

**2SK1899**

## Ultrahigh-Speed Switching Applications

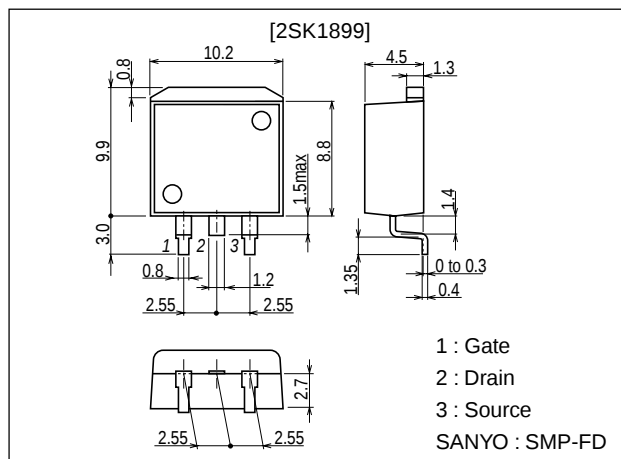
### Features

- Low ON resistance.
- Ultrahigh-speed switching.
- Low-voltage drive.
- Surface mount type device making the following possible.
- Reduction in the assembling time for 2SK1899-applied equipment.
- High-density surface mount applications.
- Small size of 2SK1899-applied equipment.

### Package Dimensions

unit:mm

2090A



### Specifications

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

| Parameter                   | Symbol    | Conditions                                                                   | Ratings     | Unit |
|-----------------------------|-----------|------------------------------------------------------------------------------|-------------|------|
| Drain-to-Source Voltage     | $V_{DS}$  |                                                                              | 60          | V    |
| Gate-to-Source Voltage      | $V_{GS}$  |                                                                              | ±20         | V    |
| Drain Current (DC)          | $I_D$     |                                                                              | 18          | A    |
| Drain Current (Pulse)       | $I_{DP}$  | $PW \leq 10\mu s$ , duty cycle $\leq 1\%$                                    | 72          | A    |
| Allowable Power Dissipation | $P_D$     |                                                                              | 1.65        | W    |
|                             |           | $T_c = 25^\circ C$                                                           | 60          | W    |
| Channel Temperature         | $T_{ch}$  |                                                                              | 150         | °C   |
| Storage Temperature         | $T_{stg}$ |                                                                              | -55 to +150 | °C   |
| Avalanche Current           | $I_{AV}$  | $V_{DS}=30V$ , $V_{GS}=10V$ ,<br>$L=0.1mH$ , $T_c=25^\circ C$ , Single pulse | 18          | A    |

#### Electrical Characteristics at Ta = 25°C

| Parameter                         | Symbol        | Conditions                      | Ratings |     |     | Unit |
|-----------------------------------|---------------|---------------------------------|---------|-----|-----|------|
|                                   |               |                                 | min     | typ | max |      |
| Drain-to-Source Breakdown Voltage | $V_{(BR)DS}$  | $I_D=1mA$ , $V_{GS}=0$          | 60      |     |     | V    |
| Gate-to-Source Breakdown Voltage  | $V_{(BR)GS}$  | $I_G=\pm 100\mu A$ , $V_{DS}=0$ | ±20     |     |     | V    |
| Zero-Gate Voltage Drain Current   | $I_{DSS}$     | $V_{DS}=60V$ , $V_{GS}=0$       |         |     | 100 | μA   |
| Gate-to-Source Leakage Current    | $I_{GSS}$     | $V_{GS}=\pm 16V$ , $V_{DS}=0$   |         |     | ±10 | μA   |
| Cutoff Voltage                    | $V_{GS(off)}$ | $V_{DS}=10V$ , $I_D=1mA$        | 1.0     |     | 2.0 | V    |
| Forward Transfer Admittance       | $ y_{fs} $    | $V_{DS}=10V$ , $I_D=9A$         | 8       | 13  |     | S    |

