

## 1.Features

- $V_{DS(V)}=60V$
- $I_D=3A$
- $R_{DS(ON)}<80m\Omega(V_{GS}=10V), I_D=3A$
- $R_{DS(ON)}<95m\Omega(V_{GS}=4.5V), I_D=1.9A$

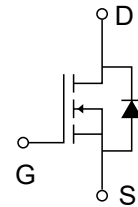
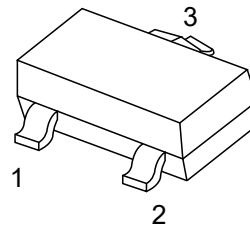
## 2.Applications

- Load/Power Switching
- Interfacing Switching
- Logic Level Shift
- Battery Management for Ultra Small Portable

## 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                    |                   | $V_{DS}$   | 60         | V             |
| Gate-Source Voltage                     |                   | $V_{GS}$   | $\pm 20$   |               |
| Continuous Drain Current                | $T_A=25^{\circ}C$ | $I_D$      | 3          | A             |
|                                         | $T_A=70^{\circ}C$ |            | 1.9        |               |
| Pulsed Drain Current                    |                   | $I_{DM}$   | 10         |               |
| Power Dissipation                       | $T_A=25^{\circ}C$ | $P_D$      | 1.25       | W             |
|                                         | $T_A=70^{\circ}C$ |            | 0.8        |               |
| Thermal Resistance.Junction- to-Ambient | (Note.1)          | $R_{thJA}$ | 100        | $^{\circ}C/W$ |
|                                         | (Note.2)          |            | 166        |               |
| Junction Temperature                    |                   | $T_J$      | 150        | $^{\circ}C$   |
| Storage Temperature Range               |                   | $T_{STG}$  | -55 to 150 |               |

Note.1: Surface Mounted on FR4 Board,  $t \leq 5$  sec.

Note.2: Surface Mounted on FR4 Board



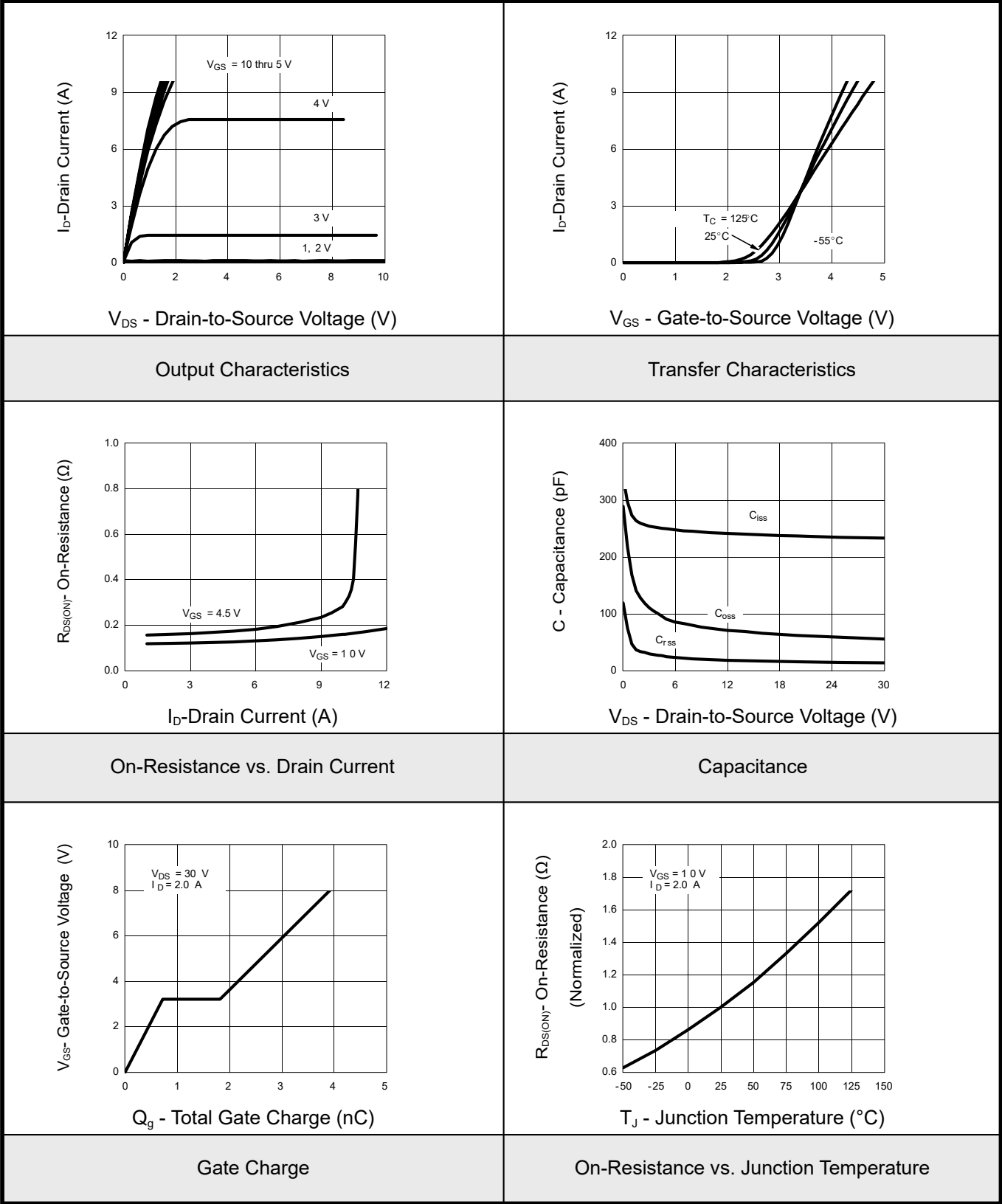
## 5. Electrical Characteristics $T_A = 25^\circ\text{C}$

