

**2SK1900**

Ultrahigh-Speed Switching Applications

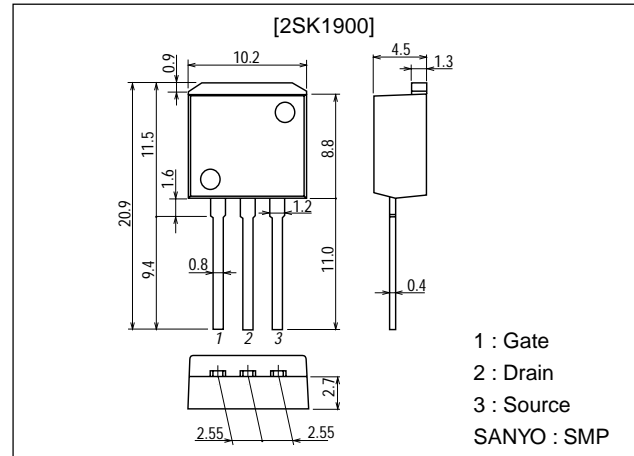
Features

- 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

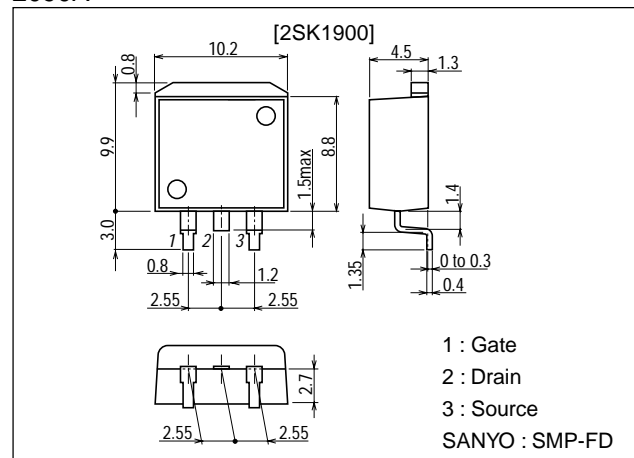
unit:mm

2093A



unit:mm

2090A



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2SK1900

Specifications

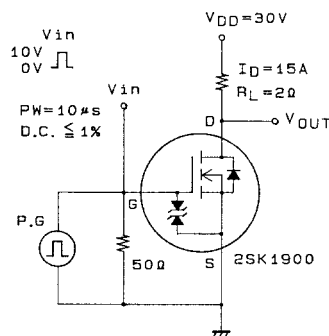
Absolute Maximum Ratings at $T_a = 25^\circ\text{C}$

| 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} | $PW \leq 10\mu\text{s}$, duty cycle $\leq 1\%$ | 120 | A |
| Allowable Power Dissipation | P_D | | 1.65 | W |
| | | $T_c = 25^\circ\text{C}$ | 70 | W |
| Channel Temperature | T_{ch} | | 150 | $^\circ\text{C}$ |
| Storage Temperature | T_{stg} | | -55 to +150 | $^\circ\text{C}$ |

