

Product Summary

| $V_{(BR)DSS}$ | $R_{DS(on)MAX}$ | I_D |
|---------------|-----------------|-------|
| -20V | 23mΩ@-4.5V | -10A |
| | 26mΩ@-2.5V | |
| | 34mΩ@-1.8V | |

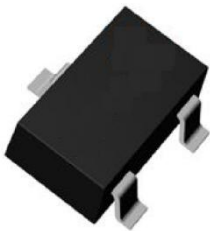
Feature

- Trench Power MV MOSFET technology
- High density cell design for Low $R_{DS(ON)}$
- High Speed switching

Application

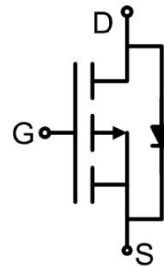
- Battery protection
- Load switch
- Power management

Package

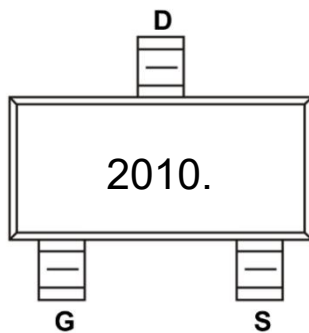


SOT-23-3L

Circuit diagram



Marking



Absolute maximum ratings (T_A=25°C unless otherwise noted)

| Parameter | Symbol | Value | Unit |
|---|-----------------------|------------|------|
| Drain-Source Voltage | V _{DS} | -20 | V |
| Gate-Source Voltage | V _{GS} | ±10 | V |
| Continuous Drain Current(Tc=25°C) | I _D | -10 | A |
| Continuous Drain Current(Tc=70°C) | I _D (70°C) | -8 | A |
| Pulsed Drain Current ¹⁾ | I _{DM} | -32 | A |
| Power Dissipation | P _D | 2.5 | W |
| Thermal Resistance from Junction to Ambient | R _{θJA} | 50 | °C/W |
| Junction Temperature | T _J | 150 | °C |
| Storage Temperature Range | T _{STG} | -55 ~ +150 | °C |

Electrical characteristics (T_J=25 °C, unless otherwise noted)

| Parameter | Symbol | Test Condition | Min. | Typ. | Max. | Unit |
|---|----------------------|---|------|-------|------|------|
| Static Characteristics | | | | | | |
| Drain-source breakdown voltage | V _{(BR)DSS} | V _{GS} = 0V, I _D = -250μA | -20 | | | V |
| Zero gate voltage drain current | I _{DSS} | V _{DS} = -20V, V _{GS} = 0V, T _c = 25°C | | | -1 | μA |
| Gate-body leakage current | I _{GSS} | V _{GS} = ±10V, V _{DS} = 0V | | | ±100 | nA |
| Gate threshold voltage | V _{GS(th)} | V _{DS} = V _{GS} , I _D = -250μA | -0.4 | -0.62 | -1.0 | V |
| Drain-source on-resistance | R _{DS(on)} | V _{GS} = -4.5V, I _D = -6A | | 15 | 23 | mΩ |
| | | V _{GS} = -2.5V, I _D = -6A | | 18 | 26 | |
| | | V _{GS} = -1.8V, I _D = -4A | | 24 | 34 | |
| Dynamic characteristics²⁾ | | | | | | |
| Input Capacitance | C _{iss} | V _{DS} = -10V, V _{GS} = 0V, f = 1MHz | | 2992 | | pF |
| Output Capacitance | C _{oss} | | | 330 | | |
| Reverse Transfer Capacitance | C _{rss} | | | 272 | | |
| Total Gate Charge | Q _g | V _{DS} = -15V, V _{GS} = -10V, I _D = -9.1A | | 72.8 | | nC |
| Gate-Source Charge | Q _{gs} | | | 6.6 | | |
| Gate-Drain Charge | Q _{gd} | | | 10.1 | | |
| Turn-on delay time | t _{d(on)} | V _{DS} = -15V, V _{GS} = -10V, I _D = -6A, R _{GEN} = 2.5Ω | | 7 | | nS |
| Turn-on rise time | t _r | | | 33 | | |
| Turn-off delay time | t _{d(off)} | | | 130 | | |
| Turn-off fall time | t _f | | | 132 | | |
| Source-Drain Diode characteristics | | | | | | |
| Diode Forward Current | I _S | | | | -10 | A |
| Diode Forward Voltage | V _{SD} | V _{GS} = 0V, I _S = -10A | | | -1.2 | V |
| Reverse Recovery Charge | Q _{rr} | I _F = -6A, di/dt = 100A/μs | | 34 | | nC |
| Reverse Recovery Time | t _{rr} | | | 67 | | nS |

Notes:

- 1) Pulse Test: Pulse Width ≤ 300μs, Duty cycle ≤ 2%.
- 2) Guaranteed by design, not subject to production.

