





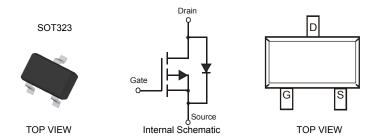
#### P-CHANNEL ENHANCEMENT MODE MOSFET

#### **Features**

- Low On-Resistance
- 100mΩ @ V<sub>GS</sub> = -4.5V
- 120mΩ @ V<sub>GS</sub> = -2.5V
- 160mΩ @ V<sub>GS</sub> = -1.8V
- Very Low Gate Threshold Voltage V<sub>GS(th)</sub> ≤ 1V
- 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: SOT323
- Case Material: Molded Plastic, "Green" Molding Compound.
  UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020D
- Terminals Connections: See Diagram Below
- Weight: 0.006 grams (approximate)



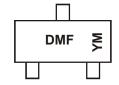
## Ordering Information (Note 4)

Part Number	Compliance	Case	Packaging
DMP2160UW-7	Standard	SOT323	3000/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**



DMF = Marking Code YM = Date Code Marking Y = Year (ex: A = 2013) M = Month (ex: 9 = September)

Date Code Key

Date Code Noy												
Year	2008		2009	2010		2011	2012		2013	2014		2015
Code	V		W	Х		Υ	Z		Α	В		С
•												
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<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Units	
Drain-Source Voltage	$V_{DSS}$	-20	V	
Gate-Source Voltage		$V_{GSS}$	±12	V
Drain Current (Note 5)	$T_A = +25$ °C $T_A = +70$ °C	I <sub>D</sub>	-1.5 -1.2	Α
Pulsed Drain Current		I <sub>DM</sub>	-10	A

## **Thermal Characteristics**

Characteristic	Symbol	Value	Units
Total Power Dissipation (Note 5)	$P_{D}$	350	mW
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	360	°C/W
Operating and Storage Temperature Range	$T_{J_i} T_{STG}$	-55 to +150	°C

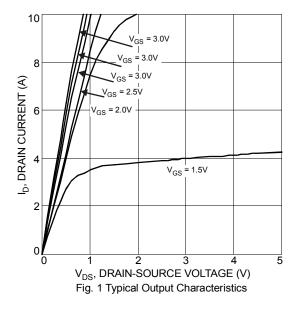
# **Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

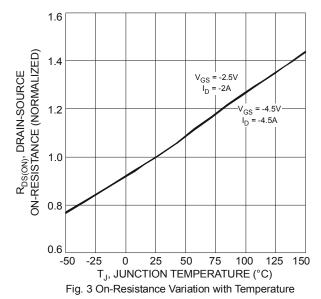
Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition	
OFF CHARACTERISTICS (Note 6)						•	
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	-20	_	_	V	$V_{GS} = 0V, I_D = -250\mu A$	
Zero Gate Voltage Drain Current T <sub>J</sub> = +25°C	I <sub>DSS</sub>	_	_	-1.0	μΑ	V <sub>DS</sub> = -20V, V <sub>GS</sub> = 0V	
Gate-Source Leakage	I <sub>GSS</sub>	_	_	±100 ±800	nA	$V_{GS} = \pm 8V, V_{DS} = 0V$ $V_{GS} = \pm 12V, V_{DS} = 0V$	
ON CHARACTERISTICS (Note 6)							
Gate Threshold Voltage	V <sub>GS(th)</sub>	-0.4	-0.6	-0.9	V	$V_{DS} = V_{GS}, I_{D} = -250 \mu A$	
Static Drain-Source On-Resistance	R <sub>DS(ON)</sub>	_	75 90	100 120	mΩ	$V_{GS} = -4.5V, I_D = -1.5A$ $V_{GS} = -2.5V, I_D = -1.2A$	
			120	160		V <sub>GS</sub> = -1.8V, I <sub>D</sub> = -1A	
Forward Transconductance	<b>9</b> FS	_	4	_	S	V <sub>DS</sub> = -10V, I <sub>D</sub> = -1.5A	
Diode Forward Voltage (Note 6)	$V_{SD}$	_	_	-1.0	V	$V_{GS} = 0V, I_{S} = -1.0A$	
DYNAMIC CHARACTERISTICS							
Input Capacitance	C <sub>iss</sub>	_	627	_	pF		
Output Capacitance	Coss	_	64	_	pF	$V_{DS} = -10V, V_{GS} = 0V$ $V_{DS} = -10W$	
Reverse Transfer Capacitance	C <sub>rss</sub>	_	53	_	pF	1.00012	

Notes:

- 5. Device mounted on  $1\text{in}^2$  FR-4 PCB with 2 oz. Copper.  $t \leq 10$  sec.
- 6. Short duration pulse test used to minimize self-heating effect.







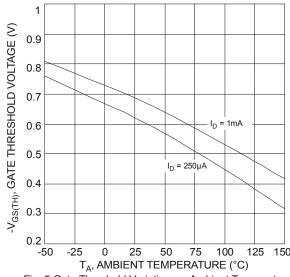
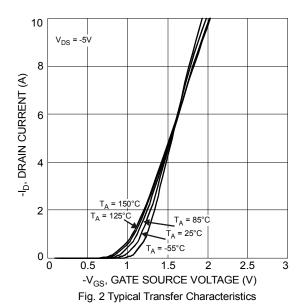
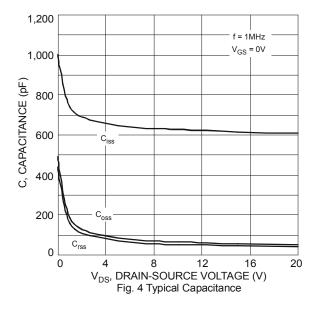
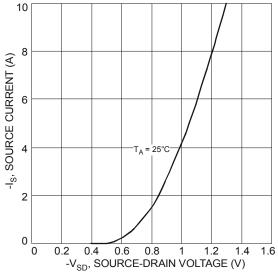


Fig. 5 Gate Threshold Variation vs. Ambient Temperature









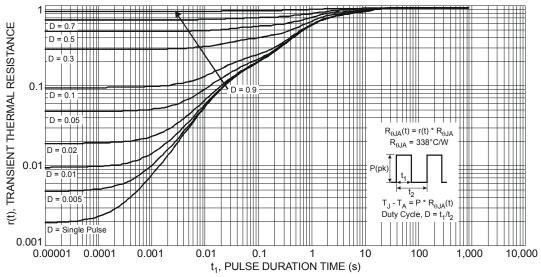
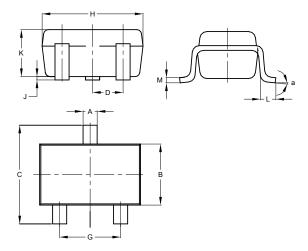


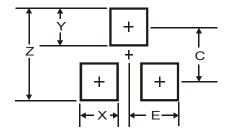
Fig. 7 Transient Thermal Response

# **Package Outline Dimensions**



SOT323						
Dim	Min	Max	Тур			
Α	0.25	0.40	0.30			
В	1.15	1.35	1.30			
С	2.00	2.20	2.10			
D	0.650 BSC					
F	0.375	0.475	0.425			
G	1.20	1.40	1.30			
Н	1.80	2.20	2.15			
J	0.00	0.10	0.05			
K	0.90	1.00	0.95			
L	0.25	0.40	0.30			
М	0.10	0.18	0.11			
а	8°C					
All Dimensions in mm						

# **Suggested Pad Layout**



Dimensions	Value (in mm)
Z	2.8
Х	0.7
Υ	0.9
С	1.9
E	1.0



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