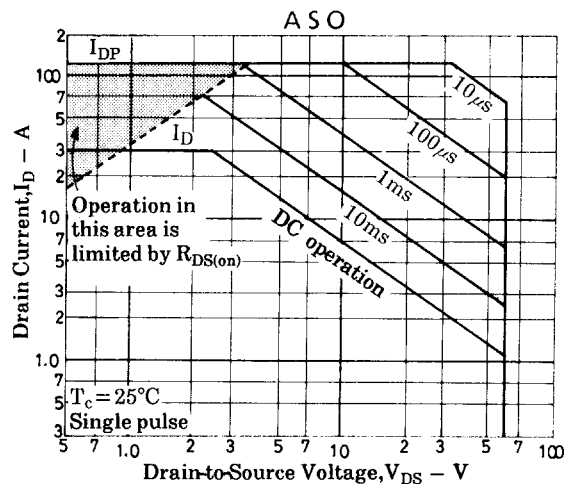
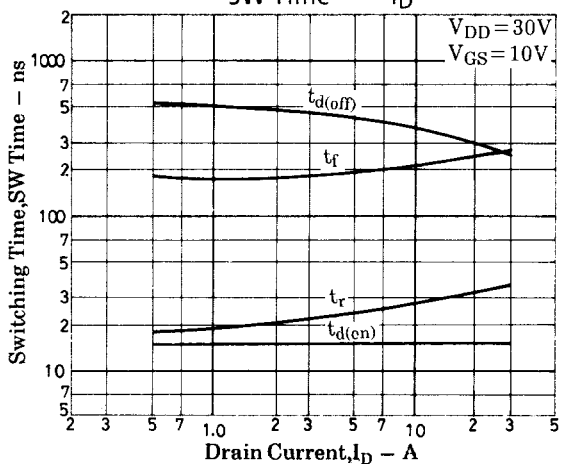
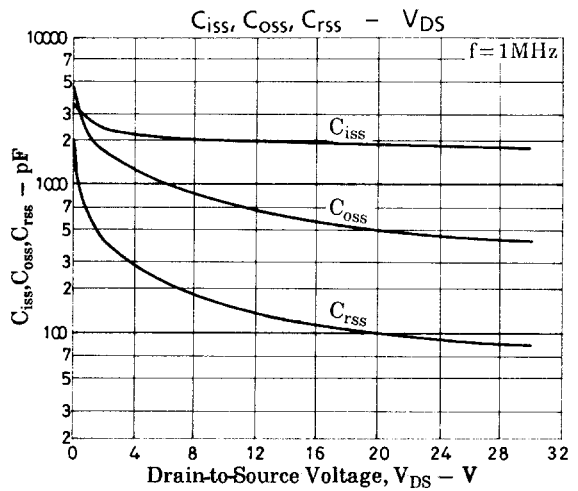
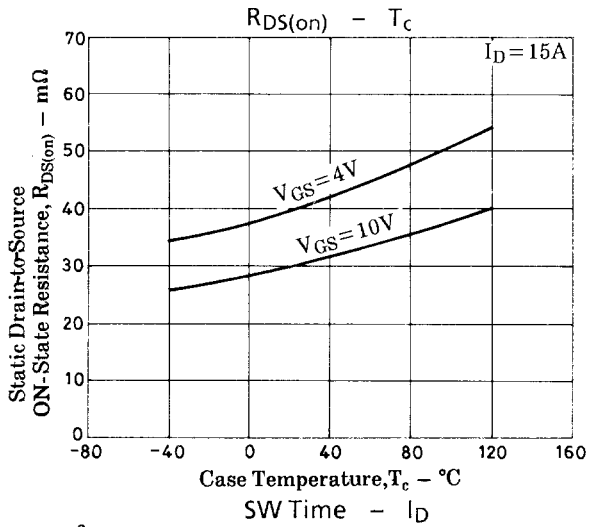
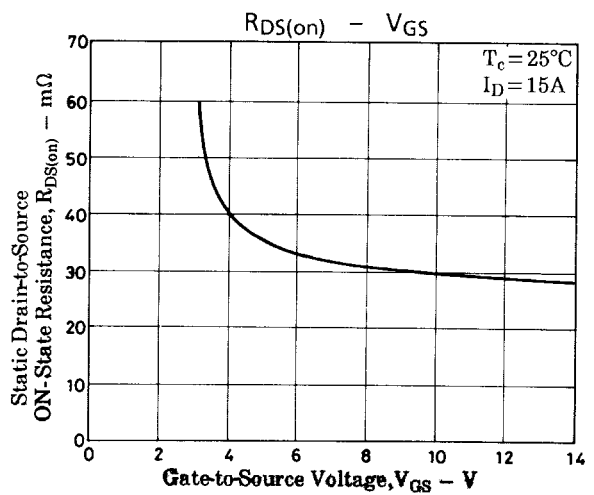
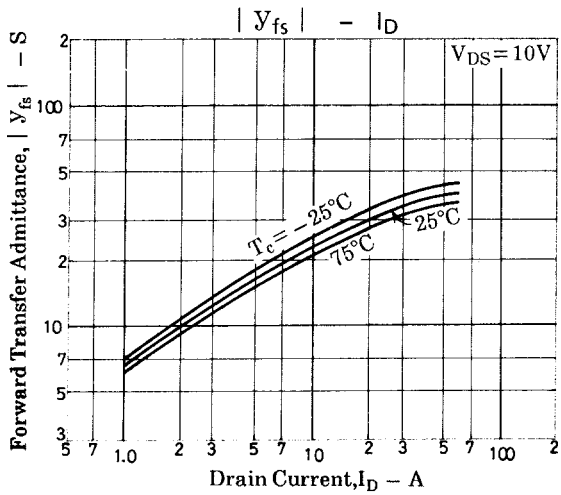
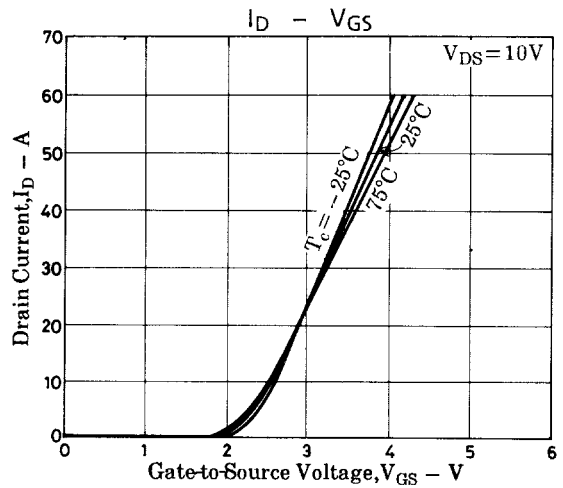
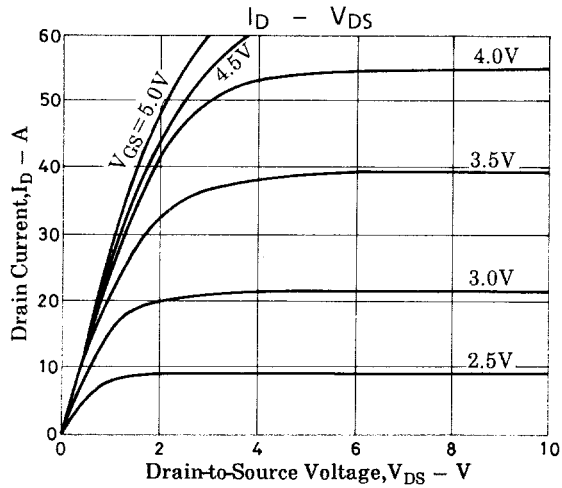
Electrical Characteristics at $T_a = 25^\circ\text{C}$

