

**2SK1900**

## Ultrahigh-Speed Switching Applications

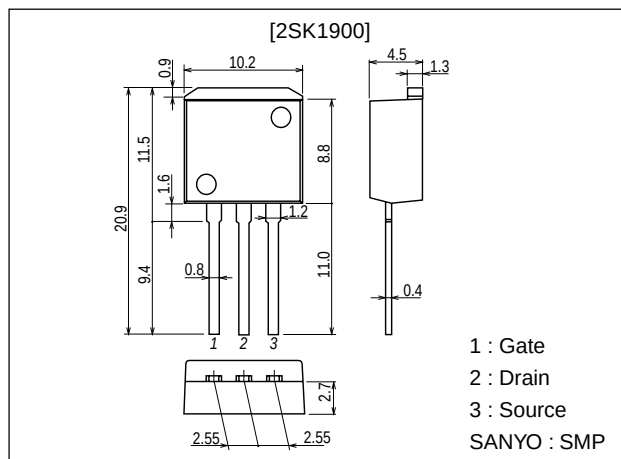
### Features

- Low ON resistance.
- Ultrahigh-speed switching.
- Low-voltage drive.
- Surface mount type device making the following possible.
  - Reduction in the number of manufacturing processes for 2SK1900-applied equipment.
  - High density surface mount applications.
  - Small size of 2SK1900-applied equipment.

### Package Dimensions

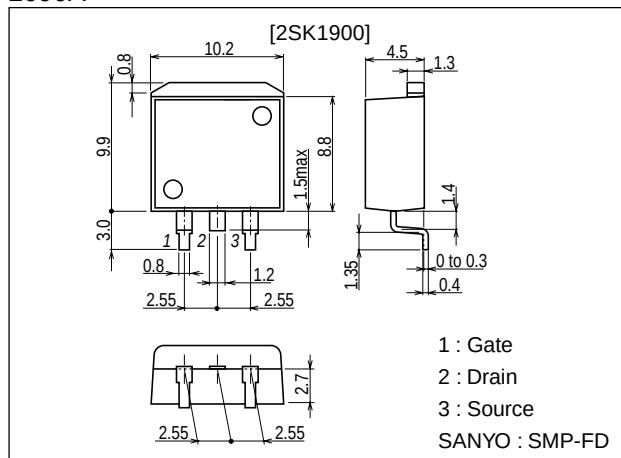
unit:mm

2093A



unit:mm

2090A



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## Specifications

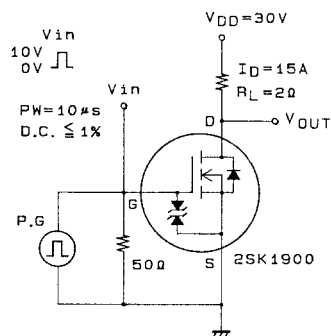
### Absolute Maximum Ratings at Ta = 25°C

| Parameter                   | Symbol    | Conditions                                | Ratings     | Unit |
|-----------------------------|-----------|-------------------------------------------|-------------|------|
| Drain-to-Source Voltage     | $V_{DSS}$ |                                           | 60          | V    |
| Gate-to-Source Voltage      | $V_{GSS}$ |                                           | ±20         | V    |
| Drain Current (DC)          | $I_D$     |                                           | 30          | A    |
| Drain Current (Pulse)       | $I_{DP}$  | $PW \leq 10\mu s$ , duty cycle $\leq 1\%$ | 120         | A    |
| Allowable Power Dissipation | $P_D$     |                                           | 1.65        | W    |
|                             |           | $T_c = 25^\circ C$                        | 70          | W    |
| Channel Temperature         | $T_{ch}$  |                                           | 150         | °C   |
| Storage Temperature         | $T_{stg}$ |                                           | -55 to +150 | °C   |

