

SWITCHING
N-CHANNEL MOS FET

DESCRIPTION

The 2SK1582, N-channel vertical type MOS FET, is a switching device which can be driven directly by the output of ICs having a 5 V power source.

The 2SK1582 has excellent switching characteristics and is suitable for use as a high-speed switching device in digital circuits.

FEATURES

- Directly driven by ICs having a 5 V power source.
- Not necessary to consider driving current because of its high input impedance.
- Possible to reduce the number of parts by omitting the bias resistor.

★ ORDERING INFORMATION

| PART NUMBER | PACKAGE |
|-------------|-------------------|
| 2SK1582 | SC-59 (Mini Mold) |

Marking: G15

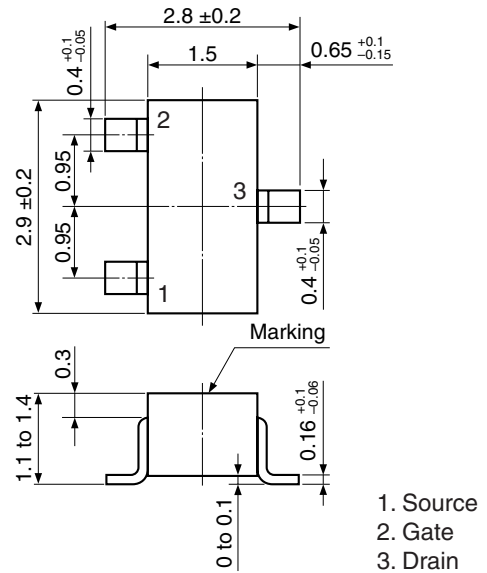
ABSOLUTE MAXIMUM RATINGS (T_A = 25°C)

| | | | |
|---|-----------------------|-------------|----|
| Drain to Source Voltage (V _{GS} = 0 V) | V _{DSS} | 30 | V |
| Gate to Source Voltage (V _{DS} = 0 V) | V _{GSS} | ±20 | V |
| Drain Current (DC) | I _{D(DC)} | ±200 | mA |
| Drain Current (pulse) ^{Note} | I _{D(pulse)} | ±400 | mA |
| Total Power Dissipation | P _T | 200 | mW |
| Channel Temperature | T _{ch} | 150 | °C |
| Storage Temperature | T _{stg} | -55 to +150 | °C |

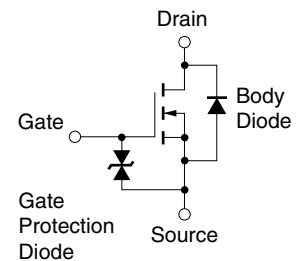
Note PW ≤ 10 ms, Duty Cycle ≤ 50%

- ★ **Remark** The diode connected between the gate and source of the transistor serves as a protector against ESD. When this device actually used, an additional protection circuit is externally required if a voltage exceeding the rated voltage may be applied to this device.

PACKAGE DRAWING (Unit: mm)



EQUIVALENT CIRCUIT



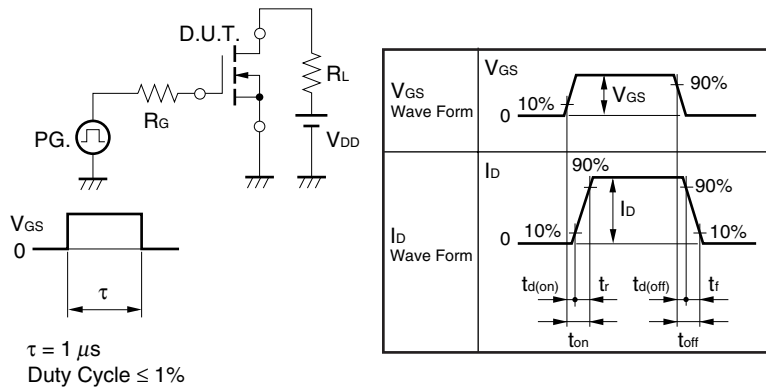
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ELECTRICAL CHARACTERISTICS (T_A = 25°C)

