



#### Product Summary

| $V_{(BR)DSS}$ | $R_{DS(on)TYP}$      | $I_D$ |
|---------------|----------------------|-------|
| -20V          | 68m $\Omega$ @-4.5V  | -1.4A |
|               | 92m $\Omega$ @-2.5V  |       |
|               | 130m $\Omega$ @-1.8V |       |

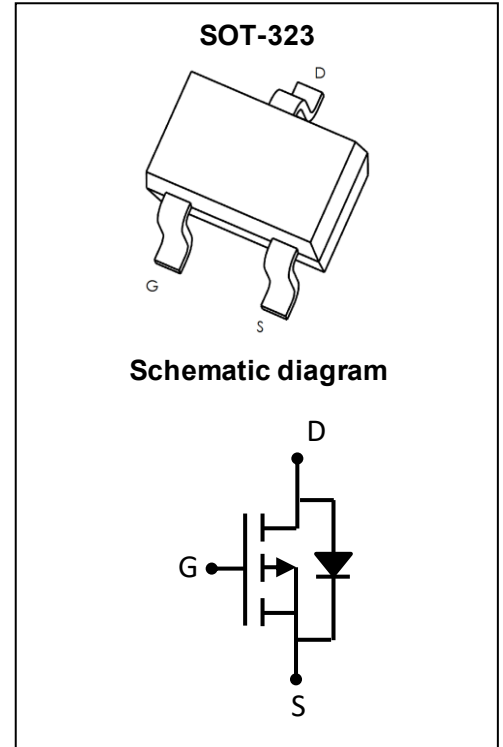
#### Feature

- Leading Trench Technology for Low  $R_{DS(on)}$
- Extending Battery Life

#### Application

- High Side Load Switch
- Charging Circuit
- Single Cell Battery Applications

#### MARKING:



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

| Parameter  | Symbol          | Value     | Unit               |
|--|-----------------|-----------|--------------------|
| Drain-Source Voltage                                       | $V_{DS}$        | -20       | V                  |
| Gate-Source Voltage  | $V_{GS}$        | $\pm 10$  | V                  |
| Continuous Drain Current <sup>1,2</sup>                    | $I_D$           | -1.4      | A                  |
| Pulsed Drain Current                                       | $I_{DM}$        | -5.6      | A                  |
| Power Dissipation  | $P_D$           | 0.57      | W                  |
| Thermal Resistance from Junction to Ambient <sup>1,2</sup> | $R_{\theta JA}$ | 220       | $^\circ\text{C/W}$ |
| Junction Temperature                                       | $T_J$           | 150       | $^\circ\text{C}$   |
| Storage Temperature  | $T_{STG}$       | -55~ +150 | $^\circ\text{C}$   |