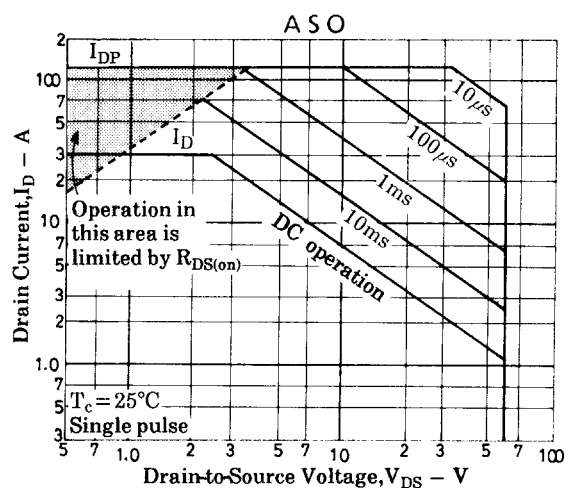
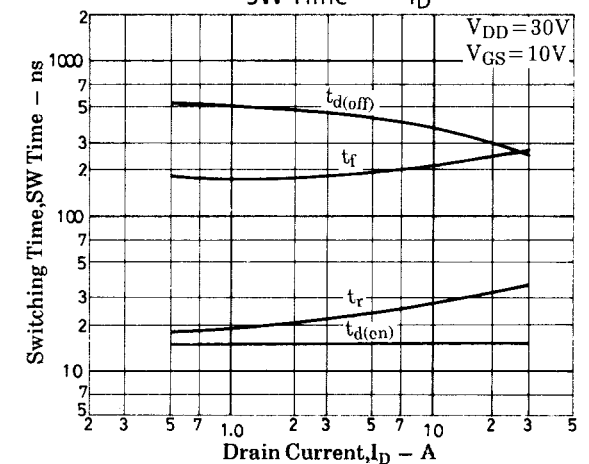
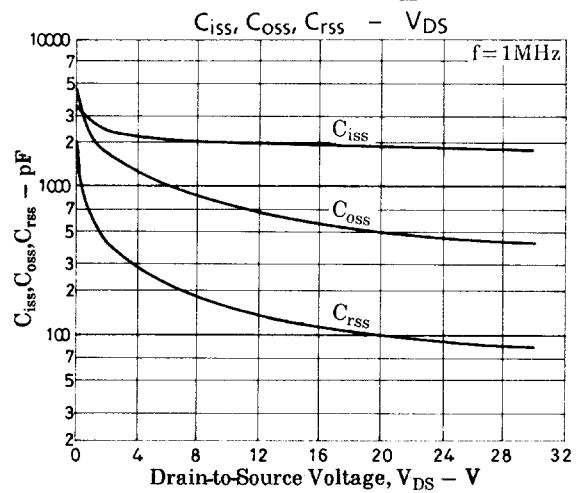
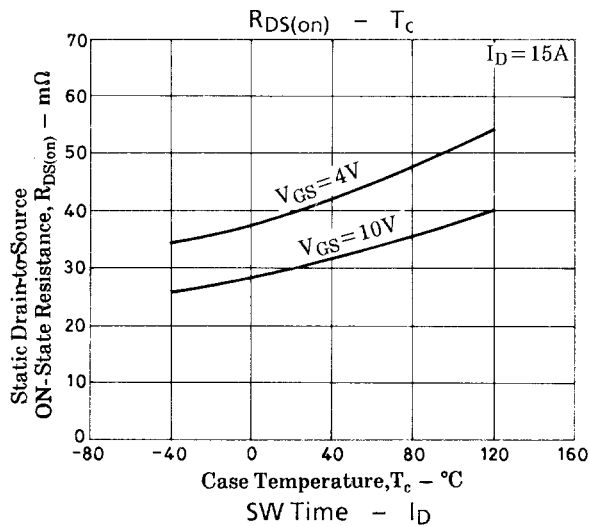
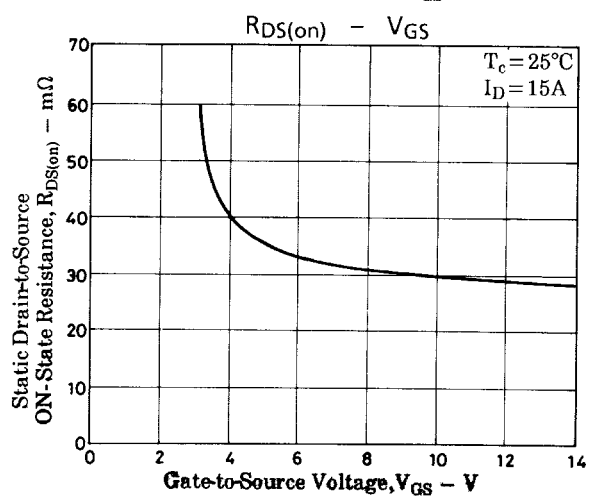
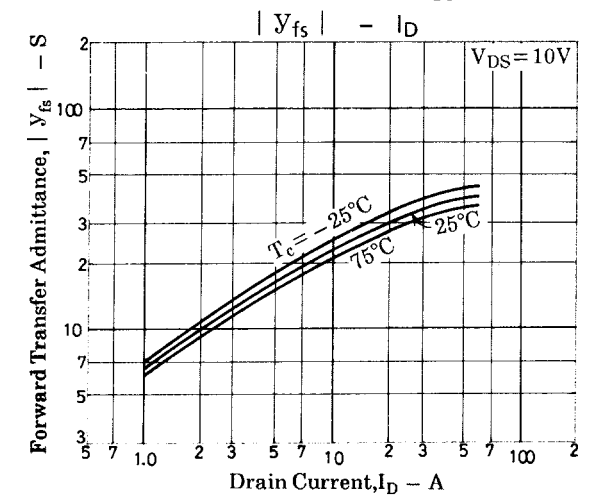
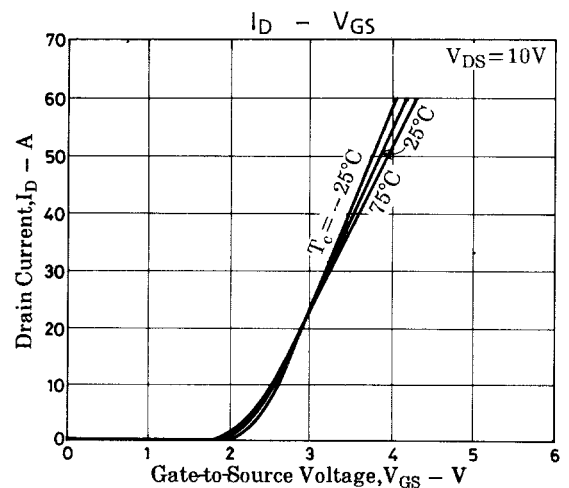
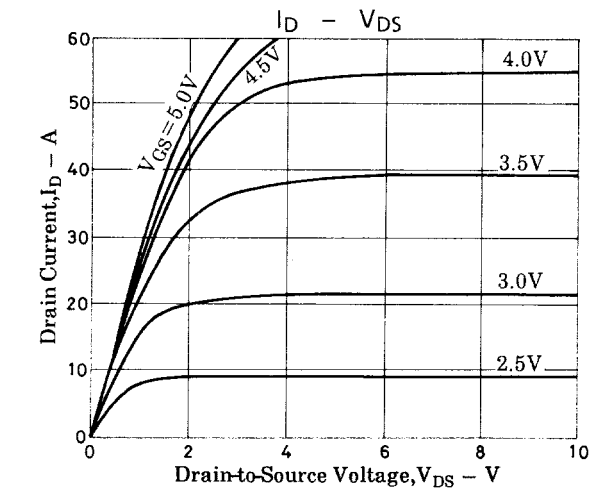
### Electrical Characteristics at Ta = 25°C

