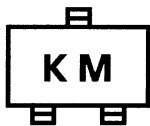


2SK2009

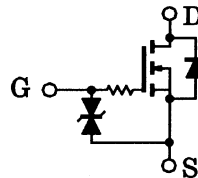
High Speed Switching Applications
 Analog Switch Applications

- High input impedance.
- Low gate threshold voltage: $V_{th} = 0.5$ to 1.5 V
- Excellent switching times: $t_{on} = 0.06 \mu s$ (typ.)
 $t_{off} = 0.12 \mu s$ (typ.)
- Low drain-source ON resistance: $R_{DS(ON)} = 1.2 \Omega$ (typ.)
- Small package
- Enhancement-mode

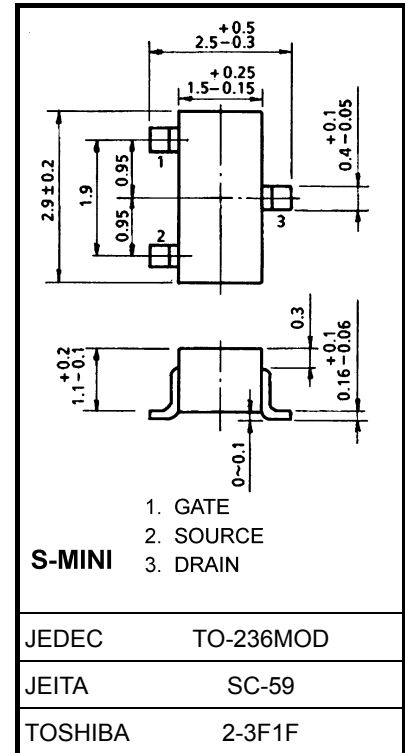
Marking



Equivalent Circuit



Unit: mm



Weight: 0.012 g (typ.)

Absolute Maximum Ratings (Ta = 25°C)

| Characteristics | Symbol | Rating | Unit |
|---------------------------|-----------|------------|------|
| Drain-source voltage | V_{DS} | 30 | V |
| Gate-source voltage | V_{GSS} | ±20 | V |
| DC drain current | I_D | 200 | mA |
| Drain power dissipation | P_D | 200 | mW |
| Channel temperature | T_{ch} | 150 | °C |
| Storage temperature range | T_{stg} | -55 to 150 | °C |

Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings.

Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

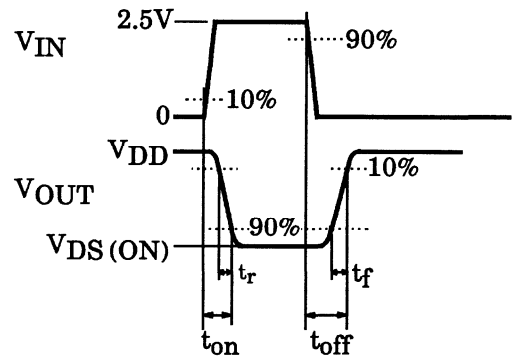
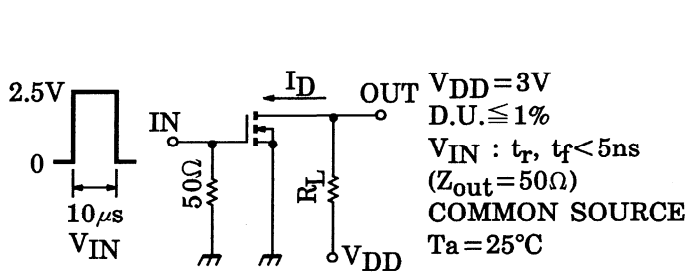
Note: This transistor is electrostatic sensitive device. Please handle with caution.

