

Features

- Trench Power MV MOSFET technology
- Voltage controlled small signal switch
- High density cell design for low $R_{DS(ON)}$
- Fast Switching Speed
- Green Device Available

Applications

- Small servo motor control
- Power MOSFET gate drivers
- Switching application

Product Summary



| | | |
|----------------------------------|------|----------|
| V_{DS} | 100 | V |
| I_D | 0.17 | A |
| $R_{DS(ON)}$ (at $V_{GS}=10V$) | 6 | Ω |
| $R_{DS(ON)}$ (at $V_{GS}=4.5V$) | 10 | Ω |



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

| Parameter | Symbol | Rating | Units |
|---------------------------------------|-----------|------------|-------------|
| Drain-Source Voltage | V_{DS} | 100 | V |
| Gate-Source Voltage | V_{GS} | ± 20 | V |
| Continuous Drain Current ¹ | I_D | 0.17 | A |
| Pulsed Drain Current ² | I_{DM} | 0.68 | A |
| Total Power Dissipation ³ | P_D | 250 | mW |
| 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 | $R_{\theta JA}$ | --- | 620 | $^{\circ}C/W$ |

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

| Parameter | Symbol | Conditions | Min | Typ | Max | Unit |
|-----------------------------------|--------------|--|-----|------|-----------|----------|
| Drain-Source Breakdown Voltage | BV_{DSS} | $V_{GS}=0V, I_D=250\mu A$ | 100 | --- | --- | V |
| Static Drain-Source On-Resistance | $R_{DS(ON)}$ | $V_{GS}=10V, I_D=0.17A$ | --- | 3.5 | 6 | Ω |
| | | $V_{GS}=4.5V, I_D=0.17A$ | --- | 4.5 | 10 | Ω |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{GS}=V_{DS}, I_D=250\mu A$ | 1 | 1.8 | 2.5 | V |
| Drain-Source Leakage Current | I_{DSS} | $V_{DS}=100V, V_{GS}=0V, T_J=25^{\circ}\text{C}$ | --- | --- | 1 | μA |
| Gate-Source Leakage Current | I_{GSS} | $V_{GS}=\pm 20V, V_{DS}=0V$ | --- | --- | ± 100 | nA |
| Total Gate Charge | Q_g | $V_{DS}=50V, V_{GS}=10V, I_D=0.2A$ | --- | 2.3 | --- | nC |
| Turn-On Delay Time | $T_{d(on)}$ | $V_{DD}=50V, V_{GS}=10V, R_G=6\Omega, I_D=0.2A$ | --- | 8.8 | --- | ns |
| Rise Time | T_r | | --- | 9.2 | --- | |
| Turn-Off Delay Time | $T_{d(off)}$ | | --- | 18.5 | --- | |
| Fall Time | T_f | | --- | 7.9 | --- | |
| Input Capacitance | C_{iss} | $V_{DS}=50V, V_{GS}=0V, f=1\text{MHz}$ | --- | 34 | --- | pF |
| Output Capacitance | C_{oss} | | --- | 11 | --- | |
| Reverse Transfer Capacitance | C_{rss} | | --- | 7 | --- | |

Drain-Source Diode Characteristics

| Parameter | Symbol | Conditions | Min | Typ | Max | Unit |
|--|----------|---|-----|-----|------|------|
| Continuous Source Current ¹ | I_S | | --- | --- | 0.17 | A |
| Diode Forward Voltage ² | V_{SD} | $V_{GS}=0V, I_S=0.2A, T_J=25^{\circ}\text{C}$ | --- | --- | 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

