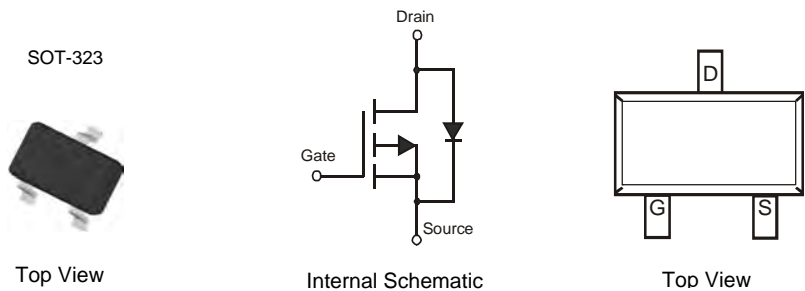


## Features

- P-Channel MOSFET
- Low On-Resistance
  - 150 mΩ @  $V_{GS} = -4.5V$
  - 200 mΩ @  $V_{GS} = -2.5V$
  - 240 mΩ @  $V_{GS} = -1.8V$
- Very Low Gate Threshold Voltage  $V_{GS(th)} \leq 1V$
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- **Lead Free By Design/RoHS Compliant (Note 2)**
- **"Green" Device (Note 3)**
- **Qualified to AEC-Q101 standards for High Reliability**

## Mechanical Data

- Case: SOT-323
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals Connections: See Diagram Below
- Terminals: Finish — Matte Tin annealed over Alloy 42 leadframe. Solderable per MIL-STD-202, Method 208
- Marking Information: See Page 4
- Ordering Information: See Page 4
- Weight: 0.006 grams (approximate)



## Maximum Ratings @ $T_A = 25^\circ C$ unless otherwise specified

Characteristic	Symbol	Value	Units	
Drain-Source Voltage	$V_{DSS}$	-20	V	
Gate-Source Voltage	$V_{GSS}$	$\pm 12$	V	
Drain Current (Note 1)		$T_A = 25^\circ C$	-1.5	A
		$T_A = 70^\circ C$	-1.0	A
Pulsed Drain Current	$I_{DM}$	-5	A	

## Thermal Characteristics

Characteristic	Symbol	Value	Units
Total Power Dissipation (Note 1)	$P_D$	250	mW
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	500	$^\circ C/W$
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	$^\circ C$

- Notes:
1. Device mounted on FR-4 substrate PC board, 2oz. Copper, with minimum recommended pad layout.
  2. No purposefully added lead.
  3. Diodes Inc.'s "Green" policy can be found on our website at [http://www.diodes.com/products/lead\\_free/index.php](http://www.diodes.com/products/lead_free/index.php).

**Electrical Characteristics** @T<sub>A</sub> = 25°C unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS (Note 4)</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	-20	—	—	V	V <sub>GS</sub> = 0V, I <sub>D</sub> = -250μA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	—	—	-1.0 -5.0	μA	T <sub>J</sub> = 25°C T <sub>J</sub> = 125°C V <sub>DS</sub> = -20V, V <sub>GS</sub> = 0V
Gate-Source Leakage	I <sub>GSS</sub>	—	—	±100	nA	V <sub>GS</sub> = ±12V, V <sub>DS</sub> = 0V
<b>ON CHARACTERISTICS (Note 4)</b>						
Gate Threshold Voltage	V <sub>GS(th)</sub>	-0.45	—	-1.0	V	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -250μA
Static Drain-Source On-Resistance	R <sub>DS(on)</sub>	—	92	150	mΩ	V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -2.0A V <sub>GS</sub> = -2.5V, I <sub>D</sub> = -1.5A V <sub>GS</sub> = -1.8V, I <sub>D</sub> = -0.5A
			134	200		
			180	240		
Forward Transconductance	g <sub>FS</sub>	—	3.1	—	S	V <sub>DS</sub> = -10V, I <sub>D</sub> = -810mA
Diode Forward Voltage (Note 4)	V <sub>SD</sub>	—	—	-0.9	V	V <sub>GS</sub> = 0V, I <sub>S</sub> = -0.5A
<b>DYNAMIC CHARACTERISTICS</b>						
Input Capacitance	C <sub>iss</sub>	—	320	—	pF	V <sub>DS</sub> = -16V, V <sub>GS</sub> = 0V f = 1.0MHz
Output Capacitance	C <sub>oss</sub>	—	80	—	pF	
Reverse Transfer Capacitance	C <sub>rss</sub>	—	60	—	pF	
Turn-On Delay Time	t <sub>D(on)</sub>	—	12.5	—	ns	V <sub>DS</sub> = -10V, V <sub>GS</sub> = -4.5V, R <sub>L</sub> = 10Ω, R <sub>G</sub> = 1.0Ω
Turn-On Rise Time	t <sub>r</sub>	—	10.3	—	ns	
Turn-Off Delay Time	t <sub>D(off)</sub>	—	46.5	—	ns	
Turn-Off Fall Time	t <sub>f</sub>	—	22.2	—	ns	

