

**Product Summary**

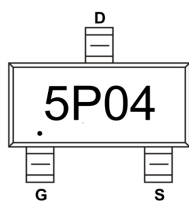
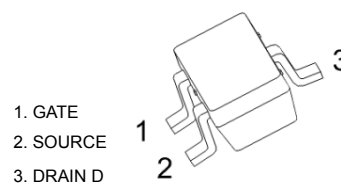
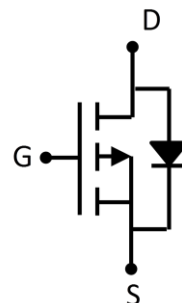
| $V_{(BR)DSS}$ | $R_{DS(on)TYP}$ | $I_D$ |
|---------------|-----------------|-------|
| -40V          | 63mΩ@-10V       | -5.3A |
|               | 98mΩ@-4.5V      |       |

**Feature**

- TrenchFET Power MOSFET
- Exceptional on-resistance and maximum DC current capability

**Application**

- DC/DC Converter
- Load Switch for Portable Devices
- Battery Switch

**MARKING:**

**SOT-23-3L**

**Schematic diagram**

**ABSOLUTE MAXIMUM RATINGS ( $T_A=25^{\circ}\text{C}$  unless otherwise noted)**

| Parameter                                   | Symbol          | Value     | Unit                 |
|---------------------------------------------|-----------------|-----------|----------------------|
| Drain-Source Voltage                        | $V_{DS}$        | -40       | V                    |
| Gate-Source Voltage                         | $V_{GS}$        | $\pm 20$  | V                    |
| Continuous Drain Current                    | $I_D$           | -5.3      | A                    |
| Power Dissipation                           | $P_D$           | 1         | W                    |
| Thermal Resistance from Junction to Ambient | $R_{\theta JA}$ | 125       | $^{\circ}\text{C/W}$ |
| Junction Temperature                        | $T_J$           | 150       | $^{\circ}\text{C}$   |
| Storage Temperature                         | $T_{STG}$       | -55~ +150 | $^{\circ}\text{C}$   |

