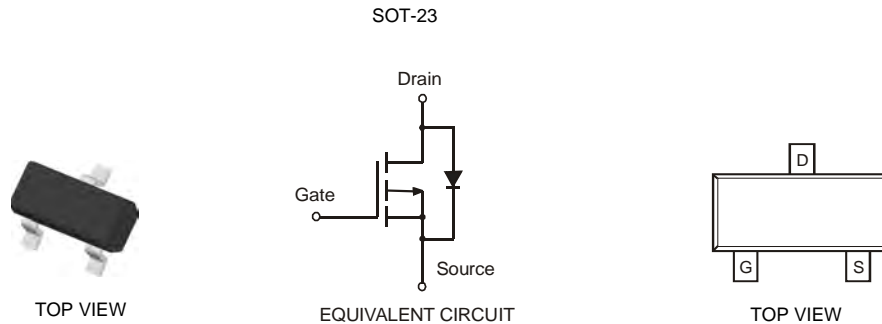


## Features

- Low On-Resistance:
  - 70mΩ @  $V_{GS} = -10V$ ,  $I_D = -3.8A$
  - 120mΩ @  $V_{GS} = -4.5V$ ,  $I_D = -3.0A$
- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- **Lead Free By Design/RoHS Compliant (Note 2)**
- **"Green" Device (Note 4)**
- **Qualified to AEC-Q101 Standards for High Reliability**

## Mechanical Data

- Case: SOT-23
- 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
- Terminal Connections: See Diagram
- Marking Information: See Page 4
- Ordering Information: See Page 4
- Weight: 0.008 grams (approximate)



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

| Characteristic                         |              |                    | Symbol    | Value    | Units |
|--|--------------|--------------------|-----------|----------|-------|
| Drain-Source Voltage                   |              |                    | $V_{DSS}$ | -30      | V     |
| Gate-Source Voltage                    |              |                    | $V_{GSS}$ | $\pm 20$ | V     |
| Drain Current (Note 1) $V_{GS} = -10V$ | Steady State | $T_A = 25^\circ C$ | $I_D$     | -3.8     | A     |
|  |              | $T_A = 70^\circ C$ |           | -2.9     |       |
| Pulsed Drain Current (Note 3)          |              |                    | $I_{DM}$  | -11      | A     |

## Thermal Characteristics

| Characteristic  | Symbol          | Value       | Units        |
|---|-----------------|-------------|--------------|
| Total Power Dissipation (Note 1)                                      | $P_D$           | 1.08        | W            |
| Thermal Resistance, Junction to Ambient @ $T_A = 25^\circ C$ (Note 1) | $R_{\theta JA}$ | 115         | $^\circ C/W$ |
| Operating and Storage Temperature Range                               | $T_J, T_{STG}$  | -55 to +150 | $^\circ C$   |

- Notes:
1. Device mounted on FR-4 PCB on 2 oz., 0.5 in.<sup>2</sup> copper pads and  $t \leq 5$  sec.
  2. No purposefully added lead.
  3. Pulse width  $\leq 10\mu S$ , Duty Cycle  $\leq 1\%$ .
  4. 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** @ $T_A = 25^\circ\text{C}$  unless otherwise specified