Notes: 4. Short duration pulse test used to minimize self-heating effect.

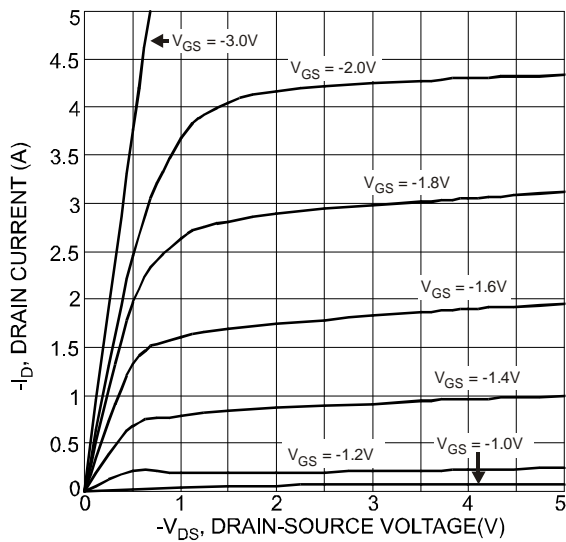


Fig. 1 Typical Output Characteristics

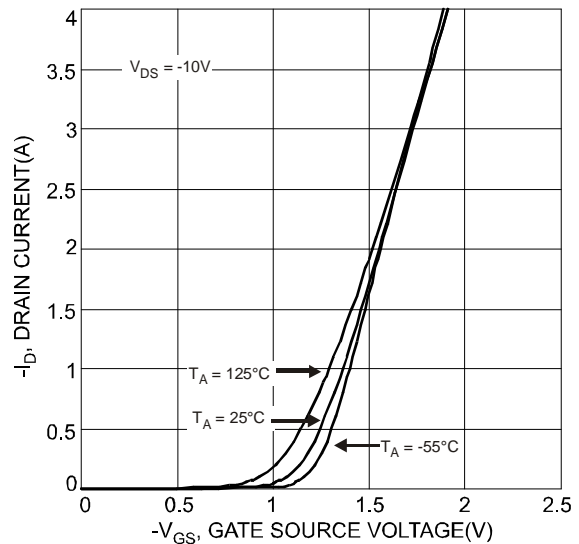


Fig. 2 Typical Transfer Characteristics

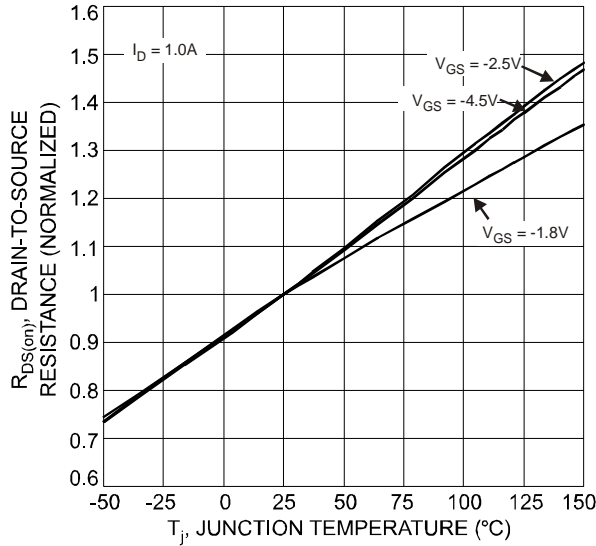


Fig. 3 On-Resistance Variation with Temperature

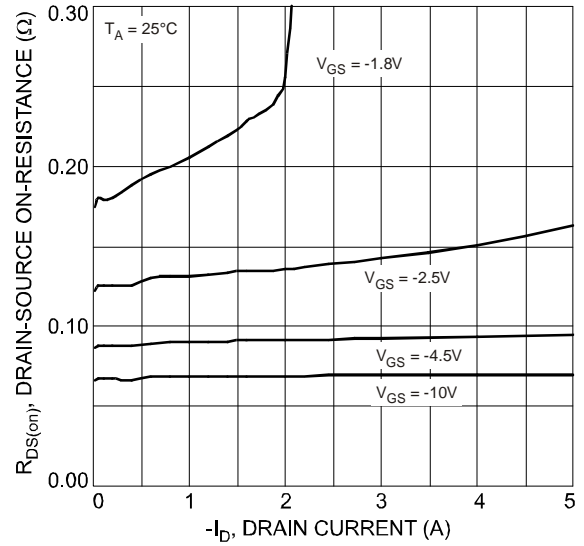


Fig. 4 On-Resistance vs Drain Current and Gate Voltage

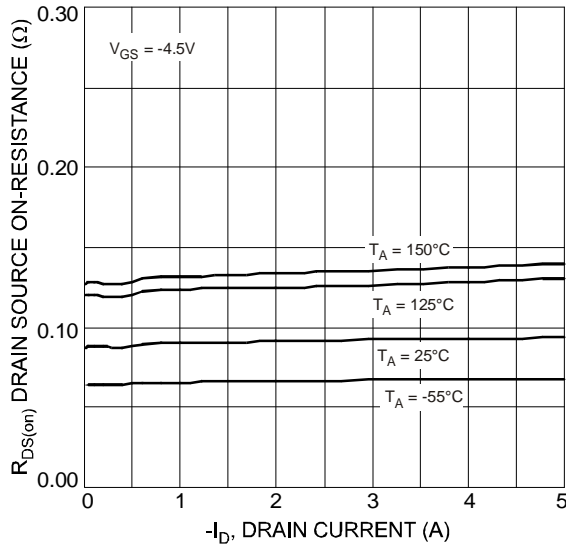


Fig. 5 Drain-Source On-Resistance Vs. Drain Current and Temperature

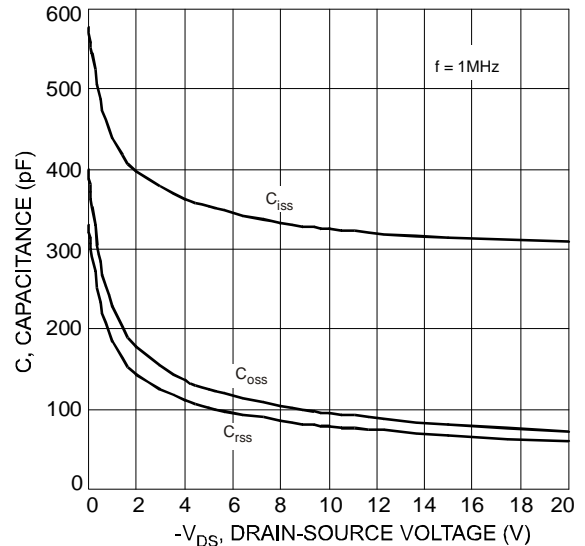


Fig. 6: Typical Capacitance

