

## 1.Features

- $V_{(BR)DSS}=20V$
- $I_D=6A$
- $R_{DS(ON)}<25m\Omega(V_{GS}=4.5V)$
- $R_{DS(ON)}<34m\Omega(V_{GS}=2.5V)$
- TrenchFET Power MOSFET

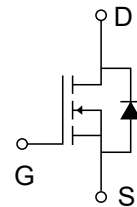
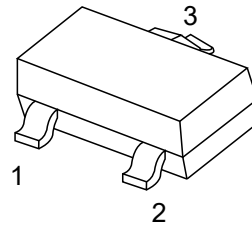
## 2.Applications

- Battery protection
- Load switch
- Power management

## 3.Pinning information

| Pin | Symbol | Description |
|-----|--------|-------------|
| 1   | G      | GATE        |
| 2   | S      | SOURCE      |
| 3   | D      | DRAIN       |

SOT-23



## 4.Absolute Maximum Ratings $T_A=25^{\circ}C$

| Parameter                                                   | Symbol          | Rating   | Units         |
|-------------------------------------------------------------|-----------------|----------|---------------|
| Drain-Source Voltage                                        | $V_{DS}$        | 20       | V             |
| Gate-Source Voltage                                         | $V_{GS}$        | $\pm 12$ | V             |
| Continuous Drain Current                                    | $I_D$           | 6        | A             |
| Continuous Source-Drain Current(Diode Conduction)           | $I_S$           | 0.6      | A             |
| Power Dissipation                                           | $P_D$           | 1.25     | W             |
| Thermal Resistance from Junction to Ambient ( $t \leq 5s$ ) | $R_{\theta JA}$ | 312.5    | $^{\circ}C/W$ |
| Operating Junction                                          | $T_J$           | 150      | $^{\circ}C$   |
| Storage Temperature                                         | $T_{STG}$       | -55~+150 | $^{\circ}C$   |



## 5. Electrical Characteristics $T_A = 25^\circ\text{C}$

| Parameter                                     | Symbol               | Conditions                                                                                                               | Min | Typ  | Max  | Units |
|-----------------------------------------------|----------------------|--------------------------------------------------------------------------------------------------------------------------|-----|------|------|-------|
| Static                                        |                      |                                                                                                                          |     |      |      |       |
| Drain-source breakdown voltage                | V <sub>(BR)DSS</sub> | V <sub>GS</sub> =0V, I <sub>D</sub> =10μA                                                                                | 20  |      |      | V     |
| Gate-threshold voltage                        | V <sub>GS(th)</sub>  | V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =50μA                                                                  | 0.4 |      | 1    | V     |
| Gate-body leakage                             | I <sub>GSS</sub>     | V <sub>DS</sub> =0V, V <sub>GS</sub> =±8V                                                                                |     |      | ±100 | nA    |
| Zero gate voltage drain current               | I <sub>DSS</sub>     | V <sub>DS</sub> =20V, V <sub>GS</sub> =0V                                                                                |     |      | 1    | μA    |
| Drain-source on-state resistance <sup>a</sup> | R <sub>DS(ON)</sub>  | V <sub>GS</sub> =4.5V, I <sub>D</sub> =6A                                                                                |     | 21   | 25   | mΩ    |
|                                               |                      | V <sub>GS</sub> =2.5V, I <sub>D</sub> =5.2A                                                                              |     | 28   | 34   | mΩ    |
| Forward transconductance <sup>a</sup>         | g <sub>FS</sub>      | V <sub>DS</sub> =5V, I <sub>D</sub> =3.6A                                                                                |     | 8    |      | S     |
| Diode forward voltage                         | V <sub>SD</sub>      | I <sub>S</sub> =0.94A, V <sub>GS</sub> =0V                                                                               |     | 0.74 | 1.2  | V     |
| Dynamic                                       |                      |                                                                                                                          |     |      |      |       |
| Total gate charge                             | Q <sub>g</sub>       | V <sub>DS</sub> =10V, V <sub>GS</sub> =4.5V, I <sub>D</sub> =3.6A                                                        |     | 7.7  | 10   | nC    |
| Gate-source charge                            | Q <sub>gs</sub>      |                                                                                                                          |     | 0.32 |      | nC    |
| Gate-drain charge                             | Q <sub>gd</sub>      |                                                                                                                          |     | 2.1  |      | nC    |
| Input capacitance <sup>b</sup>                | C <sub>iss</sub>     | V <sub>DS</sub> =10V, V <sub>GS</sub> =0V, f=1MHz                                                                        |     | 574  |      | pF    |
| Output capacitance <sup>b</sup>               | C <sub>oss</sub>     |                                                                                                                          |     | 70   |      | pF    |
| Reverse transfer capacitance <sup>b</sup>     | C <sub>rss</sub>     |                                                                                                                          |     | 60   |      | pF    |
| Switching <sup>b</sup>                        |                      |                                                                                                                          |     |      |      |       |
| Turn-on delay time                            | t <sub>D(on)</sub>   | V <sub>DD</sub> =10V<br><br>R <sub>L</sub> =5.5Ω, I <sub>D</sub> ≈3.6A<br><br>V <sub>GEN</sub> =4.5V, R <sub>G</sub> =6Ω |     | 78.7 |      | ns    |
| Rise time                                     | t <sub>r</sub>       |                                                                                                                          |     | 128  |      | ns    |
| Turn-off delay time                           | t <sub>D(off)</sub>  |                                                                                                                          |     | 453  |      | ns    |
| Fall time                                     | t <sub>f</sub>       |                                                                                                                          |     | 80.9 |      | ns    |