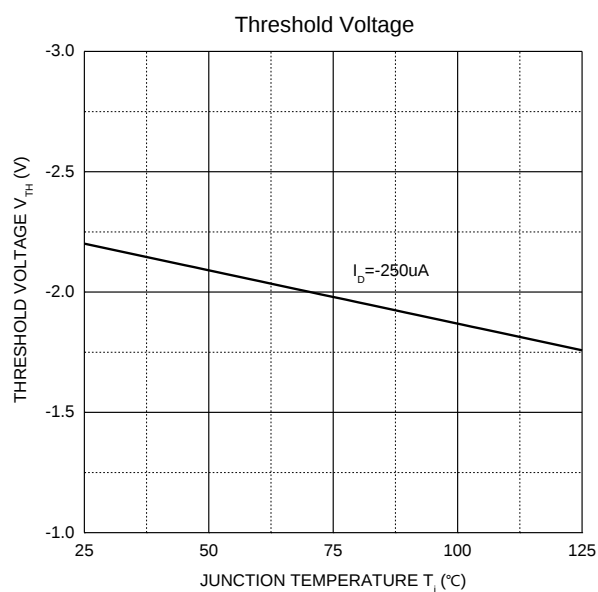
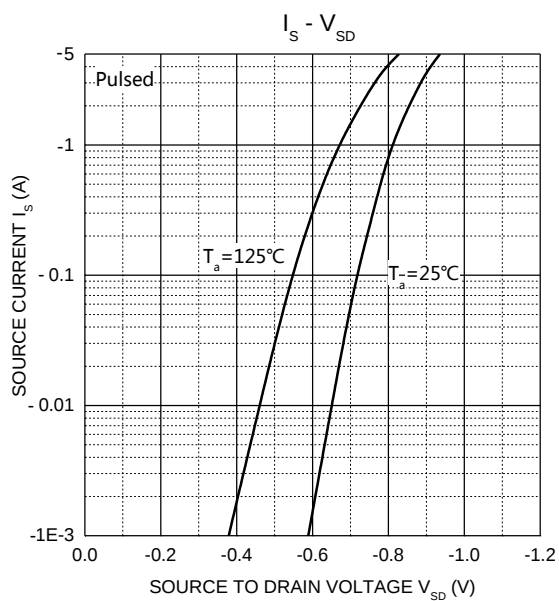
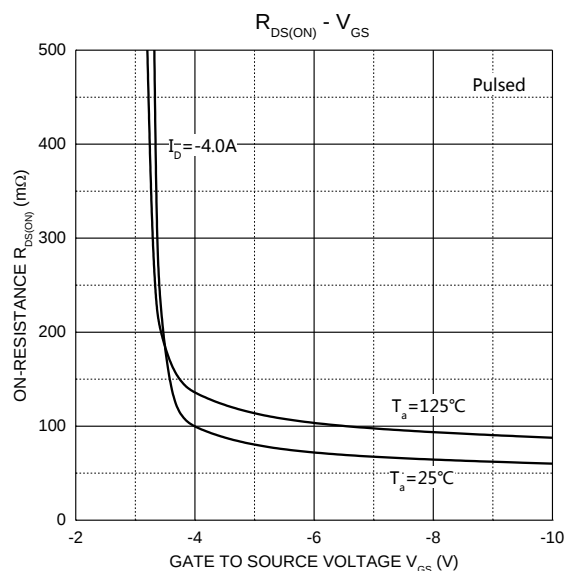
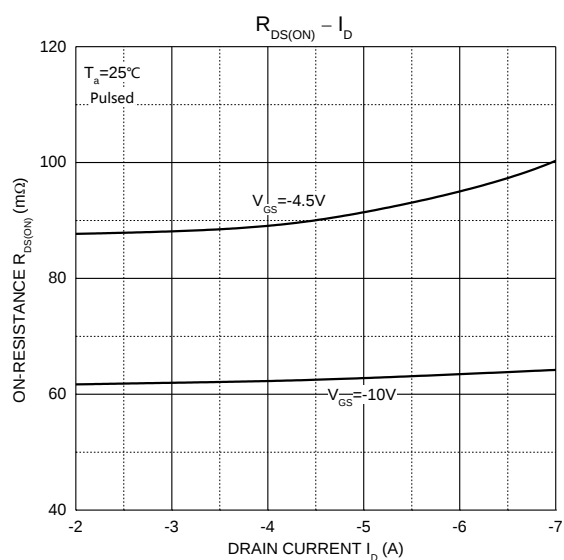
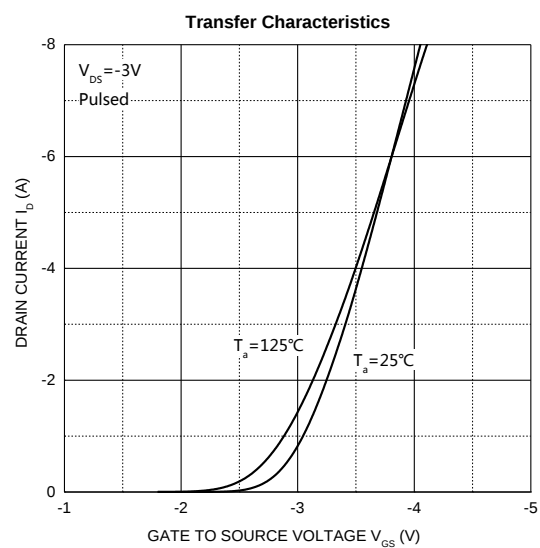
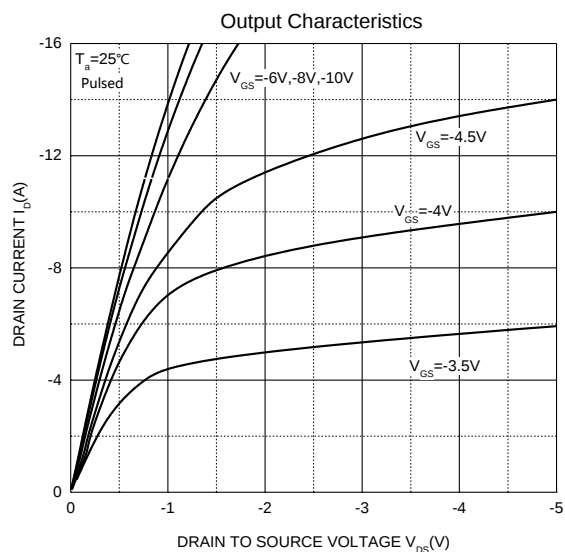
**MOSFET ELECTRICAL CHARACTERISTICS( $T_A=25^{\circ}\text{C}$  unless otherwise noted)**

