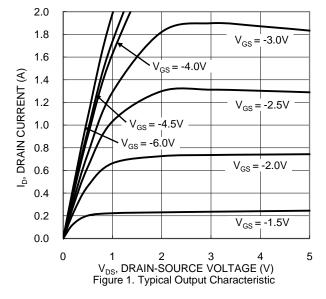
Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition		
OFF CHARACTERISTICS (Note 8)								
Drain-Source Breakdown Voltage	BV _{DSS}	-20	-	-	V	$V_{GS} = 0V, I_D = -250\mu A$		
Zero Gate Voltage Drain Current T _J = +25°C	I _{DSS}	-	-	-100	nA	$V_{DS} = -20V, V_{GS} = 0V$		
Gate-Source Leakage	I _{GSS}	-	-	±2.0	μA	$V_{GS} = \pm 4.5V, V_{DS} = 0V$		
ON CHARACTERISTICS (Note 8)								
Gate Threshold Voltage	V _{GS(TH)}	-0.5	-	-1.0	V	$V_{DS} = V_{GS}$, $I_D = -250\mu A$		
			0.5	0.75		$V_{GS} = -4.5V$, $I_D = -430mA$		
Static Drain-Source On-Resistance	R _{DS(ON)}	-	0.7	1.05	Ω	$V_{GS} = -2.5V$, $I_D = -300mA$		
			1.0	1.5		$V_{GS} = -1.8V, I_D = -150mA$		
Forward Transfer Admittance	Y _{fs}	-	0.9	-	S	$V_{DS} = -10V, I_{D} = -250mA$		
Diode Forward Voltage	V _{SD}		-0.8	-1.2	V	$V_{GS} = 0V, I_{S} = -150mA$		
DYNAMIC CHARACTERISTICS (Note 9)								
Input Capacitance	Ciss	-	59.76	-	pF	101/11/101/		
Output Capacitance	Coss	-	12.07	-	pF	$V_{DS} = -16V, V_{GS} = 0V,$ - f = 1.0MHz		
Reverse Transfer Capacitance	C _{rss}	-	6.36	-	pF	1 – 1.0101112		
Total Gate Charge	Qg	-	622.4	-	рC	15)/)/ 40)/		
Gate-Source Charge	Q _{gs}	-	100.3	-	рC	$V_{GS} = -4.5V, V_{DS} = -10V,$ $I_{D} = -250 \text{mA}$		
Gate-Drain Charge	Q_{gd}	-	132.2	-	рС	ID = -250IIIA		
Turn-On Delay Time	t _{D(ON)}	-	5.1	-	ns	10)/)/ 45)/		
Turn-On Rise Time	t _R	-	8.1	-	ns	$V_{DD} = -10V, V_{GS} = -4.5V,$		
Turn-Off Delay Time	t _{D(OFF)}	-	28.4	-	ns	$R_L = 47\Omega, R_G = 10\Omega,$ $R_L = -200 \text{mA}$		
Turn-Off Fall Time	t _F	-	20.7	-	ns	TID = -200ITIA		

Notes:

- 8. Short duration pulse test used to minimize self-heating effect. 9. Guaranteed by design. Not subject to production testing.







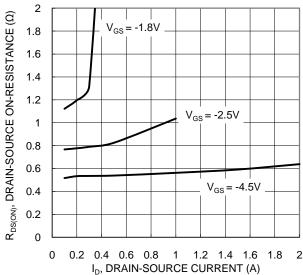


Figure 3. Typical On-Resistance vs Drain Current and

Gate Voltage

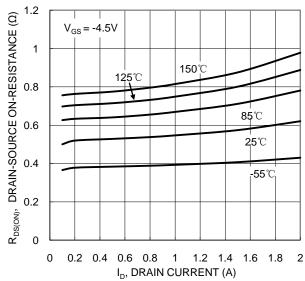
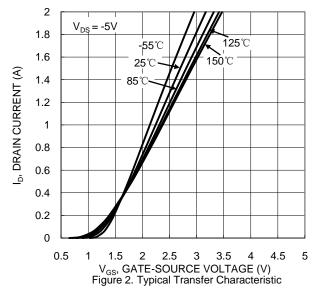
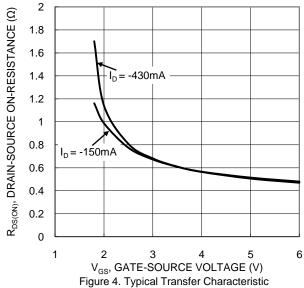


