

P-CHANNEL MOS FIELD EFFECT TRANSISTOR
FOR HIGH SPEED SWITCHING

DESCRIPTION

The 2SJ559 is a switching device which can be driven directly by a 2.5 V power source.

The 2SJ559 has excellent switching characteristics, and is suitable for use as a high-speed switching device in digital circuits.

FEATURES

- Can be driven by a 2.5 V power source.
- Low gate cut-off voltage.

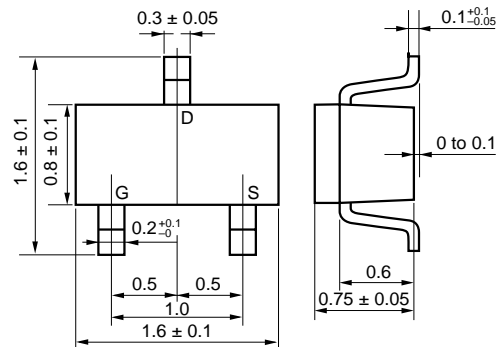
ABSOLUTE MAXIMUM RATINGS (T_A = 25°C)

| | | | |
|-------------------------|-----------------------|-------------|----|
| Drain to Source Voltage | V _{DSS} | -30 | V |
| Gate to Source Voltage | V _{GSS} | ± 20 | V |
| Drain Current (DC) | I _{D(DC)} | ± 0.1 | A |
| Drain Current (pulse) | I _{D(pulse)} | ± 0.4 | A |
| Total Power Dissipation | P _T | 200 | mW |
| Channel Temperature | T _{ch} | 150 | °C |
| Storage Temperature | T _{stg} | -55 to +150 | °C |

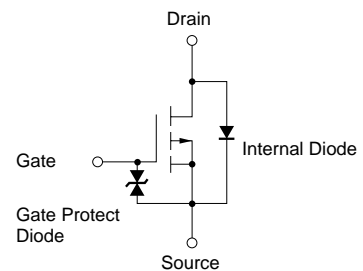
- Notes** 1. $PW \leq 10 \mu s$, Duty Cycle $\leq 1 \%$
2. Mounted on ceramic substrate of $3.0\text{cm}^2 \times 0.64 \text{ mm}$

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



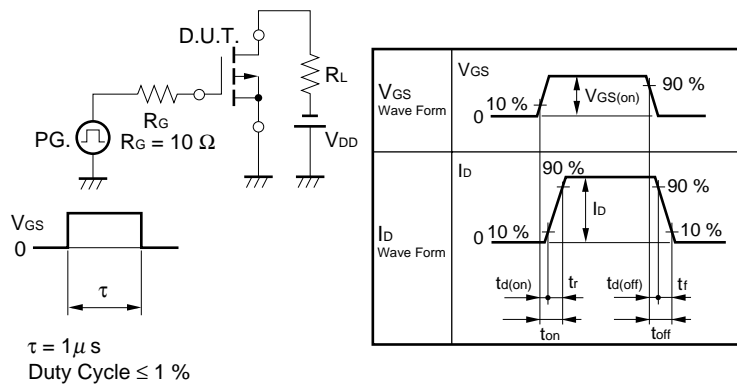
Marking : C1

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Not all devices/types available in every country. Please check with local NEC representative for availability and additional information.

