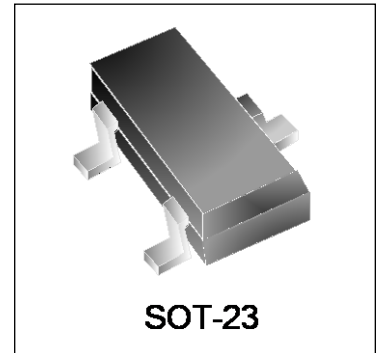


### Features

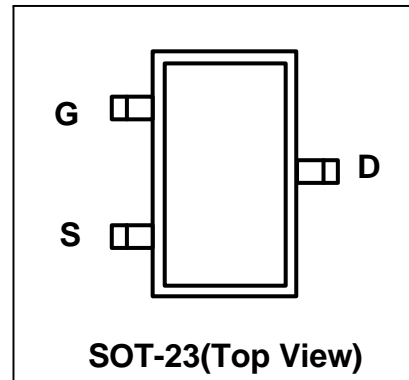
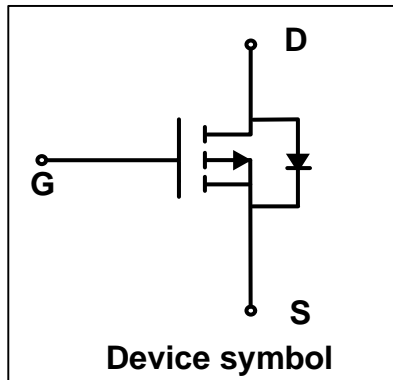
- Way-on Small Signal MOSFETs
- $V_{DS} = -20V$ ,  $I_D = -3A$   
 $R_{DS(ON)} < 70m\Omega @ V_{GS} = -4.5V$   
 $R_{DS(ON)} < 90m\Omega @ V_{GS} = -2.5V$
- Trench LV MOSFET Technology

### Mechanical Characteristics

- SOT-23 Package
- Marking : Making Code
- RoHS Compliant & Halogen-Free



### Schematic & PIN Configuration



### Absolute Maximum Rating ( $T_A=25^\circ C$ unless otherwise noted)

| Parameter  | Symbol         | Value      | Units      |
|--|----------------|------------|------------|
| Drain-Source Voltage                             | $V_{DS}$       | -20        | V          |
| Gate-Source Voltage                              | $V_{GS}$       | $\pm 12$   | V          |
| Continuous Drain Current                         | $I_D$          | -3         | A          |
| Pulsed Drain Current <sup>1</sup>                | $I_{DM}$       | -12        | A          |
| Power Dissipation                                | $P_D$          | 1          | W          |
| Operating Junction and Storage Temperature Range | $T_J, T_{STG}$ | -55 to 150 | $^\circ C$ |

### Thermal Characteristics

| Parameter  | Symbol          | Value | Unit         |
|--|-----------------|-------|--------------|
| Thermal Resistance from Junction to Ambient <sup>2</sup> | $R_{\theta JA}$ | 125   | $^\circ C/W$ |