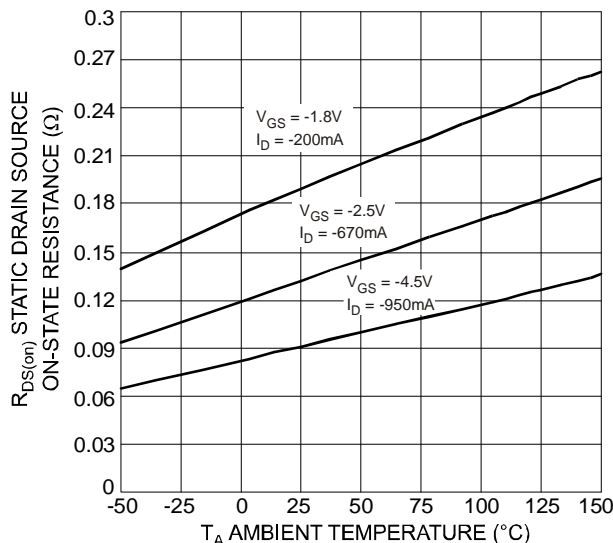


Fig. 7 Static Drain-Source On-State Resistance vs Ambient Temperature

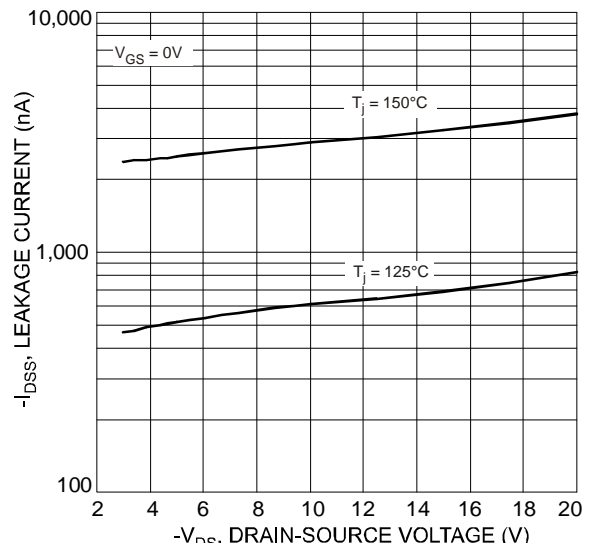


Fig. 8 Drain-Source Leakage Current vs Voltage

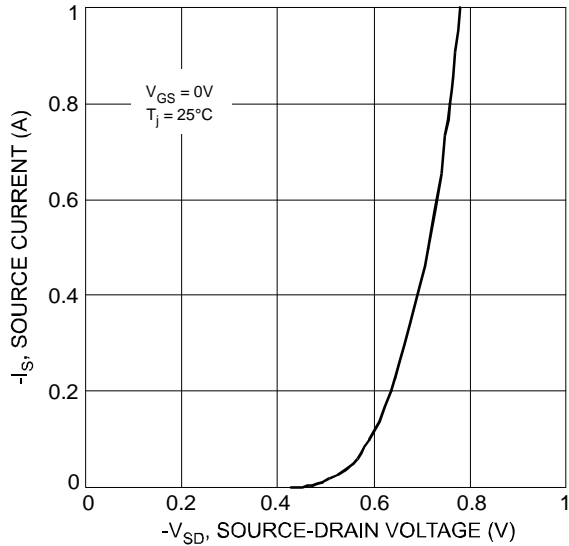


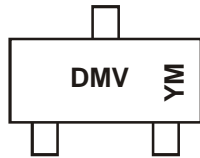
Fig. 9 Diode Forward Voltage vs. Current

**Ordering Information** (Note 5)

Part Number	Case	Packaging
DMP2240UW-7	SOT-323	3000/Tape & Reel

Notes: 5. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

**Marking Information**



DMV = Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year (ex: V = 2008)  
 M = Month (ex: 9 = September)