| Characteristic                            | Symbol       | Min  | Typ  | Max       | Unit       | Test Condition   |
|---|--------------|------|------|-----------|------------|--|
| <b>OFF CHARACTERISTICS (Note 5)</b>       |              |      |      |           |            |  |
| Drain-Source Breakdown Voltage            | $BV_{DSS}$   | -30  | —    | —         | V          | $V_{GS} = 0V, I_D = -250\mu A$                             |
| Zero Gate Voltage Drain Current           | $I_{DSS}$    | —    | —    | -800      | nA         | $V_{DS} = -30V, V_{GS} = 0V$                               |
| Gate-Source Leakage                       | $I_{GSS}$    | —    | —    | $\pm 100$ | nA         | $V_{GS} = \pm 20V, V_{DS} = 0V$                            |
| <b>ON CHARACTERISTICS (Note 5)</b>        |              |      |      |           |            |  |
| Gate Threshold Voltage                    | $V_{GS(th)}$ | -1.0 | -1.8 | -2.1      | V          | $V_{DS} = V_{GS}, I_D = -250\mu A$                         |
| Static Drain-Source On-Resistance         | $R_{DS(on)}$ | —    | 56   | 70        | m $\Omega$ | $V_{GS} = -10V, I_D = -3.8A$                               |
|   |              |      | 98   | 120       |            | $V_{GS} = -4.5V, I_D = -3.0A$                              |
| Forward Transfer Admittance               | $ Y_{fs} $   | —    | 3.6  | —         | S          | $V_{DS} = -5V, I_D = -2.7A$                                |
| Diode Forward Voltage (Note 5)            | $V_{SD}$     | —    | —    | -1.26     | V          | $V_{GS} = 0V, I_S = -2.7A$                                 |
| <b>DYNAMIC CHARACTERISTICS (Note 6)</b>   |              |      |      |           |            |  |
| Input Capacitance                         | $C_{iss}$    | —    | 336  | 1008      | pF         | $V_{DS} = -25V, V_{GS} = 0V, f = 1.0\text{MHz}$            |
| Output Capacitance                        | $C_{oss}$    | —    | 70   | 210       | pF         |  |
| Reverse Transfer Capacitance              | $C_{rss}$    | —    | 49   | 147       | pF         |  |
| Gate Resistance                           | $R_G$        | —    | 4.6  | —         | $\Omega$   | $V_{GS} = 0V, V_{DS} = 0V, f = 1\text{MHz}$                |
| <b>SWITCHING CHARACTERISTICS (Note 6)</b> |              |      |      |           |            |  |
| Total Gate Charge                         | $Q_g$        | —    | 4.0  | 8.0       | nC         | $V_{DS} = -15V, V_{GS} = -4.5V, I_D = -3.8A$               |
|   |              |      | 7.8  | —         |            |  |
|   |              |      | —    | —         |            |  |
| Gate-Source Charge                        | $Q_{gs}$     | —    | 1.0  | —         | ns         | $V_{DS} = -15V, V_{GS} = -10V, I_D = -3.8A$                |
| Gate-Drain Charge                         | $Q_{gd}$     | —    | 2.5  | —         |            |  |
| Turn-On Delay Time                        | $t_{d(on)}$  | —    | 6.0  | 12.0      | ns         | $V_{DS} = -15V, V_{GS} = -10V, I_D = -1A, R_G = 6.0\Omega$ |
| Rise Time                                 | $t_r$        | —    | 5.0  | 10.0      |            |  |
| Turn-Off Delay Time                       | $t_{d(off)}$ | —    | 17.6 | 35.2      |            |  |
| Fall Time                                 | $t_f$        | —    | 9.5  | 19.0      |            |  |

- Notes: 5. Short duration pulse test used to minimize self-heating effect.  
6. Guaranteed by design. Not subject to production testing.

