

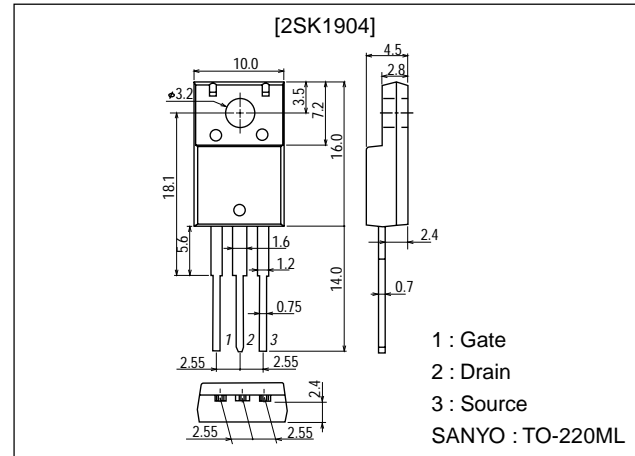
**2SK1904****Ultrahigh-Speed Switching Applications****Features**

- Low ON resistance.
- Ultrahigh-speed switching.
- Low-voltage drive.
- Micaless package facilitating mounting.

**Package Dimensions**

unit:mm

2063A

**Specifications****Absolute Maximum Ratings at Ta = 25°C**

| Parameter                   | Symbol    | Conditions                                | Ratings     | Unit |
|-----------------------------|-----------|---|-------------|------|
| Drain-to-Source Voltage     | $V_{DS}$  |   | 100         | V    |
| Gate-to-Source Voltage      | $V_{GS}$  |   | ±15         | V    |
| Drain Current (DC)          | $I_D$     |   | 10          | A    |
| Drain Current (Pulse)       | $I_{DP}$  | $PW \leq 10\mu s$ , duty cycle $\leq 1\%$ | 40          | A    |
| Allowable Power Dissipation | $P_D$     |   | 2.0         | W    |
|                             |           | $T_c = 25^\circ C$                        | 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          | $V_{(BR)DSS}$ | $I_D = 1mA$ , $V_{GS} = 0$          | 100     |      |      | V    |
| Gate-to-Source Breakdown Voltage           | $V_{(BR)GSS}$ | $I_G = \pm 100\mu A$ , $V_{DS} = 0$ | ±15     |      |      | V    |
| Zero-Gate Voltage Drain Current            | $I_{DSS}$     | $V_{DS} = 100V$ , $V_{GS} = 0$      |         |      | 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} $    | $V_{DS} = 10V$ , $I_D = 6A$         | 6       | 9.5  |      | S    |
| Static Drain-to-Source ON-State Resistance | $R_{DS(on)}$  | $I_D = 6A$ , $V_{GS} = 10V$         |         | 0.12 | 0.16 | Ω    |
|  | $R_{DS(on)}$  | $I_D = 6A$ , $V_{GS} = 4V$          |         | 0.16 | 0.22 | Ω    |

Continued on next page.