| Parameter | Symbol | Conditions | Ratings | | | Unit |
|--|---------------|--|----------|------|----------|------------------|
| | | | min | typ | max | |
| Drain-to-Source Breakdown Voltage | $V_{(BR)DSS}$ | $I_D = 1\text{mA}$, $V_{GS} = 0$ | 60 | | | V |
| Gate-to-Source Breakdown Voltage | $V_{(BR)GSS}$ | $I_G = \pm 100\mu\text{A}$, $V_{DS} = 0$ | ± 20 | | | V |
| Zero-Gate Voltage Drain Current | I_{DSS} | $V_{DS} = 60\text{V}$, $V_{GS} = 0$ | | | 100 | μA |
| Gate-to-Source Leakage Current | I_{GSS} | $V_{GS} = \pm 12\text{V}$, $V_{DS} = 0$ | | | ± 10 | μA |
| Cutoff Voltage | $V_{GS(off)}$ | $V_{DS} = 10\text{V}$, $I_D = 1\text{mA}$ | 1.0 | | 2.0 | V |
| Forward Transfer Admittance | $ y_{fs} $ | $V_{DS} = 10\text{V}$, $I_D = 15\text{A}$ | 16 | 27 | | S |
| Static Drain-to-Source ON-State Resistance | $R_{DS(on)}$ | $I_D = 15\text{A}$, $V_{GS} = 10\text{V}$ | | 30 | 40 | $\text{m}\Omega$ |
| | $R_{DS(on)}$ | $I_D = 15\text{A}$, $V_{GS} = 4\text{V}$ | | 40 | 55 | $\text{m}\Omega$ |
| Input Capacitance | C_{iss} | $V_{DS} = 20\text{V}$, $f = 1\text{MHz}$ | | 1900 | | pF |
| Output Capacitance | C_{oss} | $V_{DS} = 20\text{V}$, $f = 1\text{MHz}$ | | 500 | | pF |
| Reverse Transfer Capacitance | C_{rss} | $V_{DS} = 20\text{V}$, $f = 1\text{MHz}$ | | 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} | $I_S = 30\text{A}$, $V_{GS} = 0$ | | 1.0 | 1.5 | V |

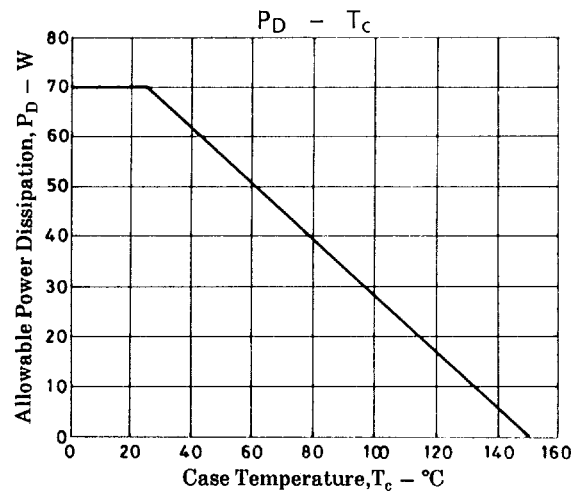
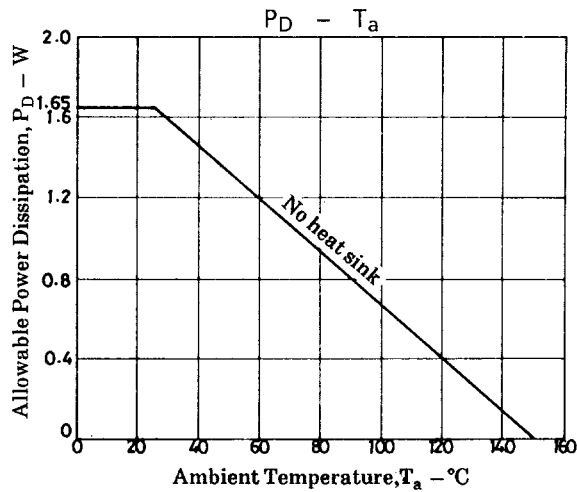
Switching Time Test Circuit



2SK1900



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