

Electrical Characteristics (T_J=25°C unless otherwise noted)

| Parameter | Symbol | Test Conditions | Min. | Typ. | Max. | Unit |
|--|----------------------------|--|------|------|------|------|
| Static Characteristics | | | | | | |
| Drain-Source Breakdown Voltage | V_{(BR)DSS} | V _{GS} = 0V, I _D = -250μA | -30 | - | - | V |
| Zero Gate Voltage Drain Current | I_{DSS} | V _{DS} = -30V, V _{GS} = 0V | - | - | -1 | μA |
| Gate-Body Leakage Current | I_{GSS} | V _{DS} = 0V, V _{GS} = ±12V | - | - | ±100 | nA |
| Gate-Threshold Voltage | V_{GS(th)} | V _{DS} = V _{GS} , I _D = -250μA | -0.7 | -1 | -1.3 | V |
| Drain-Source on-Resistance ³ | R_{DS(on)} | V _{GS} = -10V, I _D = -4.2A | - | 41 | 49 | mΩ |
| | | V _{GS} = -4.5V, I _D = -4A | - | 50 | 65 | |
| Dynamic Characteristics⁴ | | | | | | |
| Input Capacitance | C_{iss} | V _{DS} = -15V, V _{GS} = 0V, f = 1MHz | - | 745 | - | pF |
| Output Capacitance | C_{oss} | | - | 70 | - | |
| Reverse Transfer Capacitance | C_{rss} | | - | 57 | - | |
| Switching Characteristics⁴ | | | | | | |
| Total Gate Charge | Q_g | V _{GS} = -4.5V, V _{DS} = -15V, I _D = -4.2A | - | 8 | - | nC |
| Gate-Source Charge | Q_{gs} | | - | 1.8 | - | |
| Gate-Drain Charge | Q_{gd} | | - | 2.7 | - | |
| Turn-on Delay Time | t_{d(on)} | V _{GS} = -10V, V _{DD} = -15V, I _D = -4.2A, R _{GEN} = 6Ω | - | 7 | - | ns |
| Rise Time | t_r | | - | 3 | - | |
| Turn-off Delay Time | t_{d(off)} | | - | 30 | - | |
| Fall Time | t_f | | - | 12 | - | |
| Drain-Source Diode Characteristics | | | | | | |
| Diode Forward Voltage ³ | V_{SD} | I _S = -4.2A, V _{GS} = 0V | - | - | -1.2 | V |
| Continuous Source Current | I_S | | - | - | -6 | A |

Notes:

1. Repetitive rating, pulse width limited by junction temperature T_{J(MAX)}=150°C
2. The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper, The value in any given application depends on the user's specific board design.
3. Pulse Test: Pulse width≤300μs, duty cycle≤2%.
4. This value is guaranteed by design hence it is not included in the production test.