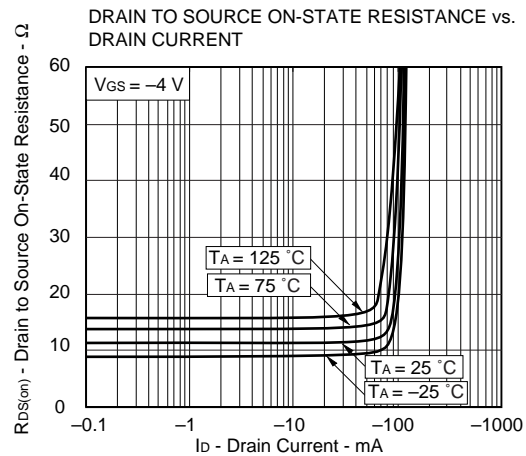
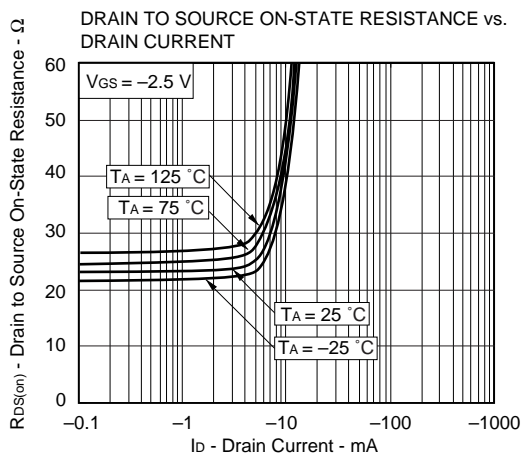
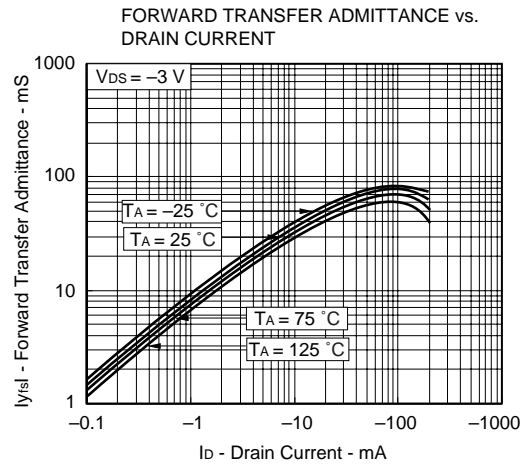
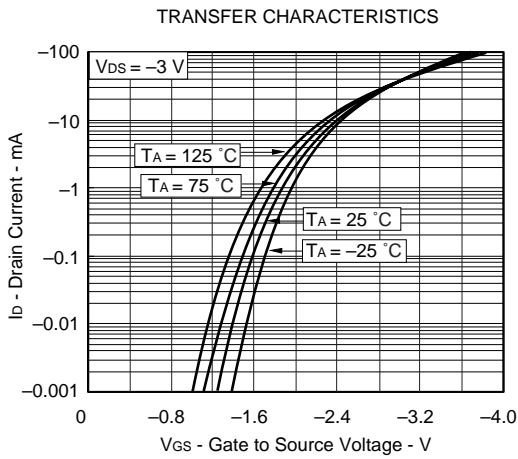
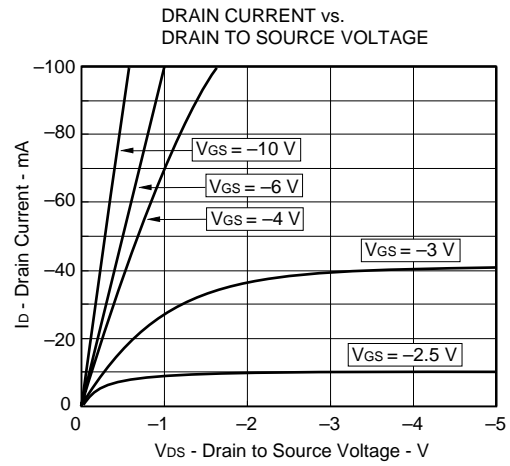
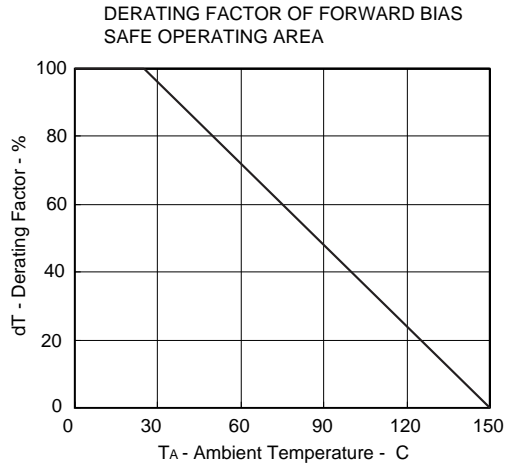
ELECTRICAL CHARACTERISTICS (T_A = 25 °C)

