

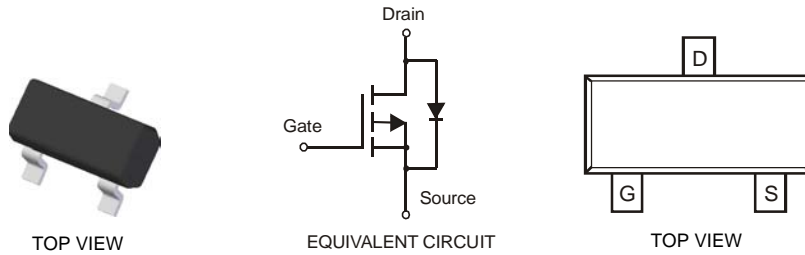
## Features

- Low On-Resistance:  
 $R_{DS(ON)} < 100m\Omega$  @  $V_{GS} = -4.5V$ ,  $I_D = -2.7A$   
 $R_{DS(ON)} < 215m\Omega$  @  $V_{GS} = -2.5V$ ,  $I_D = -2.0A$
- 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-020D
- 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)

SOT-23



## Maximum Ratings @ $T_A = 25^\circ\text{C}$ 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)        | Steady State | $T_A = 25^{\circ}\text{C}$ | $I_D$     | -2.7     | A     |
|                               |              | $T_A = 70^{\circ}\text{C}$ |           | -2       |       |
| Pulsed Drain Current (Note 3) |              |                            | $I_{DM}$  | 8        | A     |

## Thermal Characteristics

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

- Notes:
1. Device mounted on FR-4 PCB.  $t \leq 5$  sec.
  2. No purposefully added lead.
  3. Pulse width  $\leq 10\mu\text{s}$ , 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<sub>A</sub> = 25°C unless otherwise specified

| Characteristic                      | Symbol              | Min   | Typ | Max   | Unit | Test Condition   |
|-------------------------------------|---------------------|-------|-----|-------|------|--|
| <b>OFF CHARACTERISTICS (Note 5)</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>    | —     | —   | -800  | nA   | V <sub>DS</sub> = -20V, V <sub>GS</sub> = 0V                               |
| On-State Drain Current              | I <sub>D(ON)</sub>  | -6    | —   | —     | A    | V <sub>DS</sub> ≤ -5V, V <sub>GS</sub> = -4.5V                             |
|                                     |                     | -3    | —   | —     |      | V <sub>DS</sub> ≤ -5V, V <sub>GS</sub> = -2.5V                             |
| Gate-Source Leakage                 | I <sub>GSS</sub>    | —     | —   | ±80   | nA   | V <sub>GS</sub> = ±12V, V <sub>DS</sub> = 0V                               |
| <b>ON CHARACTERISTICS (Note 5)</b>  |                     |       |     |       |      |  |
| Gate Threshold Voltage              | V <sub>GS(th)</sub> | -0.45 | —   | -1.25 | V    | V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -250μA                |
| Static Drain-Source On-Resistance   | R <sub>DS(ON)</sub> | —     | 80  | 100   | mΩ   | V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -2.7A                            |
|                                     |                     |       | 165 | 215   |      | V <sub>GS</sub> = -2.5V, I <sub>D</sub> = -2.0A                            |
| Forward Transfer Admittance         | Y <sub>fs</sub>     | —     | 4   | —     | S    | V <sub>DS</sub> = -5V, I <sub>D</sub> = -2.7A                              |
| Diode Forward Voltage (Note 5)      | V <sub>SD</sub>     | —     | —   | -1.26 | V    | V <sub>GS</sub> = 0V, I <sub>S</sub> = -2.7A                               |
| <b>DYNAMIC CHARACTERISTICS</b>      |                     |       |     |       |      |  |
| Input Capacitance                   | C <sub>iss</sub>    | —     | 250 | —     | pF   | V <sub>DS</sub> = -10V, V <sub>GS</sub> = 0V<br>f = 1.0MHz                 |
| Output Capacitance                  | C <sub>oss</sub>    | —     | 88  | —     | pF   |  |
| Reverse Transfer Capacitance        | C <sub>rss</sub>    | —     | 58  | —     | pF   |  |
| Gate Resistance                     | R <sub>g</sub>      | —     | 12  | 16    | Ω    | V <sub>GS</sub> = 0V, V <sub>DS</sub> = 0V, f = 1MHz                       |
| Total Gate Charge                   | Q <sub>g</sub>      | —     | 4.3 | 5.3   | nC   | V <sub>GS</sub> = -4.5V, V <sub>DS</sub> = -10V,<br>I <sub>D</sub> = -2.7A |
| Gate-Source Charge                  | Q <sub>gs</sub>     | —     | 0.9 | —     |      |  |
| Gate-Drain Charge                   | Q <sub>gd</sub>     | —     | 2.1 | —     |      |  |

