

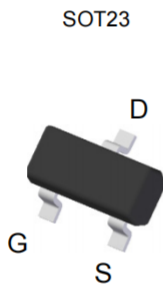
General Features

- $V_{DS} = 20V, I_D = 6A$
- $R_{DS(ON)} < 23m\Omega @ V_{GS}=2.5V$
- $R_{DS(ON)} < 35m\Omega @ V_{GS}=4.5V$

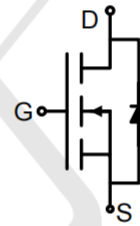
Application

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

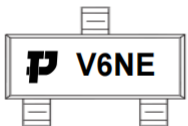
Package and Pin Configuration



Circuit diagram



Marking:



“P” is TECHPUBLIC LOGO
“V6NE” Marking ID

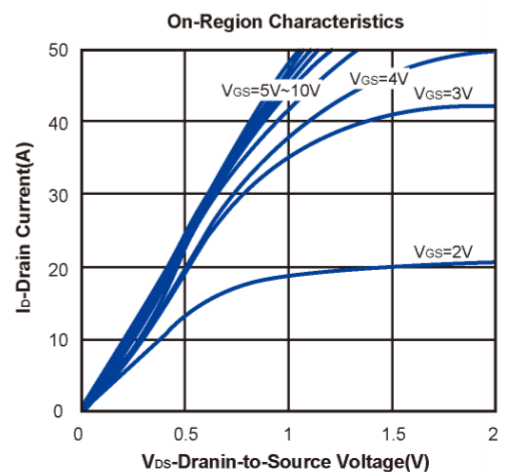
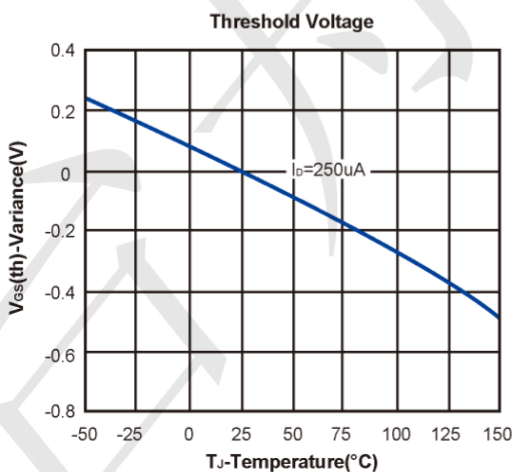
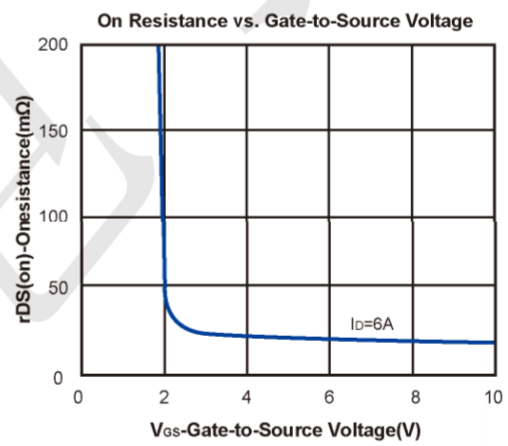
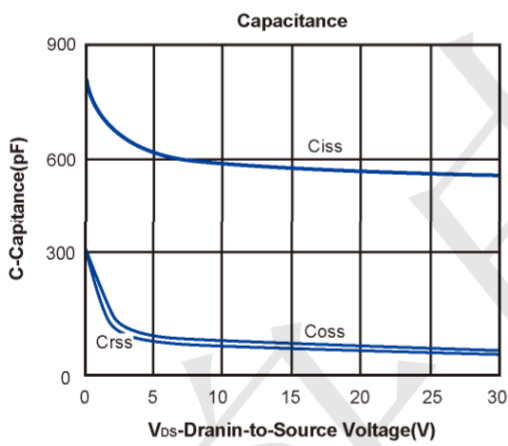
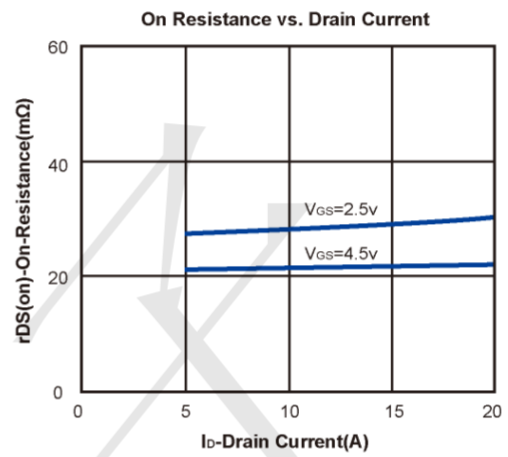
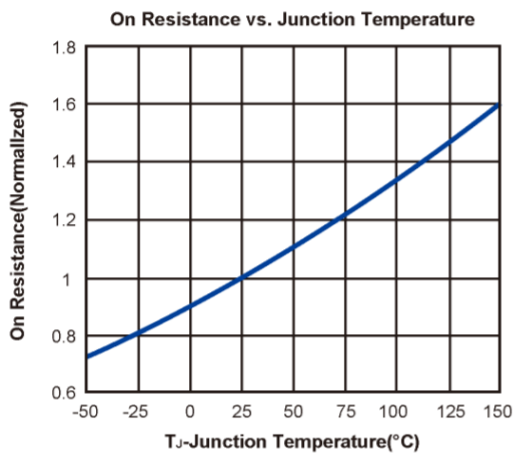
Absolute Maximum Ratings ($T_A=25^\circ C$ unless otherwise noted)