Typical Characteristics

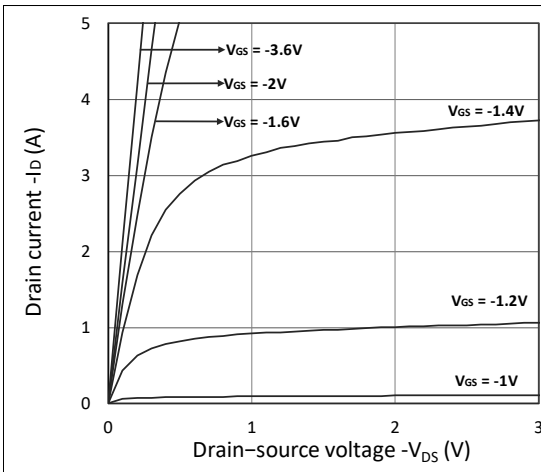


Figure 1. Output Characteristics

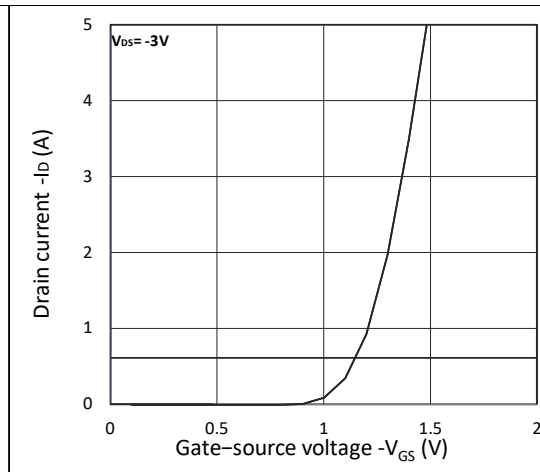


Figure 2. Transfer Characteristics

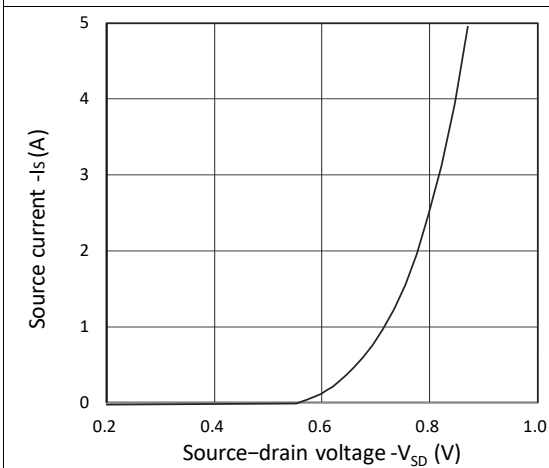


Figure 3. Forward Characteristics of Reverse

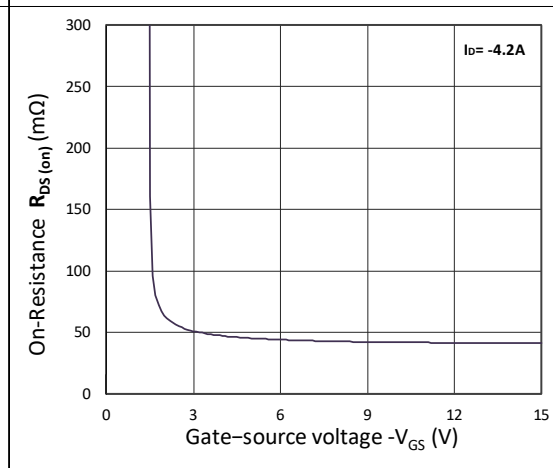


Figure 4. $R_{DS(ON)}$ vs. V_{GS}

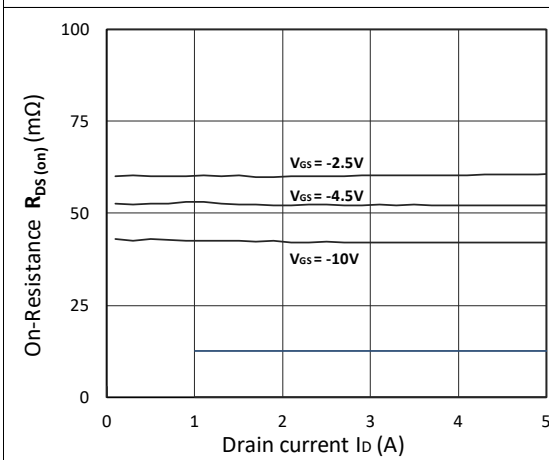


Figure 5. $R_{DS(ON)}$ vs. I_D

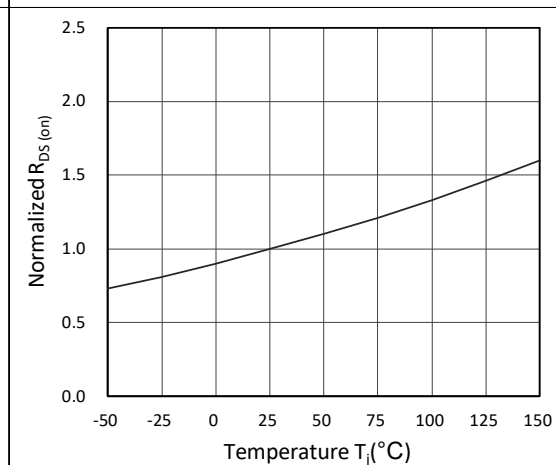


Figure 6. Normalized $R_{DS(ON)}$ vs. Temperature