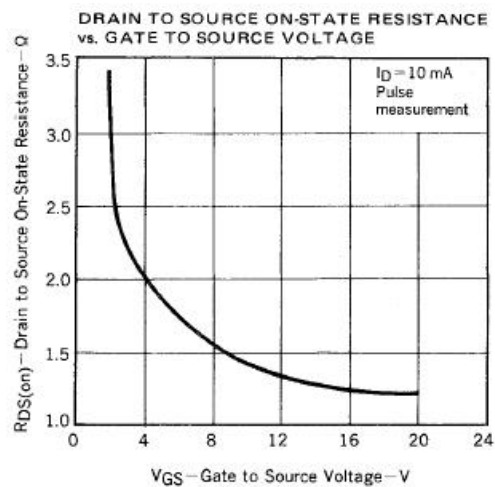
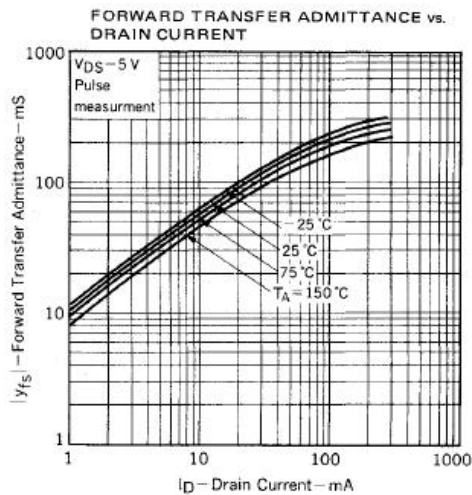
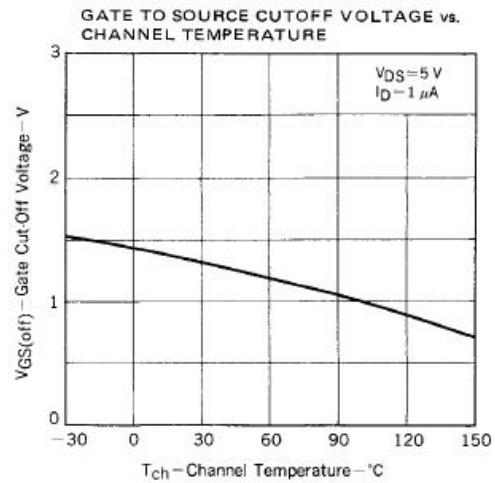
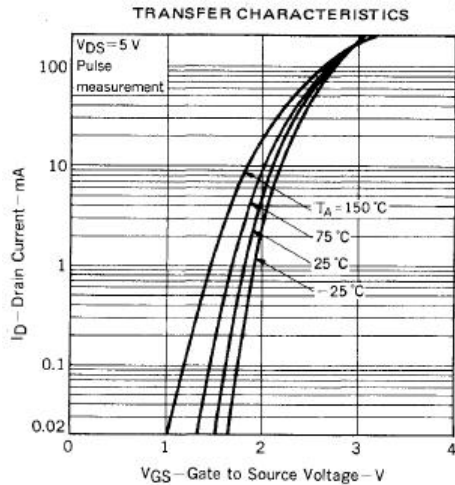
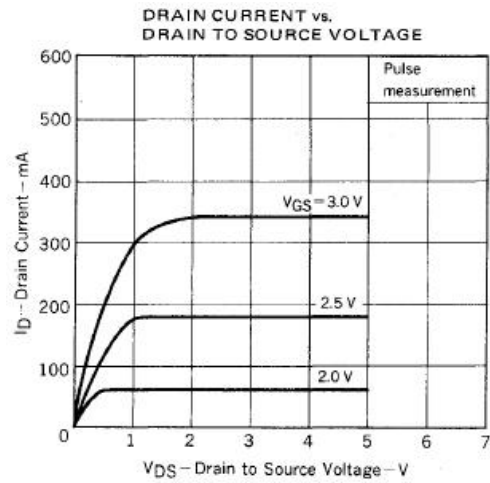
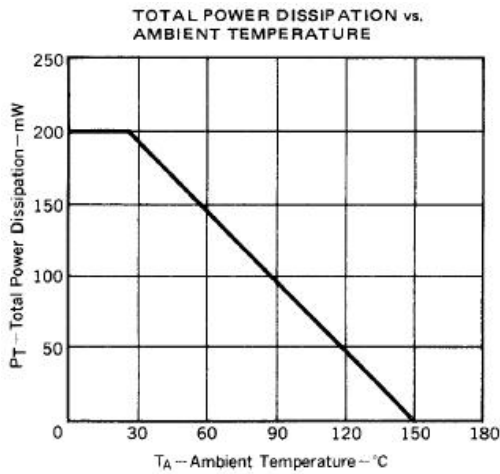
| CHARACTERISTICS | SYMBOL | TEST CONDITIONS | MIN. | TYP. | MAX. | UNIT |
|---|----------------------|--|------|------|------|------|
| Zero Gate Voltage Drain Current | I _{DSS} | V _{DS} = 30 V, V _{GS} = 0 V | | | 1.0 | μA |
| Gate Leakage Current | I _{GSS} | V _{GS} = ±20 V, V _{DS} = 0 V | | | ±1.0 | μA |
| Gate Cut-off Voltage | V _{GS(off)} | V _{DS} = 5.0 V, I _D = 1.0 μA | 0.8 | 1.3 | 1.8 | V |
| Forward Transfer Admittance Note | y _{fs} | V _{DS} = 5.0 V, I _D = 10 mA | 20 | 60 | | mS |
| Drain to Source On-state Resistance Note | R _{DS(on)1} | V _{GS} = 4.0 V, I _D = 10 mA | | 2.2 | 5.0 | Ω |
| | R _{DS(on)2} | V _{GS} = 10 V, I _D = 10 mA | | 1.4 | 3.0 | Ω |
| Input Capacitance | C _{iss} | V _{DS} = 5.0 V | | 28 | | pF |
| Output Capacitance | C _{oss} | V _{GS} = 0 V | | 30 | | pF |
| Reverse Transfer Capacitance | C _{rss} | f = 1 MHz | | 7.0 | | pF |
| Turn-on Delay Time | t _{d(on)} | V _{DD} = 5.0 V, I _D = 10 mA | | 55 | | ns |
| Rise Time | t _r | V _{GS} = 5.0 V | | 200 | | ns |
| Turn-off Delay Time | t _{d(off)} | R _G = 10 Ω | | 180 | | ns |
| Fall Time | t _f | | | 250 | | ns |