**Electrical Characteristics (T<sub>J</sub>=25°C unless otherwise noted)**

| Parameter                                     | Symbol               | Test Condition  | Min. | Typ. | Max. | Unit |
|---|----------------------|---|------|------|------|------|
| <b>Static Characteristics</b>                 |                      |   |      |      |      |      |
| Drain-Source Breakdown Voltage                | V <sub>(BR)DSS</sub> | V <sub>GS</sub> = 0V, I <sub>D</sub> = -250μA   | -20  | -    | -    | V    |
| Gate-Source Leakage                           | I <sub>GSS</sub>     | V <sub>DS</sub> = 0V, V <sub>GS</sub> = ±12V  | -    | -    | ±100 | nA   |
| Zero Gate Voltage Drain Current               | I <sub>DSS</sub>     | V <sub>DS</sub> = -20V, V <sub>GS</sub> = 0V  | -    | -    | -1   | μA   |
| Gate-Source Threshold Voltage                 | V <sub>GS(th)</sub>  | V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -250μA                                   | -0.4 | -    | -1   | V    |
| Drain-Source on-State Resistance <sup>3</sup> | R <sub>DS(on)</sub>  | V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -3A   | -    | 50   | 70   | mΩ   |
|   |                      | V <sub>GS</sub> = -2.5V, I <sub>D</sub> = -2A   | -    | 60   | 90   |      |
| <b>Dynamic Characteristics<sup>4</sup></b>    |                      |   |      |      |      |      |
| Input Capacitance                             | C <sub>iss</sub>     | V <sub>GS</sub> = 0V, V <sub>DS</sub> = -10V, f=1MHz  | -    | 495  | -    | pF   |
| Output Capacitance                            | C <sub>oss</sub>     |   | -    | 75   | -    |      |
| Reverse Transfer Capacitance                  | C <sub>rss</sub>     |   | -    | 65   | -    |      |
| <b>Switching Characteristics<sup>4</sup></b>  |                      |   |      |      |      |      |
| Total gate charge                             | Q <sub>g</sub>       | V <sub>GS</sub> = -2.5V, V <sub>DS</sub> = -10V,<br>I <sub>D</sub> = -3A                      | -    | 3.3  | -    | nC   |
| Gate-source charge                            | Q <sub>gs</sub>      |   | -    | 0.7  | -    |      |
| Gate-drain charge                             | Q <sub>gd</sub>      |   | -    | 1.3  | -    |      |
| Turn-on Time                                  | t <sub>d(on)</sub>   | V <sub>GS</sub> = -4.5V, V <sub>DD</sub> = -10V,<br>R <sub>G</sub> = 3Ω, I <sub>D</sub> = -3A | -    | 11   | -    | ns   |
| Rise Time                                     | t <sub>r</sub>       |   | -    | 35   | -    |      |
| Turn-off Time                                 | t <sub>d(off)</sub>  |   | -    | 30   | -    |      |
| Fall Time                                     | t <sub>f</sub>       |   | -    | 10   | -    |      |
| <b>Source-Drain Diode Characteristics</b>     |                      |   |      |      |      |      |
| Body Diode Voltage <sup>3</sup>               | V <sub>SD</sub>      | I <sub>S</sub> = -1A, V <sub>GS</sub> = 0V  | -    | -    | -1.2 | V    |
| Continuous Source Current                     | I <sub>S</sub>       | -   | -    | -    | -3   | A    |

**Notes:**

1. Repetitive rating, pulse width limited by junction temperature T<sub>J(MAX)</sub>=150°C.
2. The data tested by surface mounted on a 1 inch<sup>2</sup> FR-4 board with 2OZ copper, The value in any given application depends on the user's specific board design.
3. Pulse Test: Pulse width≤300μs, duty cycle≤2%.
4. This value is guaranteed by design hence it is not included in the production test.