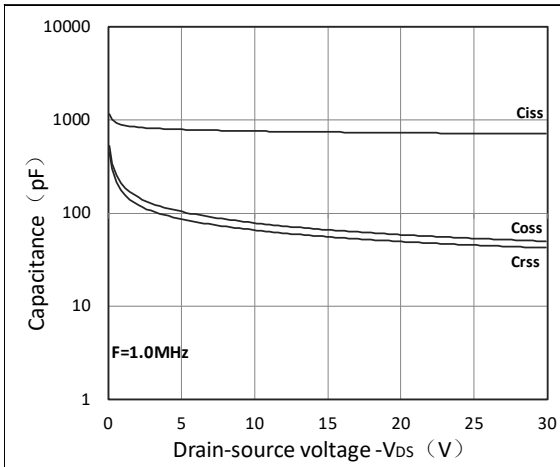


Figure 7. Capacitance Characteristics

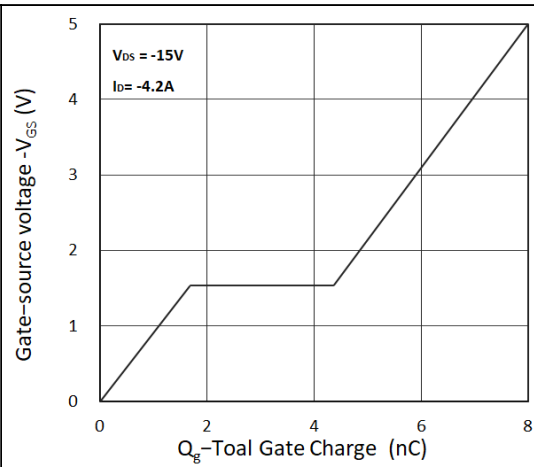


Figure 8. Gate Charge Characteristics

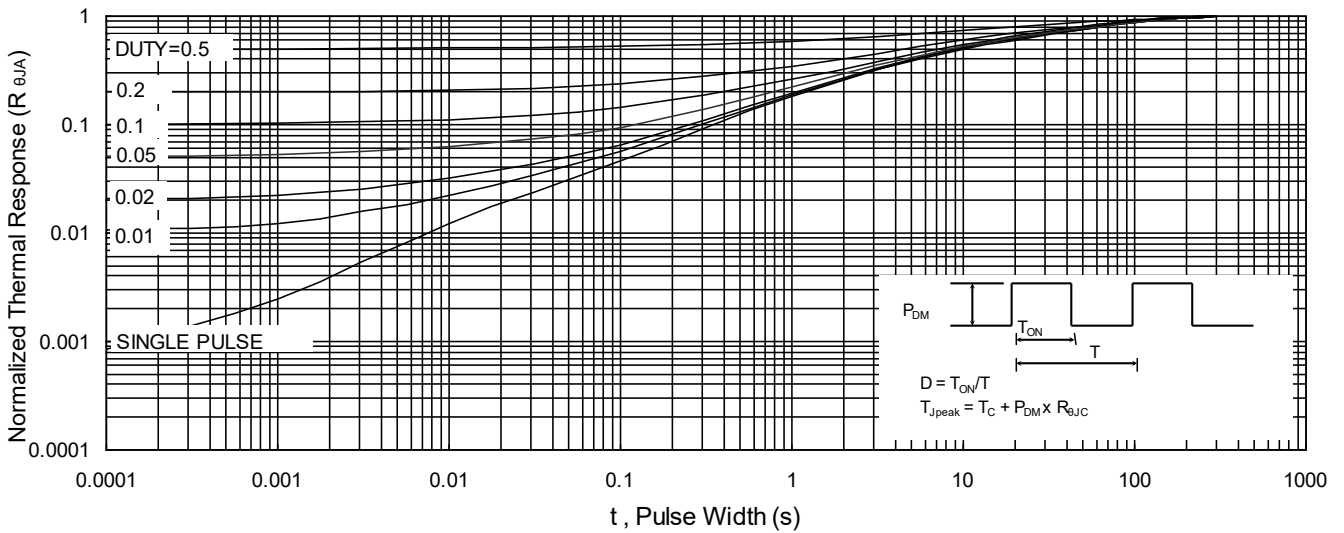


Fig.9 Normalized Maximum Transient Thermal Impedance

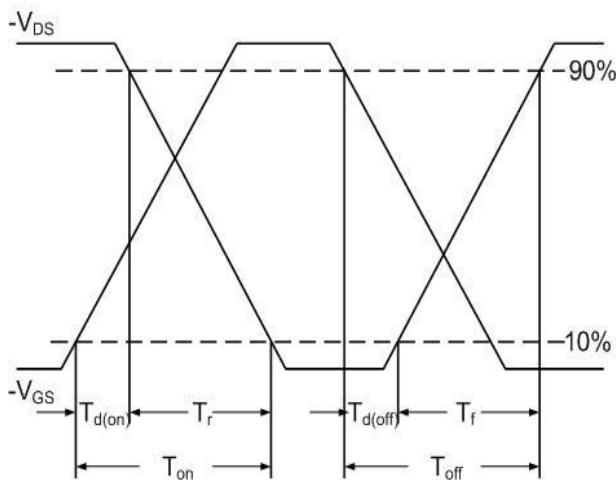


Fig.10 Switching Time Waveform

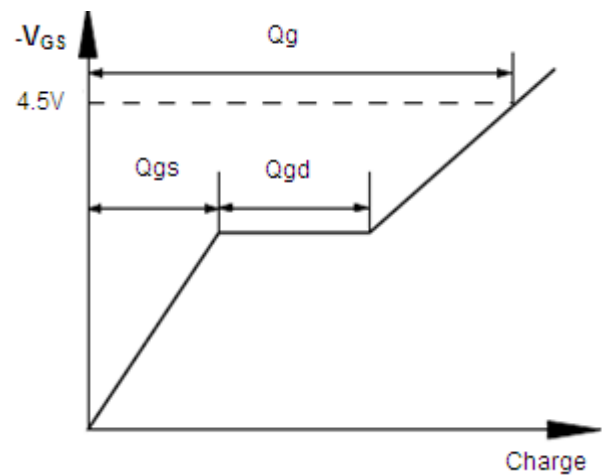
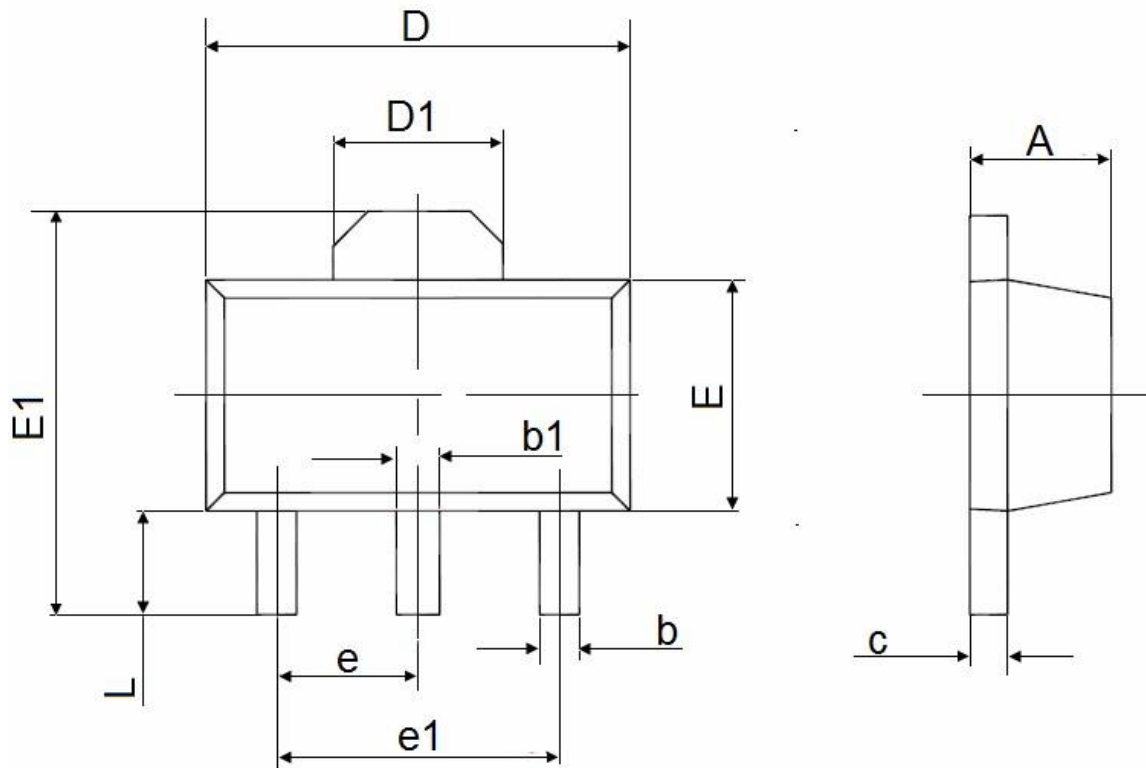


Fig.11 Gate Charge Waveform

Package Mechanical Data:SOT-89-3L



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|---------------------------|-------|----------------------|-------|
| | Min | Max | Min | Max |
| A | 1.400 | 1.600 | 0.055 | 0.063 |
| b | 0.320 | 0.520 | 0.013 | 0.020 |
| b1 | 0.400 | 0.580 | 0.016 | 0.023 |
| c | 0.350 | 0.440 | 0.014 | 0.017 |
| D | 4.400 | 4.600 | 0.173 | 0.181 |
| D1 | 1.550 REF. | | 0.061 REF. | |
| E | 2.300 | 2.600 | 0.091 | 0.102 |
| E1 | 3.940 | 4.250 | 0.155 | 0.167 |
| e | 1.500 TYP. | | 0.060 TYP. | |
| e1 | 3.000 TYP. | | 0.118 TYP. | |
| L | 0.900 | 1.200 | 0.035 | 0.047 |