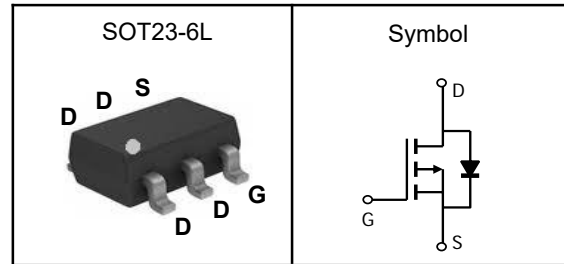


P-Channel Enhancement Mode MOSFET
Features

- TrenchFET Power MOSFET
- Low Thermal Resistance
- ROHS Compliant & Halogen-Free
- 100% UIS and Rg Tested

Applications

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

Pin Description


| | | |
|------------------|------|------------|
| V_{DSS} | -40 | V |
| $R_{DS(ON)-Max}$ | 45 | m Ω |
| I_D | -4.4 | A |

Absolute Maximum Ratings($T_J=25^\circ\text{C}$, Unless Otherwise Noted)

| Symbol | Parameter | N-Channel | Unit |
|--------------|------------------------------|------------------------|------------------|
| V_{DSS} | Drain-Source Voltage | -40 | V |
| V_{GSS} | Gate-Source Voltage | ± 20 | V |
| T_J | Maximum Junction Temperature | -55 to 150 | $^\circ\text{C}$ |
| T_{STG} | Storage Temperature Range | -55 to 150 | $^\circ\text{C}$ |
| $I_{DM}^{①}$ | Pulse Drain Current Tested | -20 | A |
| I_D | Continuous Drain Current | $T_A=25^\circ\text{C}$ | A |
| P_D | Maximum Power Dissipation | $T_A=25^\circ\text{C}$ | W |

Thermal Characteristics

| Symbol | Parameter | Rating | Unit |
|---------------------|--|--------|---------------------------|
| $R_{\theta JA}^{③}$ | Thermal Resistance-Junction to Ambient | 166 | $^\circ\text{C}/\text{W}$ |

Note ① : Max. current is limited by bonding wire.

Note ② : UIS tested and pulse width are limited by maximum junction temperature 150 $^\circ\text{C}$.

Note ③ : Surface Mounted on 1in² FR-4 board with 1oz.