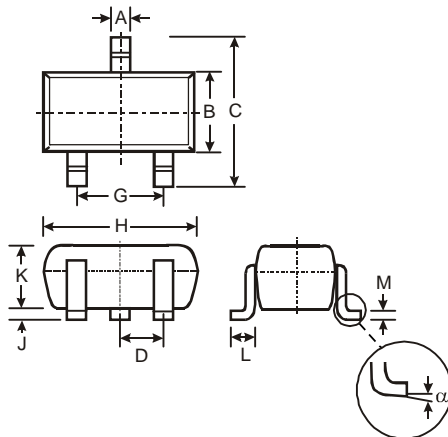
Date Code Key

Year	2008	2009	2010	2011	2012	2013	2014	2015
Code	V	W	X	Y	Z	A	B	C

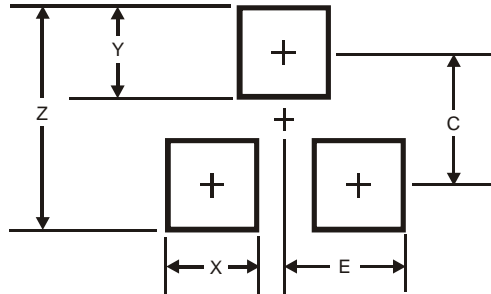
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

**Package Outline Dimensions**



SOT-323			
Dim	Min	Max	Typ
A	0.25	0.40	0.30
B	1.15	1.35	1.30
C	2.00	2.20	2.10
D	-	-	0.65
G	1.20	1.40	1.30
H	1.80	2.20	2.15
J	0.0	0.10	0.05
K	0.90	1.00	1.00
L	0.25	0.40	0.30
M	0.10	0.18	0.11
α	0°	8°	-
All Dimensions in mm			

## Suggested Pad Layout



Dimensions	Value (in mm)
Z	2.8
X	0.7
Y	0.9
C	1.9
E	1.0

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