

Product Summary

| $V_{(BR)DSS}$ | $R_{DS(on)MAX}$ | I_D |
|---------------|-----------------|-------|
| -60V | 120mΩ@-10V | -4A |
| | 170mΩ@-4.5V | |

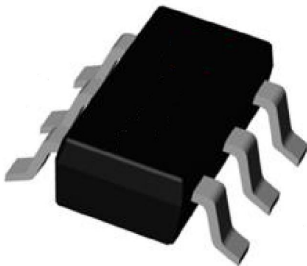
Feature

- High density cell design for ultra low on-resistance
- Fully characterized avalanche voltage and current
- Excellent package for good heat dissipation

Application

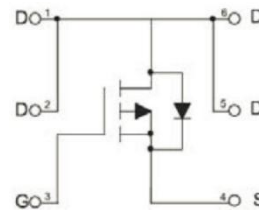
- Load Switch for Portable Devices
- PWM application

Package

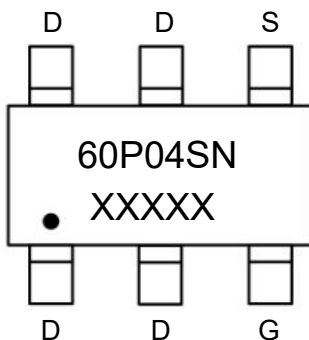


SOT-23-6L

Circuit diagram



Marking



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

| Parameter | Symbol | Value | Unit |
|---|------------------|------------|------|
| Drain-Source Voltage | V _{DS} | -60 | V |
| Gate-Source Voltage | V _{GS} | ±20 | V |
| Continuous Drain Current | I _D | -4 | A |
| Pulsed Drain Current | I _{DM} | -12 | A |
| Power Dissipation | P _D | 1.5 | W |
| Thermal Resistance from Junction to Ambient | R _{θJA} | 83.3 | °C/W |
| Junction Temperature | T _J | 150 | °C |
| Storage Temperature | T _{STG} | -55 ~ +150 | °C |

Electrical characteristics (T_A=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 | -60 | | | V |
| Zero gate voltage drain current | I _{DSS} | V _{DS} = -60V, V _{GS} = 0V | | | -1 | μA |
| Gate-body leakage current | I _{GSS} | V _{GS} = ±20V, V _{DS} = 0V | | | ±100 | nA |
| Gate threshold voltage | V _{GS(th)} | V _{DS} = V _{GS} , I _D = -250μA | -1.0 | | -2.5 | V |
| Drain-source on-resistance ¹⁾ | R _{DS(on)} | V _{GS} = -10V, I _D = -4A | | 106 | 120 | mΩ |
| | | V _{GS} = -4.5V, I _D = -3A | | 135 | 170 | |
| Forward transconductance ¹⁾ | g _{FS} | V _{DS} = -5V, I _D = -4A | | 10 | | S |
| Dynamic characteristics²⁾ | | | | | | |
| Input Capacitance | C _{iss} | V _{DS} = -30V, V _{GS} = 0V, f = 1MHz | | 930 | | pF |
| Output Capacitance | C _{oss} | | | 85 | | |
| Reverse Transfer Capacitance | C _{rss} | | | 35 | | |
| Total Gate Charge | Q _g | V _{DS} = -30V, V _{GS} = -10V, I _D = -4A | | 25 | | nC |
| Gate-Source Charge | Q _{gs} | | | 3 | | |
| Gate-Drain Charge | Q _{gd} | | | 7 | | |
| Turn-on delay time | t _{d(on)} | V _{DS} = -30V, V _{GS} = -10V, R _L = 7.5Ω, R _{GEN} = 3Ω | | 8 | | nS |
| Turn-on rise time | t _r | | | 4 | | |
| Turn-off delay time | t _{d(off)} | | | 32 | | |
| Turn-off fall time | t _f | | | 7 | | |
| Source-Drain Diode characteristics | | | | | | |
| Diode Forward Current ¹⁾ | I _S | | | | -4 | A |
| Diode Forward voltage | V _{DS} | V _{GS} = 0V, I _S = -4A | | | -1.2 | V |
| Reverse Recovery Time | t _{rr} | T _J = 25°C, I _F = -4A | | 25 | | nS |
| Reverse Recovery Charge | Q _{rr} | di/dt = 100A/μs ¹⁾ | | 31 | | nC |