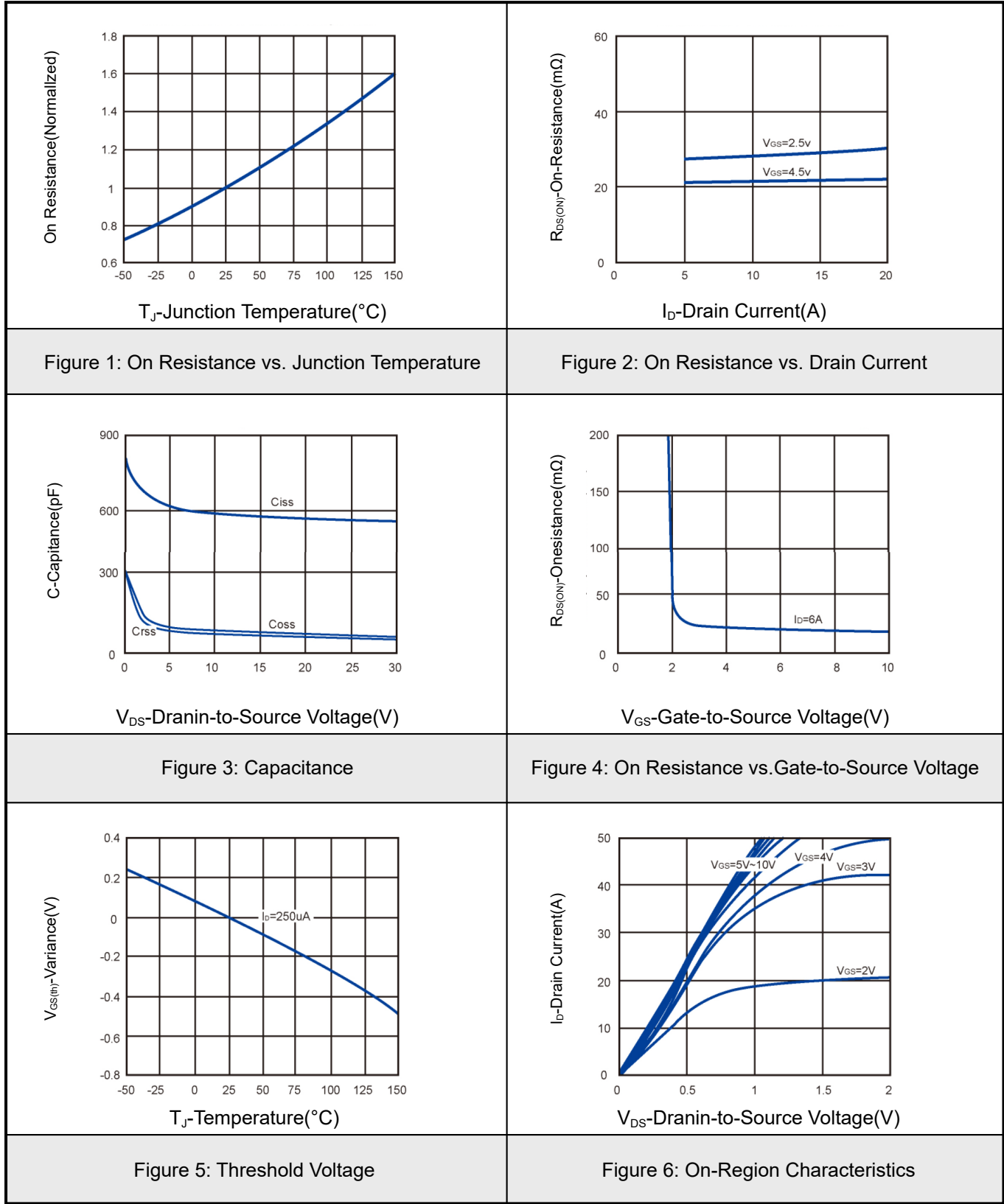
Notes :