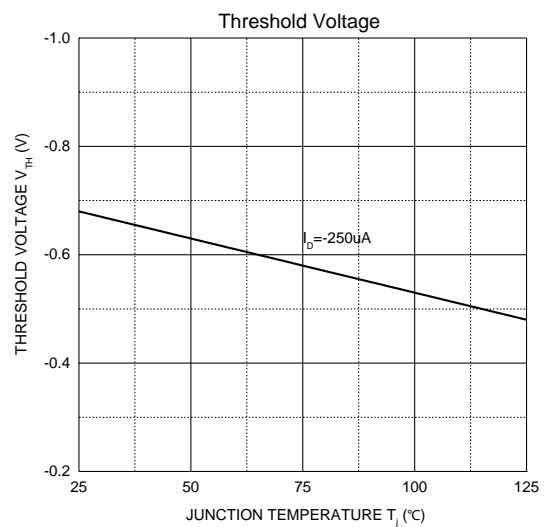
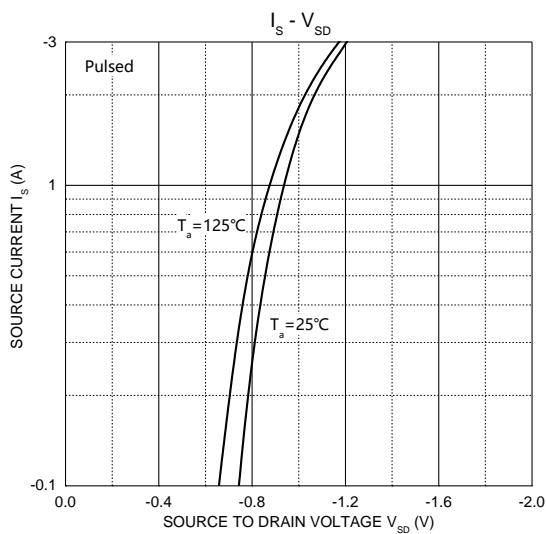
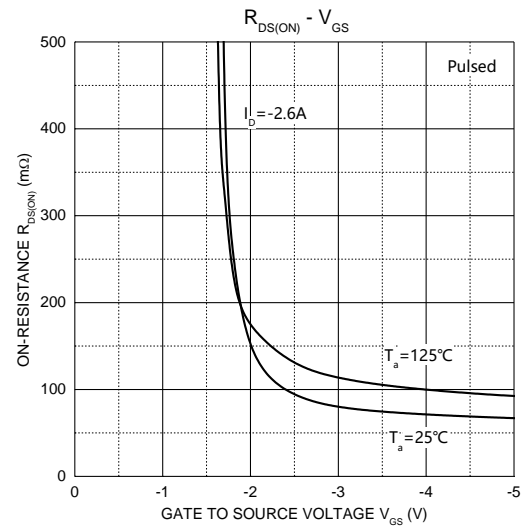
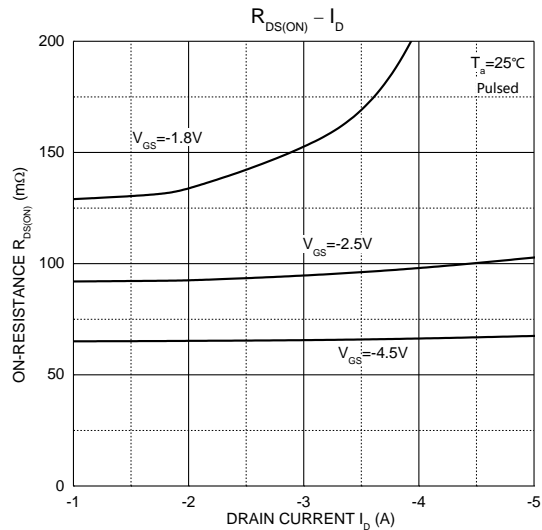
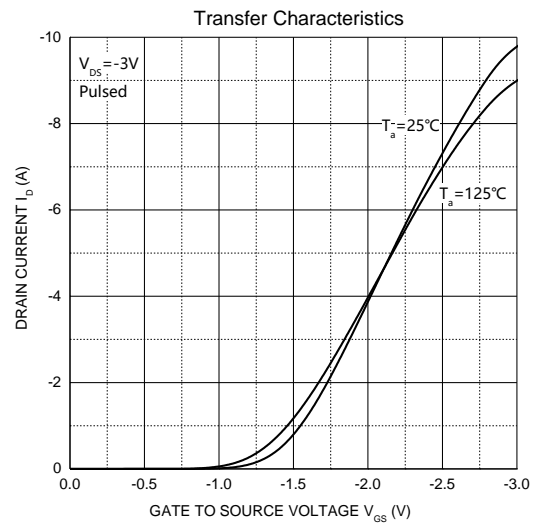
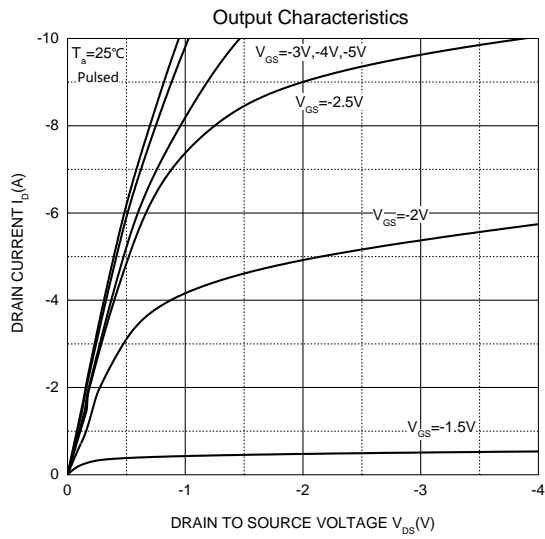
**MOSFET ELECTRICAL CHARACTERISTICS(T<sub>a</sub> = 25°C unless otherwise noted)**