### Typical Characteristics

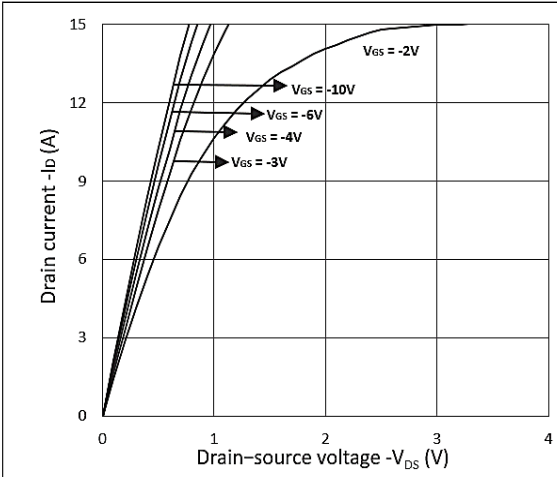


Figure 1. Output Characteristics

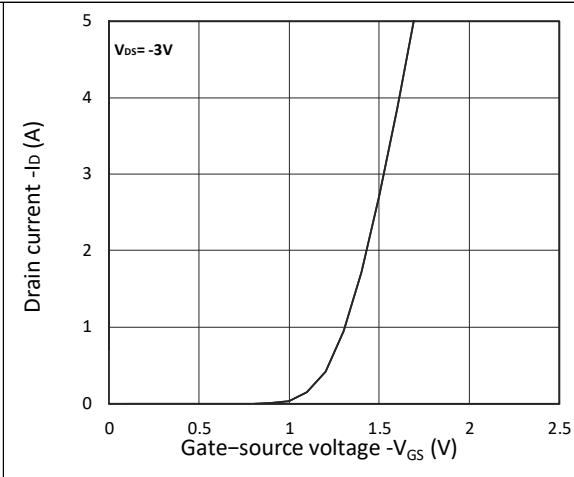


Figure 2. Transfer Characteristics

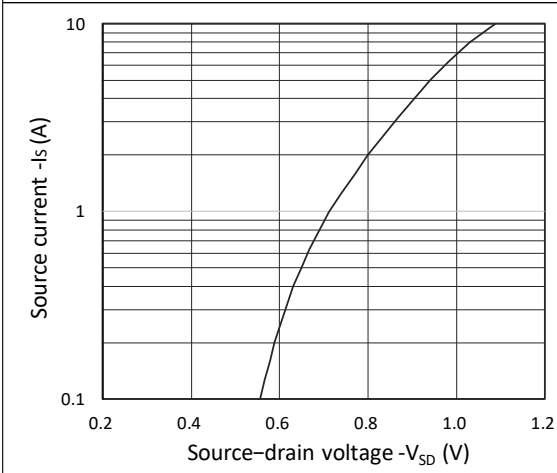


Figure 3. Forward Characteristics of Reverse

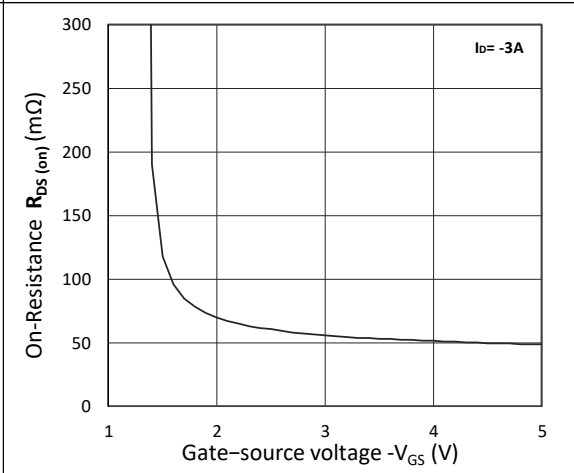


Figure 4.  $R_{DS(on)}$  vs.  $V_{GS}$

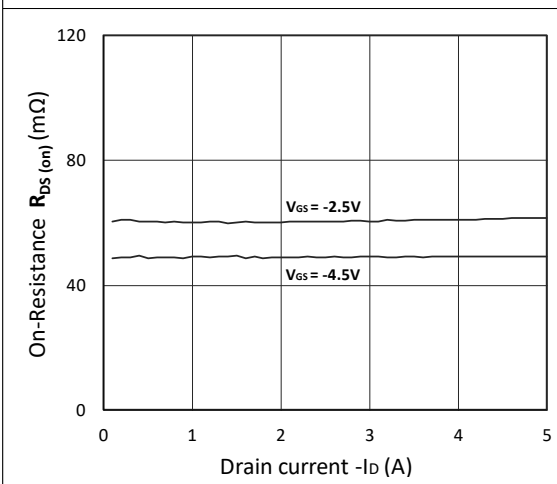


Figure 5.  $R_{DS(on)}$  vs.  $I_D$

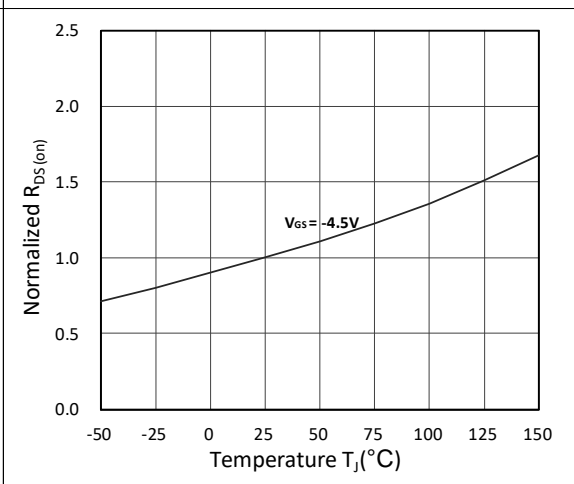


Figure 6. Normalized  $R_{DS(on)}$  vs. Temperature

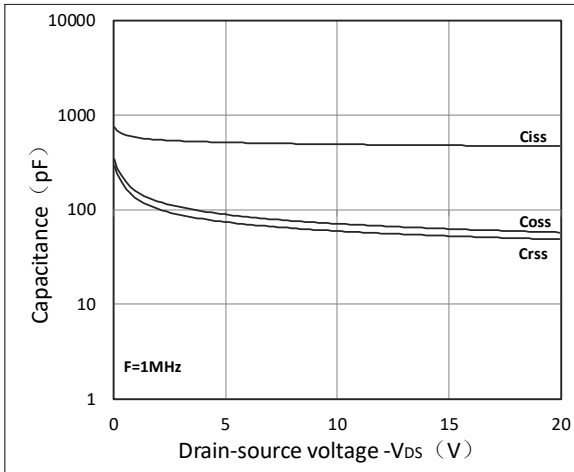


Figure 7. Capacitance Characteristics

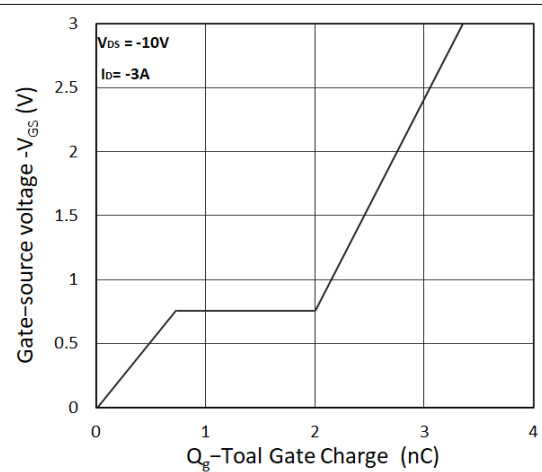


Figure 8. Gate Charge Characteristics

### Outline Drawing – SOT-23

#### PACKAGE OUTLINE

**SOT-23**

#### DIMENSIONS

| SYMBOL | MILLIMETER |      | INCHES   |       |
|--------|------------|------|----------|-------|
|        | MIN        | MAX  | MIN      | MAX   |
| A      | 0.90       | 1.15 | 0.035    | 0.045 |
| A1     | 0.00       | 0.10 | 0.000    | 0.004 |
| b      | 0.30       | 0.50 | 0.012    | 0.020 |
| c      | 0.08       | 0.15 | 0.003    | 0.006 |
| D      | 2.80       | 3.00 | 0.110    | 0.118 |
| E      | 2.25       | 2.55 | 0.089    | 0.100 |
| E1     | 1.20       | 1.40 | 0.047    | 0.055 |
| e      | 0.95 BSC   |      | 0.037BSC |       |
| e1     | 1.80       | 2.00 | 0.071    | 0.079 |
| L      | 0.55REF    |      | 0.022REF |       |
| L1     | 0.30       | 0.50 | 0.012    | 0.020 |
| θ      | 0°         | 8°   | 0°       | 8°    |

#### DIMENSIONS

| DIM | INCHES    | MILLIMETERS |
|-----|-----------|-------------|
| M   | 0.080     | 2.02        |
| C   | 0.032     | 0.80        |
| Z   | 0.111     | 2.82        |
| e   | 0.037 BSC | 0.95 BSC    |
| e1  | 0.075 BSC | 1.90 BSC    |
| b   | 0.032     | 0.80        |

### Marking Codes

|              |          |
|--------------|----------|
| Part Number  | WM02P30M |
| Marking Code |          |

### Package Information

Qty: 3k/Reel

### CONTACT INFORMATION

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WAYON website: <http://www.way-on.com>

For additional information, please contact your local Sales Representative.

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## Product Specification Statement

1. The product specification aims to provide users with a reference regarding various product parameters, performance, and usage. It presents certain aspects of the product's performance in graphical form and is intended solely for users to select product and make product comparisons, enabling users to better understand and evaluate the characteristics and advantages of the product. It does not constitute any commitment, warranty, or guarantee.
2. The product parameters described in the product specification are numerical values, characteristics, and functions obtained through actual testing or theoretical calculations of the product in an independent or ideal state. Due to the complexity of product applications and variations in test conditions and equipment, there may be slight fluctuations in parameter test values. WAYON shall not guarantee that the actual performance of the product when installed in the customer's system or equipment will be entirely consistent with the product specification, especially concerning dynamic parameters. It is recommended that users consult with professionals for product selection and system design. Users should also thoroughly validate and assess whether the actual parameters and performance when installed in their respective systems or equipment meet their requirements or expectations. Additionally, users should exercise caution in verifying product compatibility issues, and WAYON assumes no responsibility for the application of the product.
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