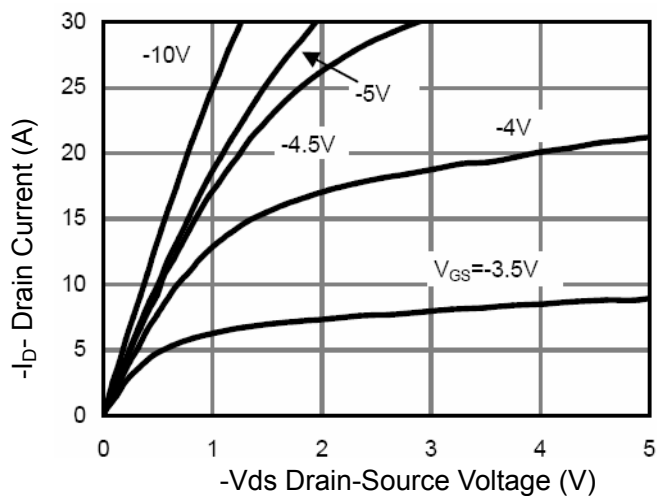
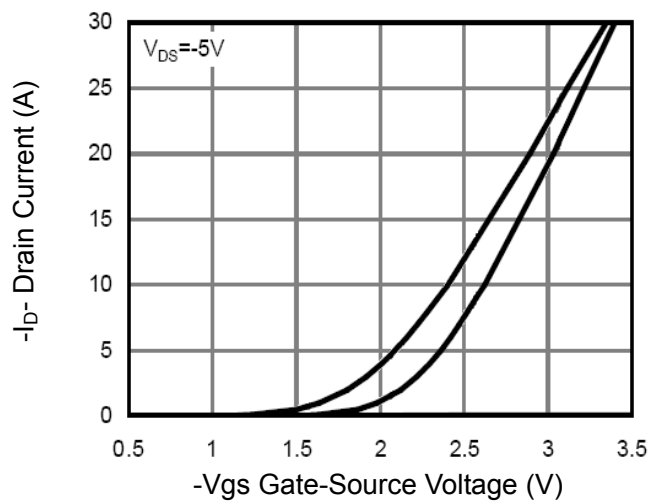
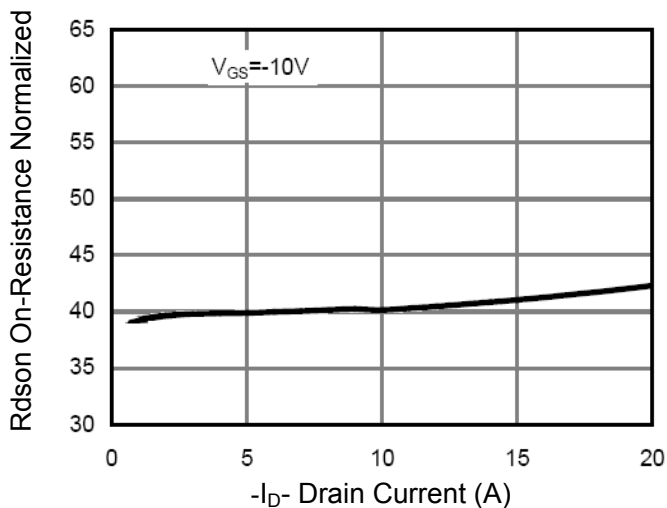
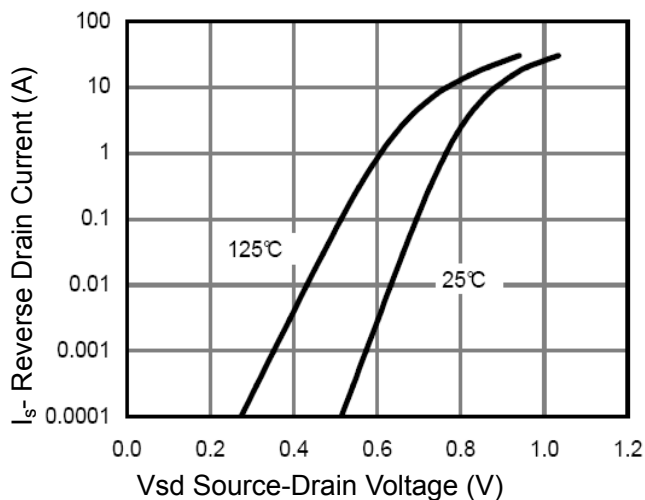
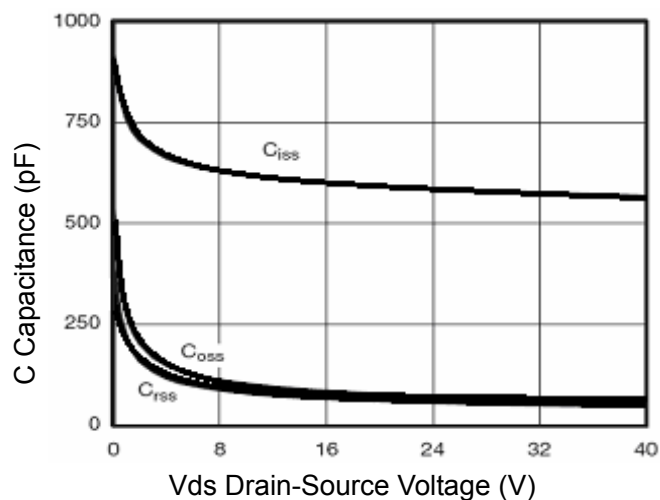
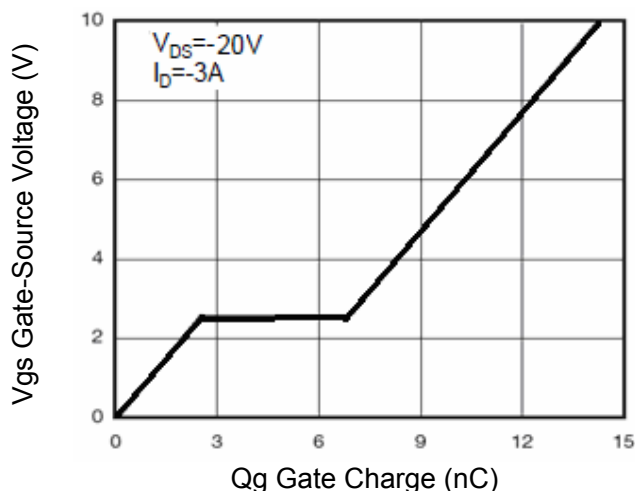
P-Channel Enhancement Mode MOSFET

