

## Product Summary

| $V_{(BR)DSS}$ | $R_{DS(on)typ.}$ | $I_D$ |
|---------------|------------------|-------|
| 30V           | 38mΩ@10V         | 3.6A  |
|               | 45mΩ@4.5V        |       |

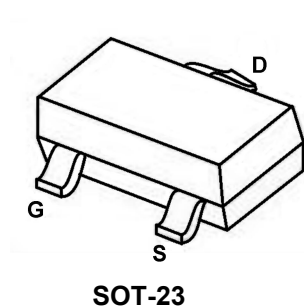
## Feature

- TrenchFET Power MOSFET

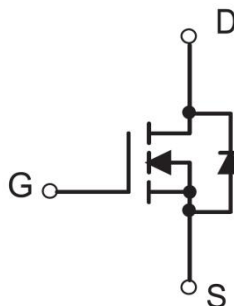
## Application

- DC/DC Converter
- Load Switch for Portable Devices

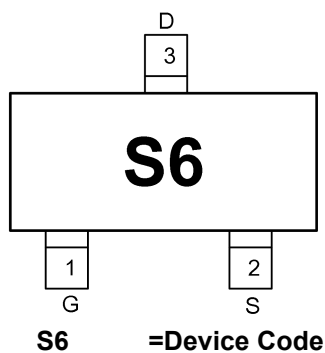
## Package:



## Circuit diagram



## Marking



**Absolute maximum ratings (Ta=25°C unless otherwise noted)**

| Parameter                                                  | Symbol          | Value     | Unit          |
|------------------------------------------------------------|-----------------|-----------|---------------|
| Drain-Source Voltage                                       | $V_{DS}$        | 30        | V             |
| Gate-Source Voltage                                        | $V_{GS}$        | $\pm 20$  |               |
| Continuous Drain Current (Ta=25)                           | $I_D$           | 3.6       | A             |
| Pulsed Drain Current                                       | $I_{DM}$        | 14.4      |               |
| Maximum Power Dissipation                                  | $P_D$           | 0.35      | W             |
| Thermal Resistance from Junction to Ambient( $t \leq 5s$ ) | $R_{\theta JA}$ | 357       | $^{\circ}C/W$ |
| Junction Temperature                                       | $T_J$           | 150       | $^{\circ}C$   |
| Storage Temperature                                        | $T_{STG}$       | -55~ +150 |               |