Notes:

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

Typical Characteristics

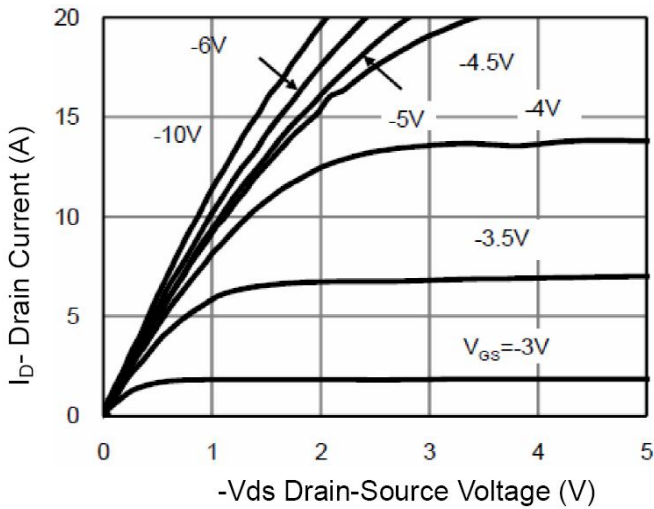


Figure 1 Output Characteristics

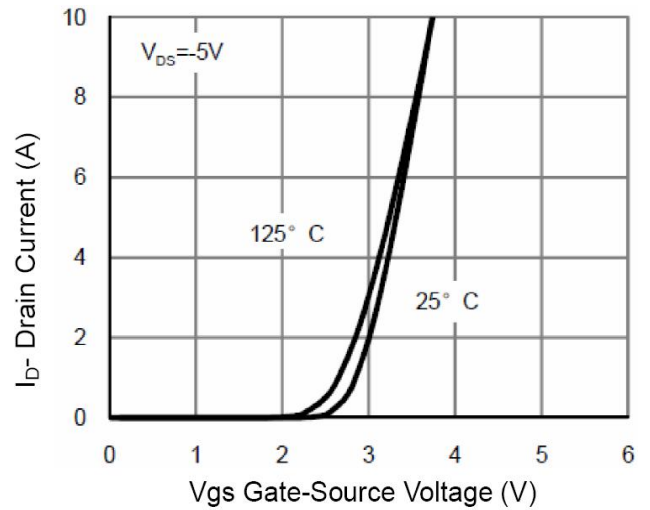


Figure 2 Transfer Characteristics

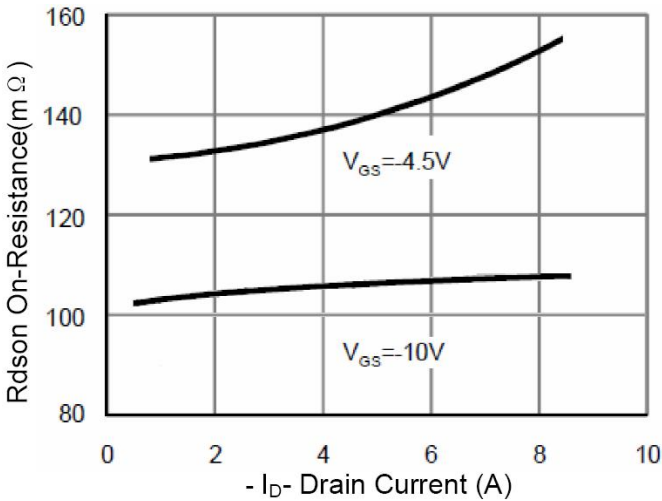


Figure 3 Rdson- Drain Current