| Parameter                                  | Symbol        | Conditions                          | Ratings |      |     | Unit |
|--------------------------------------------|---------------|-------------------------------------|---------|------|-----|------|
|                                            |               |                                     | min     | typ  | max |      |
| Drain-to-Source Breakdown Voltage          | $V_{(BR)DSS}$ | $I_D = 1mA$ , $V_{GS} = 0$          | 60      |      |     | V    |
| Gate-to-Source Breakdown Voltage           | $V_{(BR)GSS}$ | $I_G = \pm 100\mu A$ , $V_{DS} = 0$ | ±20     |      |     | V    |
| Zero-Gate Voltage Drain Current            | $I_{DSS}$     | $V_{DS} = 60V$ , $V_{GS} = 0$       |         |      | 100 | μA   |
| Gate-to-Source Leakage Current             | $I_{GSS}$     | $V_{GS} = \pm 12V$ , $V_{DS} = 0$   |         |      | ±10 | μA   |
| Cutoff Voltage                             | $V_{GS(off)}$ | $V_{DS} = 10V$ , $I_D = 1mA$        | 1.0     |      | 2.0 | V    |
| Forward Transfer Admittance                | $ y_{fs} $    | $V_{DS} = 10V$ , $I_D = 15A$        | 16      | 27   |     | S    |
| Static Drain-to-Source ON-State Resistance | $R_{DS(on)}$  | $I_D = 15A$ , $V_{GS} = 10V$        |         | 30   | 40  | mΩ   |
|                                            | $R_{DS(on)}$  | $I_D = 15A$ , $V_{GS} = 4V$         |         | 40   | 55  | mΩ   |
| Input Capacitance                          | $C_{iss}$     | $V_{DS} = 20V$ , $f = 1MHz$         |         | 1900 |     | pF   |
| Output Capacitance                         | $C_{oss}$     | $V_{DS} = 20V$ , $f = 1MHz$         |         | 500  |     | pF   |
| Reverse Transfer Capacitance               | $C_{rss}$     | $V_{DS} = 20V$ , $f = 1MHz$         |         | 100  |     | pF   |
| Turn-ON Delay Time                         | $t_{d(on)}$   | See specified Test Circuit          |         | 15   |     | ns   |
| Rise Time                                  | $t_r$         | See specified Test Circuit          |         | 30   |     | ns   |
| Turn-OFF Delay Time                        | $t_{d(off)}$  | See specified Test Circuit          |         | 335  |     | ns   |
| Fall Time                                  | $t_f$         | See specified Test Circuit          |         | 225  |     | ns   |
| Diode Forward Voltage                      | $V_{SD}$      | $I_S = 30A$ , $V_{GS} = 0$          |         | 1.0  | 1.5 | V    |