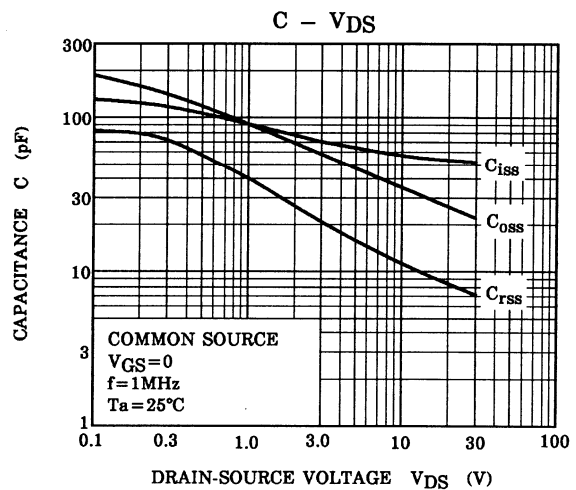
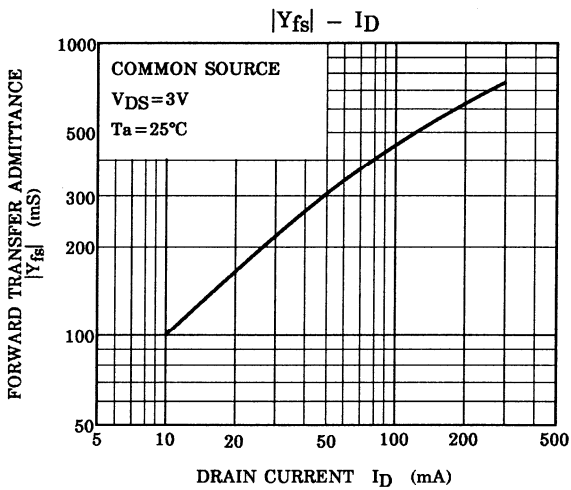
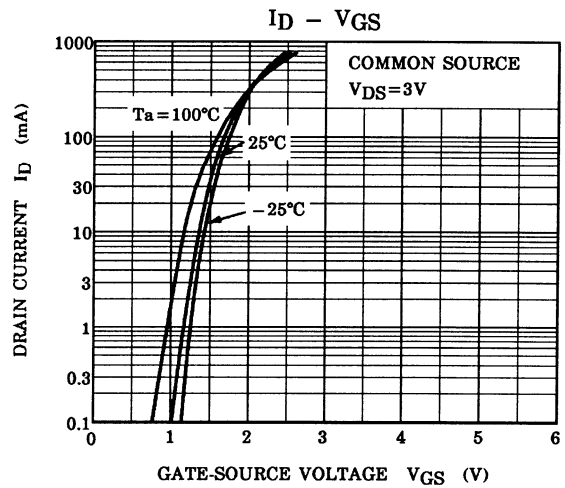
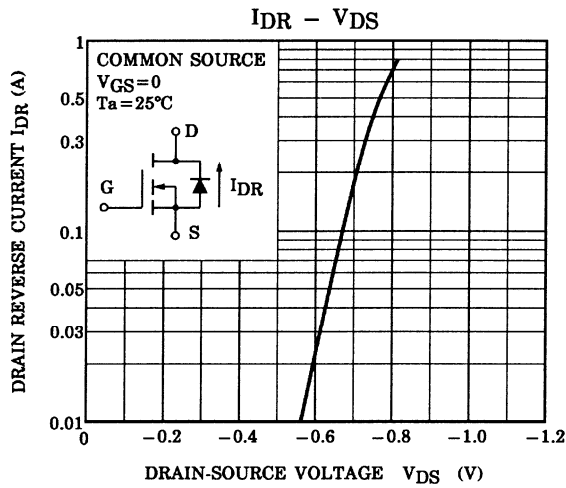
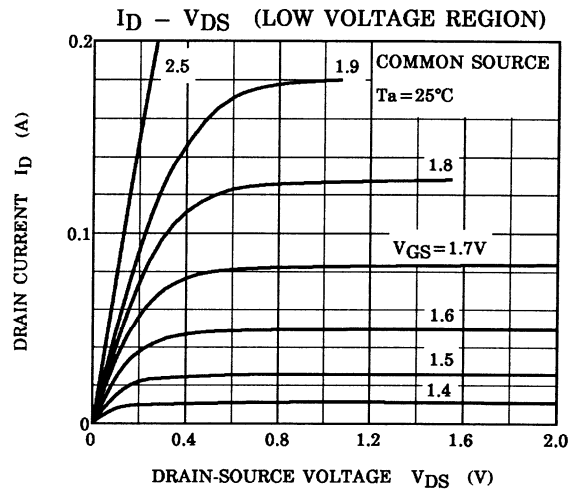
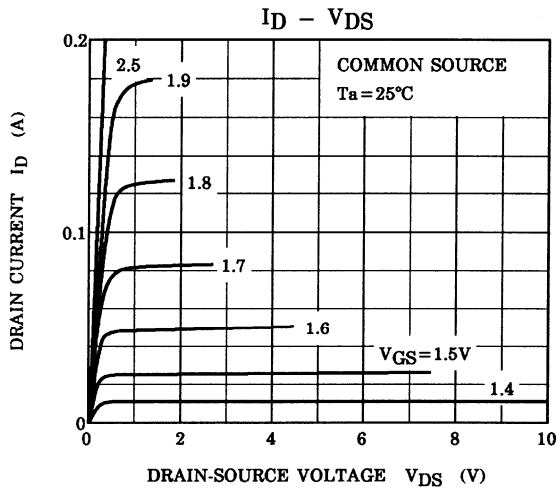
Start of commercial production
 1992-04