**Electrical characteristics (Ta=25 °C, unless otherwise noted)**

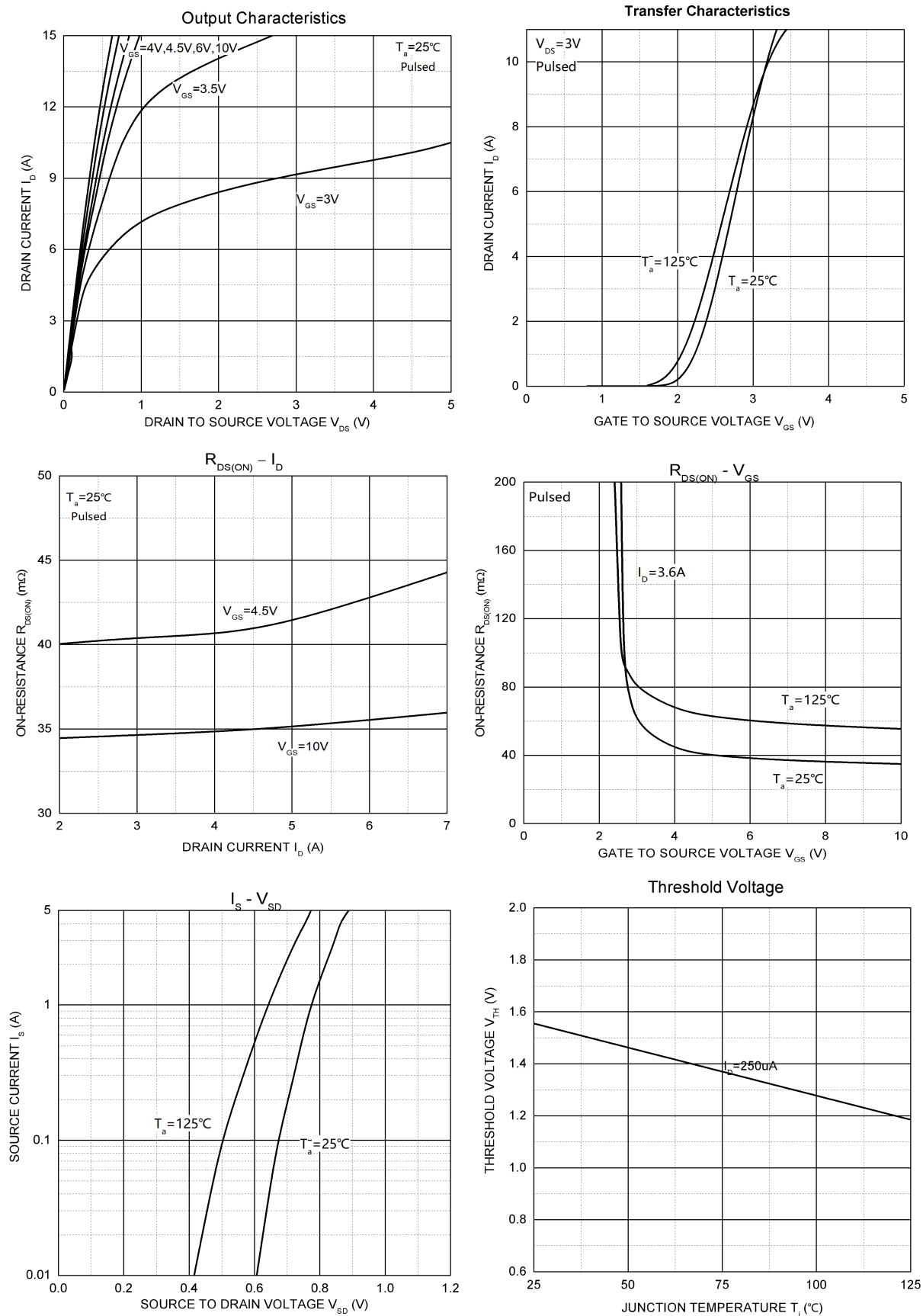
| Parameter                                | Symbol               | Test Condition                                                                                             | Min. | Typ. | Max. | Unit |
|------------------------------------------|----------------------|------------------------------------------------------------------------------------------------------------|------|------|------|------|
| Static Characteristics                   |                      |                                                                                                            |      |      |      |      |
| Drain-source breakdown voltage           | V <sub>(BR)DSS</sub> | V <sub>GS</sub> = 0V, I <sub>D</sub> =250μA                                                                | 30   |      |      | V    |
| Zero gate voltage drain current          | I <sub>DSS</sub>     | V <sub>DS</sub> =30V,V <sub>GS</sub> = 0V                                                                  |      |      | 0.5  | μA   |
| Gate-body leakage current                | I <sub>GSS</sub>     | V <sub>GS</sub> =±20V, V <sub>DS</sub> = 0V                                                                |      |      | ±100 | nA   |
| Gate threshold voltage                   | V <sub>GS(th)</sub>  | V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA                                                   | 1    | 1.5  | 2    | V    |
| Drain-source on-resistance <sup>1)</sup> | R <sub>DS(on)</sub>  | V <sub>GS</sub> =10V, I <sub>D</sub> =3.5A                                                                 |      | 38   | 47   | mΩ   |
|                                          |                      | V <sub>GS</sub> =4.5V, I <sub>D</sub> =2.8A                                                                |      | 45   | 65   |      |
| Dynamic characteristics <sup>2)</sup>    |                      |                                                                                                            |      |      |      |      |
| gate charge                              | Q <sub>g</sub>       | V <sub>DS</sub> =15V,V <sub>GS</sub> =5V,I <sub>D</sub> =2.5A                                              |      | 3.0  | 4.5  | nC   |
| Total Gate Charge                        | Q <sub>gt</sub>      | V <sub>DS</sub> =15V,V <sub>GS</sub> =10V,I <sub>D</sub> =2.5A                                             |      | 6    | 9    |      |
| Gate-source charge                       | Q <sub>gs</sub>      |                                                                                                            |      | 1.6  |      |      |
| Gate-drain charge                        | Q <sub>gd</sub>      |                                                                                                            |      | 0.6  |      |      |
| Gate resistance                          | R <sub>g</sub>       | f =1.0MHz                                                                                                  | 2.5  | 5    | 7.5  | Ω    |
| Input Capacitance                        | C <sub>iss</sub>     | V <sub>DS</sub> =15V,V <sub>GS</sub> =0V,f =1MHz                                                           |      | 305  |      | pF   |
| Output Capacitance                       | C <sub>oss</sub>     |                                                                                                            |      | 65   |      |      |
| Reverse Transfer Capacitance             | C <sub>rss</sub>     |                                                                                                            |      | 29   |      |      |
| Turn-on delay time                       | t <sub>d(on)</sub>   | V <sub>DD</sub> =15V, R <sub>L</sub> =15Ω, I <sub>D</sub> ≈1A,<br>V <sub>GEN</sub> =10V,R <sub>g</sub> =6Ω |      | 7    | 11   | ns   |
| Turn-on rise time                        | t <sub>r</sub>       |                                                                                                            |      | 12   | 18   |      |
| Turn-off delay time                      | t <sub>d(off)</sub>  |                                                                                                            |      | 14   | 25   |      |
| Turn-off fall time                       | t <sub>f</sub>       |                                                                                                            |      | 6    | 10   |      |
| Source-Drain Diode characteristics       |                      |                                                                                                            |      |      |      |      |
| Body diode voltage                       | V <sub>SD</sub>      | I <sub>S</sub> =1.25A,V <sub>GS</sub> =0V                                                                  |      | 0.8  | 1.2  | V    |

**Notes:**

- 1) Pulse Test: Pulse width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$ .
- 2) Guaranteed by design, not subject to production testing.

