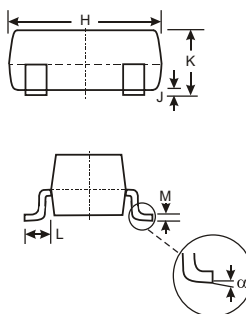
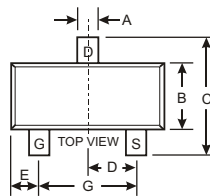
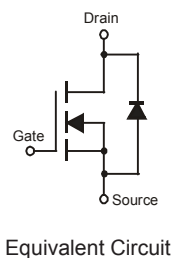


N-CHANNEL ENHANCEMENT MODE FIELD EFFECT TRANSISTOR

Features

- Low Input Capacitance.
- Low Gate Threshold Voltage.
- High Drain-Source Voltage Rating.
- Fast Switching Speed.
- Low Input/Output Leakage.
- Marking Code:SA



| SOT-23 | | |
|----------------------|-------|-------|
| Dim | Min | Max |
| A | 0.37 | 0.51 |
| B | 1.20 | 1.40 |
| C | 2.30 | 2.50 |
| D | 0.89 | 1.03 |
| E | 0.45 | 0.60 |
| G | 1.78 | 2.05 |
| H | 2.80 | 3.00 |
| J | 0.013 | 0.10 |
| K | 0.903 | 1.10 |
| L | 0.45 | 0.61 |
| M | 0.085 | 0.180 |
| α | 0° | 8° |
| All Dimensions in mm | | |

Maximum Ratings @ $T_A = 25^\circ\text{C}$ unless otherwise specified

| Parameter | Symbol | Value | Unit |
|---|-----------------|------------|--------------------|
| Drain-Source Voltage | V_{DS} | 100 | V |
| Continuous Gate-Source Voltage | V_{GSS} | ± 20 | V |
| Continuous Drain Current | I_D | 0.17 | A |
| Power Dissipation | P_D | 0.30 | W |
| Thermal Resistance from Junction to Ambient | $R_{\theta JA}$ | 417 | $^\circ\text{C/W}$ |
| Operating Temperaturea | T_j | 150 | $^\circ\text{C}$ |
| Storage Temperature | T_{stg} | -55 ~ +150 | $^\circ\text{C}$ |

Electrical Characteristics @ $T_A = 25^\circ\text{C}$ unless otherwise specified

| Parameter | Symbol | Test Condition | Min | Typ | Max | Units |
|--|---------------|---|------|------|-----------|----------|
| Off characteristics | | | | | | |
| Drain-source breakdown voltage | $V_{(BR)DSS}$ | $V_{GS} = 0V, I_D = 250\mu A$ | 100 | | | V |
| Gate-body leakage | I_{GSS} | $V_{DS} = 0V, V_{GS} = \pm 20V$ | | | ± 100 | nA |
| Zero gate voltage drain current | I_{DSS} | $V_{DS} = 100V, V_{GS} = 0V$ | | | 15 | μA |
| | | $V_{DS} = 20V, V_{GS} = 0V$ | | | 10 | nA |
| On characteristics | | | | | | |
| Gate-threshold voltage (note 1) | $V_{GS(th)}$ | $V_{DS} = V_{GS}, I_D = 250\mu A$ | 1.00 | 1.80 | 2.50 | V |
| Static drain-source on-resistance (note 1) | $R_{DS(on)}$ | $V_{GS} = 10V, I_D = 0.20A$ | | 2.6 | 3.5 | Ω |
| | | $V_{GS} = 4.5V, I_D = 0.18A$ | | 2.8 | 4.2 | |
| Forward transconductance (note 1) | g_{FS} | $V_{DS} = 10V, I_D = 0.18A$ | 0.08 | 0.37 | | S |
| Dynamic characteristics (note 2) | | | | | | |
| Input capacitance | C_{iss} | $V_{DS} = 25V, V_{GS} = 0V, f = 1MHz$ | | 22 | 60 | pF |
| Output capacitance | C_{oss} | | | 3.5 | 15 | |
| Reverse transfer capacitance | C_{rss} | | | 2.0 | 6 | |
| Switching characteristics | | | | | | |
| Turn-on delay time (note 1,2) | $t_{d(on)}$ | $V_{DD} = 30V, V_{DS} = 10V, I_D = 0.28A, R_{GEN} = 50\Omega$ | | | 8 | ns |
| Rise time (note 1,2) | t_r | | | | 8 | |
| Turn-off delay time (note 1,2) | $t_{d(off)}$ | | | | 13 | |
| Fall time (note 1,2) | t_f | | | | 16 | |
| Drain-source body diode characteristics | | | | | | |
| Body diode forward voltage (note 1) | V_{SD} | $I_S = 0.34A, V_{GS} = 0V$ | | 0.84 | 1.3 | V |

Notes: 1. Pulse Test; Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
2. These parameters have no way to verify.

