

## Product Summary

| $V_{(BR)DSS}$ | $R_{DS(on)TYP}$ | $I_D$ |
|---------------|-----------------|-------|
| 30V           | 37mΩ@10V        | 3.3A  |
|               | 57mΩ@4.5V       |       |

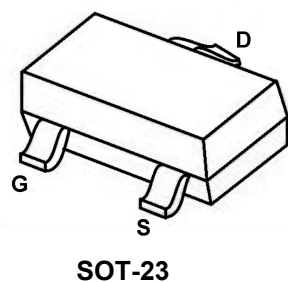
## Feature

- TrenchFET Power MOSFET

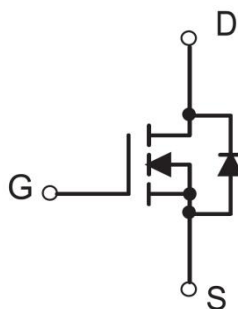
## Application

- DC/DC Converter
- Load Switch for Portable Devices

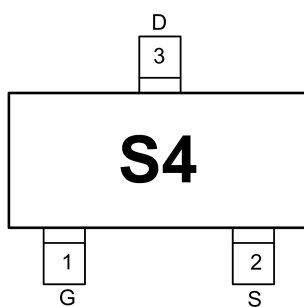
## Package



## 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                                   | $I_D$           | 3.3       | A             |
| Pulsed Drain Current                                       | $I_{DM}$        | 15        |               |
| Continuous Source-Drain Diode Current                      | $I_S$           | 0.9       |               |
| 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       |
|---------------------------------------------|---------------|----------------------------------------------------------------------------------|------|------|-----------|------------|
| <b>Static Characteristics</b>               |               |                                                                                  |      |      |           |            |
| Drain-source breakdown voltage              | $V_{(BR)DSS}$ | $V_{GS} = 0V, I_D = 250\mu A$                                                    | 30   |      |           | V          |
| Zero gate voltage drain current             | $I_{DSS}$     | $V_{DS} = 30V, V_{GS} = 0V$                                                      |      |      | 1         | $\mu A$    |
| Gate-body leakage current                   | $I_{GSS}$     | $V_{GS} = \pm 20V, V_{DS} = 0V$                                                  |      |      | $\pm 100$ | nA         |
| Gate threshold voltage                      | $V_{GS(th)}$  | $V_{DS} = V_{GS}, I_D = 250\mu A$                                                | 1    | 1.6  | 2.2       | V          |
| Drain-source on-resistance <sup>1)</sup>    | $R_{DS(on)}$  | $V_{GS} = 10V, I_D = 3.2A$                                                       |      | 37   | 60        | m $\Omega$ |
|                                             |               | $V_{GS} = 4.5V, I_D = 2.8A$                                                      |      | 57   | 75        |            |
| Forward transconductance <sup>1)</sup>      | $g_{FS}$      | $V_{DS} = 4.5V, I_D = 2.5A$                                                      | 2.5  |      |           | S          |
| <b>Dynamic characteristics<sup>2)</sup></b> |               |                                                                                  |      |      |           |            |
| Total gate charge                           | $Q_g$         | $V_{DS} = 15V, V_{GS} = 10V, I_D = 3.4A$                                         |      | 4.5  | 6.7       | nC         |
|                                             |               |                                                                                  |      | 2.1  | 3.2       |            |
| Gate-source charge                          | $Q_{gs}$      | $V_{DS} = 15V, V_{GS} = 4.5V, I_D = 3.4A$                                        |      | 0.85 |           |            |
| Gate-drain charge                           | $Q_{gd}$      |                                                                                  |      | 0.65 |           |            |
| Gate resistance                             | $R_g$         | $f = 1.0MHz$                                                                     | 0.8  | 4.4  | 8.8       | $\Omega$   |
| Input Capacitance                           | $C_{iss}$     | $V_{DS} = 15V, V_{GS} = 0V, f = 1MHz$                                            |      | 235  |           | pF         |
| Output Capacitance                          | $C_{oss}$     |                                                                                  |      | 45   |           |            |
| Reverse Transfer Capacitance                | $C_{rss}$     |                                                                                  |      | 17   |           |            |
| Turn-on delay time                          | $t_{d(on)}$   | $V_{DD} = 15V, R_L = 5.6\Omega, I_D \approx 2.7A, V_{GEN} = 4.5V, R_g = 1\Omega$ |      | 12   | 20        | ns         |
| Turn-on rise time                           | $t_r$         |                                                                                  |      | 50   | 75        |            |
| Turn-off delay time                         | $t_{d(off)}$  |                                                                                  |      | 12   | 20        |            |
| Turn-off fall time                          | $t_f$         |                                                                                  |      | 22   | 35        |            |
| Turn-on delay time                          | $t_{d(on)}$   | $V_{DD} = 15V, R_L = 5.6\Omega, I_D \approx 2.7A, V_{GEN} = 10V, R_g = 1\Omega$  |      | 5    | 10        |            |
| Turn-on rise time                           | $t_r$         |                                                                                  |      | 12   | 20        |            |
| Turn-off delay time                         | $t_{d(off)}$  |                                                                                  |      | 10   | 15        |            |
| Turn-off fall time                          | $t_f$         |                                                                                  |      | 5    | 10        |            |