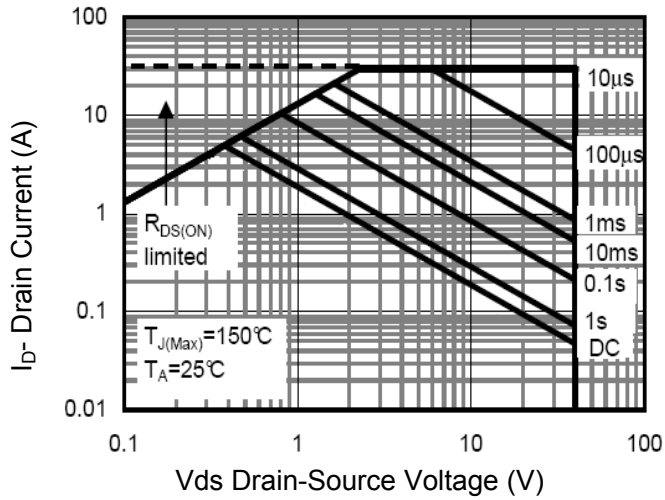
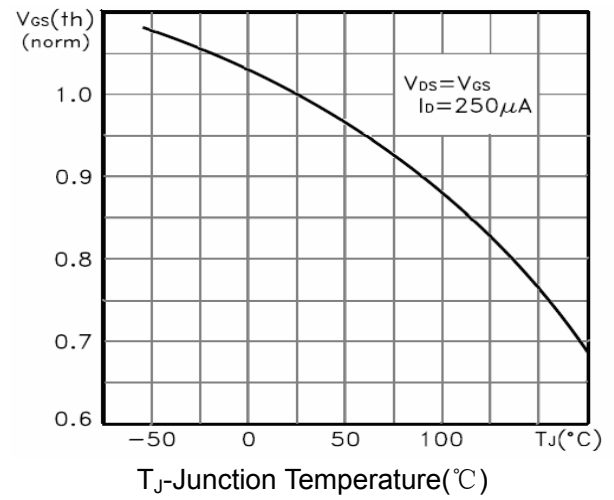
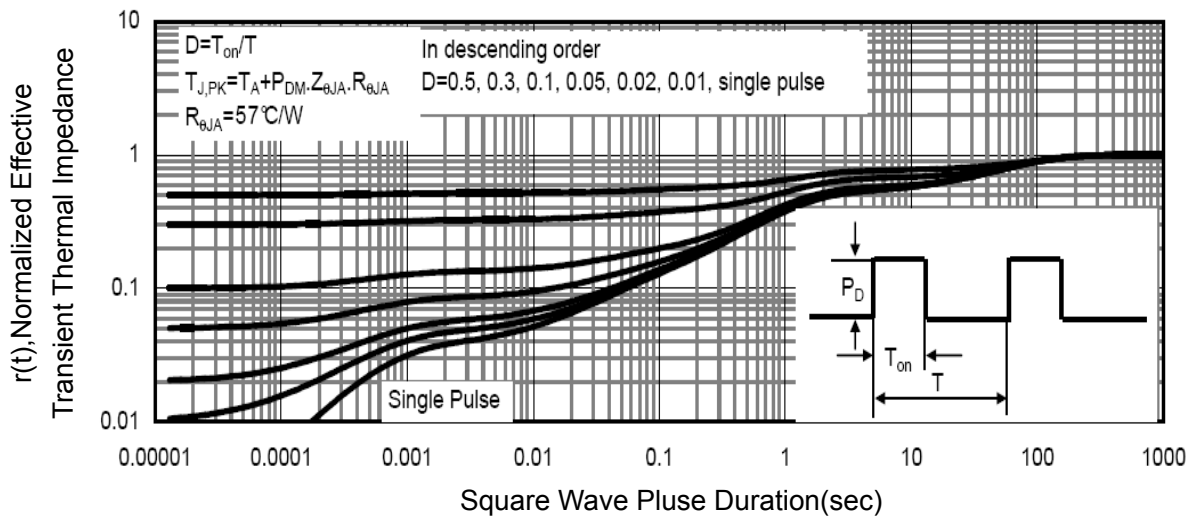
Electrical Characteristics ($T_J=25^{\circ}\text{C}$, Unless Otherwise Noted)

