

**2SJ563**

## Ultrahigh-Speed Switching Applications

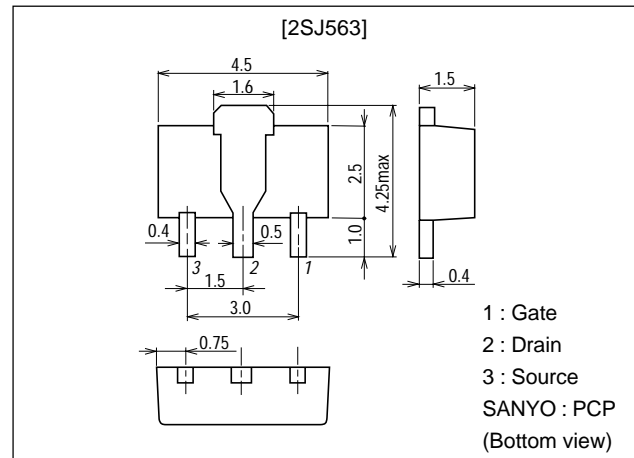
### Features

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

### Package Dimensions

unit:mm

2062A



### 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      | $V_{GSS}$ |  | $\pm 20$    | V    |
| Drain Current (DC)          | $I_D$     |  | -2          | A    |
| Drain Current (Pulse)       | $I_{DP}$  | $PW \leq 10\mu s$ , duty cycle $\leq 1\%$              | -8          | A    |
| Allowable Power Dissipation | $P_D$     | Mounted on a ceramic board (250mm <sup>2</sup> ×0.8mm) | 1.5         | W    |
|                             |           | $T_c = 25^\circ C$                                     | 3.5         | 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      | $\mu A$    |
| Gate-to-Source Leakage Current             | $I_{GSS}$     | $V_{GS} = \pm 16V$ , $V_{DS} = 0$ |         |     | $\pm 10$ | $\mu A$    |
| Cutoff Voltage                             | $V_{GS(off)}$ | $V_{DS} = -10V$ , $I_D = -1mA$    | -1.0    |     | -2.5     | V          |
| Forward Transfer Admittance                | $ y_{fs} $    | $V_{DS} = -10V$ , $I_D = -1A$     | 1.2     | 1.7 |          | S          |
| Static Drain-to-Source On-State Resistance | $R_{DS(on)1}$ | $I_D = -1A$ , $V_{GS} = -10V$     |         | 240 | 315      | m $\Omega$ |
|  | $R_{DS(on)2}$ | $I_D = -300mA$ , $V_{GS} = -4V$   |         | 400 | 550      | m $\Omega$ |