Typical Characteristics

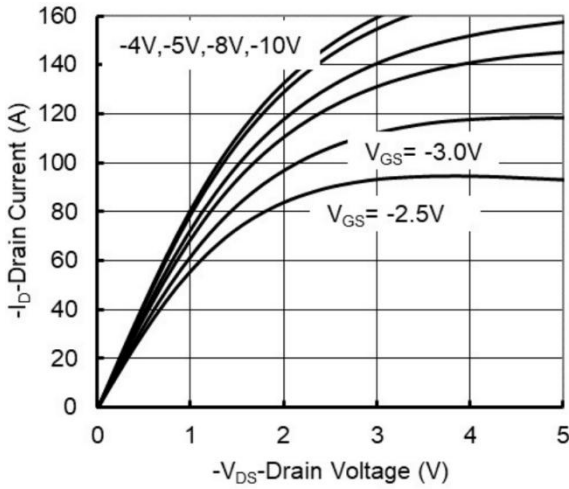


Figure 1. Output Characteristics

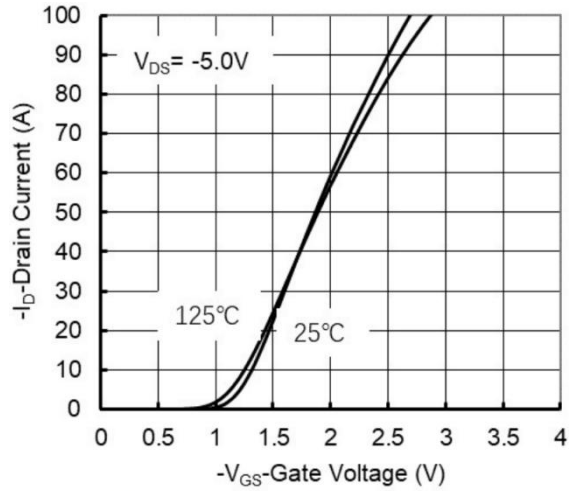


Figure 2. Transfer Characteristics

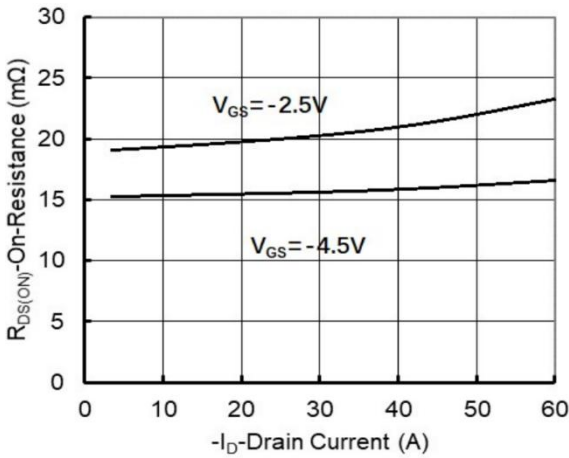


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

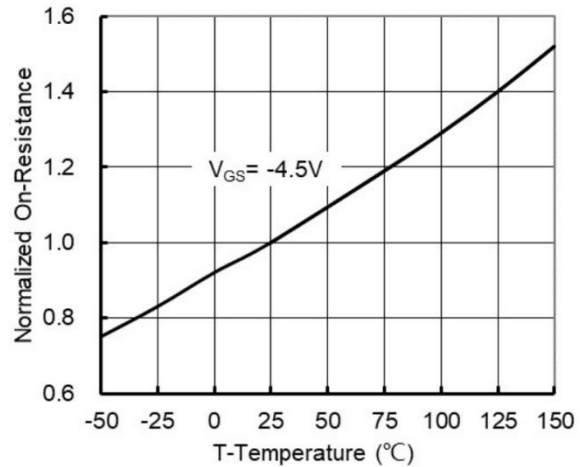


Figure 4. On-Resistance vs. Junction Temperature

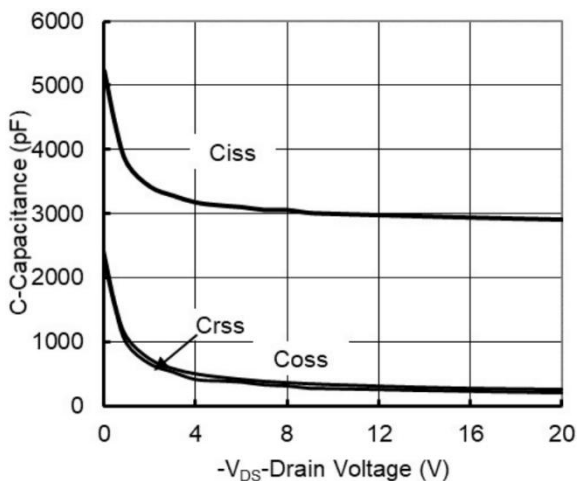


Figure 5. Capacitance Characteristics