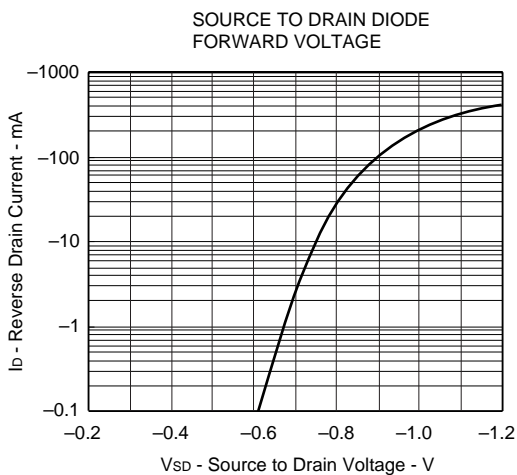
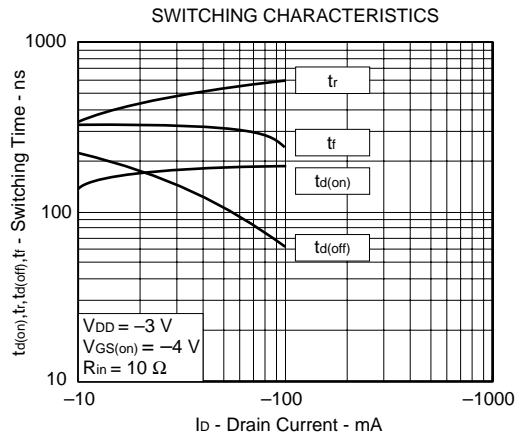
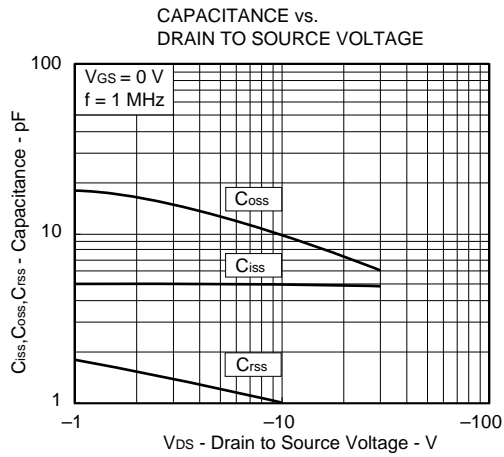
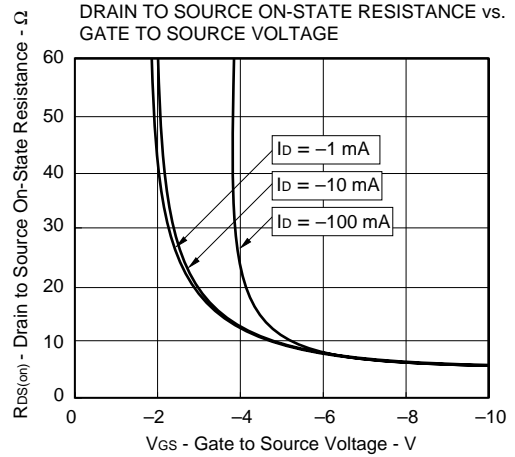
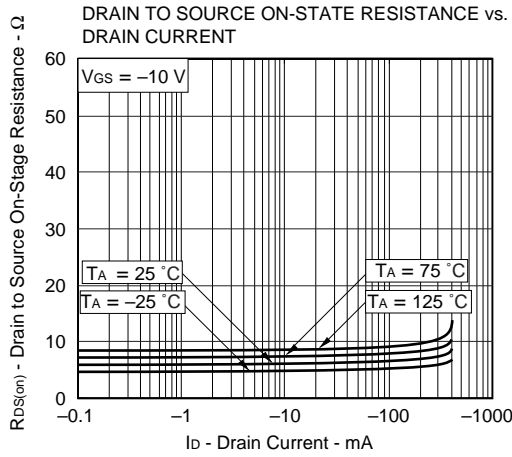
| CHARACTERISTICS | SYMBOL | TEST CONDITIONS | MIN. | TYP. | MAX. | UNIT |
|-------------------------------------|----------------------|--|------|------|------|------|
| Drain Cut-off Current | I _{DSS} | V _{DS} = -30 V, V _{GS} = 0 V | | | -1 | μA |
| Gate Leakage Current | I _{GSS} | V _{GS} = ± 20 V, V _{DS} = 0 V | | | ± 10 | μA |
| Gate Cut-off Voltage | V _{GS(off)} | V _{DS} = -3 V, I _D = -10 μA | -1.0 | -1.4 | -1.7 | V |
| Forward Transfer Admittance | y _{fs} | V _{DS} = -3 V, I _D = -10 mA | 20 | | | mS |
| Drain to Source On-state Resistance | R _{DS(on)1} | V _{GS} = -2.5 V, I _D = -1 mA | | 23 | 60 | Ω |
| | R _{DS(on)2} | V _{GS} = -4 V, I _D = -10 mA | | 11 | 23 | Ω |
| | R _{DS(on)3} | V _{GS} = -10 V, I _D = -10 mA | | 6 | 13 | Ω |
| Input Capacitance | C _{iSS} | V _{DS} = -3 V | | 5 | | pF |
| Output Capacitance | C _{oSS} | V _{GS} = 0 V | | 15 | | pF |
| Reverse Transfer Capacitance | C _{rSS} | f = 1 MHz | | 1.3 | | pF |
| Turn-on Delay Time | t _{d(on)} | V _{DD} = -3 V | | 140 | | ns |
| Rise Time | t _r | I _D = -10 mA | | 330 | | ns |
| Turn-off Delay Time | t _{d(off)} | V _{GS(on)} = -4 V | | 220 | | ns |
| Fall Time | t _f | R _G = 10 Ω, R _L = 300 Ω | | 320 | | ns |

TEST CIRCUIT SWITCHING TIME



TYPICAL CHARACTERISTICS (TA = 25°C)





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