

Features

- Advanced high cell density Trench technology
- Super Low Gate Charge
- Excellent CdV/dt effect decline
- Green Device Available

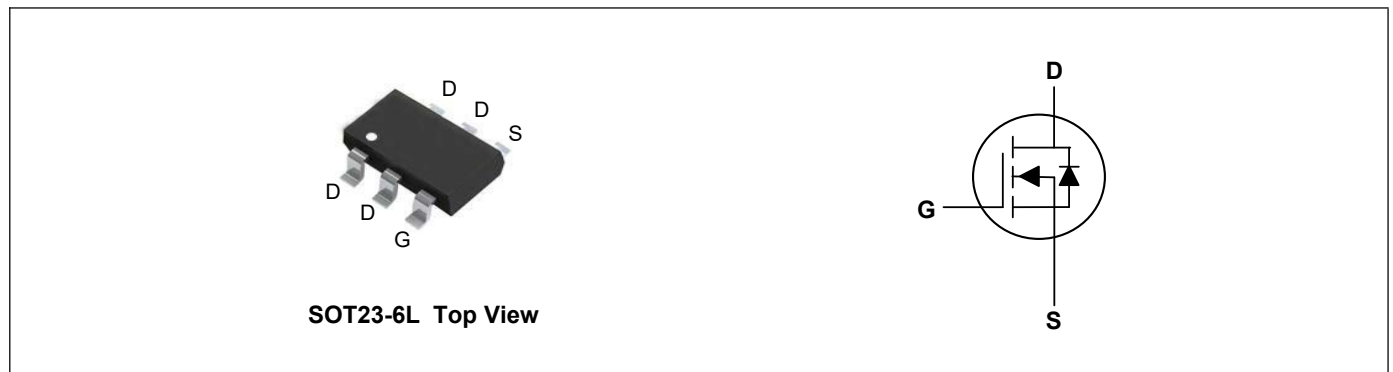
Product Summary



| | | |
|---------------------------------|-----|------------|
| V_{DS} | 110 | V |
| I_D | 3 | A |
| $R_{DS(ON)}$ (at $V_{GS}=10V$) | 230 | m Ω |

Applications

- High Frequency Point-of-Load, Synchronous Buck Converter
- Networking DC-DC Power System
- Load Switch



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

| Parameter | Symbol | Rating | Units |
|--------------------------------------|-----------|------------|-------------|
| Drain-Source Voltage | V_{DS} | 110 | V |
| Gate-Source Voltage | V_{GS} | ± 20 | V |
| Continuous Drain Current | I_D | 3 | A |
| Pulsed Drain Current ² | I_{DM} | 10 | A |
| Total Power Dissipation ³ | P_D | 1.25 | W |
| Storage Temperature Range | T_{STG} | -55 to 150 | $^{\circ}C$ |
| Operating Junction Temperature Range | T_J | -55 to 150 | $^{\circ}C$ |

Thermal Characteristics

| Parameter | Symbol | Typ | Max | Unit |
|--|-----------------|-----|------|---------------|
| Thermal Resistance Junction-Ambient ¹ | $R_{\theta JA}$ | --- | 62.5 | $^{\circ}C/W$ |

