

**2SJ502**

Ultrahigh-Speed Switching Applications

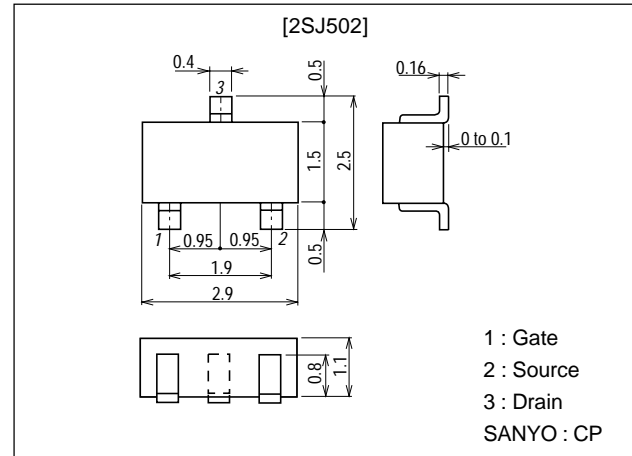
Features

- Low ON-resistance.
- Ultrahigh-speed switching.
- 4V drive.

Package Dimensions

unit:mm

2091A



Specifications

Absolute Maximum Ratings at Ta = 25°C

| Parameter | Symbol | Conditions | Ratings | Unit |
|-----------------------------|-----------|--|-------------|------|
| Drain-to-Source Voltage | V_{DSS} | | -30 | V |
| Gate-to-Source Voltage | V_{GSS} | | ±20 | V |
| Drain Current (DC) | I_D | | -0.5 | A |
| Drain Current (Pulse) | I_{DP} | $PW \leq 10 \mu s$, duty cycle $\leq 1\%$ | -2.0 | A |
| Allowable Power Dissipation | P_D | | 0.25 | W |
| Channel Temperature | T_{ch} | | 150 | °C |
| Storage Temperature | T_{stg} | | -55 to +150 | °C |

Electrical Characteristics at Ta = 25°C

| Parameter | Symbol | Conditions | Ratings | | | Unit |
|--|---------------|-----------------------------------|---------|-----|------|------|
| | | | min | typ | max | |
| Drain-to-Source Breakdown Voltage | $V_{(BR)DSS}$ | $I_D = -1mA$, $V_{GS} = 0$ | -30 | | | V |
| Zero-Gate Voltage Drain Current | I_{DSS} | $V_{DS} = -30V$, $V_{GS} = 0$ | | | -10 | μA |
| Gate-to-Source Leakage Current | I_{GSS} | $V_{GS} = \pm 16V$, $V_{DS} = 0$ | | | ±10 | μA |
| Cutoff Voltage | $V_{GS(off)}$ | $V_{DS} = -10V$, $I_D = -1mA$ | -1.0 | | -2.5 | V |
| Forward Transfer Admittance | $ y_{fs} $ | $V_{DS} = -10V$, $I_D = -300mA$ | 300 | 800 | | mS |
| Static Drain-to-Source On-State Resistance | $R_{DS(on)1}$ | $I_D = -300mA$, $V_{GS} = -10V$ | | 360 | 600 | mΩ |
| | $R_{DS(on)2}$ | $I_D = -300mA$, $V_{GS} = -4V$ | | 690 | 970 | mΩ |

Marking : FM

Continued on next page.