| Parameter                             | Symbol       | Conditions                                                                                                | Min | Typ | Max       | Units         |
|---------------------------------------|--------------|-----------------------------------------------------------------------------------------------------------|-----|-----|-----------|---------------|
| Drain-Source Breakdown Voltage        | $V_{DS}$     | $I_D = 250\mu\text{A}$ , $V_{GS} = 0\text{V}$                                                             | 60  |     |           | V             |
| Zero Gate Voltage Drain Current       | $I_{DSS}$    | $V_{DS} = 60\text{V}$ , $V_{GS} = 0\text{V}$                                                              |     |     | 0.5       | $\mu\text{A}$ |
|                                       |              | $V_{DS} = 60\text{V}$ , $V_{GS} = 0\text{V}$ , $T_J = 55^\circ\text{C}$                                   |     |     | 10        |               |
| Gate-Body leakage current             | $I_{GSS}$    | $V_{DS} = 0\text{V}$ , $V_{GS} = \pm 20\text{V}$                                                          |     |     | $\pm 100$ | nA            |
| Gate Threshold Voltage                | $V_{GS(th)}$ | $V_{DS} = V_{GS}$ , $I_D = 250\mu\text{A}$                                                                | 1   |     | 3         | V             |
| Static Drain-Source On-Resistance     | $R_{DS(on)}$ | $V_{GS} = 10\text{V}$ , $I_D = 3\text{A}$                                                                 |     | 65  | 80        | m $\Omega$    |
|                                       |              | $V_{GS} = 4.5\text{V}$ , $I_D = 1.9\text{A}$                                                              |     | 75  | 95        |               |
| On state drain current                | $I_{D(on)}$  | $V_{GS} \geq 4.5\text{V}$ , $V_{DS} = 10\text{A}$                                                         | 6   |     |           | A             |
|                                       |              | $V_{DS} \geq 4.5\text{V}$ , $V_{DS} = 4.5\text{A}$                                                        | 4   |     |           | A             |
| Forward Transconductance              | $g_{FS}$     | $V_{DS} = 4.5\text{A}$ , $I_D = 2\text{A}$                                                                |     | 4.6 |           | S             |
| Input Capacitance                     | $C_{iss}$    | $V_{GS} = 0\text{V}$ , $V_{DS} = 25\text{V}$ , $f = 1\text{MHz}$                                          |     | 240 |           | pF            |
| Output Capacitance                    | $C_{oss}$    |                                                                                                           |     | 50  |           |               |
| Reverse Transfer Capacitance          | $C_{rss}$    |                                                                                                           |     | 15  |           |               |
| Gate Resistance                       | $R_g$        | $V_{DS} = 25\text{V}$ , $V_{GS} = 0\text{V}$ , $f = 1\text{MHz}$                                          | 0.5 |     | 3.3       | $\Omega$      |
| Total Gate Charge                     | $Q_g$        | $V_{DS} = 30\text{V}$ , $V_{GS} = 10\text{V}$ , $I_D = 2\text{A}$                                         |     | 4.8 | 10        | nC            |
| Gate Source Charge                    | $Q_{gs}$     |                                                                                                           |     | 0.8 |           |               |
| Gate Drain Charge                     | $Q_{gd}$     |                                                                                                           |     | 1   |           |               |
| Turn-On DelayTime                     | $t_{D(on)}$  | $V_{GS} = 4.5\text{V}$ , $V_{DS} = 30\text{V}$<br>$R_L = 30\Omega$ , $R_G = 6\Omega$<br>$I_D = 1\text{A}$ |     | 7   | 15        | ns            |
| Turn-On Rise Time                     | $t_r$        |                                                                                                           |     | 10  | 20        |               |
| Turn-Off DelayTime                    | $t_{D(off)}$ |                                                                                                           |     | 17  | 35        |               |
| Turn-Off Fall Time                    | $t_f$        |                                                                                                           |     | 6   | 15        |               |
| Maximum Body-Diode Continuous Current | $I_S$        |                                                                                                           |     |     | 1         | A             |
| Diode Forward Voltage                 | $V_{SD}$     | $I_S = 1\text{A}$ , $V_{GS} = 0\text{V}$                                                                  |     |     | 1.2       | V             |