Notes: 5. Short duration pulse test used to minimize self-heating effect.

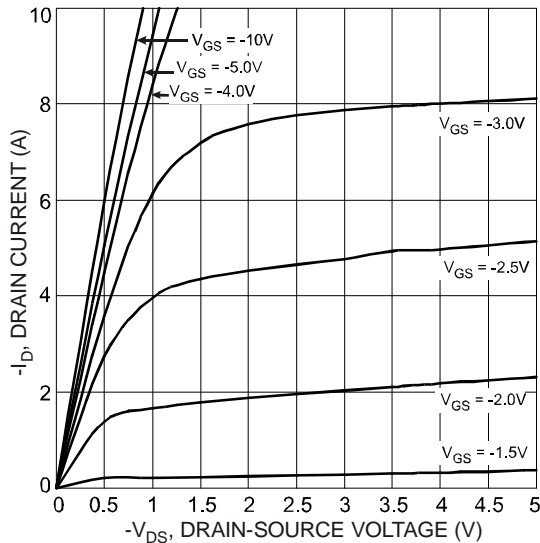


Fig. 1 Typical Output Characteristics

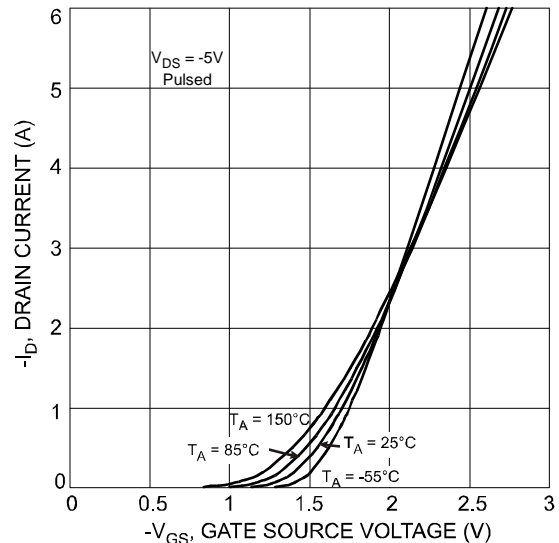


Fig. 2 Typical Transfer Characteristics

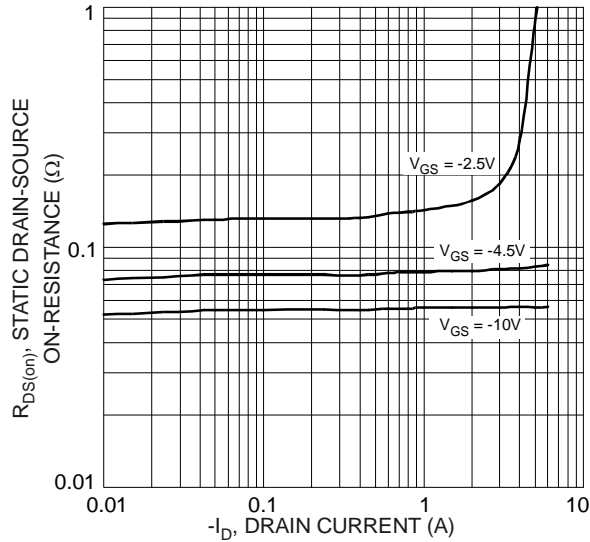


Fig. 3 On-Resistance vs. Drain Current and Gate Voltage

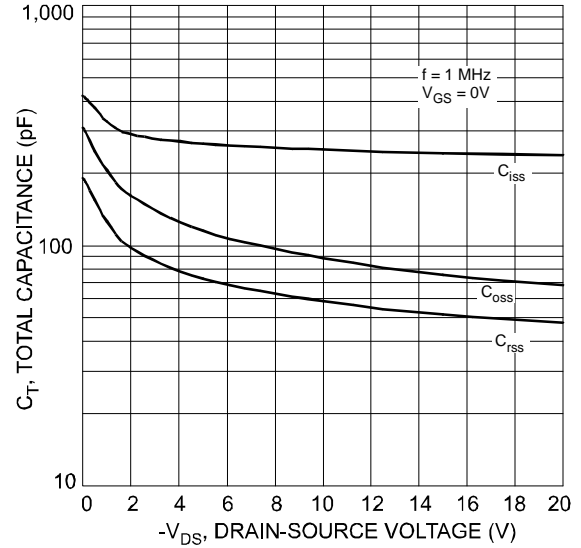


Fig. 4 Typical Total Capacitance

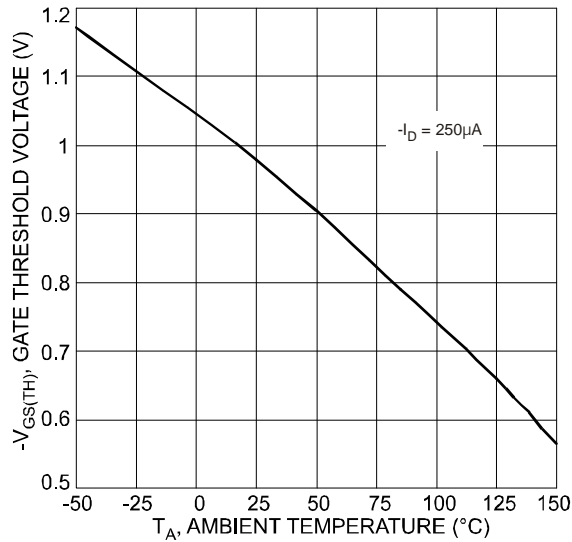


Fig. 5 Gate Threshold Voltage vs. Ambient Temperature

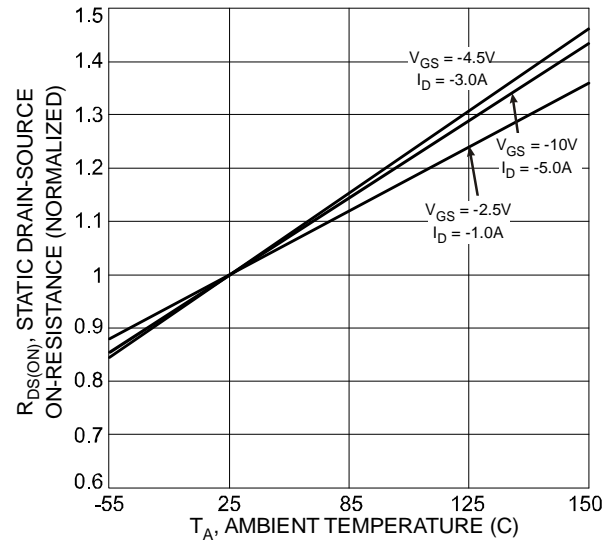


Fig. 6 Normalized Static Drain-Source On-Resistance vs. Ambient Temperature

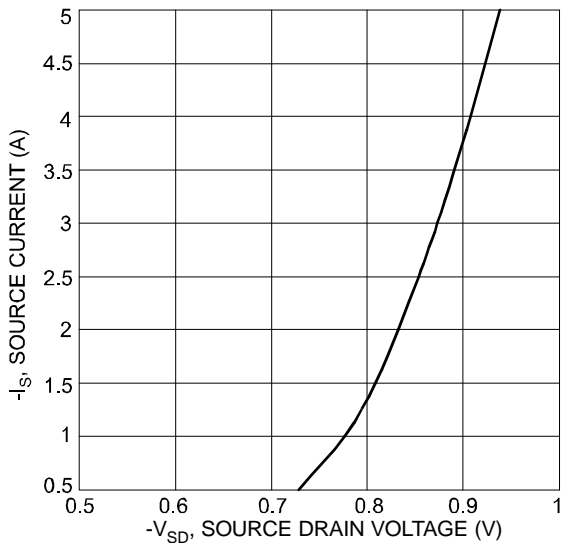


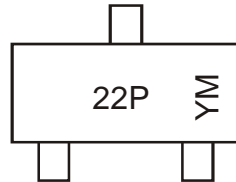
Fig. 7 Reverse Drain Current vs. Source-Drain Voltage

## Ordering Information (Note 6)

| Part Number | Case   | Packaging        |