a. Pulse Test : Pulse width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$ .

b. These parameters have no way to verify

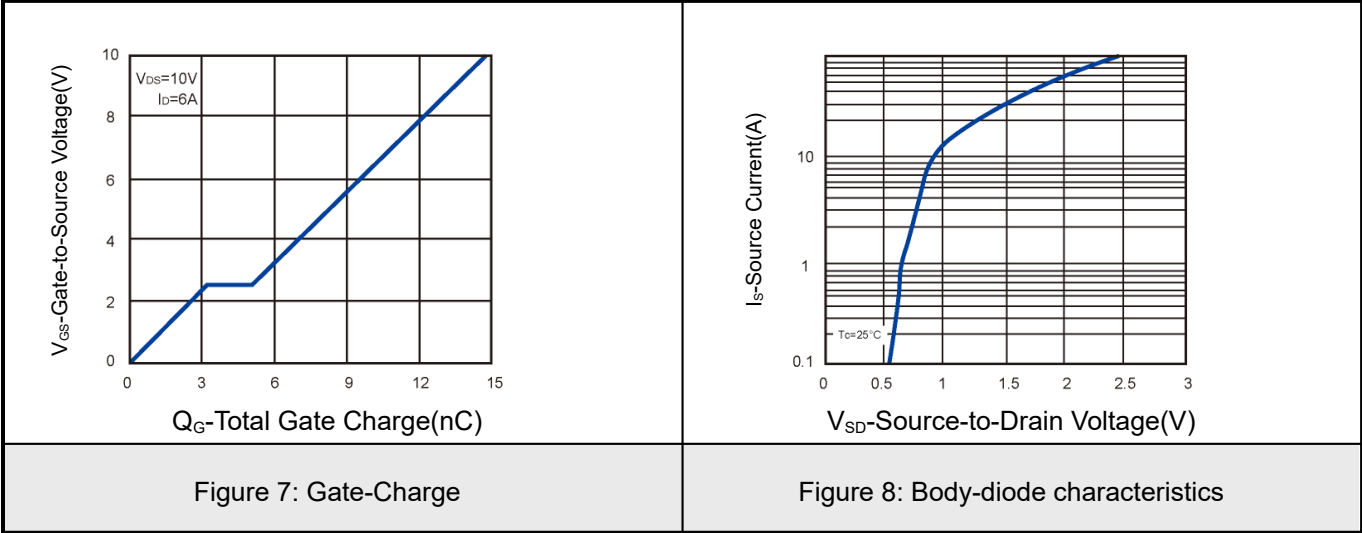


6.1Typical Characterisitics



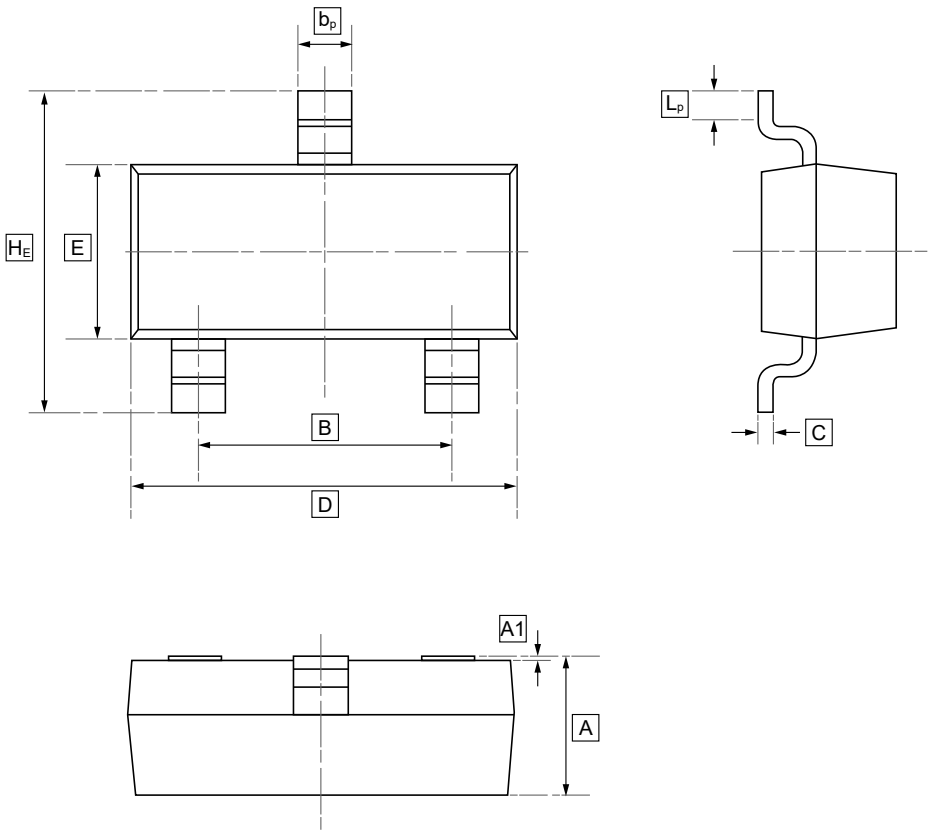


6.2Typical Characterisitics





7.SOT-23 Package Outline Dimensions

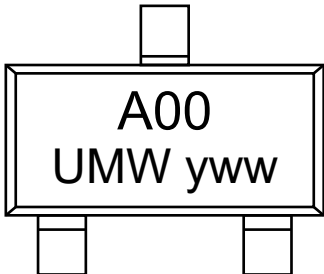


DIMENSIONS (mm are the original dimensions)

| Symbol | A    | B    | b <sub>p</sub> | C    | D    | E    | H <sub>E</sub> | A1    | L <sub>p</sub> |
|--------|------|------|----------------|------|------|------|----------------|-------|----------------|
| Min    | 0.95 | 1.78 | 0.35           | 0.08 | 2.70 | 1.20 | 2.20           | 0.013 | 0.20           |
| Max    | 1.40 | 2.04 | 0.50           | 0.19 | 3.10 | 1.65 | 3.00           | 0.100 | 0.50           |



8.Ordering information



yww: Batch Code

| Order Code  | Package | Base QTY | Delivery Mode |
|-------------|---------|----------|---------------|
| UMW SI2300A | SOT-23  | 3000     | Tape and reel |



## 9.Disclaimer

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