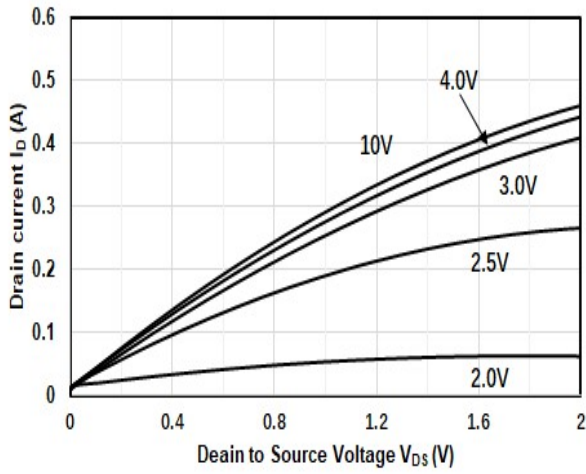


Figure1. Output Characteristics

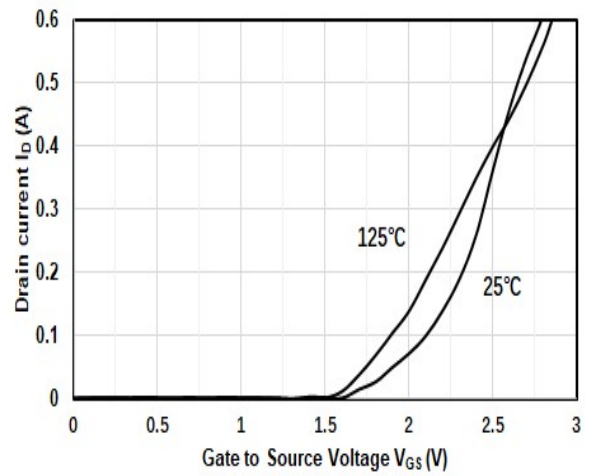


Figure2. Transfer Characteristics

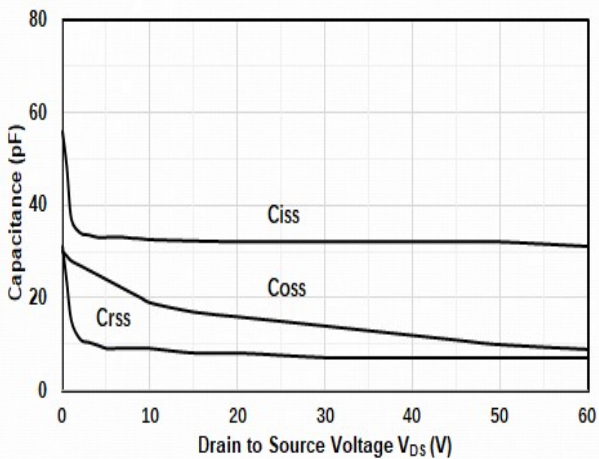


Figure3. Capacitance Characteristics

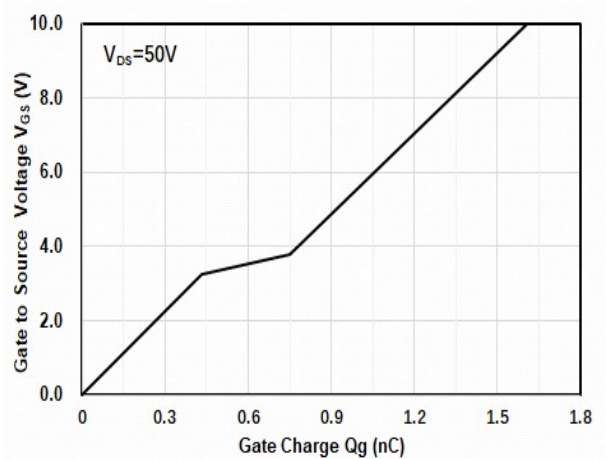


Figure4. Gate Charge

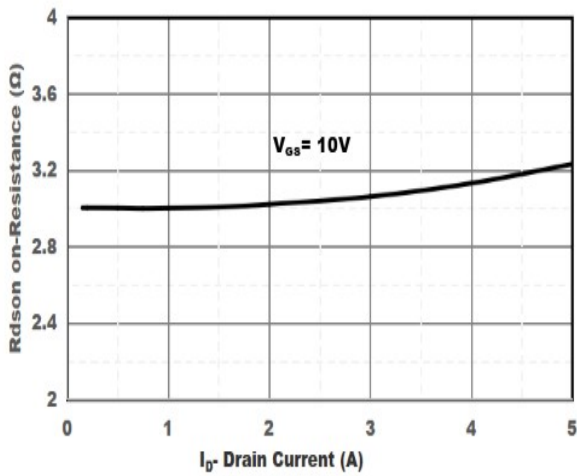


Figure5. Drain-Source on Resistance

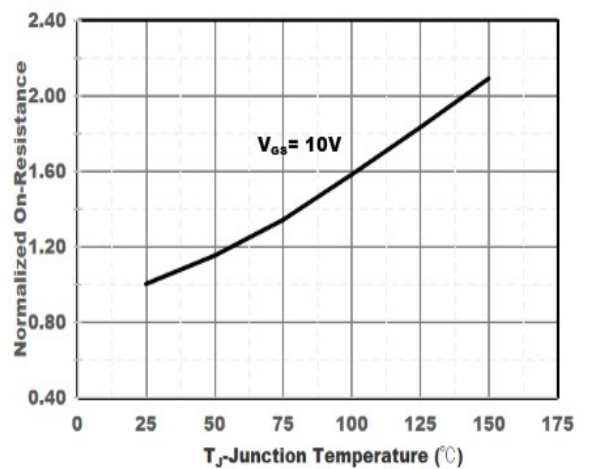


Figure6. Drain-Source on Resistance

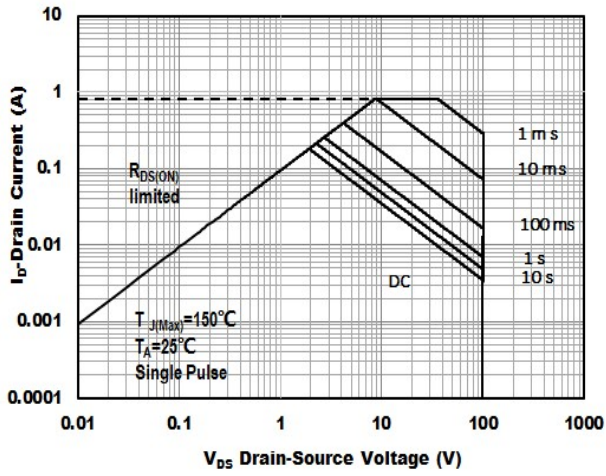


Figure7. Safe Operation Area

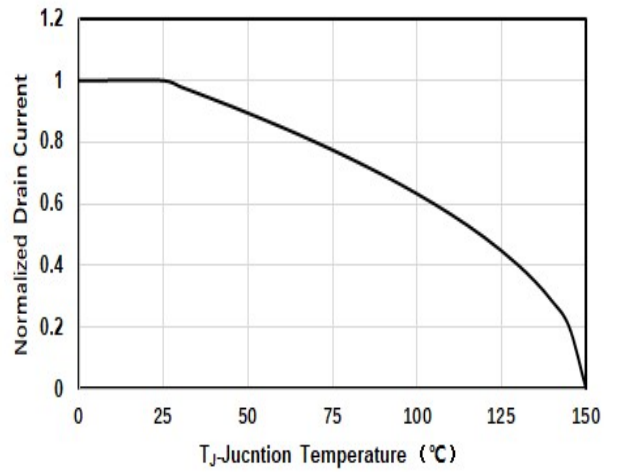
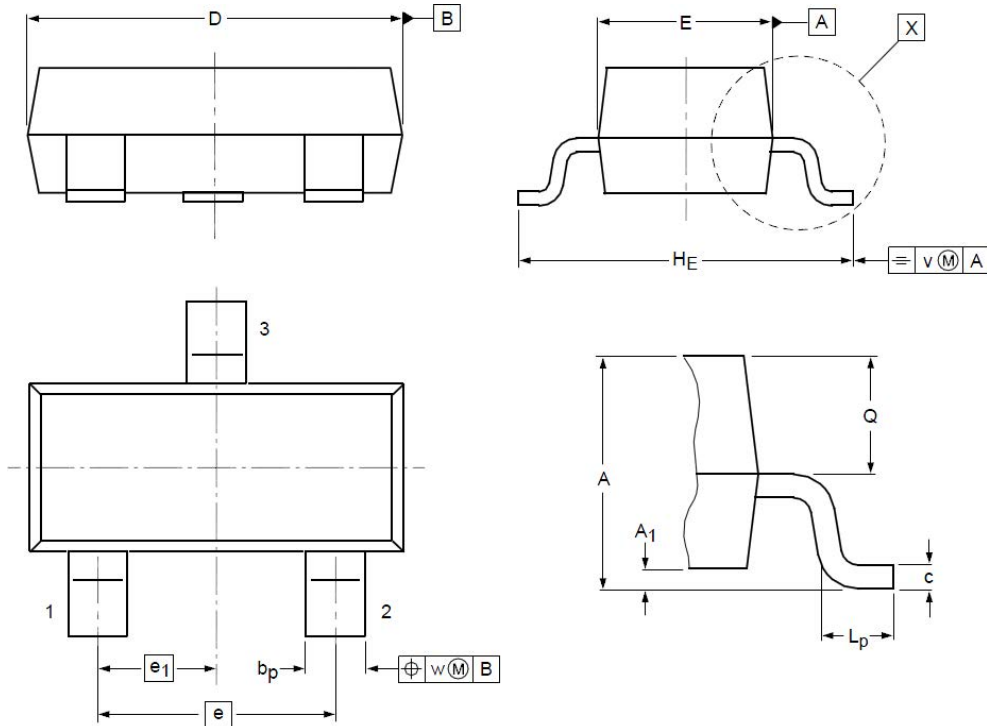


Figure8. Drain-Source Current

SOT23 Package Outline Dimensions



| Symbol | Dimensions (unit:mm) | | | Symbol | Dimensions (unit:mm) | | |
|----------------------|----------------------|------|------|----------------------|----------------------|------|------|
| | Min | Typ | Max | | Min | Typ | Max |
| A | 0.90 | 1.05 | 1.20 | e₁ | -- | 0.95 | -- |
| A₁ | 0.01 | 0.05 | 0.10 | H_E | 2.10 | 2.40 | 2.50 |
| b_p | 0.38 | 0.42 | 0.48 | L_p | 0.40 | 0.50 | 0.60 |
| c | 0.09 | 0.13 | 0.15 | Q | 0.45 | 0.49 | 0.55 |
| D | 2.80 | 2.92 | 3.00 | V | -- | 0.20 | -- |
| E | 1.20 | 1.33 | 1.40 | W | -- | 0.10 | -- |
| e | -- | 1.90 | -- | | | | |