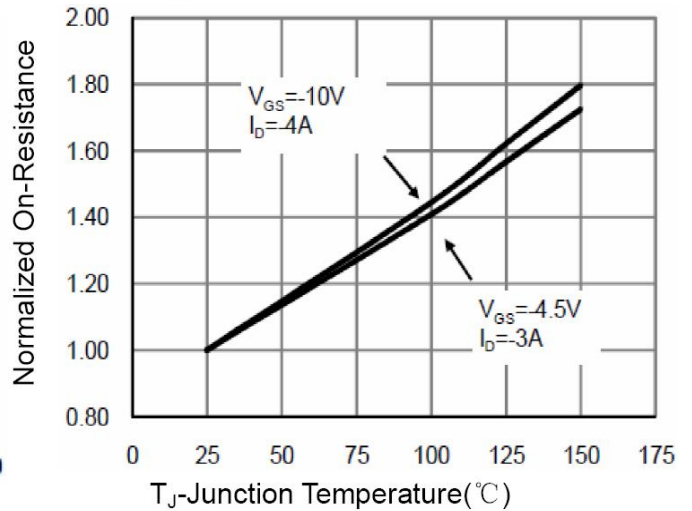


Figure 4 Rdson-Junction Temperature

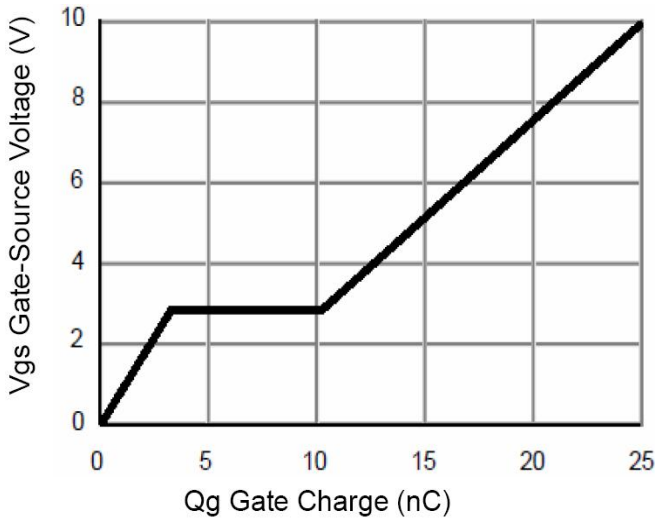


Figure 5 Gate Charge

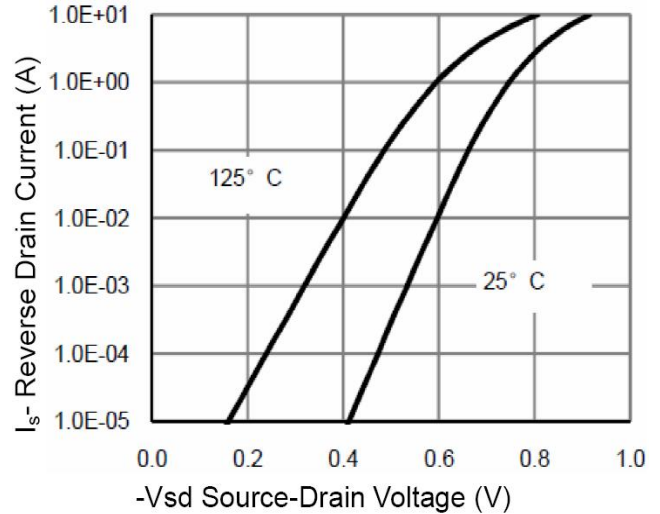


Figure 6 Source- Drain Diode Forward

Typical Characteristics

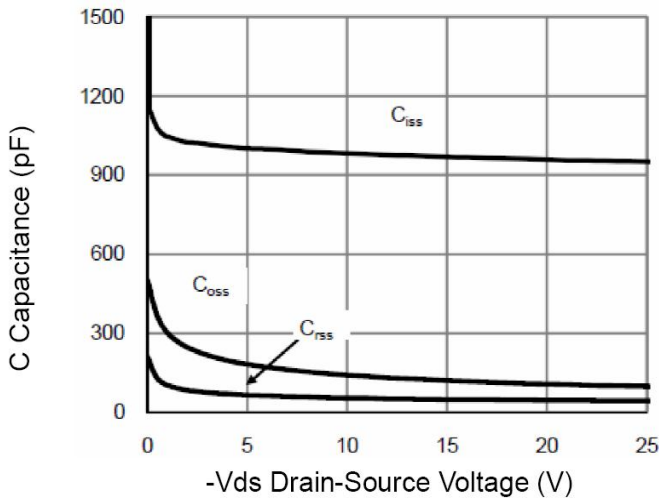