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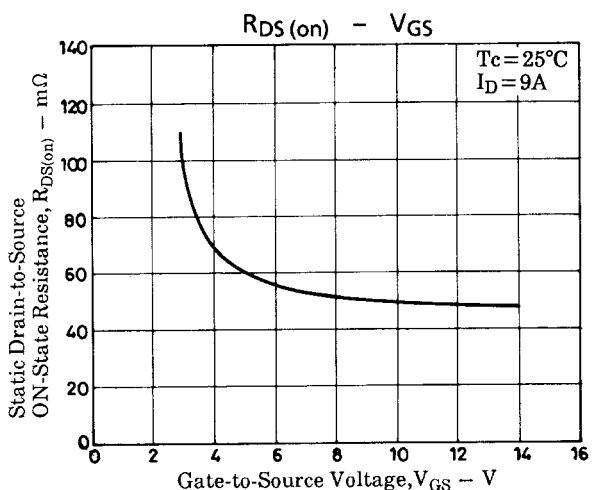
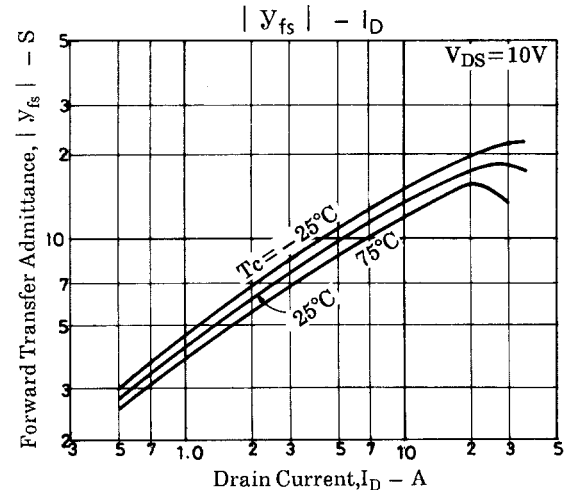
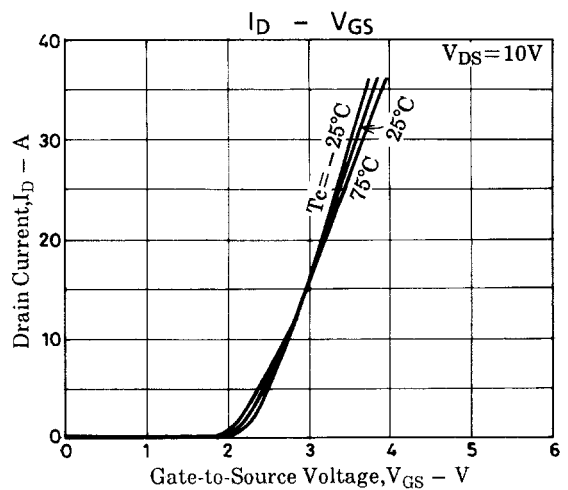
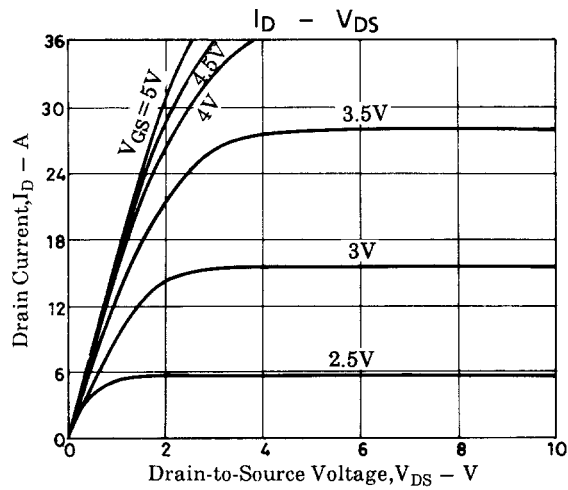
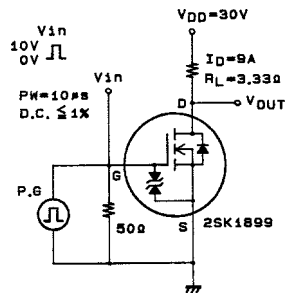
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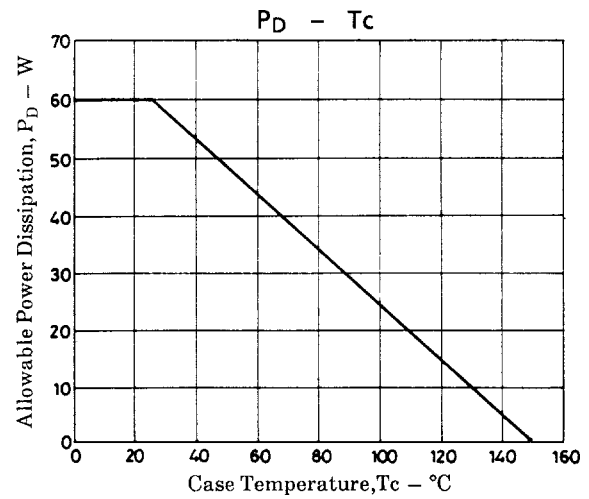
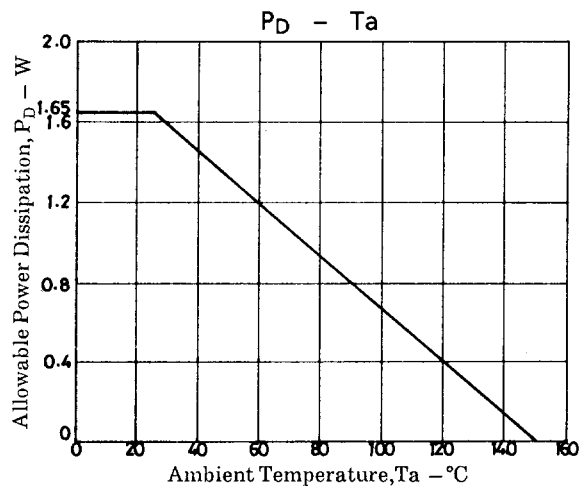
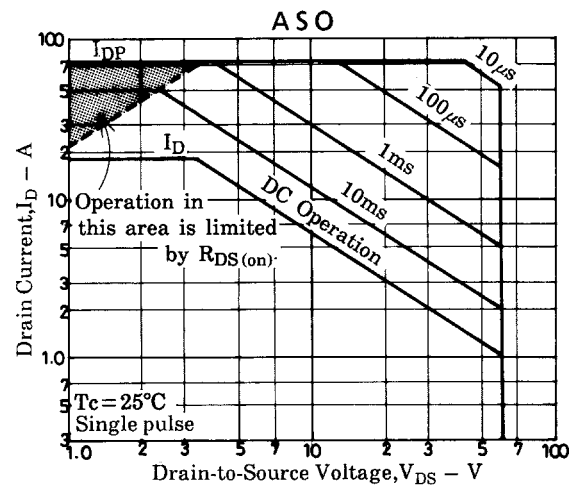
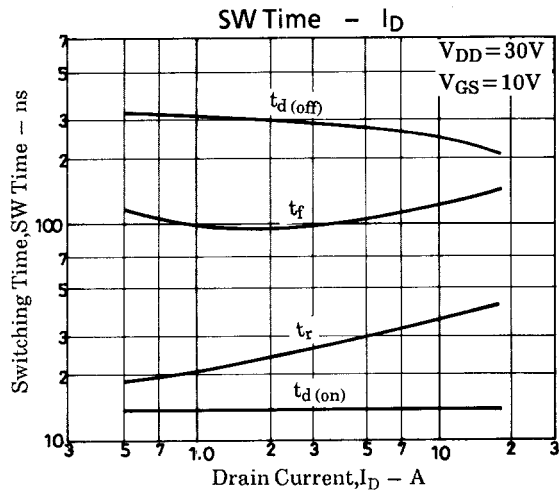
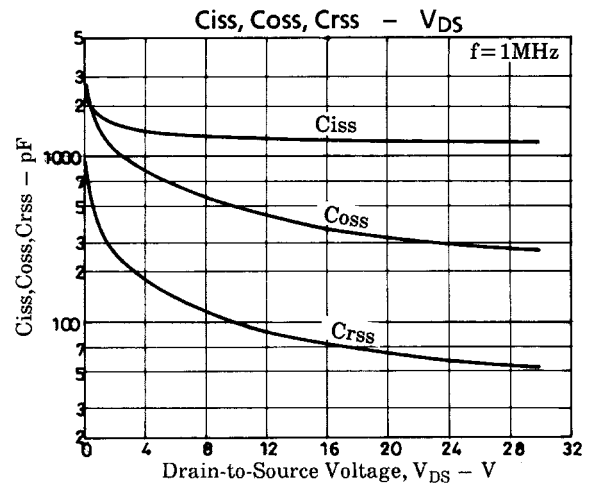
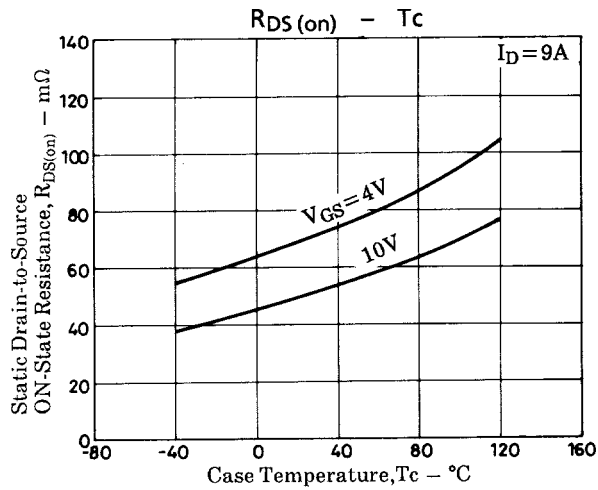
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| Parameter                                  | Symbol       | Conditions                 | Ratings |      |       | Unit     |
