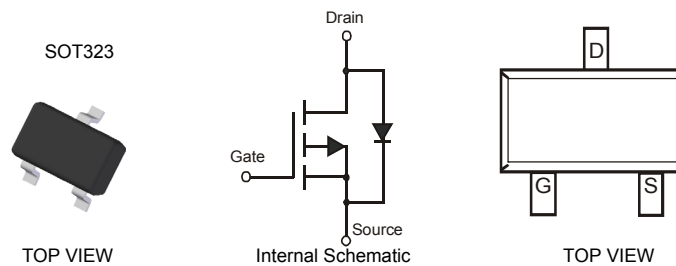


## Features

- Low On-Resistance
- 100mΩ @  $V_{GS} = -4.5V$
- 120mΩ @  $V_{GS} = -2.5V$
- 160mΩ @  $V_{GS} = -1.8V$
- Very Low Gate Threshold Voltage  $V_{GS(th)} \leq 1V$
- 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
- Terminals: Finish - Matte Tin annealed over Alloy 42 leadframe. Solderable per MIL-STD-202, Method 208 
- Weight: 0.006 grams (approximate)

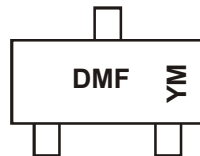


## Ordering Information (Note 4)

| 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](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

| 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   |

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

| Characteristic         | Symbol           | Value        | Units |
|------------------------|------------------|--------------|-------|
| Drain-Source Voltage   | V <sub>DSS</sub> | -20          | V     |
| Gate-Source Voltage    | V <sub>GSS</sub> | ±12          | V     |
| Drain Current (Note 5) | I <sub>D</sub>   | -1.5<br>-1.2 | A     |
| Pulsed Drain Current   | I <sub>DM</sub>  | -10          | A     |

**Thermal Characteristics**

| Characteristic                          | Symbol                            | Value       | Units |
|-----------------------------------------|-----------------------------------|-------------|-------|
| Total Power Dissipation (Note 5)        | P <sub>D</sub>                    | 350         | mW    |
| Thermal Resistance, Junction to Ambient | R <sub>θJA</sub>                  | 360         | °C/W  |
| Operating and Storage Temperature Range | T <sub>J</sub> , T <sub>STG</sub> | -55 to +150 | °C    |

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

| Characteristic                      | Symbol              | Min  | Typ             | Max               | Unit | Test Condition                                                                                                                                      |
|-------------------------------------|---------------------|------|-----------------|-------------------|------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>OFF CHARACTERISTICS (Note 6)</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              | μA   | T <sub>J</sub> = +25°C, V <sub>DS</sub> = -20V, V <sub>GS</sub> = 0V                                                                                |
| Gate-Source Leakage                 | I <sub>GSS</sub>    | —    | —               | ±100<br>±800      | nA   | V <sub>GS</sub> = ±8V, V <sub>DS</sub> = 0V<br>V <sub>GS</sub> = ±12V, V <sub>DS</sub> = 0V                                                         |
| <b>ON CHARACTERISTICS (Note 6)</b>  |                     |      |                 |                   |      |                                                                                                                                                     |
| Gate Threshold Voltage              | V <sub>GS(th)</sub> | -0.4 | -0.6            | -0.9              | V    | V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -250μA                                                                                         |
| Static Drain-Source On-Resistance   | R <sub>DS(on)</sub> | —    | 75<br>90<br>120 | 100<br>120<br>160 | mΩ   | V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -1.5A<br>V <sub>GS</sub> = -2.5V, I <sub>D</sub> = -1.2A<br>V <sub>GS</sub> = -1.8V, I <sub>D</sub> = -1A |
| Forward Transconductance            | g <sub>FS</sub>     | —    | 4               | —                 | S    | V <sub>DS</sub> = -10V, I <sub>D</sub> = -1.5A                                                                                                      |
| Diode Forward Voltage (Note 6)      | V <sub>SD</sub>     | —    | —               | -1.0              | V    | V <sub>GS</sub> = 0V, I <sub>S</sub> = -1.0A                                                                                                        |
| <b>DYNAMIC CHARACTERISTICS</b>      |                     |      |                 |                   |      |                                                                                                                                                     |
| Input Capacitance                   | C <sub>iss</sub>    | —    | 627             | —                 | pF   | V <sub>DS</sub> = -10V, V <sub>GS</sub> = 0V<br>f = 1.0MHz                                                                                          |
| Output Capacitance                  | C <sub>oss</sub>    | —    | 64              | —                 | pF   |                                                                                                                                                     |
| Reverse Transfer Capacitance        | C <sub>rss</sub>    | —    | 53              | —                 | pF   |                                                                                                                                                     |

Notes: 5. Device mounted on 1in<sup>2</sup> FR-4 PCB with 2 oz. Copper. t ≤ 10 sec.  
6. Short duration pulse test used to minimize self-heating effect.