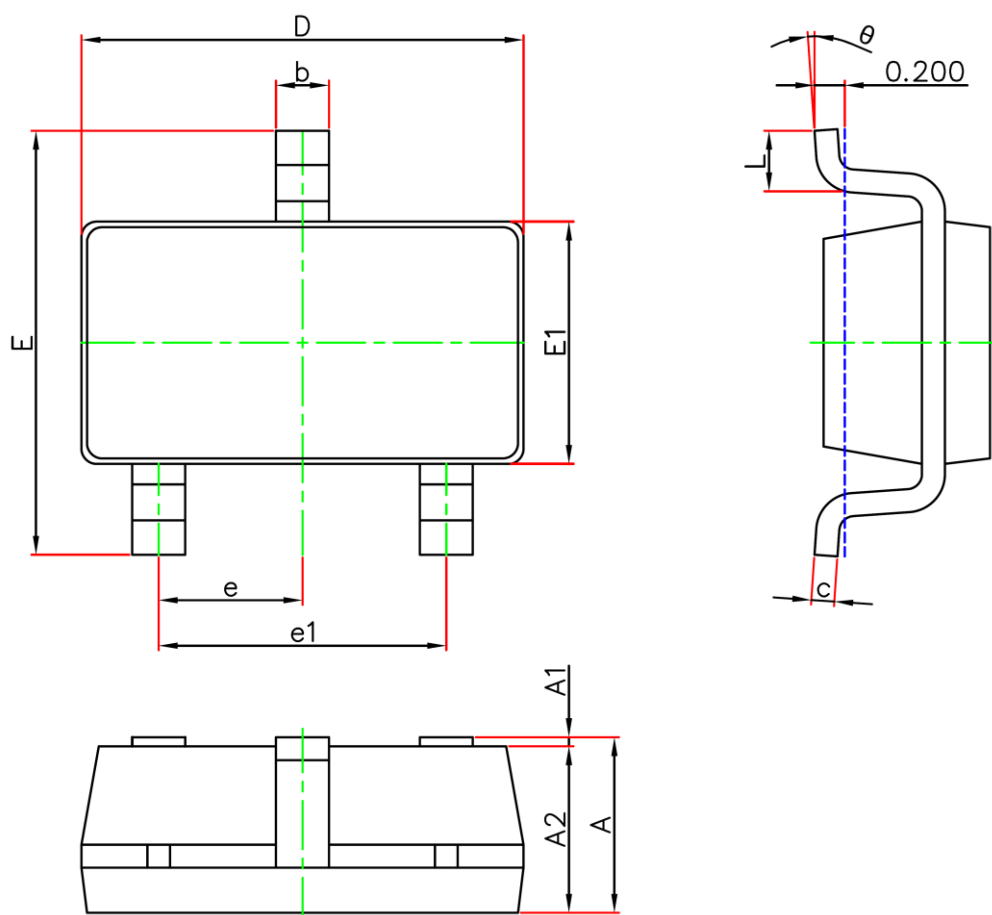
| Parameter                                 | Symbol               | Test Condition                                                                           | Min  | Type  | Max  | Unit |
|-------------------------------------------|----------------------|------------------------------------------------------------------------------------------|------|-------|------|------|
| Static Characteristics                    |                      |                                                                                          |      |       |      |      |
| Drain-source breakdown voltage            | V <sub>(BR)DSS</sub> | V <sub>GS</sub> = 0V, I <sub>D</sub> =-250μA                                             | -40  |       |      | V    |
| Zero gate voltage drain current           | I <sub>DSS</sub>     | V <sub>DS</sub> =-40V,V <sub>GS</sub> = 0V                                               |      |       | -1   | μA   |
| Gate-body leakage current                 | I <sub>GSS</sub>     | V <sub>GS</sub> =±20V, V <sub>DS</sub> = 0V                                              |      |       | 100  | nA   |
| Gate threshold voltage <sup>(1)</sup>     | V <sub>GS(th)</sub>  | V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-250μA                                | -1.0 | -2.1  | -3.0 | V    |
| Drain-source on-resistance <sup>(1)</sup> | R <sub>DS(on)</sub>  | V <sub>GS</sub> =-10V, I <sub>D</sub> =-5.0A                                             |      | 63    | 82   | mΩ   |
|                                           |                      | V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-4.0A                                            |      | 98    | 126  |      |
| Forward tranconductance                   | g <sub>FS</sub>      | V <sub>DS</sub> =-5V, I <sub>D</sub> =-4.1A                                              |      | 7     |      | S    |
| Dynamic characteristics <sup>(2)</sup>    |                      |                                                                                          |      |       |      |      |
| Input Capacitance                         | C <sub>iss</sub>     | V <sub>DS</sub> =-20V,V <sub>GS</sub> =0V,f =1MHz                                        |      | 650   |      | pF   |
| Output Capacitance                        | C <sub>oss</sub>     |                                                                                          |      | 90    |      |      |
| Reverse Transfer Capacitance              | C <sub>rss</sub>     |                                                                                          |      | 70    |      |      |
| Total Gate Charge                         | Q <sub>g</sub>       | V <sub>DS</sub> =-20V,I <sub>D</sub> =-3.1A, V <sub>GS</sub> =-10V                       |      | 14    |      | nC   |
| Gate-Source Charge                        | Q <sub>gs</sub>      |                                                                                          |      | 2.9   |      |      |
| Gate-Drain Charge                         | Q <sub>gd</sub>      |                                                                                          |      | 3.8   |      |      |
| Switching characteristics <sup>(2)</sup>  |                      |                                                                                          |      |       |      |      |
| Turn-on delay time                        | t <sub>d(on)</sub>   | V <sub>DD</sub> =-20V, ,R <sub>L</sub> =2Ω<br>V <sub>GS</sub> =-10V,R <sub>GEN</sub> =3Ω |      | 8     |      | ns   |
| Turn-on rise time                         | t <sub>r</sub>       |                                                                                          |      | 9     |      |      |
| Turn-off delay time                       | t <sub>d(off)</sub>  |                                                                                          |      | 28    |      |      |
| Turn-off fall time                        | t <sub>f</sub>       |                                                                                          |      | 10    |      |      |
| Source-Drain Diode characteristics        |                      |                                                                                          |      |       |      |      |
| Diode Forward voltage <sup>(1)</sup>      | V <sub>DS</sub>      | V <sub>GS</sub> =0V, I <sub>S</sub> =-2.5A                                               |      | -0.87 | -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 Electrical and Thermal Characteristics