| Parameter                             | Symbol               | Test Condition  | Min  | Type | Max  | Unit |
|---------------------------------------|----------------------|---|------|------|------|------|
| <b>Off Characteristics</b>            |                      |   |      |      |      |      |
| Drain-source breakdown voltage        | V <sub>(BR)DSS</sub> | V <sub>GS</sub> = 0V, I <sub>D</sub> = -250μA   | -20  |      |      | V    |
| Zero gate voltage drain current       | I <sub>DSS</sub>     | V <sub>DS</sub> = -16V, V <sub>GS</sub> = 0V  |      |      | -1   | μA   |
| Gate-body leakage current             | I <sub>GSS</sub>     | V <sub>GS</sub> = ±8V, V <sub>DS</sub> = 0V   |      |      | ±100 | nA   |
| <b>On Characteristics<sup>3</sup></b> |                      |   |      |      |      |      |
| Gate threshold voltage                | V <sub>GS(th)</sub>  | V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -250μA                                     | -0.4 | -0.7 | -1.0 | V    |
| Drain-source on-resistance            | R <sub>DS(on)</sub>  | V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -1.0A   |      | 68   | 90   | mΩ   |
|                                       |                      | V <sub>GS</sub> = -2.5V, I <sub>D</sub> = -0.5A   |      | 92   | 120  |      |
|                                       |                      | V <sub>GS</sub> = -1.8V, I <sub>D</sub> = -0.3A   |      | 130  | 195  |      |
| Forward transconductance              | g <sub>FS</sub>      | V <sub>DS</sub> = -5V, I <sub>D</sub> = -1.4A   | 8    |      |      | S    |
| <b>Dynamic Characteristics</b>        |                      |   |      |      |      |      |
| Input Capacitance                     | C <sub>iss</sub>     | V <sub>DS</sub> = -10V, V <sub>GS</sub> = 0V, f = 1MHz  |      | 350  |      | pF   |
| Output Capacitance                    | C <sub>oss</sub>     |   |      | 75   |      |      |
| Reverse Transfer Capacitance          | C <sub>rss</sub>     |   |      | 67   |      |      |
| <b>Switching Characteristics</b>      |                      |   |      |      |      |      |
| Turn-on delay time                    | t <sub>d(on)</sub>   | V <sub>GS</sub> = -4.5V, V <sub>DD</sub> = -10V, I <sub>D</sub> = -1.4A,<br>R <sub>G</sub> = 3Ω |      | 7.0  |      | ns   |
| Turn-on rise time                     | t <sub>r</sub>       |   |      | 32   |      |      |
| Turn-off delay time                   | t <sub>d(off)</sub>  |   |      | 49   |      |      |
| Turn-off fall time                    | t <sub>f</sub>       |   |      | 55   |      |      |
| Total Gate Charge                     | Q <sub>g</sub>       | V <sub>DS</sub> = -10V, V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -1.4A                         |      | 8.2  |      | nC   |
| Gate-Source Charge                    | Q <sub>gs</sub>      |   |      | 1.1  |      |      |
| Gate-Drain Charge                     | Q <sub>gd</sub>      |   |      | 2.0  |      |      |
| <b>Diode Characteristics</b>          |                      |   |      |      |      |      |
| Diode Forward voltage <sup>3</sup>    | V <sub>DS</sub>      | V <sub>GS</sub> = 0V, I <sub>S</sub> = -0.3A  |      |      | -1.2 | V    |