TYPICAL TRANSIENT CHARACTERISTICS

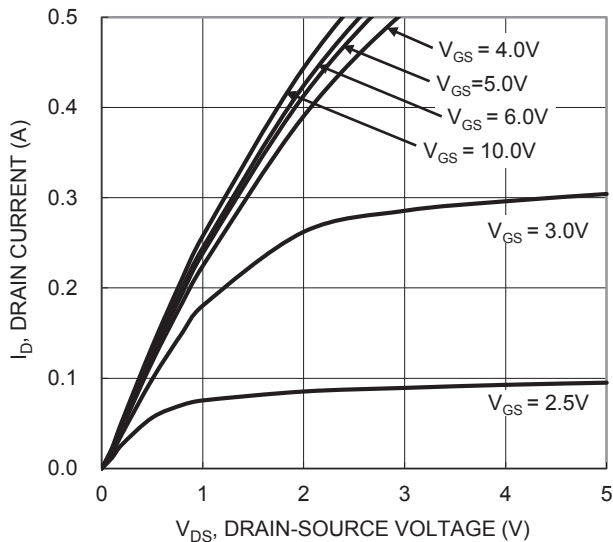


Figure 1. Typical Output Characteristic

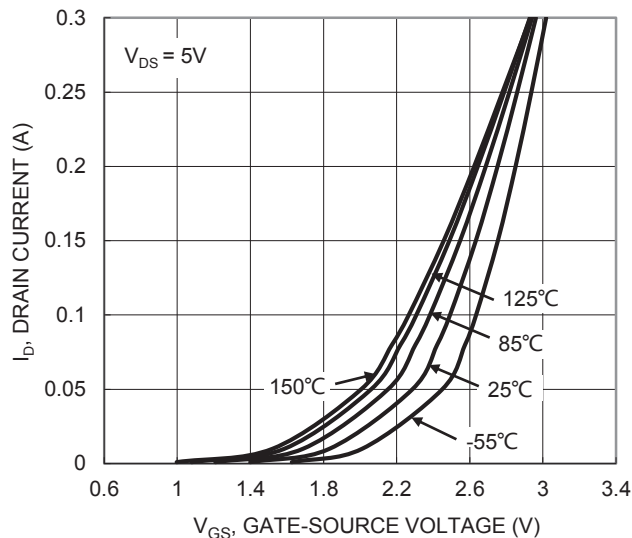


Figure 2. Typical Transfer Characteristic

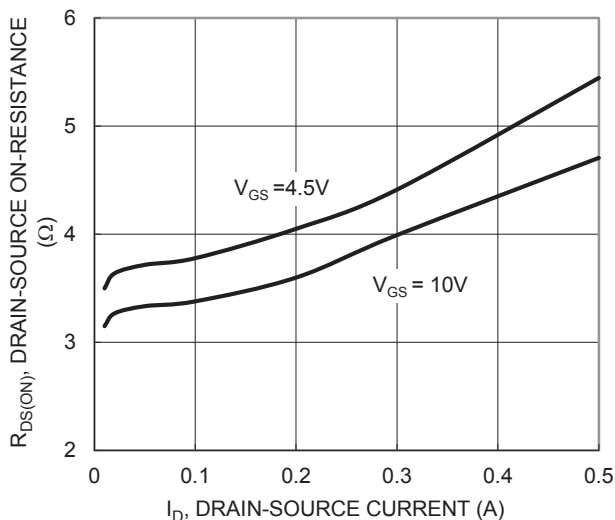


Figure 3. Typical On-Resistance vs. Drain Current and Gate Voltage