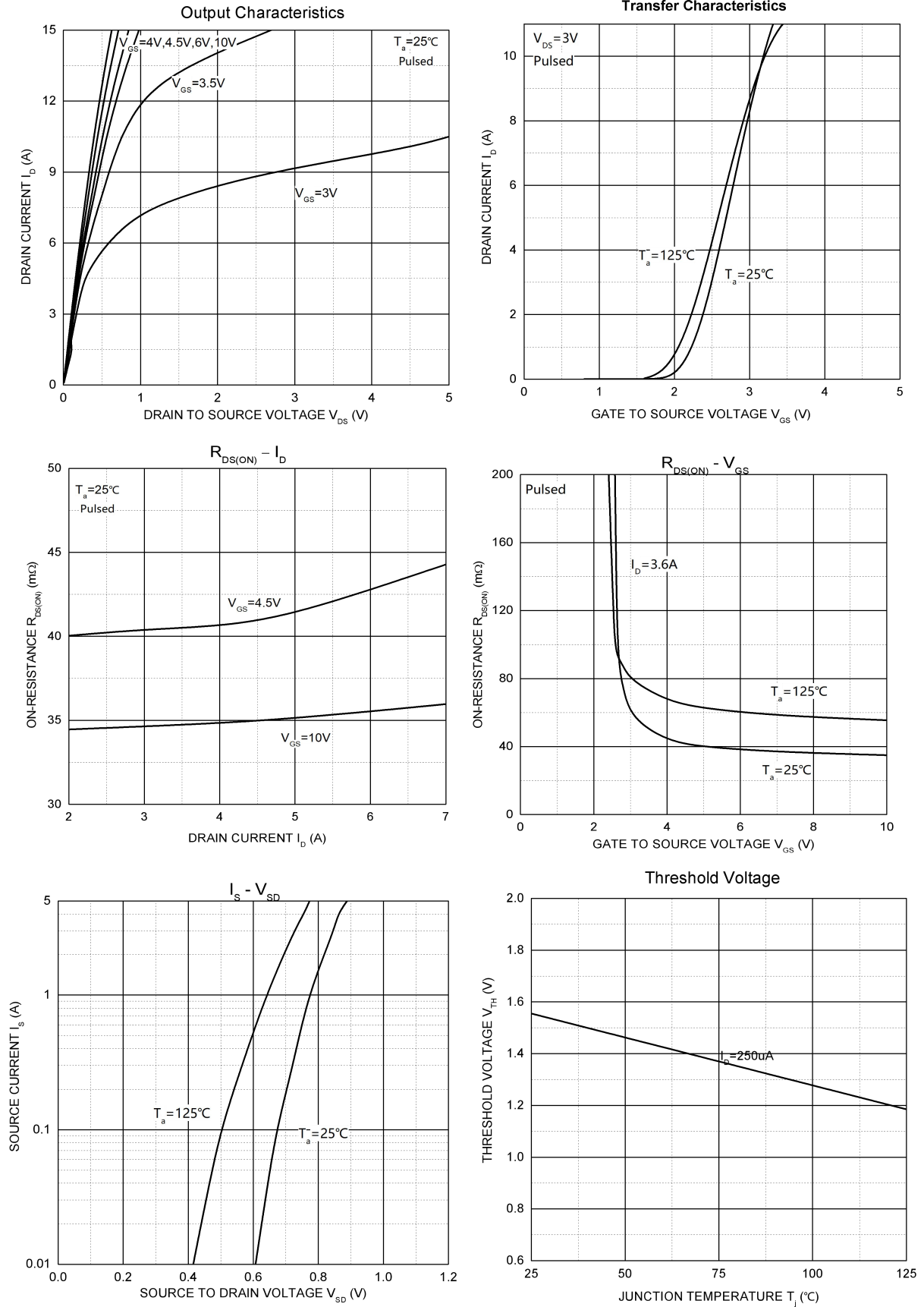
| Source-Drain Diode characteristics    |          |                                     |  |  |     |   |
|---------------------------------------|----------|-------------------------------------|--|--|-----|---|
| Continuous source-drain diode current | $I_S$    | $T_C=25^{\circ}\text{C}$            |  |  | 1.4 | A |
| Pulse diode forward current           | $I_{SM}$ |                                     |  |  | 15  | A |
| Body diode voltage                    | $V_{SD}$ | $I_S=2.7\text{A}, V_{GS}=0\text{V}$ |  |  | 1.2 | V |