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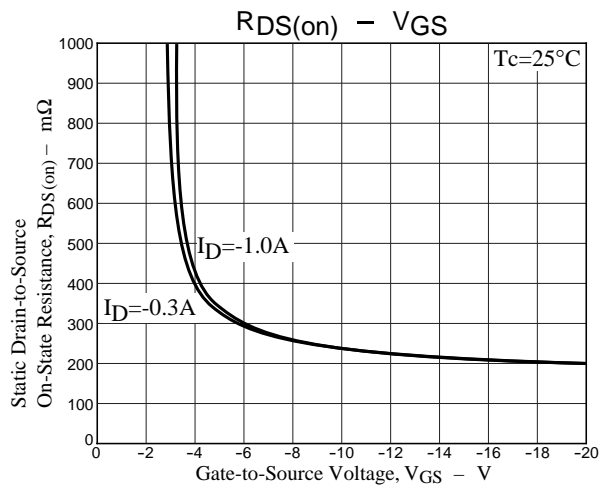
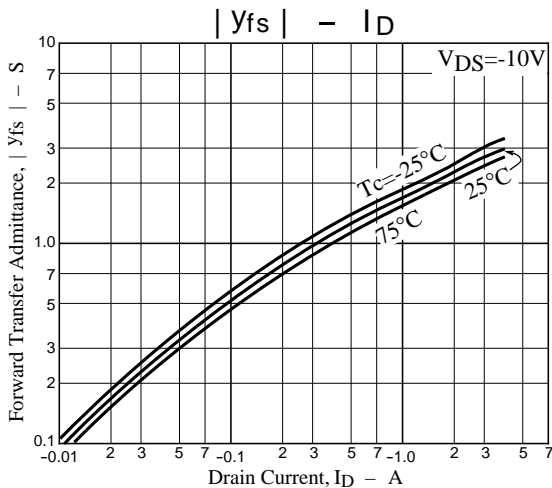
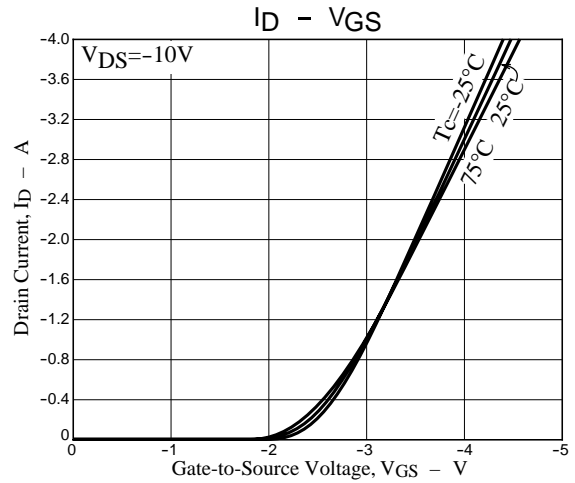
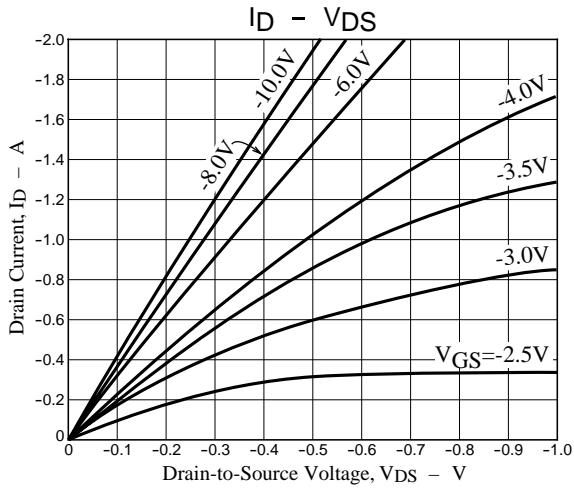
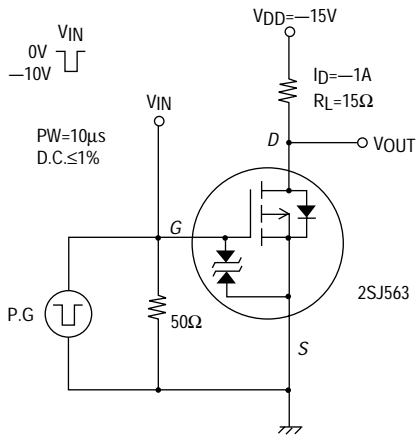
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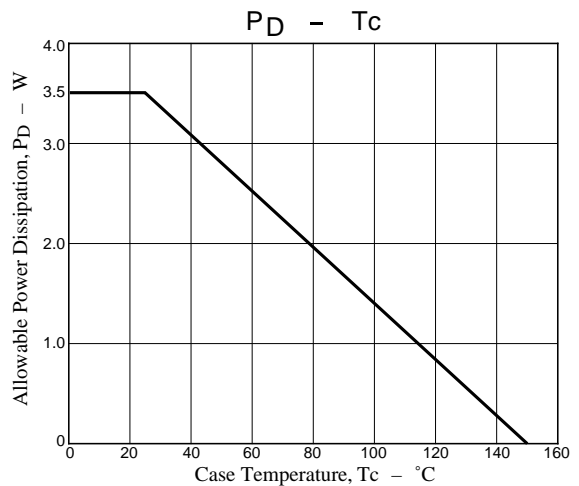
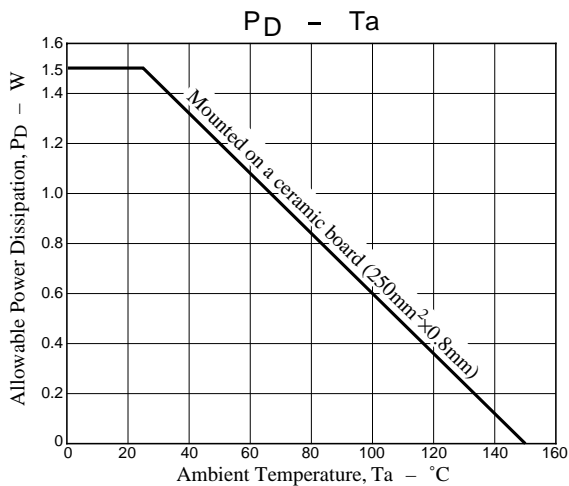
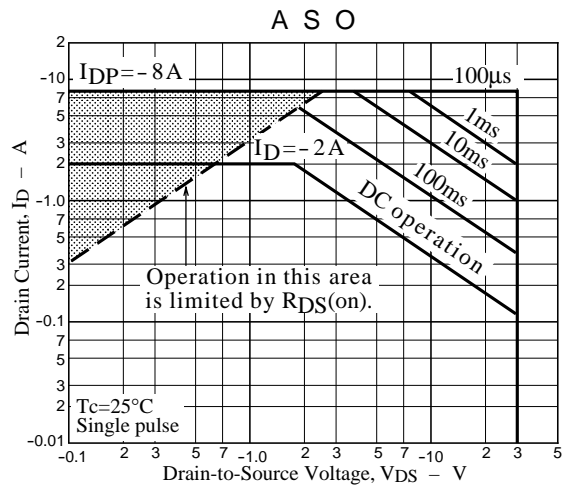
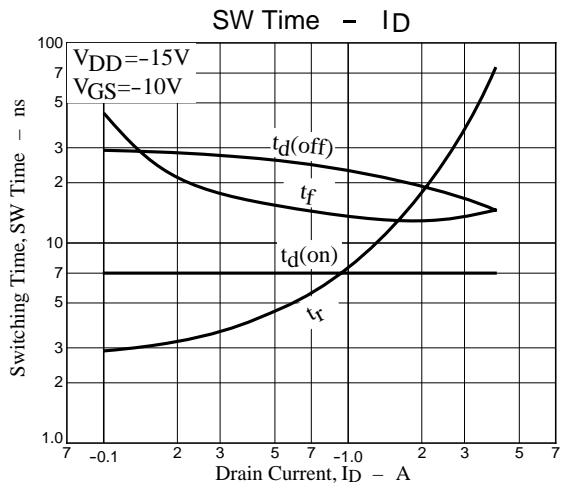
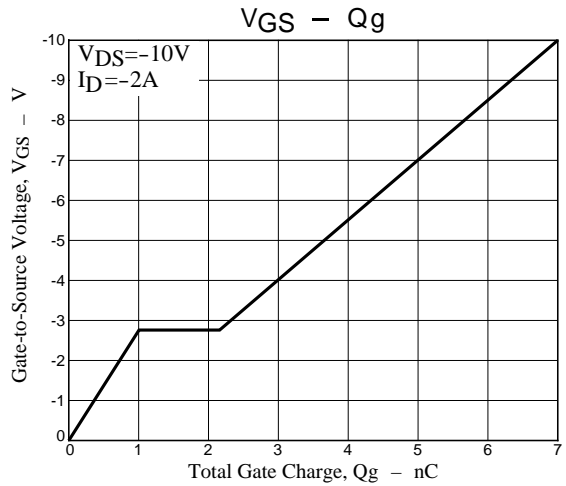
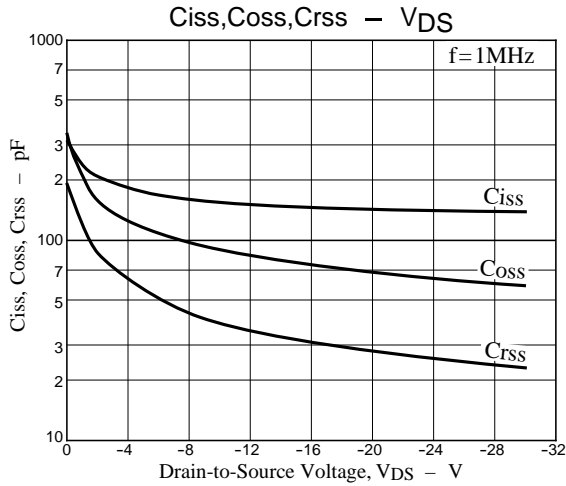
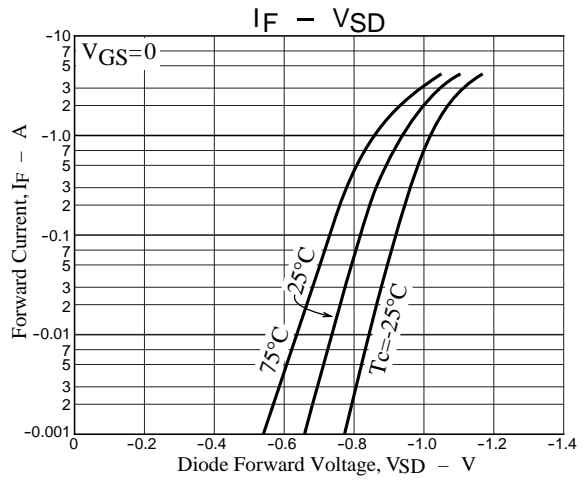
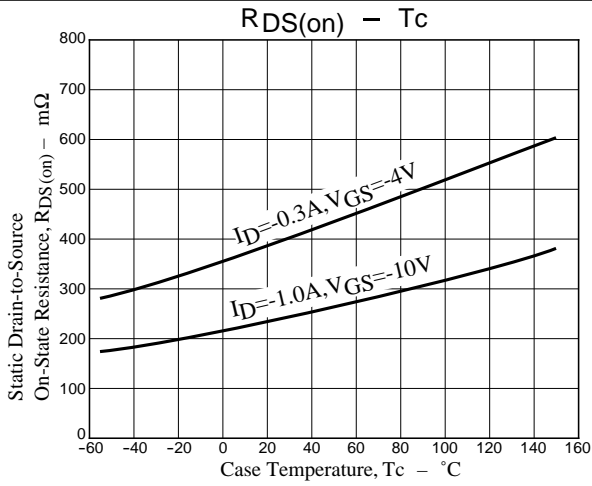
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| Parameter                     | Symbol       | Conditions                          | Ratings |      |      | Unit |