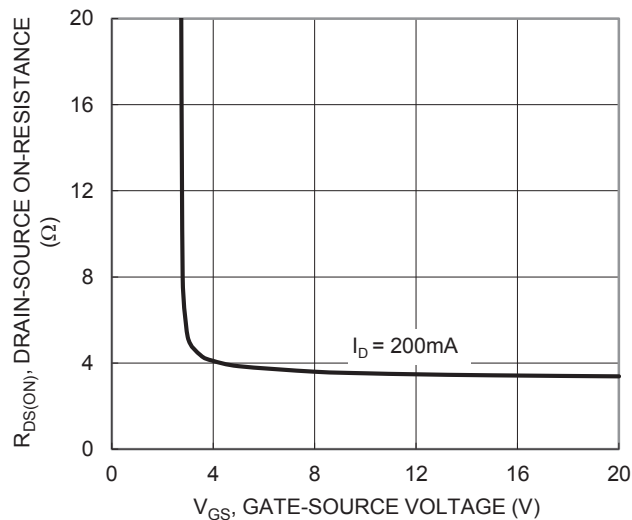


Figure 4. Typical Transfer Characteristic

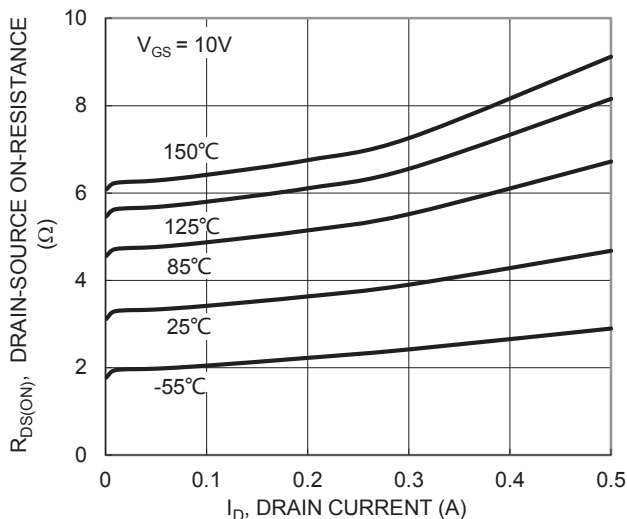


Figure 5. Typical On-Resistance vs. Drain Current and Junction Temperature

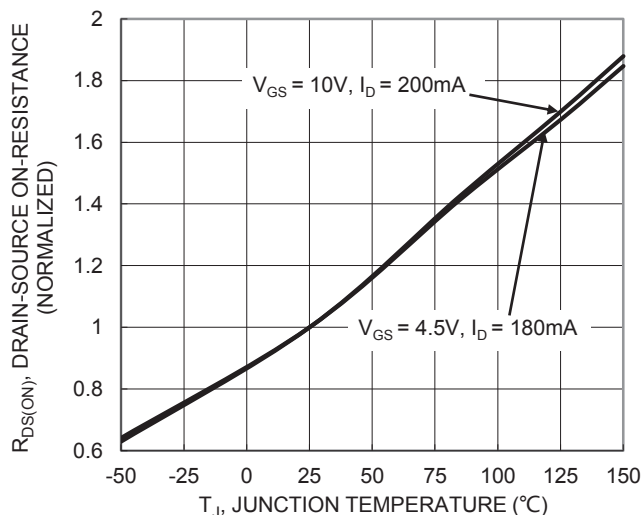
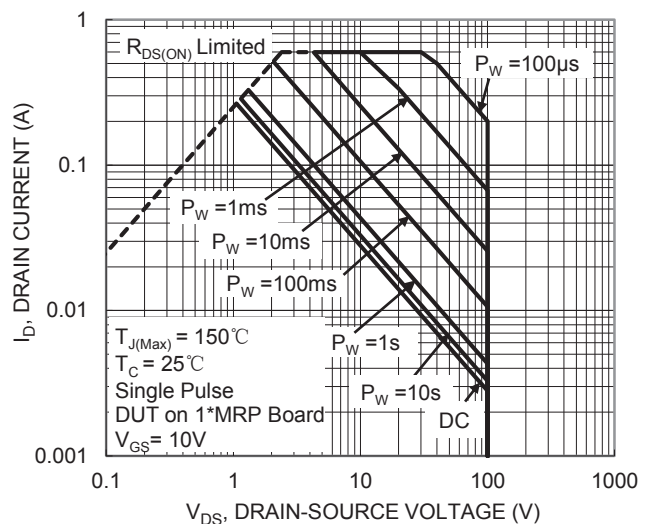
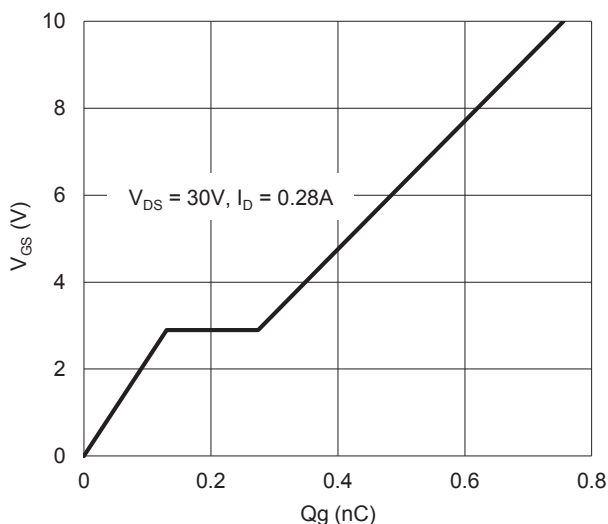