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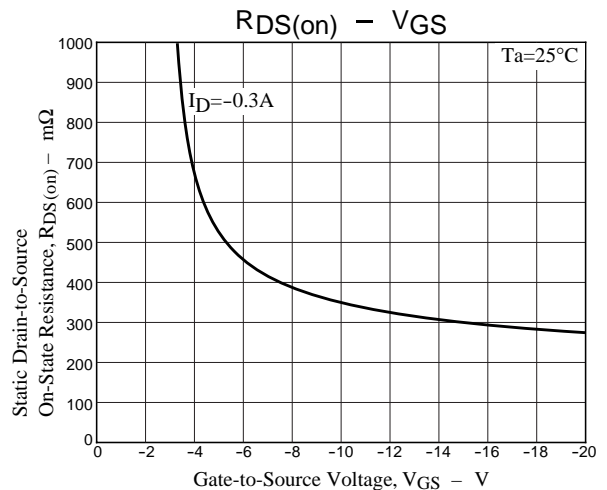
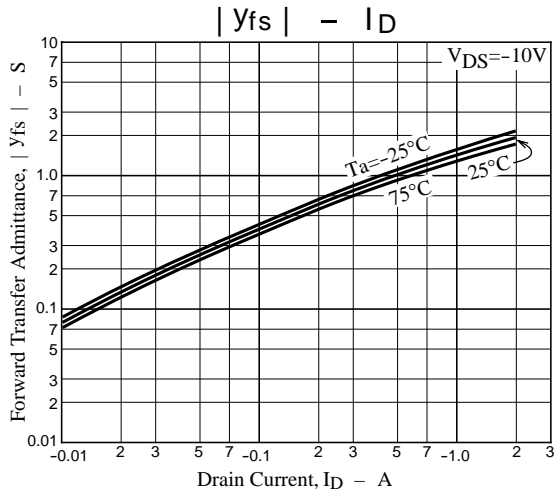
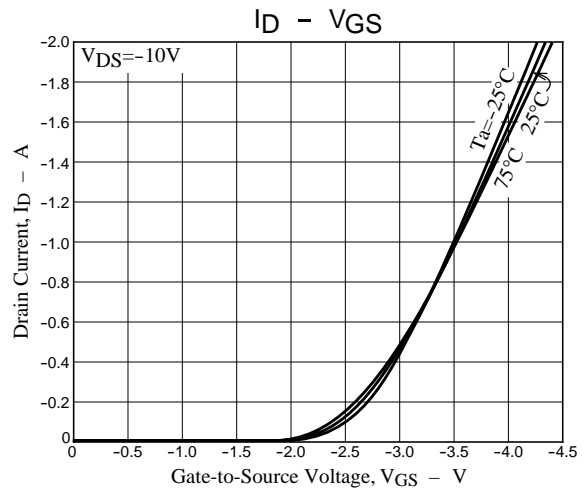
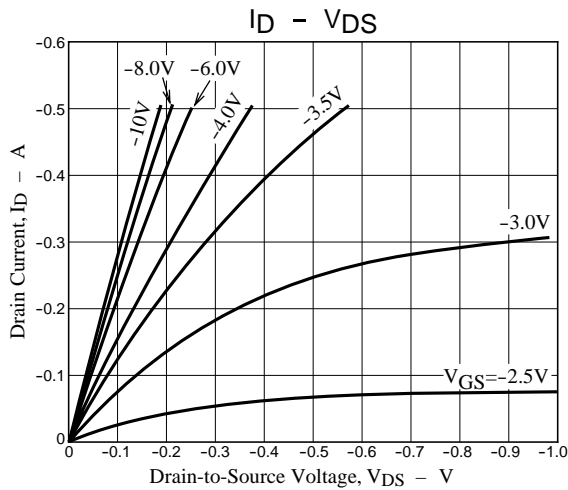
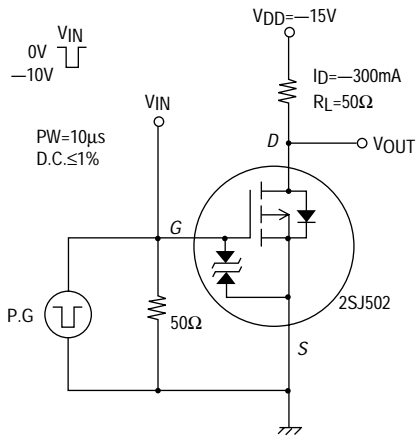
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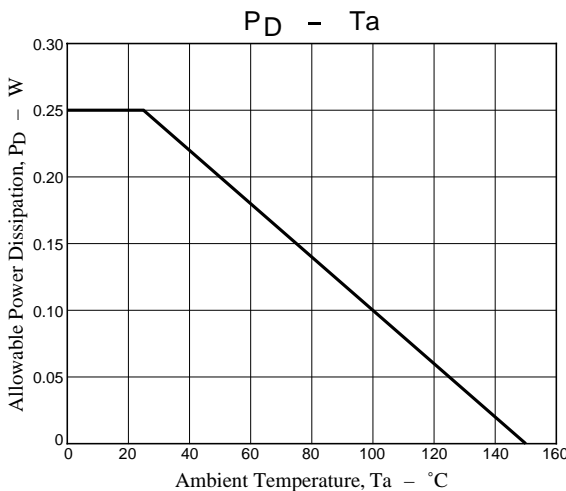
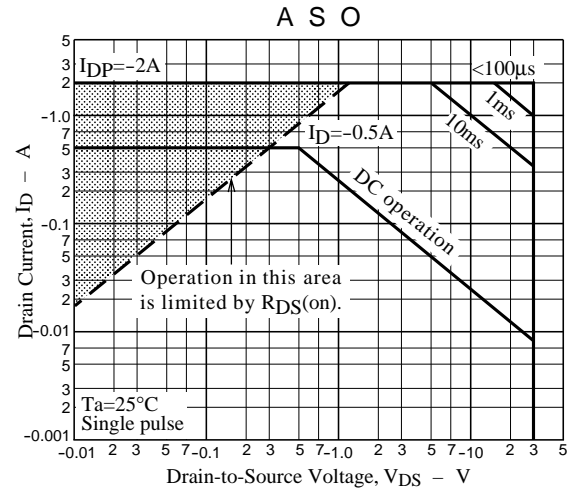
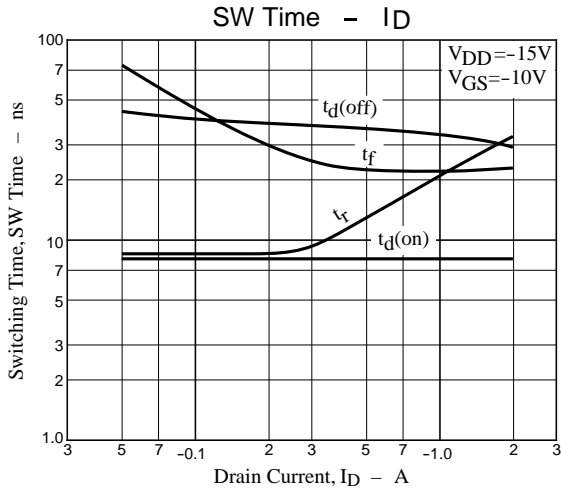
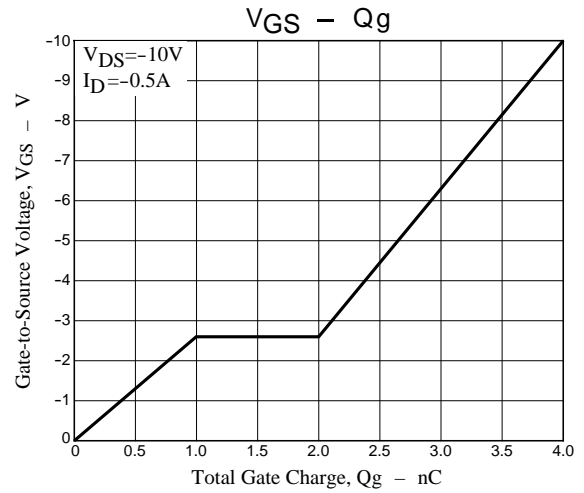
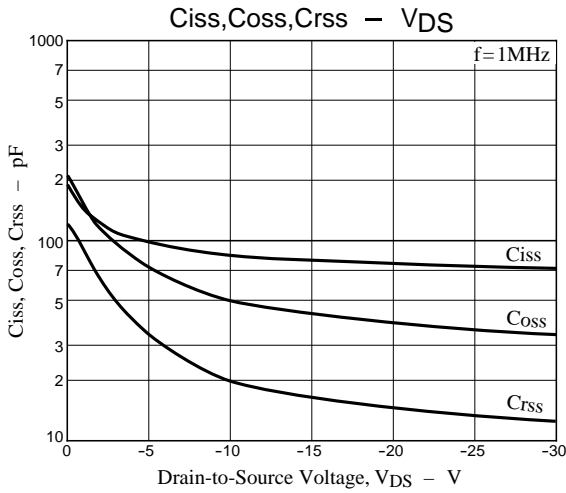
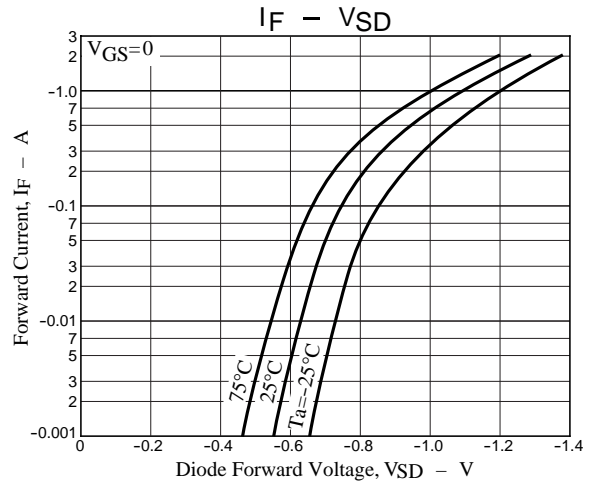
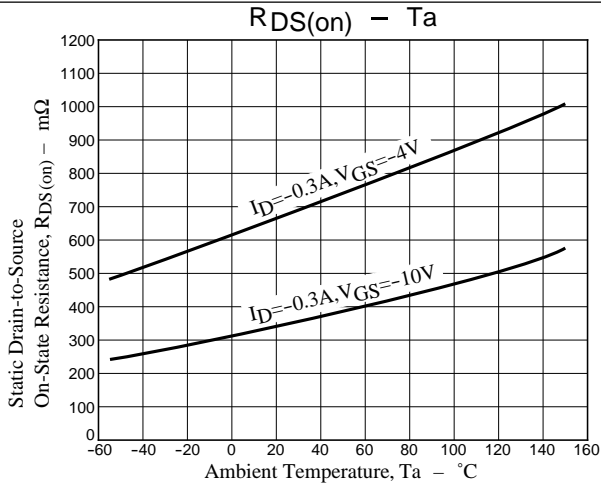