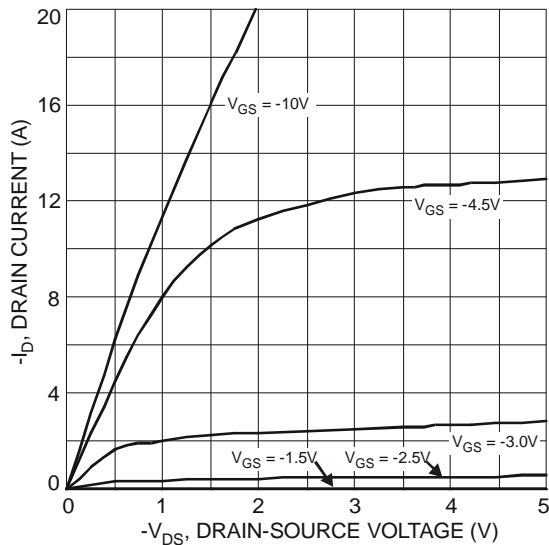


Fig. 1 Typical Output Characteristics

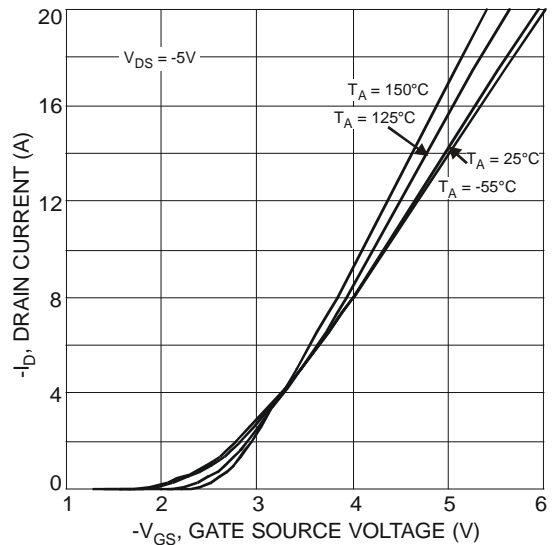


Fig. 2 Typical Transfer Characteristics

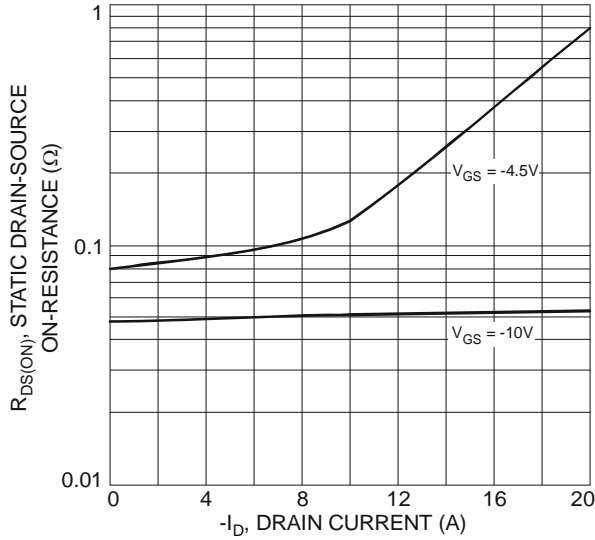


Fig. 3 Typical On-Resistance vs. Drain Current and Gate Voltage

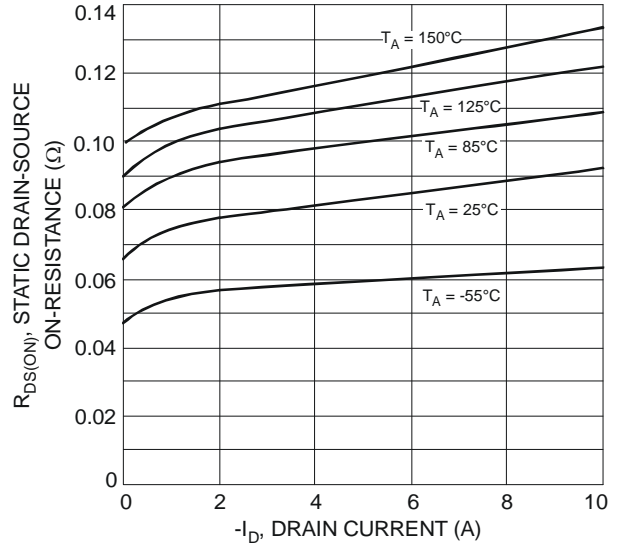


Fig. 4 Typical On-Resistance vs. Drain Current and Temperature

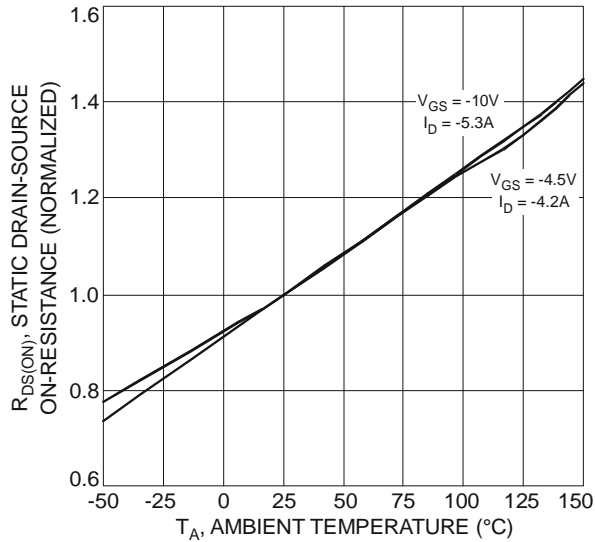


Fig. 5 On-Resistance Variation with Temperature

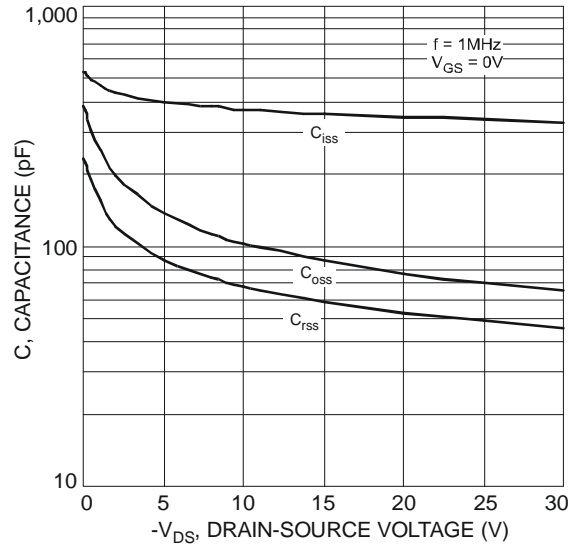


Fig. 6 Typical Capacitance

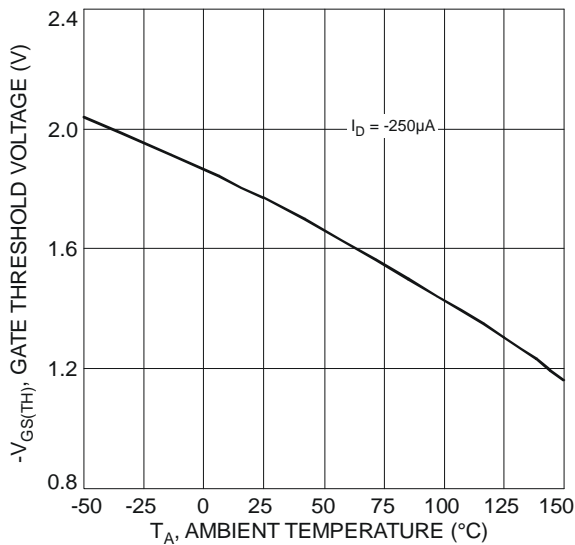


Fig. 7 Gate Threshold Variation vs. Ambient Temperature

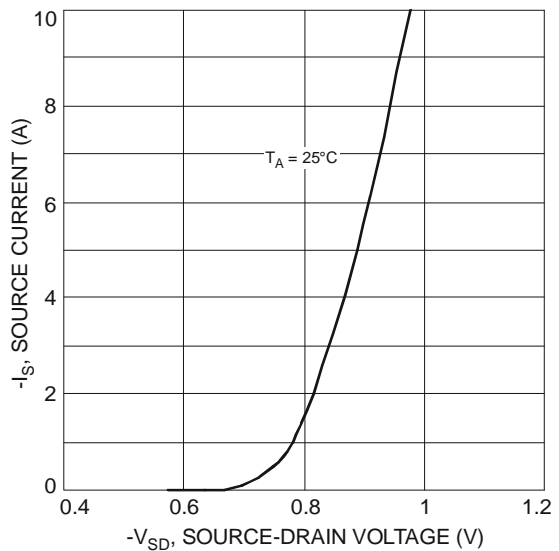


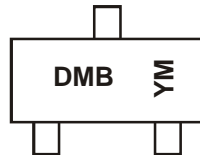
Fig. 8 Diode Forward Voltage vs. Current

### Ordering Information (Note 7)

| Part Number | Case   | Packaging        |
|-------------|--------|------------------|
| DMP3098L-7  | SOT-23 | 3000/Tape & Reel |

Notes: 7. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

### Marking Information



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