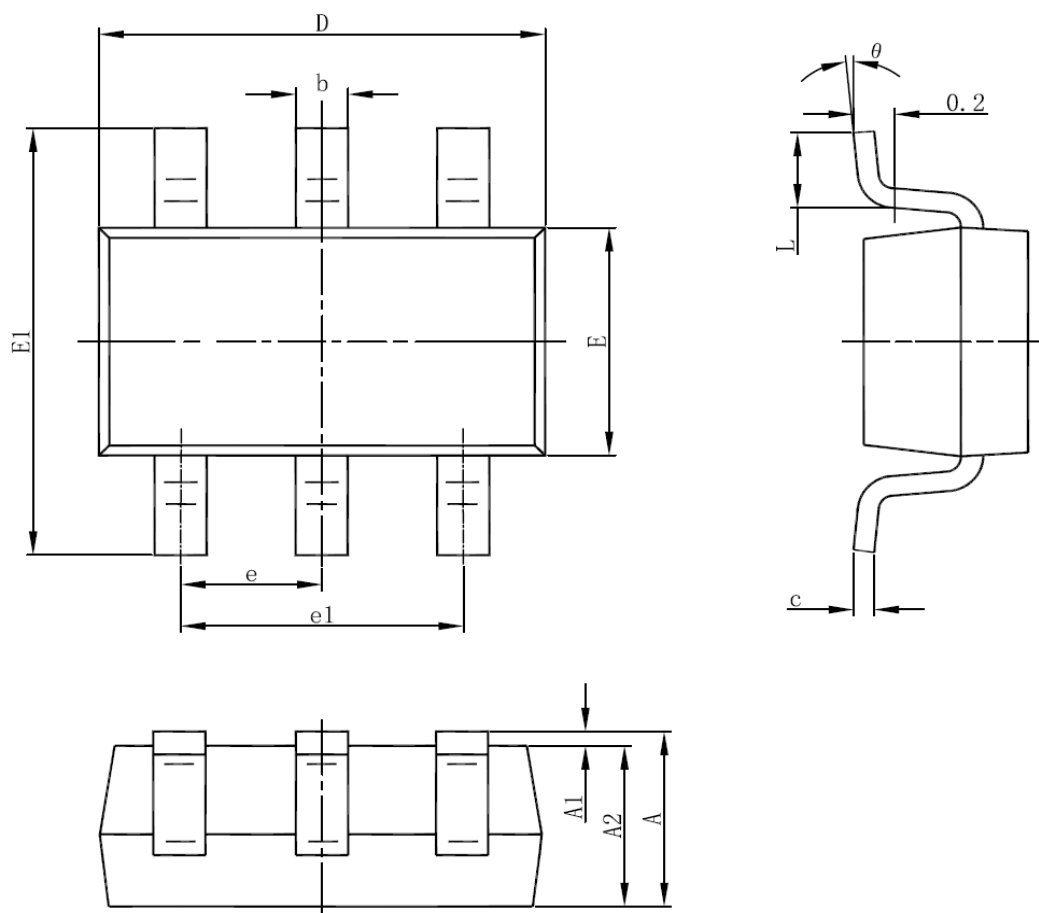
| Symbol | Parameter | Test Conditions | Min | Typ | Max | Unit |
|---|----------------------------------|--|-----|------|-----------|-----------|
| Static Electrical Characteristics | | | | | | |
| BV_{DSS} | Drain-Source Breakdown Voltage | $V_{GS}=0V, I_D=-250\mu A$ | -40 | --- | --- | V |
| I_{DSS} | Zero Gate Voltage Drain Current | $V_{DS}=-40V, V_{GS}=0V$ | --- | --- | -1 | μA |
| $V_{GS(th)}$ | Gate Threshold Voltage | $V_{DS}=V_{GS}, I_D=-250\mu A$ | -1 | --- | -3 | V |
| I_{GSS} | Gate Leakage Current | $V_{GS}=\pm 20V, V_{DS}=0V$ | --- | --- | ± 100 | nA |
| $R_{DS(on)}$ | Drain-Source On-state Resistance | $V_{GS}=-10V, I_D=-3A$ | --- | 40 | 45 | $m\Omega$ |
| | | $V_{GS}=-4.5V, I_D=-2.5A$ | --- | 56 | 65 | $m\Omega$ |
| Dynamic Characteristics ^⑤ | | | | | | |
| C_{iss} | Input Capacitance | $V_{GS}=0V, V_{DS}=-20V, \text{Freq.}=1\text{MHz}$ | --- | 595 | --- | pF |
| C_{oss} | Output Capacitance | | --- | 85 | --- | |
| C_{rss} | Reverse Transfer Capacitance | | --- | 65 | --- | |
| $T_{d(on)}$ | Turn-on Delay Time | $V_{GS}=-4.5V, V_{DS}=-20V, I_D=-2.5, R_G=1\Omega$ | --- | 40 | --- | nS |
| T_r | Turn-on Rise Time | | --- | 27 | --- | |
| $T_{d(off)}$ | Turn-off Delay Time | | --- | 18 | --- | |
| T_f | Turn-off Fall Time | | --- | 10 | --- | |
| Q_g | Total Gate Charge | $V_{GS}=-10V, V_{DS}=-20V, I_D=-3A$ | --- | 13.6 | --- | nC |
| Q_{gs} | Gate-Source Charge | | --- | 2.3 | --- | |
| Q_{gd} | Gate-Drain Charge | | --- | 3.3 | --- | |
| Source-Drain Characteristics | | | | | | |
| V_{SD} ^④ | Diode Forward Voltage | $I_S=-1.25A, V_{GS}=0V$ | --- | --- | -1.28 | V |