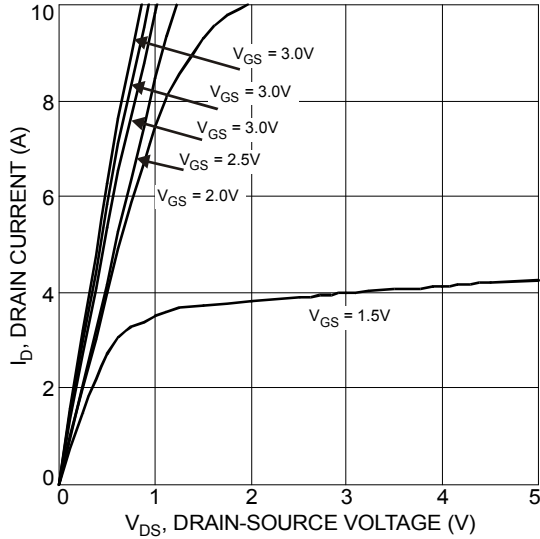


Fig. 1 Typical Output Characteristics

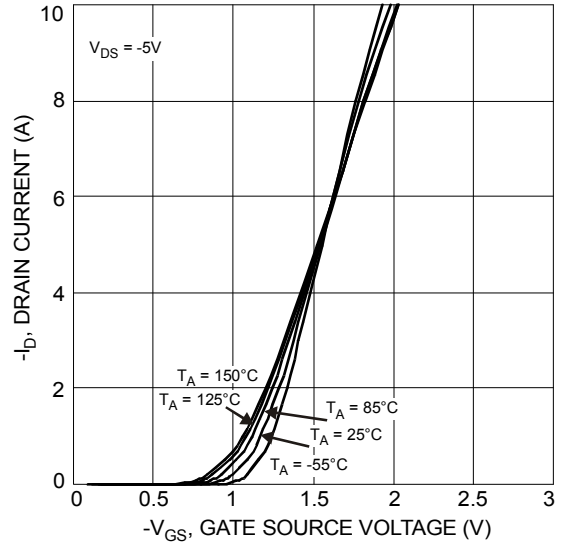


Fig. 2 Typical Transfer Characteristics

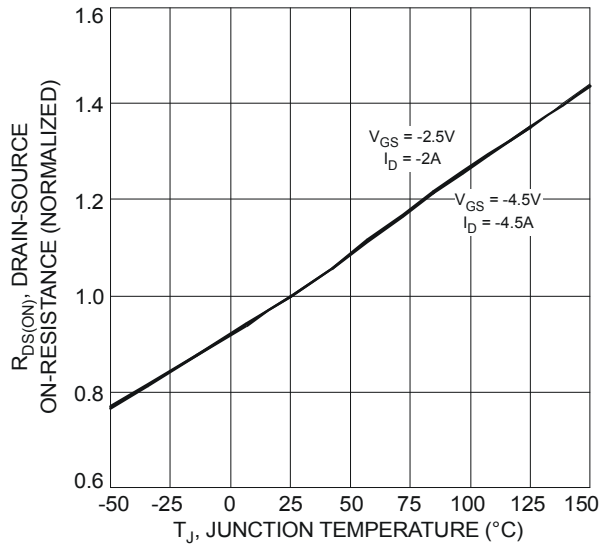


Fig. 3 On-Resistance Variation with Temperature

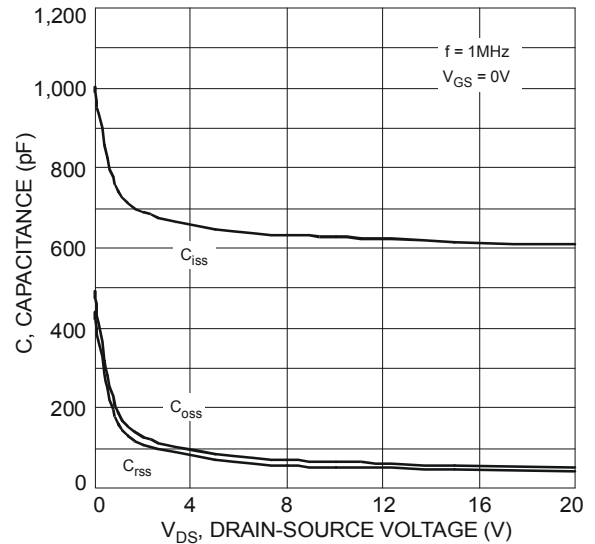


Fig. 4 Typical Capacitance

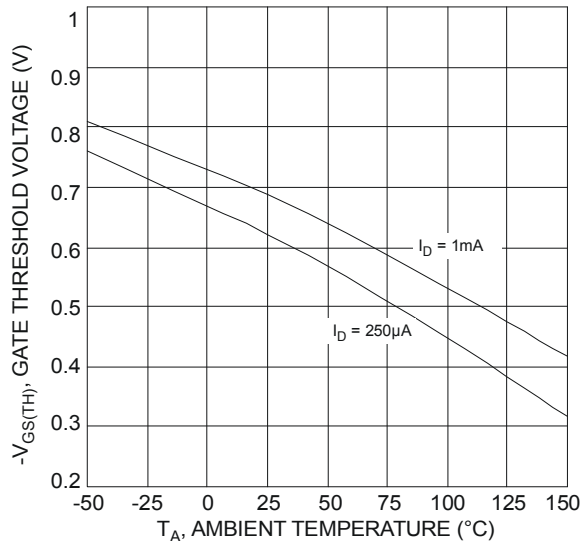


Fig. 5 Gate Threshold Variation vs. Ambient Temperature

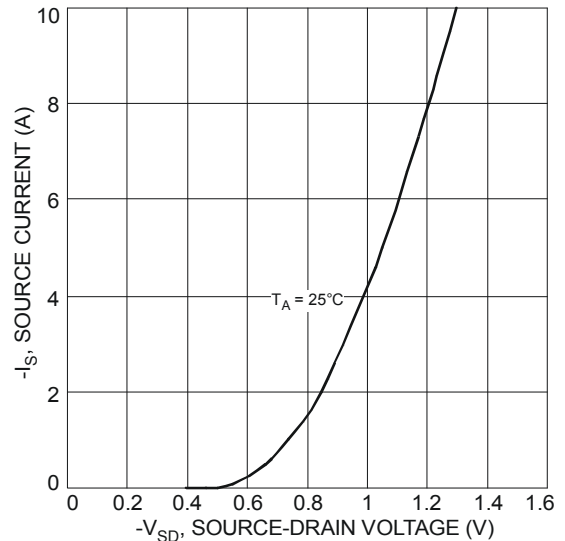


Fig. 6 Diode Forward Voltage vs. Current

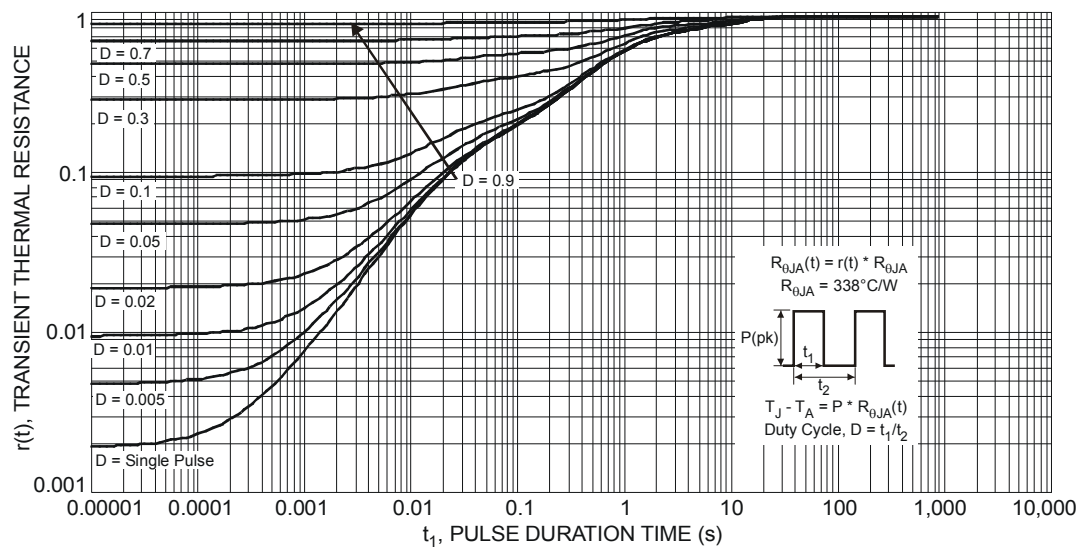
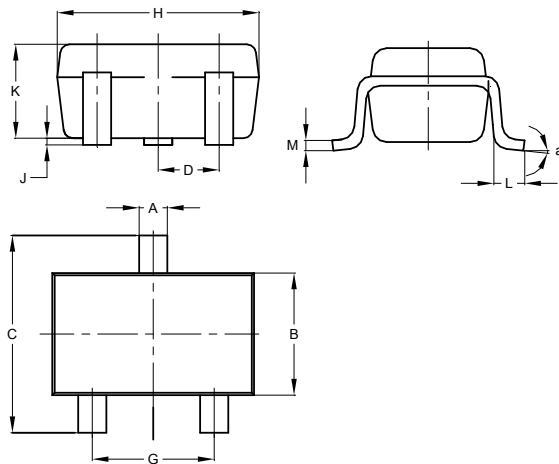


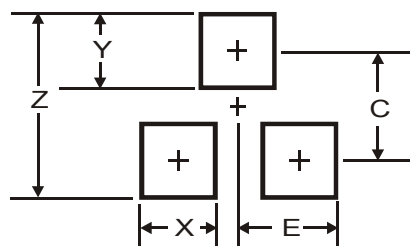
Fig. 7 Transient Thermal Response

## Package Outline Dimensions



| SOT323               |           |       |       |
|----------------------|-----------|-------|-------|
| 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                    | 0.650 BSC |       |       |
| F                    | 0.375     | 0.475 | 0.425 |
| G                    | 1.20      | 1.40  | 1.30  |
| H                    | 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  |
| M                    | 0.10      | 0.18  | 0.11  |
| a                    | 8°C       |       |       |
| 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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