**Notes:**

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

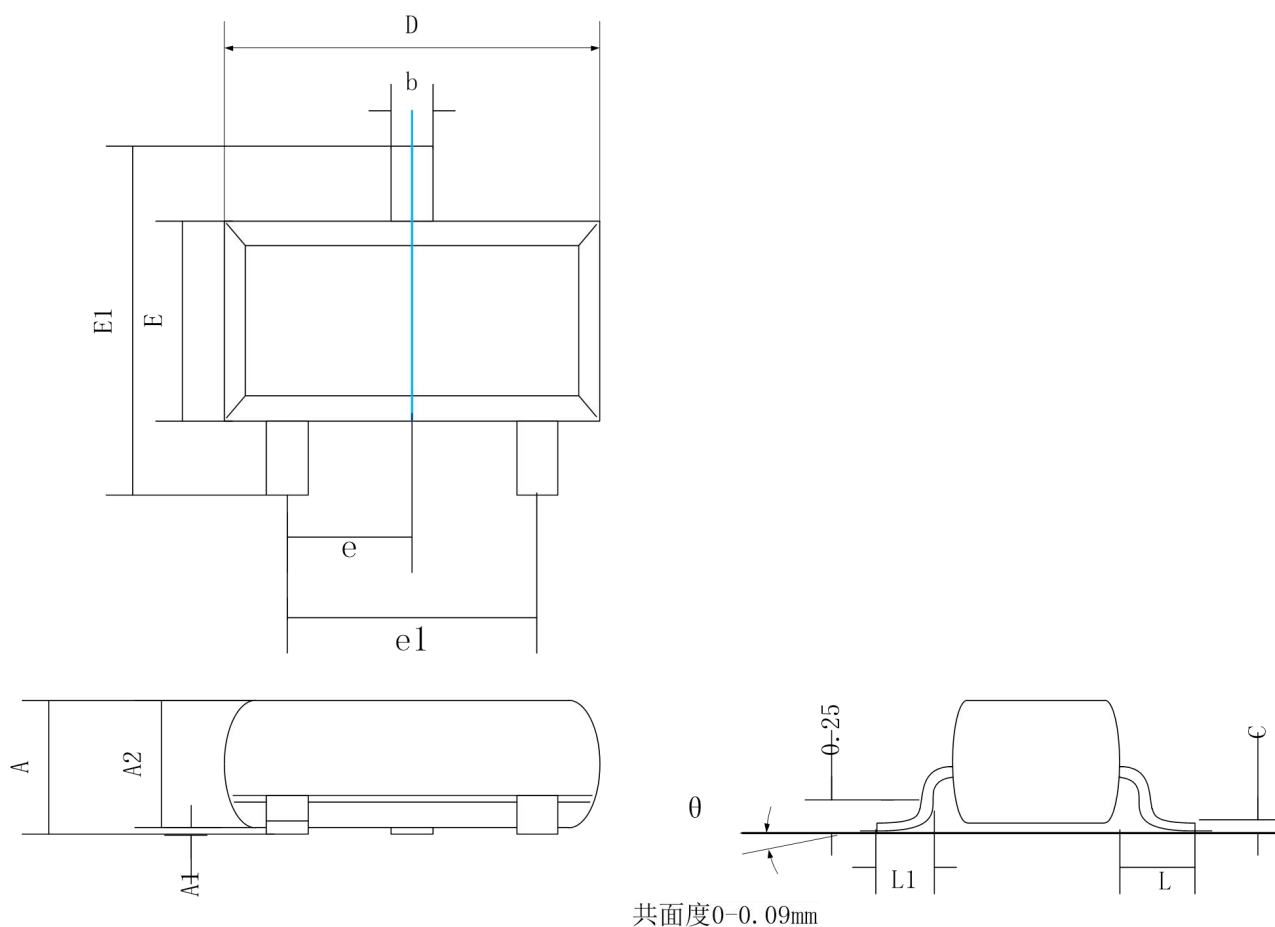


## Typical Characteristics





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 |
| θ      | 0°                        | 8°   |

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