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

| Parameter | Symbol | Conditions | Min | Typ | Max | Unit |
|-----------------------------------|--------------|---|-----|------|-----------|------------|
| Drain-Source Breakdown Voltage | BV_{DSS} | $V_{GS}=0V, I_D=250\mu A$ | 110 | --- | --- | V |
| Static Drain-Source On-Resistance | $R_{DS(ON)}$ | $V_{GS}=10V, I_D=1A$ | --- | 200 | 230 | m Ω |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{GS}=V_{DS}, I_D=250\mu A$ | 1.2 | --- | 2.5 | V |
| Drain-Source Leakage Current | I_{DSS} | $V_{DS}=110V, V_{GS}=0V, T_A=25^\circ\text{C}$ | --- | --- | 1 | μA |
| Gate-Source Leakage Current | I_{GSS} | $V_{GS}=\pm 20V, V_{DS}=0V$ | --- | --- | ± 100 | nA |
| Forward Transconductance | g_{fs} | $V_{DS}=5V, I_D=1A$ | 1 | --- | --- | S |
| Total Gate Charge | Q_g | $V_{DS}=50V, V_{GS}=10V, I_D=1.3A$ | --- | 5.2 | --- | nC |
| Gate-Source Charge | Q_{gs} | | --- | 0.75 | --- | |
| Gate-Drain Charge | Q_{gd} | | --- | 1.4 | --- | |
| Turn-On Delay Time | $T_{d(on)}$ | $V_{DD}=50V, V_{GS}=10V, R_G=1\Omega, I_D=1.3A, R_L=39\Omega$ | --- | 6 | --- | ns |
| Rise Time | T_r | | --- | 10 | --- | |
| Turn-Off Delay Time | $T_{d(off)}$ | | --- | 10 | --- | |
| Fall Time | T_f | | --- | 6 | --- | |
| Input Capacitance | C_{iss} | $V_{DS}=50V, V_{GS}=0V, f=1\text{MHz}$ | --- | 190 | --- | pF |
| Output Capacitance | C_{oss} | | --- | 22 | --- | |
| Reverse Transfer Capacitance | C_{rss} | | --- | 13 | --- | |

Drain-Source Diode Characteristics

| Parameter | Symbol | Conditions | Min | Typ | Max | Unit |
|--|----------|---|-----|-----|-----|------|
| Continuous Source Current ¹ | I_S | $T_A=25^\circ\text{C}$ | --- | --- | 2 | A |
| Diode Forward Voltage ² | V_{SD} | $V_{GS}=0V, I_S=1A, T_J=25^\circ\text{C}$ | --- | --- | 1.2 | V |

Note:

1. The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
2. The data tested by pulsed, pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
3. The power dissipation is limited by 150 $^\circ\text{C}$ junction temperature