Note: Pulse test; pulse width  $\leq 300\text{ us}$ , duty cycle  $\leq 2\%$ .

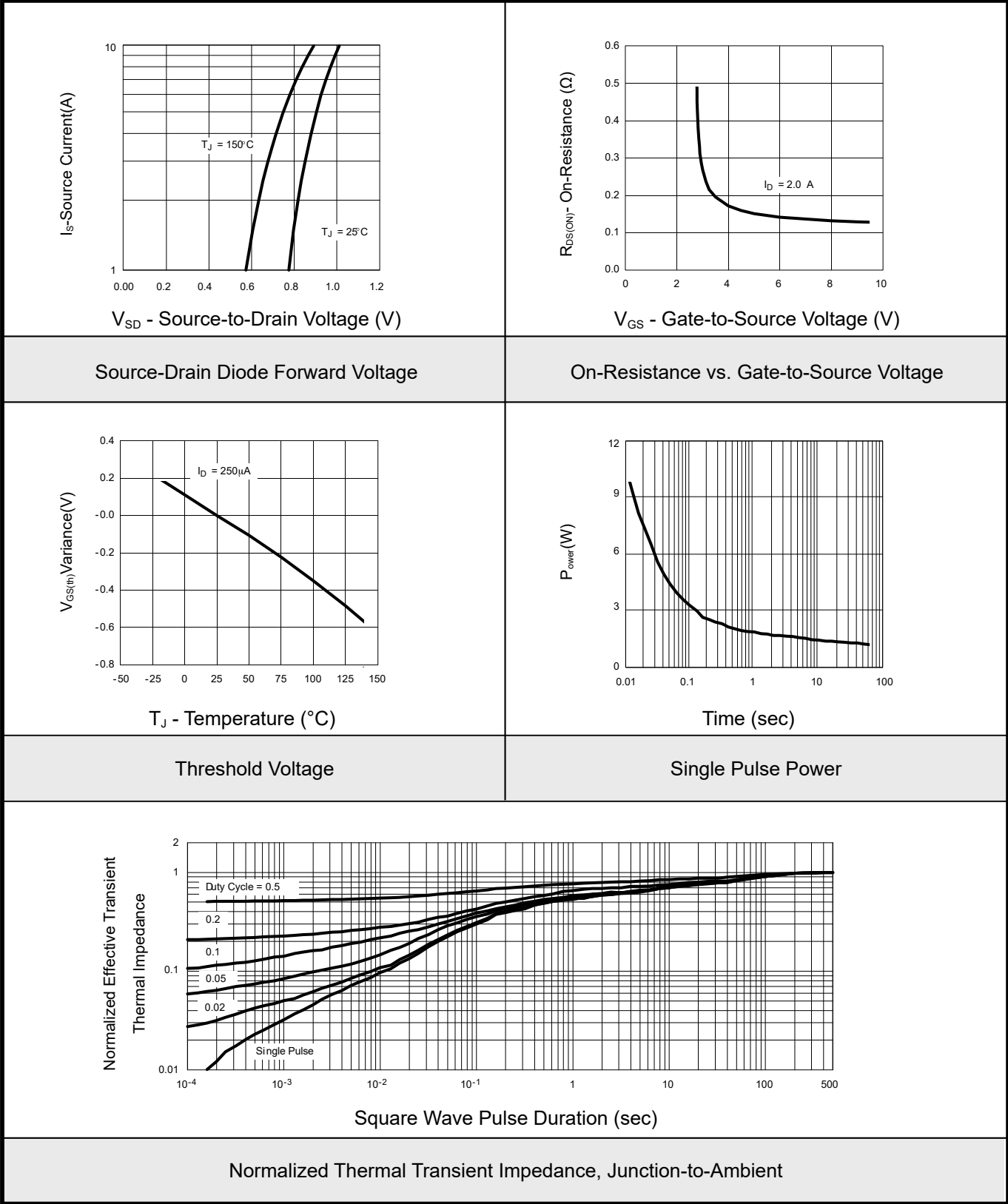


6.1Typical Characteristics



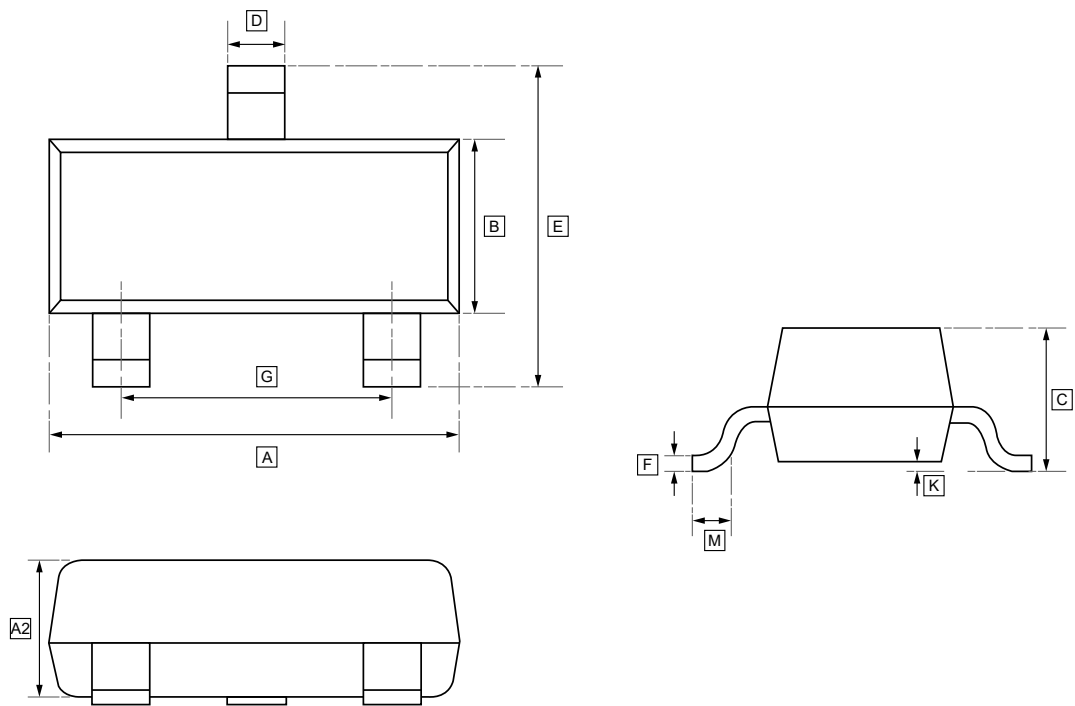


6.2Typical Characterisitics





7.SOT-23 Package Outline Dimensions

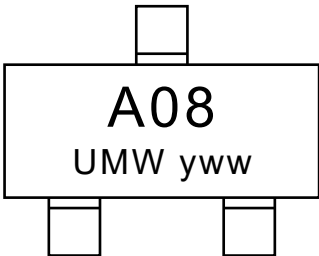


DIMENSIONS (mm are the original dimensions)

| Symbol | A    | B    | C    | D    | E    | G    | K    | M    | A2   | F     |
|--------|------|------|------|------|------|------|------|------|------|-------|
| Min    | 2.85 | 1.20 | 0.90 | 0.40 | 2.25 | 1.80 | 0.00 | 0.30 | 0.95 | 0.095 |
| Max    | 3.04 | 1.40 | 1.10 | 0.50 | 2.55 | 2.00 | 0.10 | -    | 1.05 | 0.115 |



8.Ordering information



yww: Batch Code

| Order Code  | Package | Base QTY | Delivery Mode |
|-------------|---------|----------|---------------|
| UMW SI2308A | SOT-23  | 3000     | Tape and reel |



## 9.Disclaimer

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