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| Parameter | Symbol | Conditions | Ratings | | | Unit |
|-------------------------------|--------------|--|---------|-------|------|------|
| | | | min | typ | max | |
| Input Capacitance | C_{iss} | $V_{DS}=-10V, f=1MHz$ | | 90 | | pF |
| Output Capacitance | C_{oss} | $V_{DS}=-10V, f=1MHz$ | | 50 | | pF |
| Reverse Transfer Capacitance | C_{rss} | $V_{DS}=-10V, f=1MHz$ | | 20 | | pF |
| Turn-ON Delay Time | $t_{d(on)}$ | See specified Test Circuit | | 8 | | ns |
| Rise Time | t_r | See specified Test Circuit | | 10 | | ns |
| Turn-OFF Delay Time | $t_{d(off)}$ | See specified Test Circuit | | 40 | | ns |
| Fall Time | t_f | See specified Test Circuit | | 25 | | ns |
| Total Gate Charge | Q_g | $V_{DS}=-10V, V_{GS}=-10V, I_D=-500mA$ | | 4 | | nC |
| Gate-to-Source Charge | Q_{gs} | $V_{DS}=-10V, V_{GS}=-10V, I_D=-500mA$ | | 1 | | nC |
| Gate-to-Drain "Miller" Charge | Q_{gd} | $V_{DS}=-10V, V_{GS}=-10V, I_D=-500mA$ | | 1 | | nC |
| Diode Forward Voltage | V_{SD} | $I_S=-500mA, V_{GS}=0$ | | -0.93 | -1.5 | V |

Switching Time Test Circuit



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