Typical Characteristics

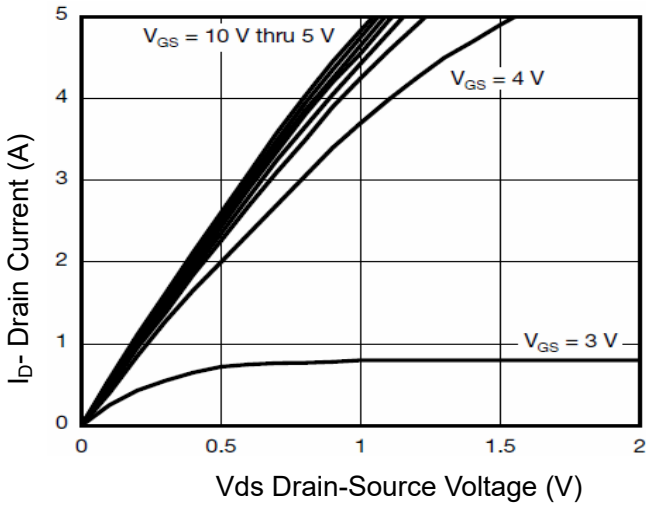


Figure 1 Output Characteristics

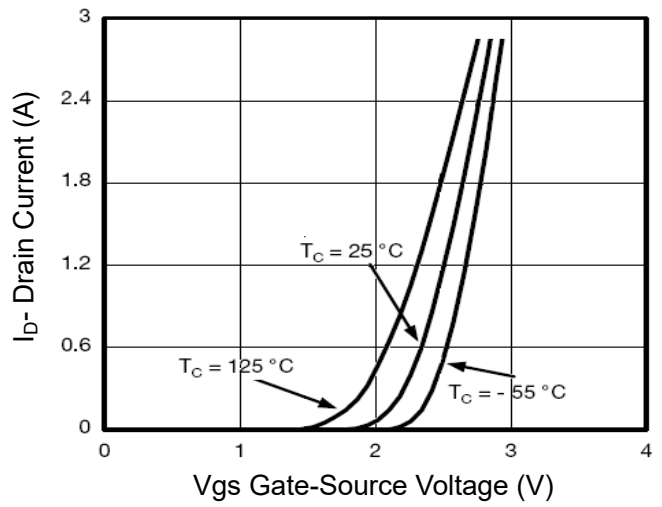


Figure 2 Transfer Characteristics

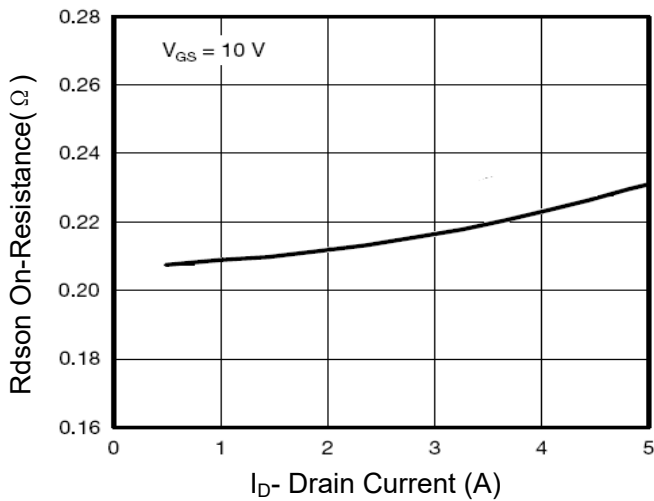


Figure 3 Rdson- Drain Current

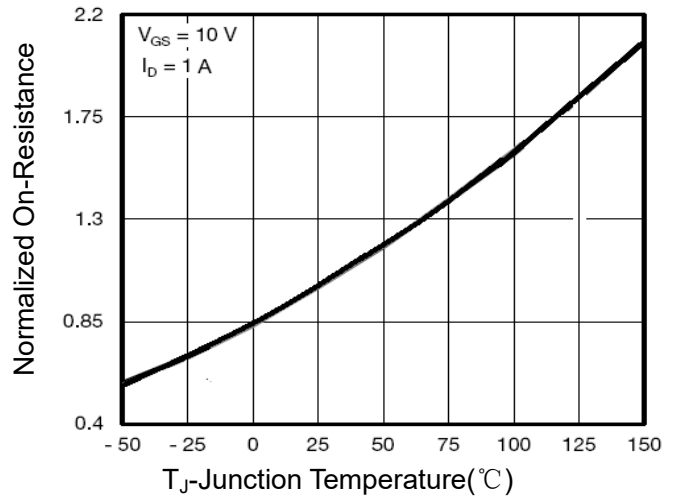


Figure 4 Rdson-Junction Temperature

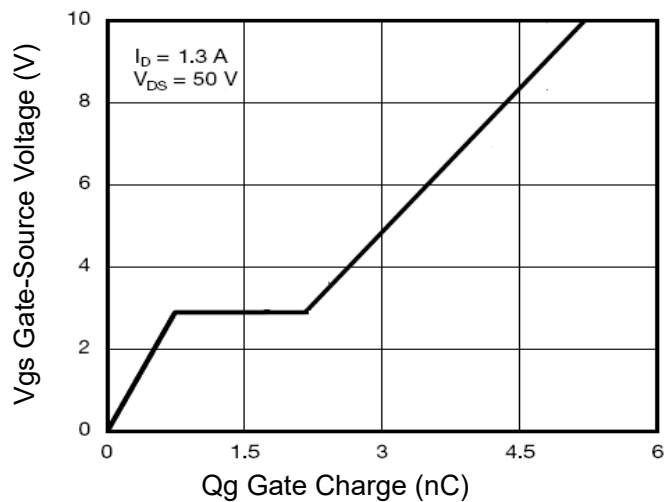