Note ④: Pulse test (pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$).

Note ⑤: Guaranteed by design, not subject to production testing.

P-Channel Enhancement Mode MOSFET
Typical Characteristics

Figure 1 Output Characteristics

Figure 2 Transfer Characteristics

Figure 3 Rdson- Drain Current

Figure 4 Source- Drain Diode Forward

Figure 5 Capacitance vs Vds

Figure 6 Gate Charge

P-Channel Enhancement Mode MOSFET

Figure 7 Safe Operation Area

Figure 8 $V_{GS(th)}$ vs Junction Temperature

Figure 9 Normalized Maximum Transient Thermal Impedance

P-Channel Enhancement Mode MOSFET
SOT23-6L Package Outline Data


| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|----------|---------------------------|-------|----------------------|-------|
| | Min | Max | Min | Max |
| A | 1.050 | 1.250 | 0.041 | 0.049 |
| A1 | 0.000 | 0.100 | 0.000 | 0.004 |
| A2 | 1.050 | 1.150 | 0.041 | 0.045 |
| 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 | 1.500 | 1.700 | 0.059 | 0.067 |
| E1 | 2.650 | 2.950 | 0.104 | 0.116 |
| e | 0.950(BSC) | | 0.037(BSC) | |
| e1 | 1.800 | 2.000 | 0.071 | 0.079 |
| L | 0.300 | 0.600 | 0.012 | 0.024 |
| θ | 0° | 8° | 0° | 8° |