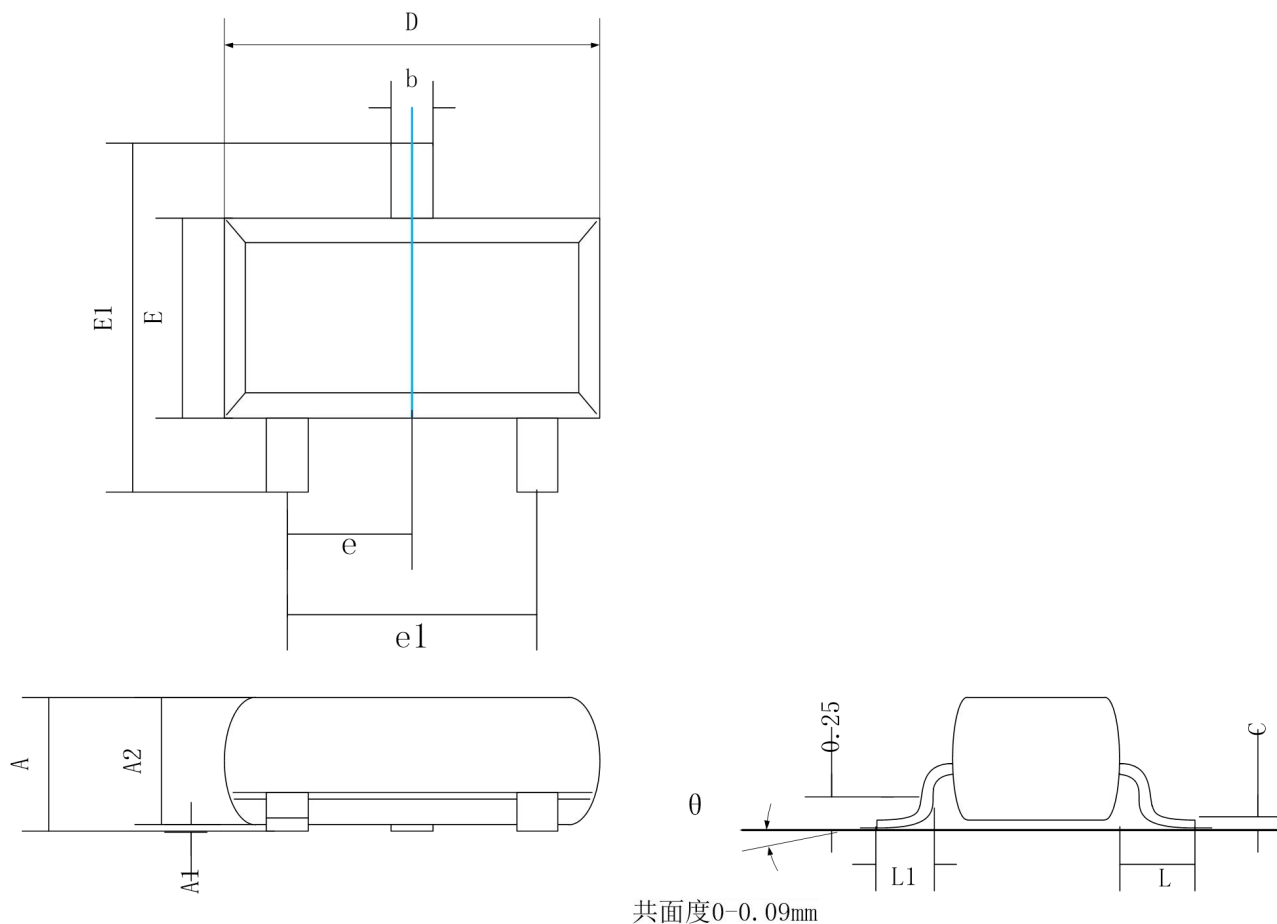


## Typical Characteristics





SOT-23 Package Information



| Symbol   | Dimensions In Millimeters |      |
|----------|---------------------------|------|
|          | Min.                      | Max. |
| A        | 0.90                      | 1.15 |
| A1       | 0.00                      | 0.10 |
| A2       | 0.90                      | 1.05 |
| b        | 0.30                      | 0.50 |
| c        | 0.08                      | 0.15 |
| D        | 2.80                      | 3.00 |
| E        | 1.20                      | 1.40 |
| E1       | 2.25                      | 2.55 |
| e        | 0.95 REF.                 |      |
| e1       | 1.80                      | 2.00 |
| L        | 0.55 REF.                 |      |
| L1       | 0.30                      | 0.50 |
| $\theta$ | 0°                        | 8°   |

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