|-------------|--------|------------------|
| DMP2215L-7  | SOT-23 | 3000/Tape & Reel |

Notes: 6. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

## Marking Information



22P = Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year (ex: U = 2007)  
 M = Month (ex: 9 = September)

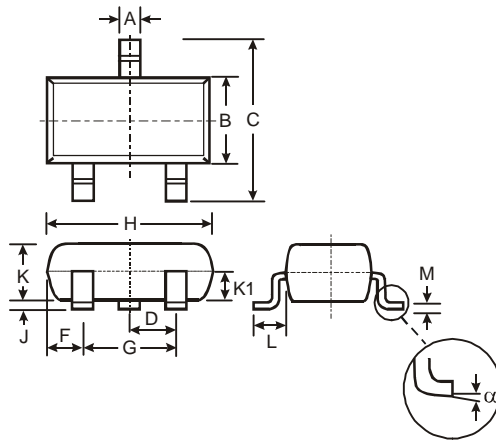
### Date Code Key

| Year | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|------|------|------|------|------|------|------|
| Code | U    | V    | W    | X    | Y    | Z    |

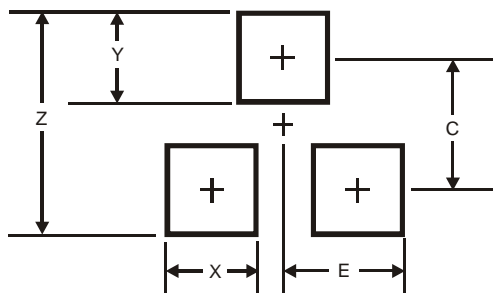
| Month | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Code  | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | O   | N   | D   |

## Package Outline Dimensions



| SOT-23               |       |      |       |
|----------------------|-------|------|-------|
| Dim                  | Min   | Max  | Typ   |
| A                    | 0.37  | 0.51 | 0.40  |
| B                    | 1.20  | 1.40 | 1.30  |
| C                    | 2.30  | 2.50 | 2.40  |
| D                    | 0.89  | 1.03 | 0.915 |
| F                    | 0.45  | 0.60 | 0.535 |
| G                    | 1.78  | 2.05 | 1.83  |
| H                    | 2.80  | 3.00 | 2.90  |
| J                    | 0.013 | 0.10 | 0.05  |
| K                    | 0.903 | 1.10 | 1.00  |
| K1                   | -     | -    | 0.400 |
| L                    | 0.45  | 0.61 | 0.55  |
| M                    | 0.085 | 0.18 | 0.11  |
| $\alpha$             | 0°    | 8°   | -     |
| All Dimensions in mm |       |      |       |

## 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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