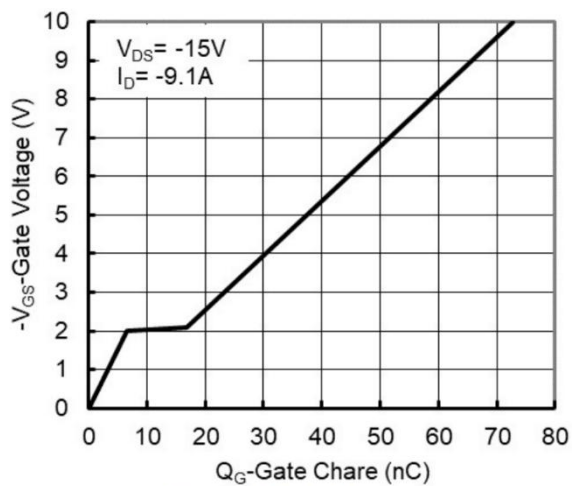


Figure 6. Gate Charge

Typical Characteristics

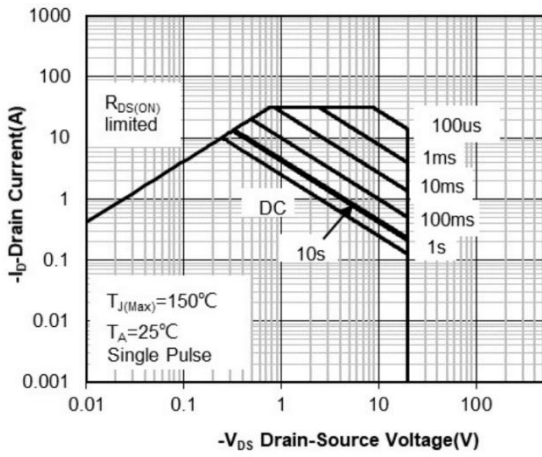


Figure 7. Safe Operation Area

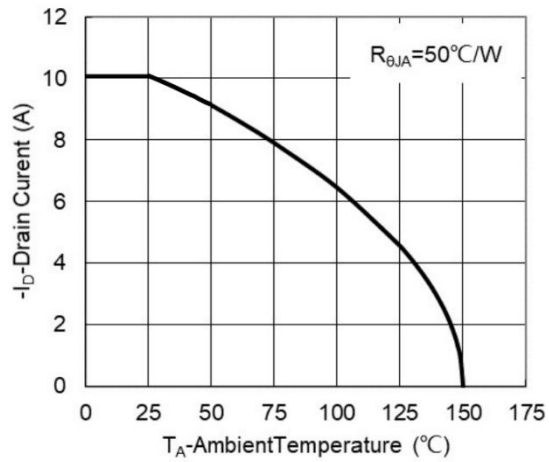
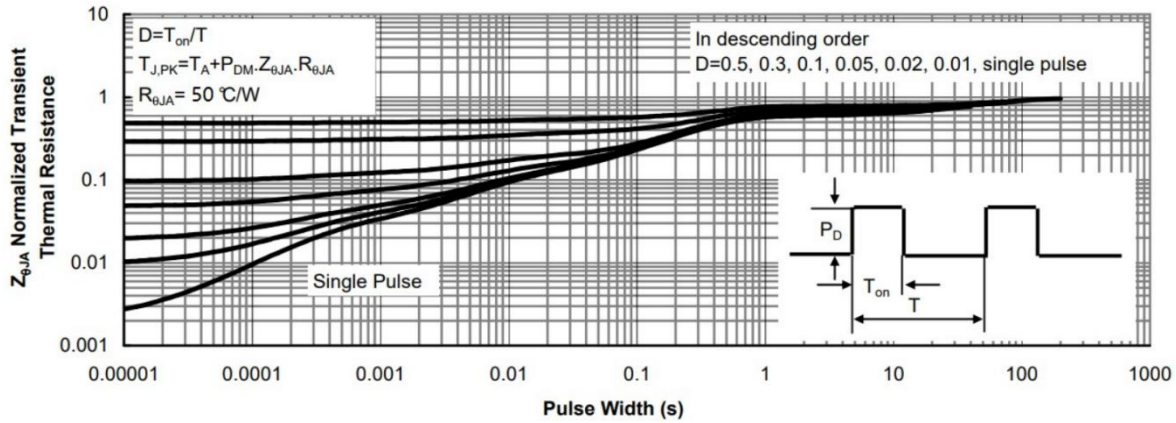
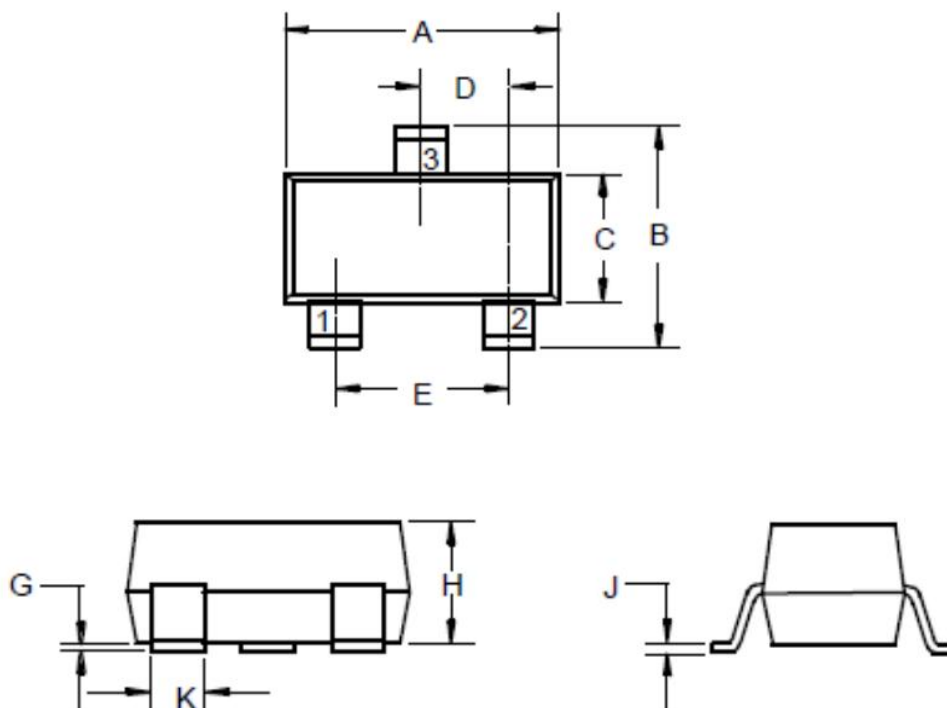


Figure 8. Maximum Continuous Drain Current vs Case Temperature



SOT-23-3L Package Information



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|---------------------------|-------|----------------------|-------|
| | Min. | Max. | Min. | Max. |
| A | 2.820 | 3.020 | 0.111 | 0.119 |
| B | 2.650 | 2.950 | 0.104 | 0.116 |
| C | 1.500 | 1.700 | 0.059 | 0.067 |
| D | 0.950 TYP | | 0.037 TYP | |
| E | 1.800 | 2.000 | 0.071 | 0.079 |
| G | 0.000 | 0.200 | 0.000 | 0.008 |
| H | 1.050 | 1.250 | 0.041 | 0.049 |
| J | 0.100 | 0.200 | 0.004 | 0.008 |
| K | 0.300 | 0.500 | 0.012 | 0.020 |