**SOT-23-3L Package Information**


| Symbol   | Dimensions In Millimeters |       | Dimensions In Inches |       |
|----------|---------------------------|-------|----------------------|-------|
|          | Min.                      | Max.  | Min.                 | Max.  |
| A        | 1.050                     | 1.250 | 0.041                | 0.049 |
| A1       | 0                         | 0.150 | 0.000                | 0.006 |
| A2       | 1.050                     | 1.250 | 0.041                | 0.049 |
| b        | 0.300                     | 0.500 | 0.012                | 0.020 |
| c        | 0.100                     | 0.200 | 0.004                | 0.008 |
| D        | 2.820                     | 3.020 | 0.111                | 0.119 |
| E        | 2.650                     | 2.950 | 0.104                | 0.116 |
| E1       | 1.500                     | 1.700 | 0.059                | 0.067 |
| e        | 0.950TYP                  |       | 0.037TYP             |       |
| e1       | 1.800                     | 2.000 | 0.071                | 0.079 |
| L        | 0.300                     | 0.600 | 0.012                | 0.024 |
| $\theta$ | 0°                        | 8°    | 0°                   | 8°    |

**Attention:**

- GreenPower Electronics reserves the right to improve product design function and reliability without notice.
- Any and all semiconductor products have certain probability to fail or malfunction, which may result in personal injury, death or property damage. Customer are solely responsible for providing adequate safe measures when design their systems.
- GreenPower Electronics products belong to consumer electronics or other civilian electronic products.