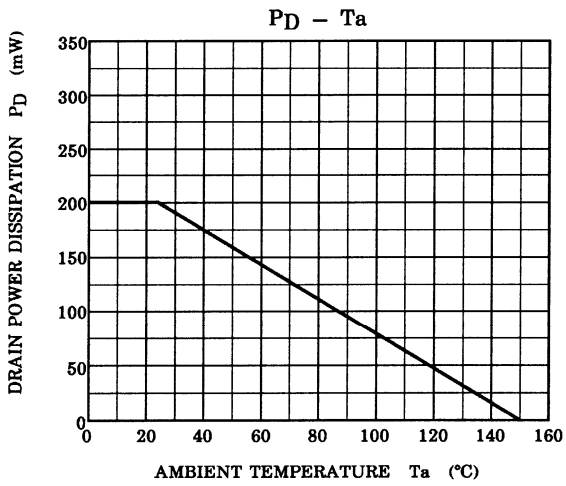
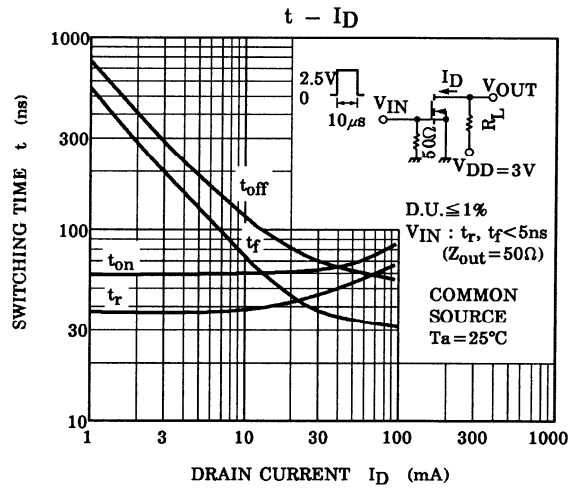
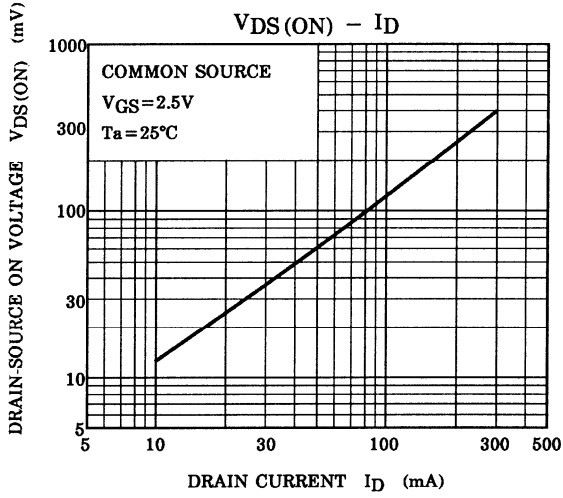
Electrical Characteristics (Ta = 25°C)

| Characteristics | Symbol | Test Condition | Min | Typ. | Max | Unit |
|--------------------------------|---------------|--|-----|------|-----------|---------------|
| Gate leakage current | I_{GSS} | $V_{GS} = \pm 10\text{ V}, V_{DS} = 0$ | — | — | ± 0.1 | μA |
| Drain-source breakdown voltage | $V_{(BR)DSS}$ | $I_D = 1\text{ mA}, V_{GS} = 0$ | 30 | — | — | V |
| Drain cut-off current | I_{DSS} | $V_{DS} = 30\text{ V}, V_{GS} = 0$ | — | — | 10 | μA |
| Gate threshold voltage | V_{th} | $V_{DS} = 3\text{ V}, I_D = 0.1\text{ mA}$ | 0.5 | — | 1.5 | V |
| Forward transfer admittance | $ Y_{fs} $ | $V_{DS} = 3\text{ V}, I_D = 50\text{ mA}$ | 100 | — | — | mS |
| Drain-source ON resistance | $R_{DS(ON)}$ | $I_D = 50\text{ mA}, V_{GS} = 2.5\text{ V}$ | — | 1.2 | 2 | Ω |
| Input capacitance | C_{iss} | $V_{DS} = 3\text{ V}, V_{GS} = 0, f = 1\text{ MHz}$ | — | 70 | — | pF |
| Reverse transfer capacitance | C_{rss} | $V_{DS} = 3\text{ V}, V_{GS} = 0, f = 1\text{ MHz}$ | — | 23 | — | pF |
| Output capacitance | C_{oss} | $V_{DS} = 3\text{ V}, V_{GS} = 0, f = 1\text{ MHz}$ | — | 58 | — | pF |
| Switching time | Turn-on time | $V_{DD} = 3\text{ V}, I_D = 10\text{ mA}, V_{GS} = 0\text{ to }2.5\text{ V}$ | — | 0.06 | — | μs |
| | Turn-off time | $V_{DD} = 3\text{ V}, I_D = 10\text{ mA}, V_{GS} = 0\text{ to }2.5\text{ V}$ | — | 0.12 | — | |

Switching Time Test Circuit







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