|--------------------------------------------|--------------|----------------------------|---------|------|-------|----------|
|                                            |              |                            | min     | typ  | max   |          |
| Static Drain-to-Source ON-State Resistance | $R_{DS(on)}$ | $I_D=9A, V_{GS}=10V$       |         | 0.05 | 0.07  | $\Omega$ |
|                                            | $R_{DS(on)}$ | $I_D=9A, V_{GS}=4V$        |         | 0.07 | 0.095 | $\Omega$ |
| Input Capacitance                          | $C_{iss}$    | $V_{DS}=20V, f=1MHz$       |         | 1230 |       | pF       |
| Output Capacitance                         | $C_{oss}$    | $V_{DS}=20V, f=1MHz$       |         | 330  |       | pF       |
| Reverse Transfer Capacitance               | $C_{rss}$    | $V_{DS}=20V, f=1MHz$       |         | 65   |       | pF       |
| Turn-ON Delay Time                         | $t_d(on)$    | See specified Test Circuit |         | 14   |       | ns       |
| Rise Time                                  | $t_r$        | See specified Test Circuit |         | 35   |       | ns       |
| Turn-OFF Delay Time                        | $t_d(off)$   | See specified Test Circuit |         | 250  |       | ns       |
| Fall Time                                  | $t_f$        | See specified Test Circuit |         | 120  |       | ns       |
| Diode Forward Voltage                      | $V_{SD}$     | $I_S=18A, V_{GS}=0$        |         | 1.0  | 1.5   | V        |

Switching Time Test Circuit





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