Figure 5. Typical On-Resistance vs Drain Current and Junction Temperature





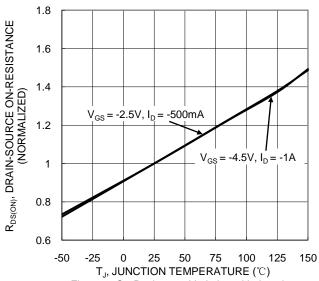
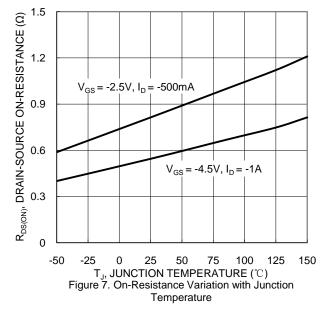
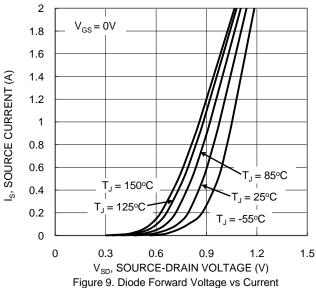


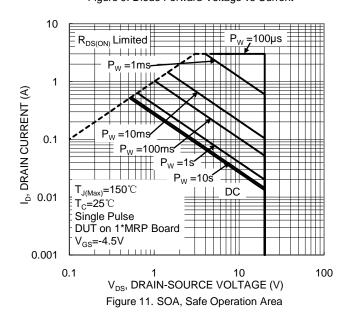
Figure 6. On-Resistance Variation with Junction Temperature

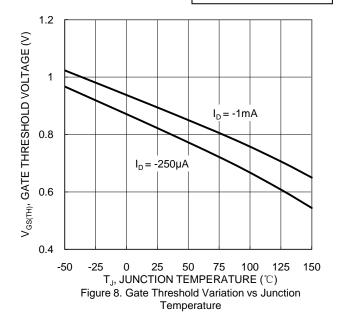


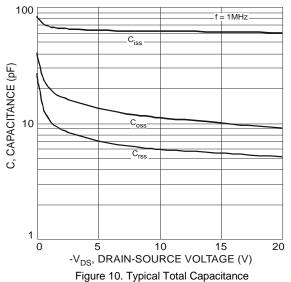














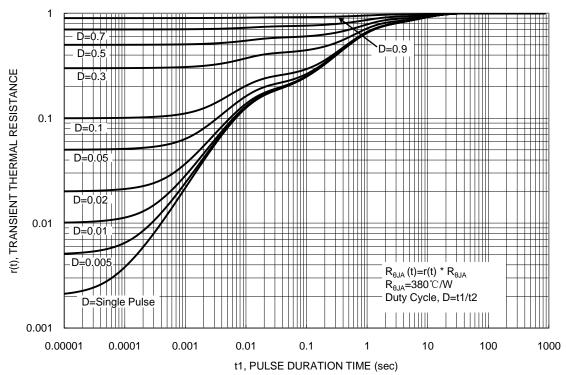


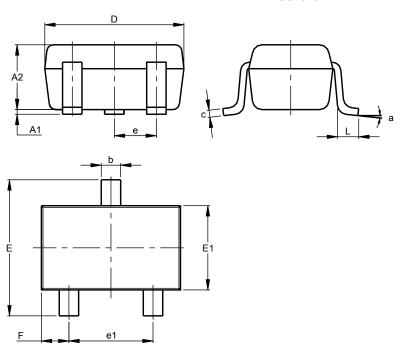
Figure 12. Transient Thermal Resistance



Package Outline Dimensions

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

SOT323

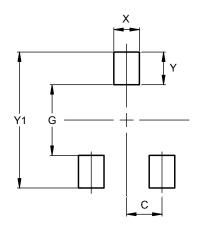


SOT323							
Dim	Min	Max	Тур				
A1	0.00	0.10	0.05				
A2	0.90	1.00	0.95				
b	0.25	0.40	0.30				
С	0.10	0.18	0.11				
D	1.80	2.20	2.15				
Е	2.00	2.20	2.10				
E1	1.15	1.35	1.30				
е	0.650 BSC						
e1	1.20	1.40	1.30				
F	0.375	0.475	0.425				
L	0.25	0.40	0.30				
а	8°						
All Dimensions in mm							

Suggested Pad Layout

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

SOT323



Dimensions	Value
Dilliensions	(in mm)
С	0.650
G	1.300
Х	0.470
Y	0.600
Y1	2.500



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