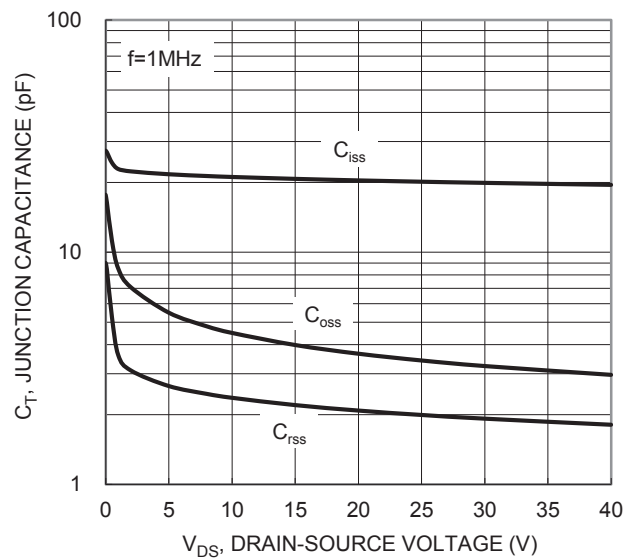
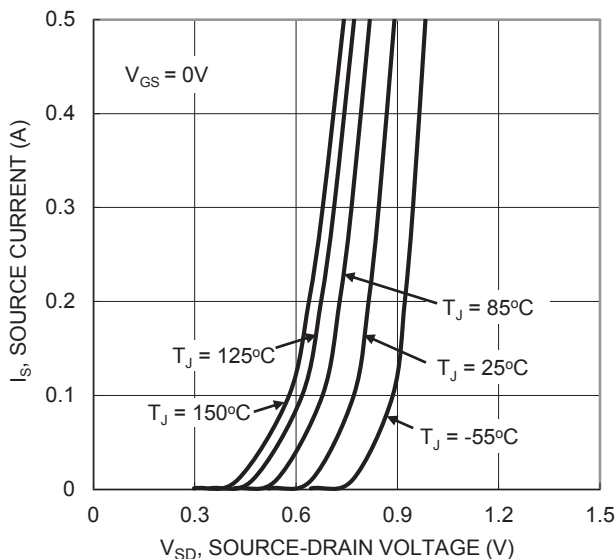
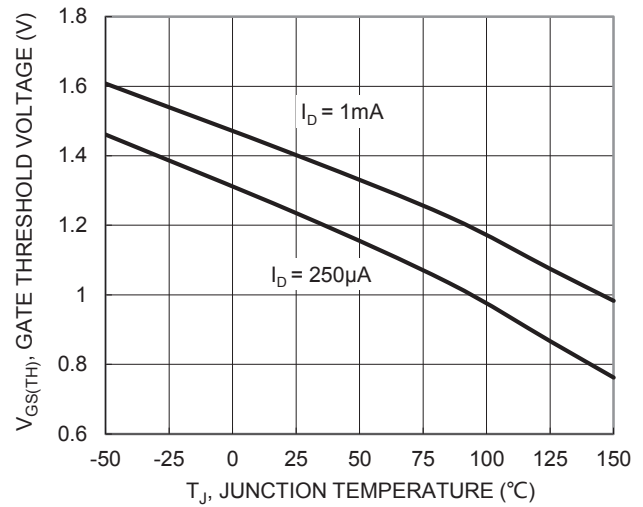
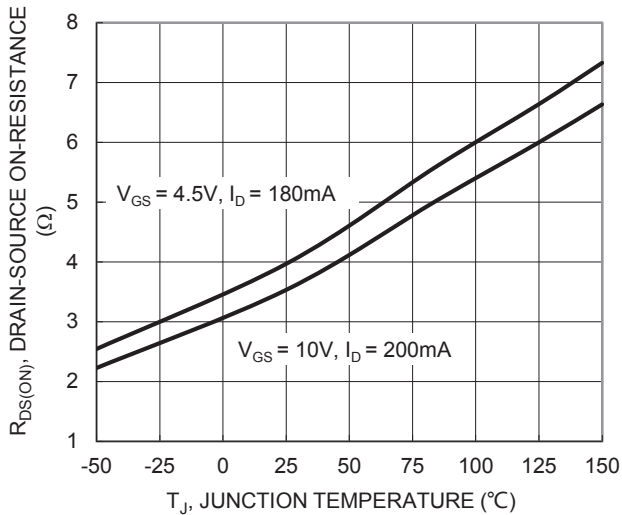


Figure 6. On-Resistance Variation with Junction Temperature

TYPICAL TRANSIENT CHARACTERISTICS



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