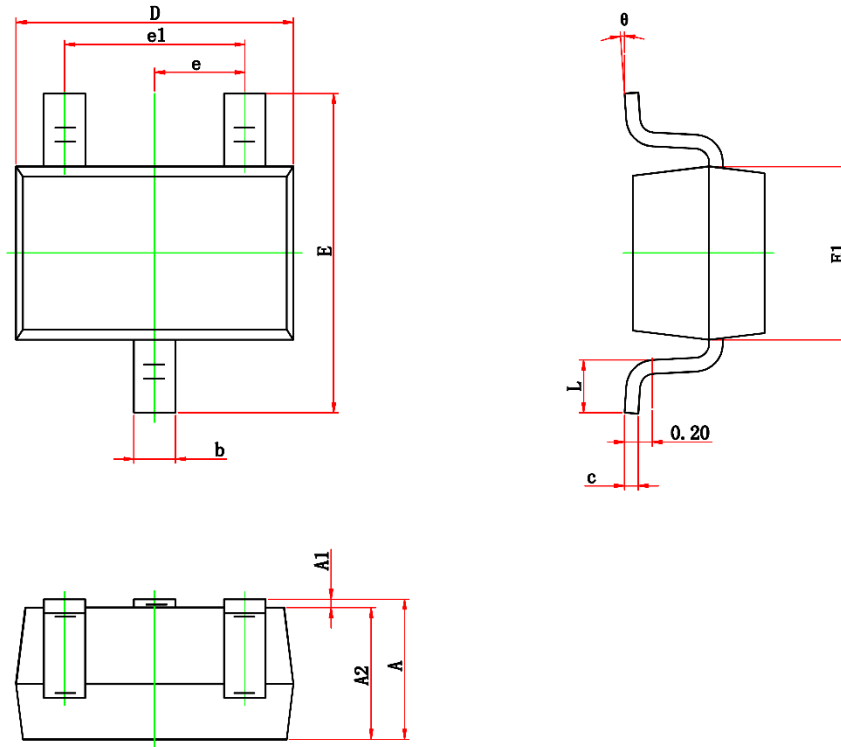
**Notes :**

- 1.R<sub>θJA</sub> is measured with the device mounted on 1 in<sup>2</sup> FR4 board with 1 oz. single side copper, in a still air environment with T<sub>A</sub> = 25°C.
- 2.R<sub>θJA</sub> is measured in the steady state
- 3.Pulse test : Pulse width ≤ 380μs, duty cycle ≤ 2%.

**Typical Characteristics**



## SOT-323 Package Information



| Symbol | Dimensions In Millimeters |       | Dimensions In Inches |       |
|--------|---------------------------|-------|----------------------|-------|
|        | Min.                      | Max.  | Min.                 | Max.  |
| A      | 0.900                     | 1.100 | 0.035                | 0.043 |
| A1     | 0.000                     | 0.100 | 0.000                | 0.004 |
| A2     | 0.900                     | 1.000 | 0.035                | 0.039 |
| b      | 0.200                     | 0.400 | 0.008                | 0.016 |
| c      | 0.050                     | 0.150 | 0.002                | 0.006 |
| D      | 1.900                     | 2.200 | 0.075                | 0.087 |
| E      | 2.000                     | 2.450 | 0.079                | 0.096 |
| E1     | 1.150                     | 1.350 | 0.045                | 0.053 |
| e      | 0.650TYP.                 |       | 0.026TYP.            |       |
| e1     | 1.200                     | 1.400 | 0.047                | 0.055 |
| L      | 0.200                     | 0.460 | 0.008                | 0.018 |
| θ      | 0°                        | 8°    | 0°                   | 8°    |