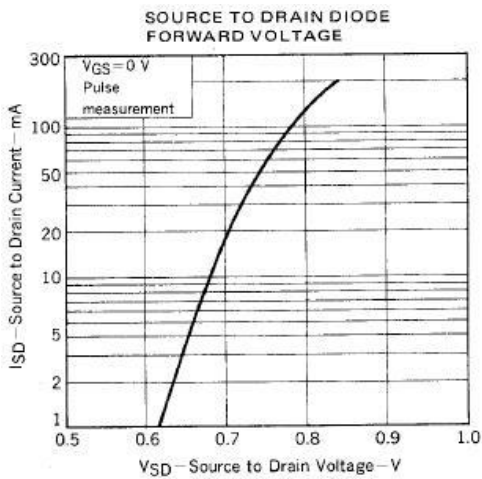
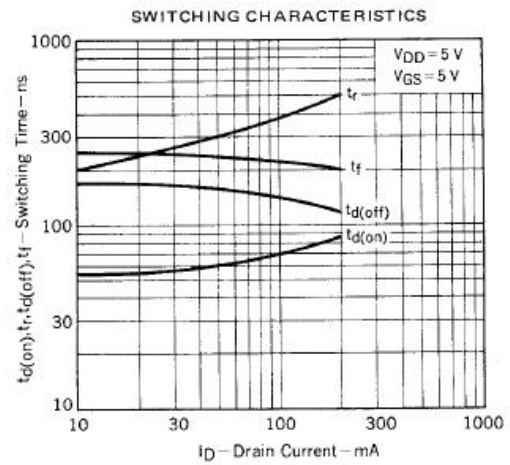
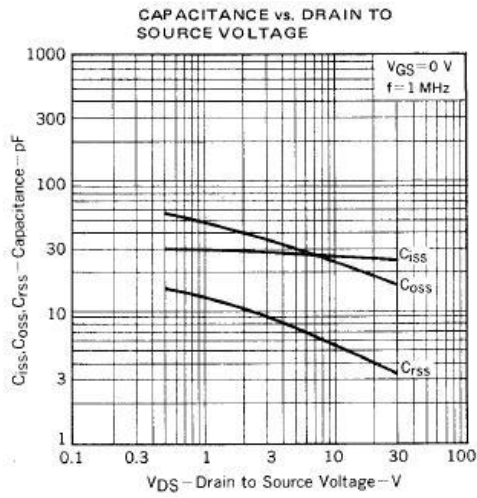
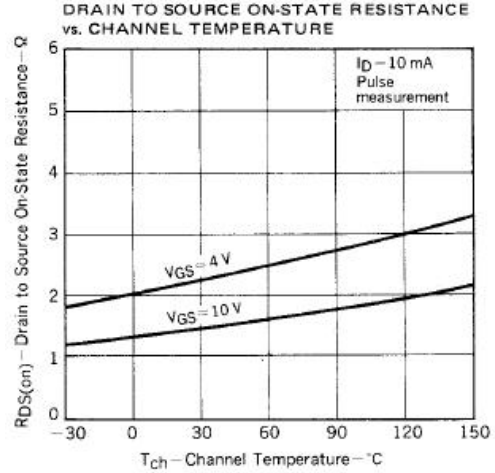
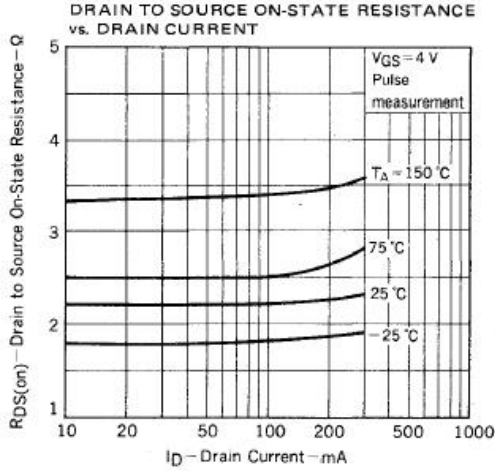
Note Pulsed

TEST CIRCUIT SWITCHING TIME



★ TYPICAL CHARACTERISTICS (T_A = 25°C)





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