Figure 7 Capacitance vs Vds

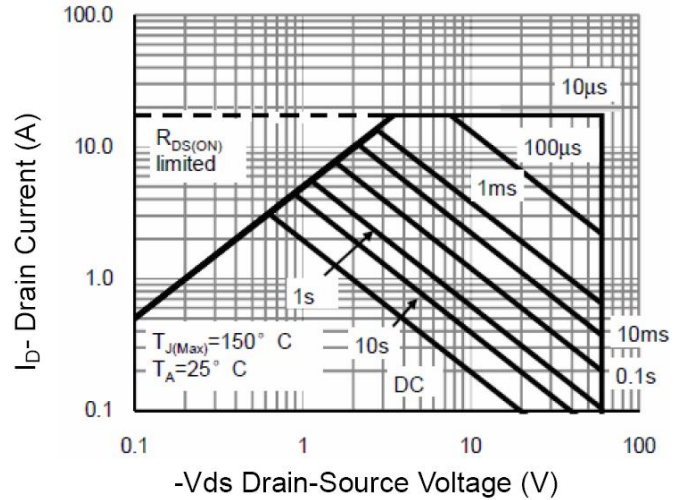


Figure 8 Safe Operation Area

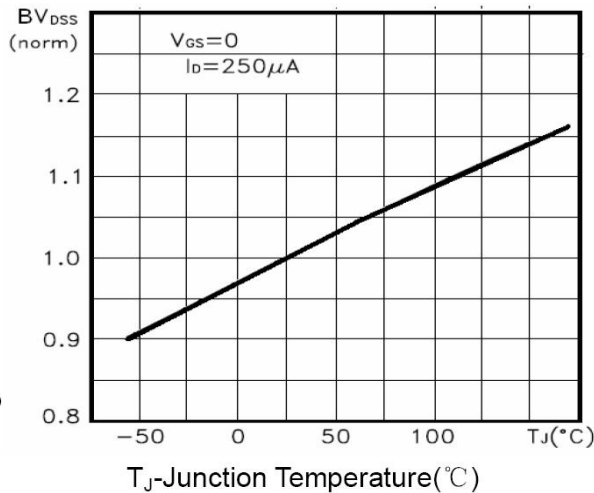


Figure 9 BV_{DSS} vs Junction Temperature

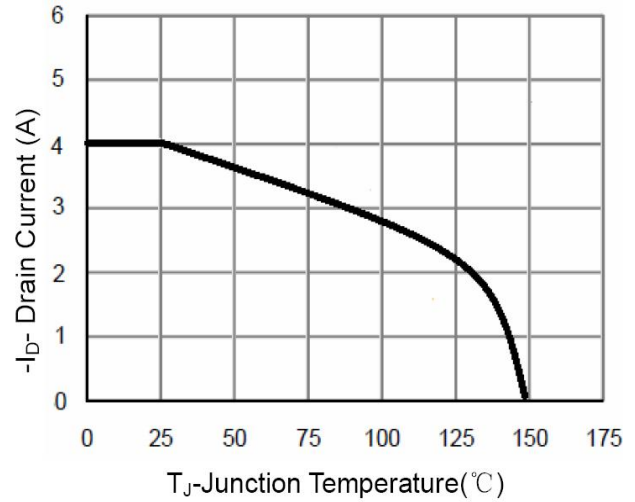


Figure 10 ID Current De-rating

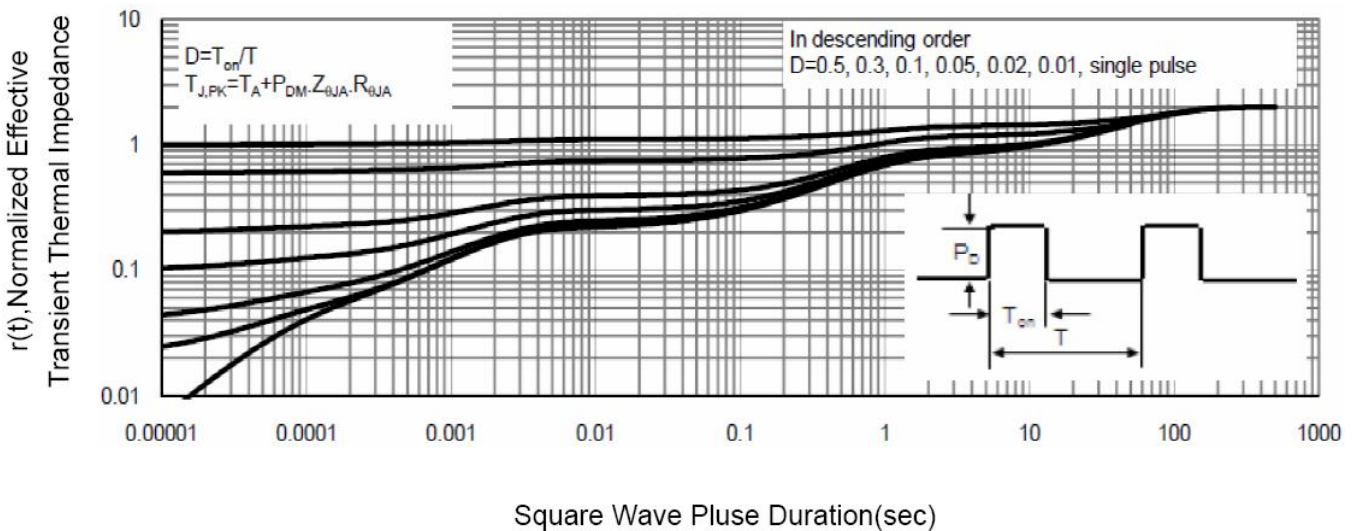