Figure 5 Gate Charge

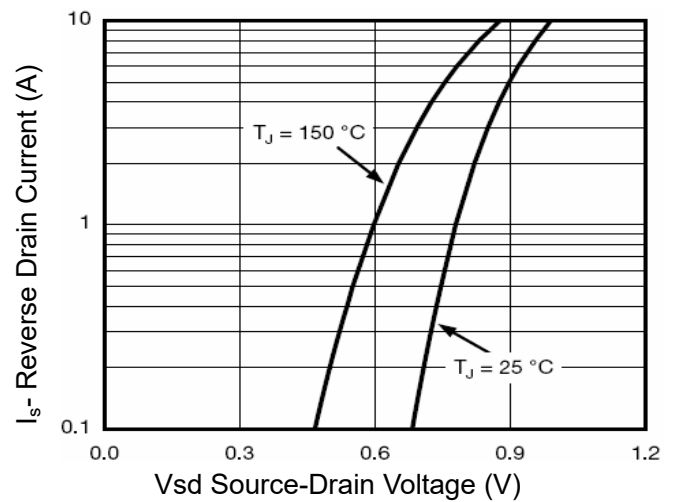


Figure 6 Source- Drain Diode Forward

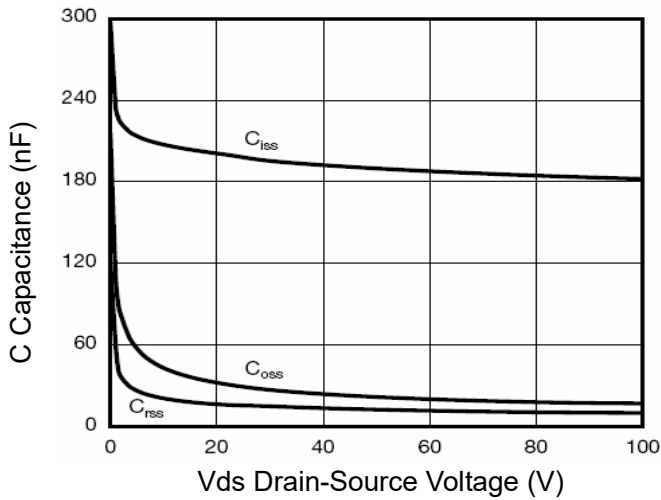


Figure 7 Capacitance vs Vds

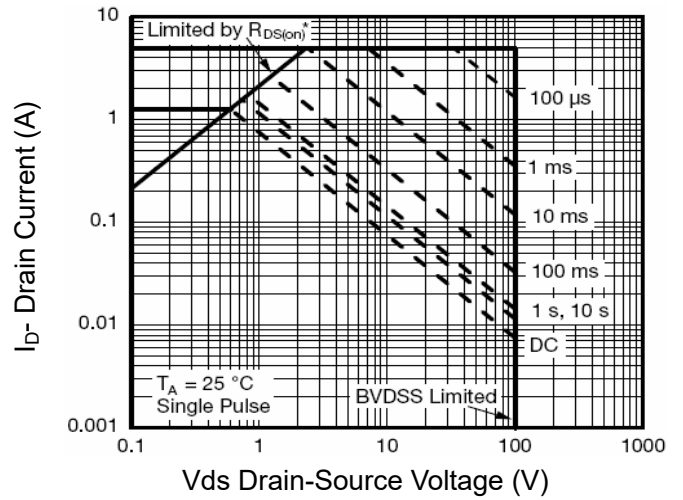


Figure 8 Safe Operation Area

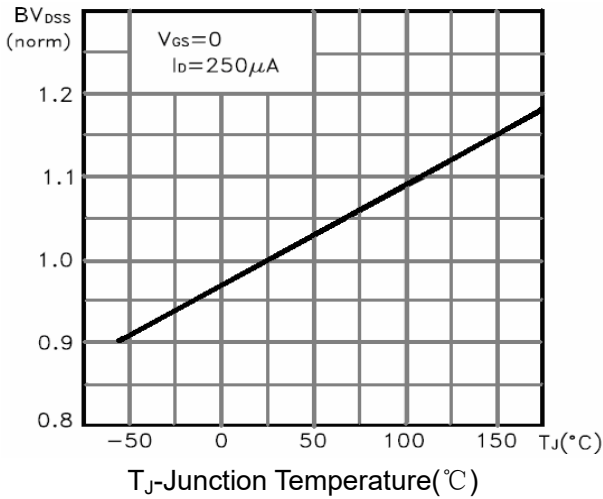


Figure 9 BV_{DSS} vs Junction Temperature

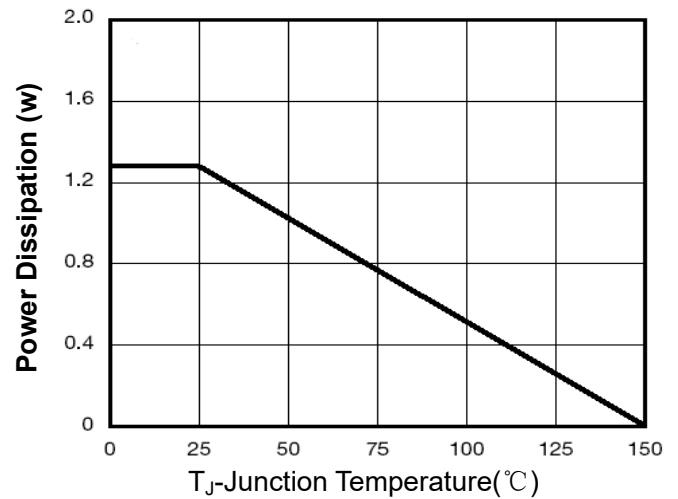


Figure 10 Power De-ratin