| Parameter | Symbol | Value | Unit |
|---|-----------------|------------|--------------|
| Drain-Source Voltage | V_{DS} | 20 | V |
| Gate-Source Voltage | V_{GS} | ± 12 | |
| Continuous Drain Current | I_D | 6 | A |
| Continuous Source-Drain Current(Diode Conduction) | I_S | 0.6 | |
| Power Dissipation | P_D | 1.25 | W |
| Thermal Resistance from Junction to Ambient ($t \leq 5s$) | $R_{\theta JA}$ | 312.5 | $^\circ C/W$ |
| Operating Junction | T_J | 150 | $^\circ C$ |
| Storage Temperature | T_{STG} | -55 ~ +150 | |

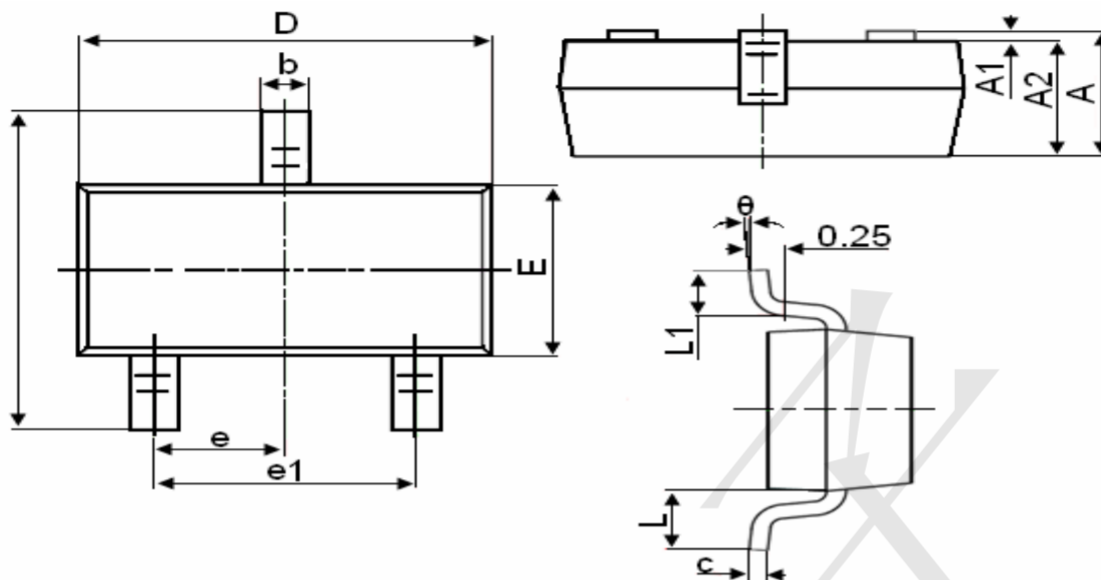
Electrical Characteristics ($T_A=25^\circ\text{C}$ unless otherwise noted)