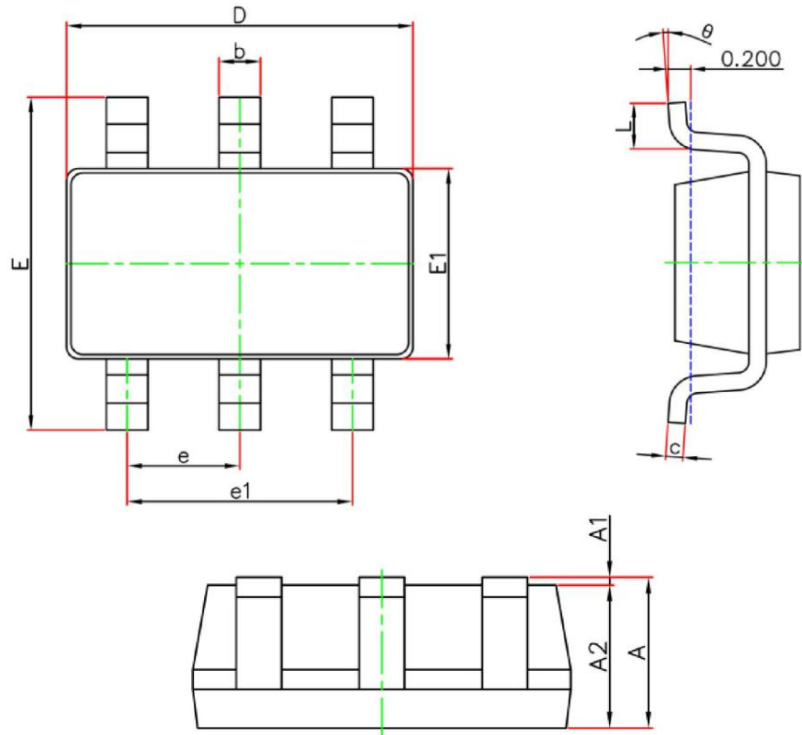


Figure 11 Normalized Maximum Transient Thermal Impedance

SOT-23-6L Package Information



| 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 | 2.650 | 2.950 | 0.104 | 0.116 |
| E1 | 1.500 | 1.700 | 0.059 | 0.067 |
| 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° |