|-------------------------------|--------------|-------------------------------------|---------|------|------|------|
|                               |              |                                     | min     | typ  | max  |      |
| Input Capacitance             | $C_{iss}$    | $V_{DS}=-10V, f=1MHz$               |         | 160  |      | pF   |
| Output Capacitance            | $C_{oss}$    | $V_{DS}=-10V, f=1MHz$               |         | 90   |      | pF   |
| Reverse Transfer Capacitance  | $C_{rss}$    | $V_{DS}=-10V, f=1MHz$               |         | 38   |      | pF   |
| Turn-ON Delay Time            | $t_{d(on)}$  | See specified Test Circuit          |         | 7    |      | ns   |
| Rise Time                     | $t_r$        | See specified Test Circuit          |         | 7    |      | ns   |
| Turn-OFF Delay Time           | $t_{d(off)}$ | See specified Test Circuit          |         | 23   |      | ns   |
| Fall Time                     | $t_f$        | See specified Test Circuit          |         | 15   |      | ns   |
| Total Gate Charge             | $Q_g$        | $V_{DS}=-10V, V_{GS}=-10V, I_D=-2A$ |         | 7    |      | nC   |
| Gate-to-Source Charge         | $Q_{gs}$     | $V_{DS}=-10V, V_{GS}=-10V, I_D=-2A$ |         | 1    |      | nC   |
| Gate-to-Drain "Miller" Charge | $Q_{gd}$     | $V_{DS}=-10V, V_{GS}=-10V, I_D=-2A$ |         | 1.2  |      | nC   |
| Diode Forward Voltage         | $V_{SD}$     | $I_S=-2A, V_{GS}=0$                 |         | -1.0 | -1.5 | V    |

## Switching Time Test Circuit



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