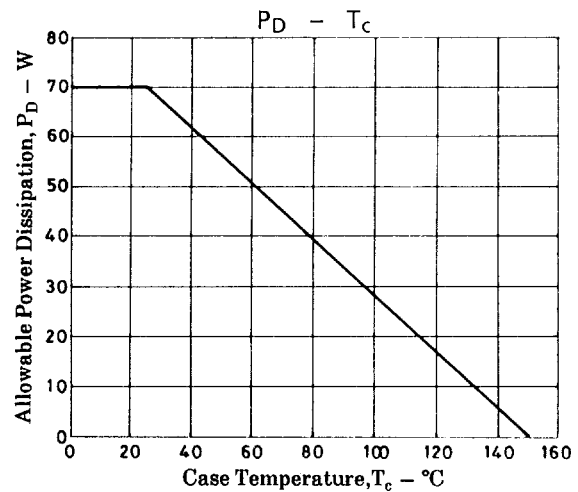
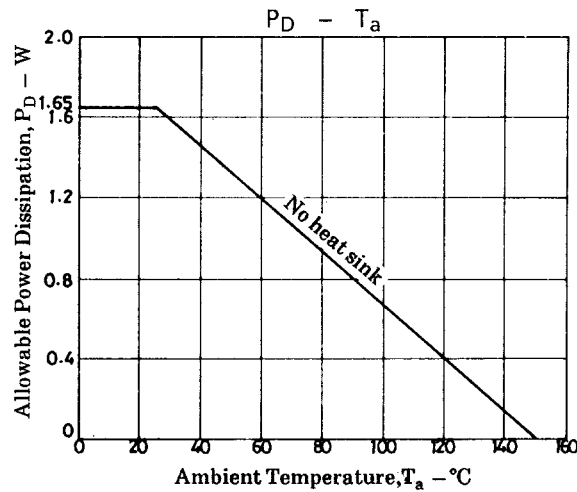
### Switching Time Test Circuit



# 2SK1900



## 2SK1900



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