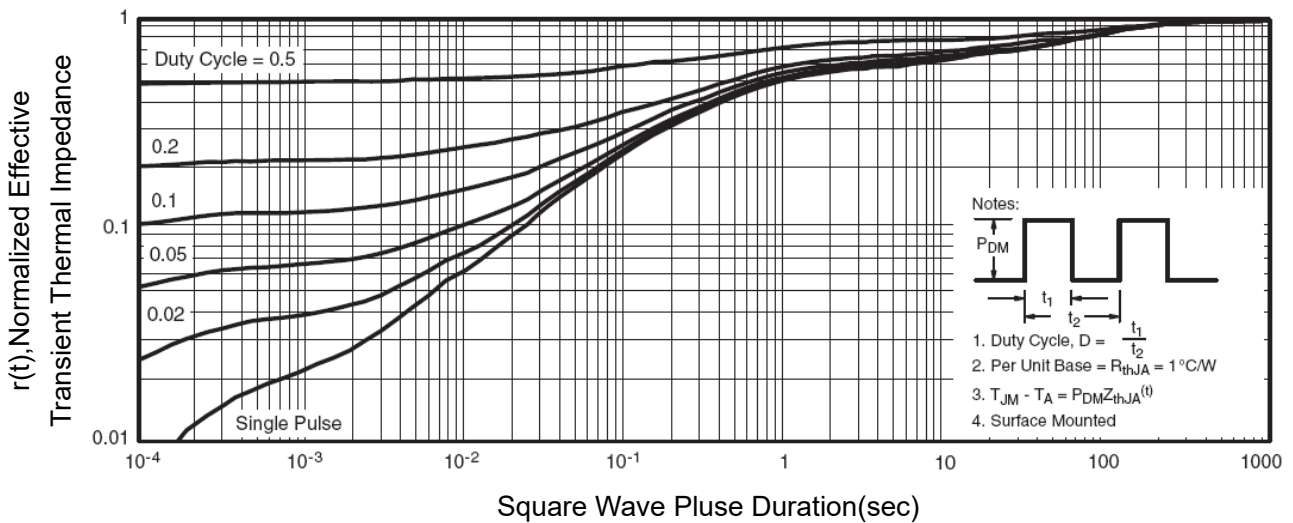
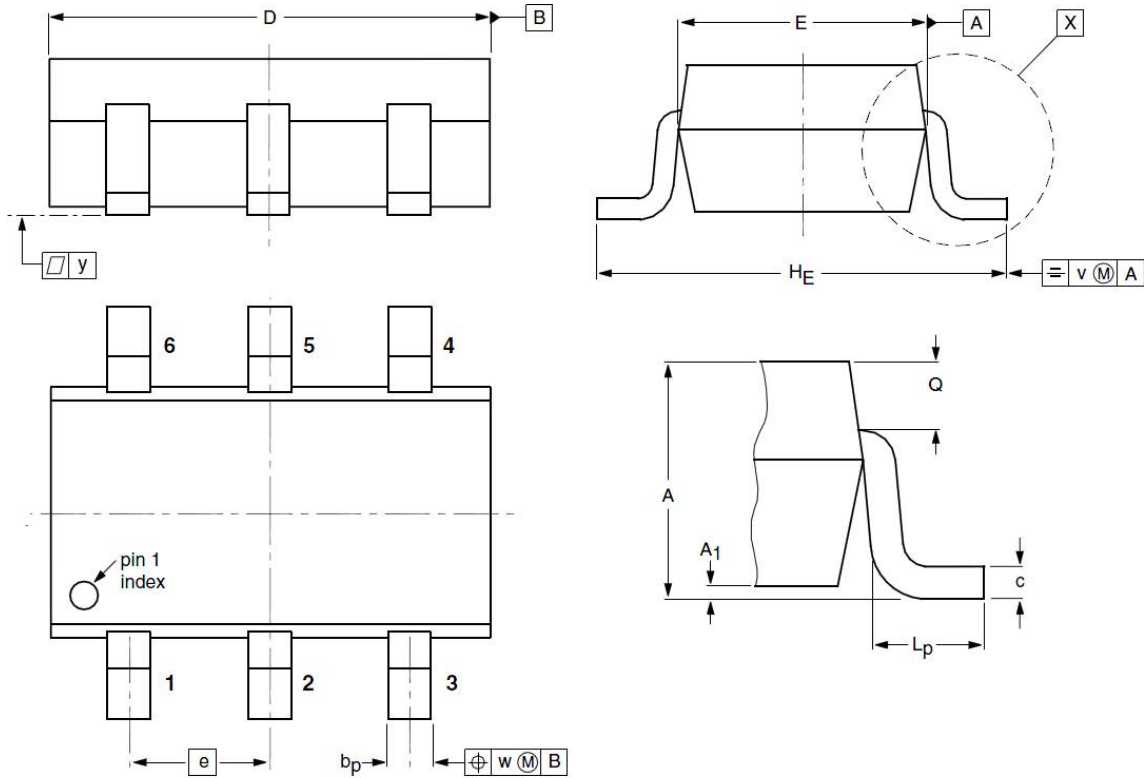


Figure 11 Normalized Maximum Transient Thermal Impedance

SOT23-6L Package Outline Dimensions



| Symbol | Dimensions (unit:mm) | | | Symbol | Dimensions (unit:mm) | | |
|----------------------|----------------------|------|------|----------------------|----------------------|------|------|
| | Min | Typ | Max | | Min | Typ | Max |
| A | 0.90 | 1.07 | 1.45 | A₁ | 0.01 | 0.05 | 0.15 |
| b_p | 0.30 | 0.40 | 0.50 | c | 0.10 | 0.15 | 0.22 |
| D | 2.70 | 2.92 | 3.10 | E | 1.35 | 1.55 | 1.75 |
| e | -- | 0.95 | -- | H_E | 2.50 | 2.80 | 3.00 |
| L_p | 0.30 | 0.45 | 0.60 | Q | 0.23 | 0.29 | 0.33 |
| v | -- | 0.20 | -- | W | -- | 0.20 | -- |
| y | -- | 0.10 | -- | | | | |