| Parameter | Symbol | Test Condition | Min | Typ | Max | Units |
|---|---------------|--|------|-------|-----------|----------|
| Static | | | | | | |
| Drain-source breakdown voltage | $V_{(BR)DSS}$ | $V_{GS} = 0V, I_D = 10\mu A$ | 20 | | | V |
| Gate-threshold voltage | $V_{GS(th)}$ | $V_{DS} = V_{GS}, I_D = 50\mu A$ | 0.40 | | 1 | |
| Gate-body leakage | I_{GSS} | $V_{DS} = 0V, V_{GS} = \pm 8V$ | | | ± 100 | nA |
| Zero gate voltage drain current | I_{DSS} | $V_{DS} = 20V, V_{GS} = 0V$ | | | 1 | μA |
| Drain-source on-resistance ^a | $r_{DS(on)}$ | $V_{GS} = 4.5V, I_D = 6A$ | | 0.021 | 0.023 | Ω |
| | | $V_{GS} = 2.5V, I_D = 5.2A$ | | 0.028 | 0.035 | |
| Forward transconductance ^a | g_{fs} | $V_{DS} = 5V, I_D = 3.6A$ | | 8 | | S |
| Diode forward voltage | V_{SD} | $I_S = 0.94A, V_{GS} = 0V$ | | 0.74 | 1.2 | V |
| Dynamic | | | | | | |
| Total gate charge | Q_g | $V_{DS} = 10V, V_{GS} = 4.5V, I_D = 3.6A$ | | 7.7 | 10 | nC |
| Gate-source charge | Q_{gs} | | | 0.32 | | |
| Gate-drain charge | Q_{gd} | | | 2.1 | | |
| Input capacitance ^b | C_{iss} | $V_{DS} = 10V, V_{GS} = 0V, f = 1MHz$ | | 574 | | pF |
| Output capacitance ^b | C_{oss} | | | 70 | | |
| Reverse transfer capacitance ^b | C_{rss} | | | 60 | | |
| Switching^b | | | | | | |
| Turn-on delay time | $t_{d(on)}$ | $V_{DD} = 10V,$ $R_L = 5.5\Omega, I_D \approx 3.6A,$ $V_{GEN} = 4.5V, R_g = 6\Omega$ | | 78.7 | | ns |
| Rise time | t_r | | | 128 | | |
| Turn-off delay time | $t_{d(off)}$ | | | 453 | | |
| Fall time | t_f | | | 80.9 | | |

Typical Electrical and Thermal Characteristics



Package Outline Dimensions (SOT-23)



| Symbol | Dimensions in Millimeters | |
|--------|---------------------------|-------|
| | MIN. | MAX. |
| A | 0.900 | 1.150 |
| A1 | 0.000 | 0.100 |
| A2 | 0.900 | 1.050 |
| b | 0.300 | 0.500 |
| c | 0.080 | 0.150 |
| D | 2.800 | 3.000 |
| E | 1.200 | 1.400 |
| E1 | 2.250 | 2.550 |
| e | 0.950TYP | |
| e1 | 1.800 | 2.000 |
| L | 0.550REF | |
| L1 | 0.300 | 0.500 |
| θ | 0° | 8° |

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