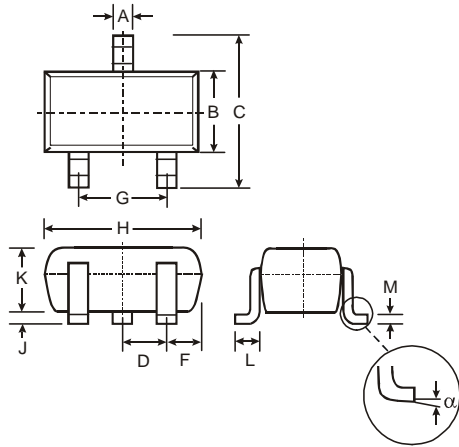
#### Date Code Key

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

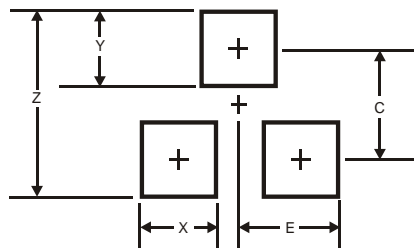
| Month | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Code  | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | O   | N   | D   |

### Package Outline Dimensions



| SOT-23 |       |       |
|--------|-------|-------|
| Dim    | Min   | Max   |
| A      | 0.37  | 0.51  |
| B      | 1.20  | 1.40  |
| C      | 2.30  | 2.50  |
| D      | 0.89  | 1.03  |
| F      | 0.45  | 0.60  |
| G      | 1.78  | 2.05  |
| H      | 2.80  | 3.00  |
| J      | 0.013 | 0.10  |
| K      | 0.903 | 1.10  |
| L      | 0.45  | 0.61  |
| M      | 0.085 | 0.180 |
| α      | 0°    | 8°    |

### Suggested Pad Layout



| Dimensions | Value (in mm) |
|------------|---------------|
| Z          | 2.9           |
| X          | 0.8           |
| Y          | 0.9           |
| C          | 2.0           |
| E          | 1.35          |

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