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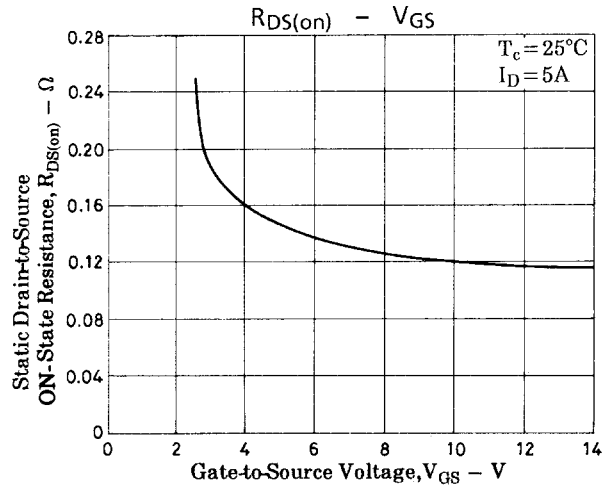
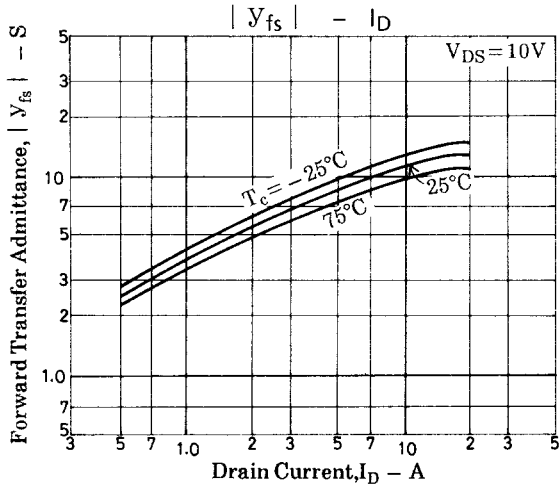
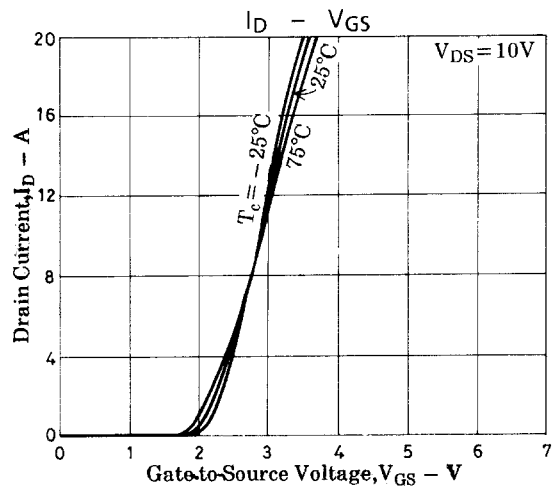
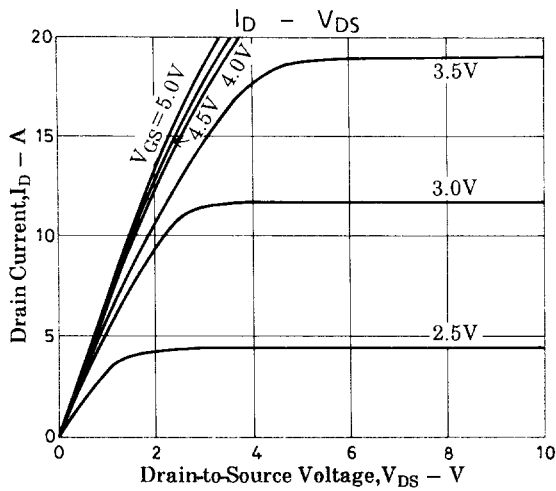
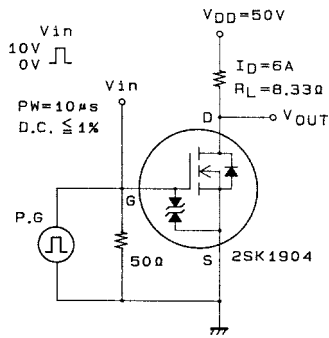
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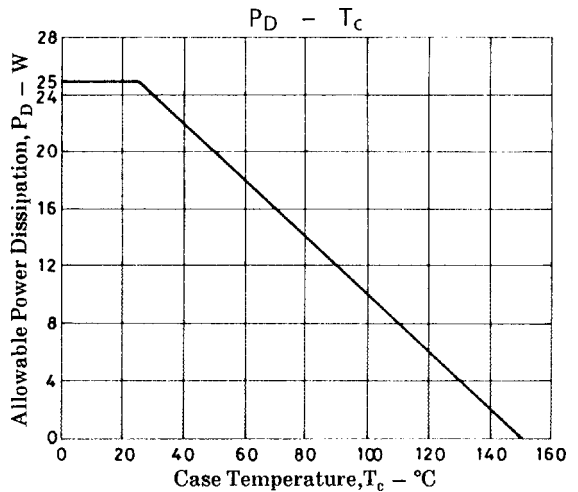
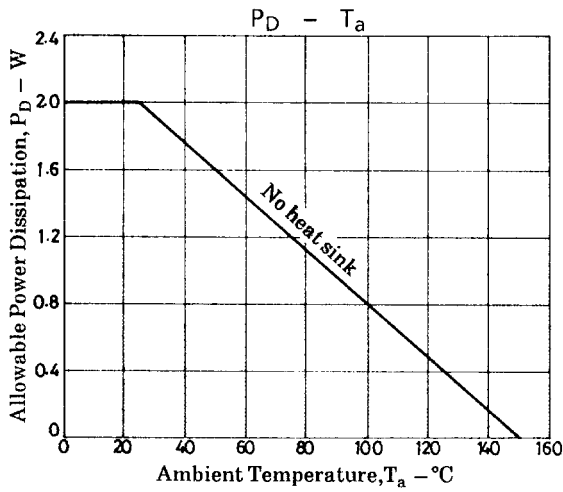
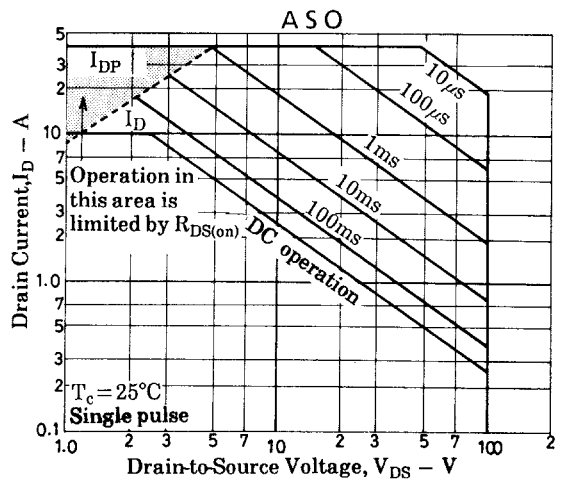
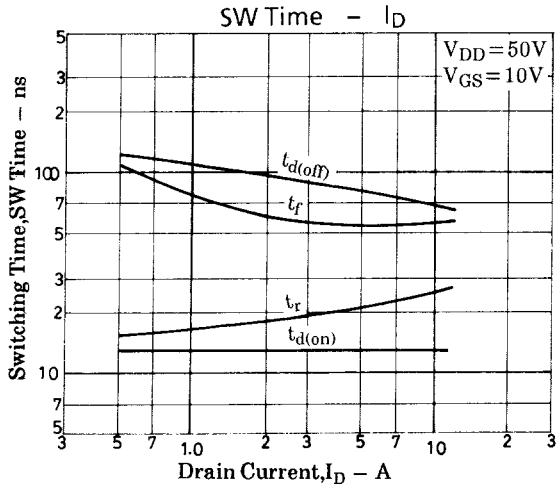
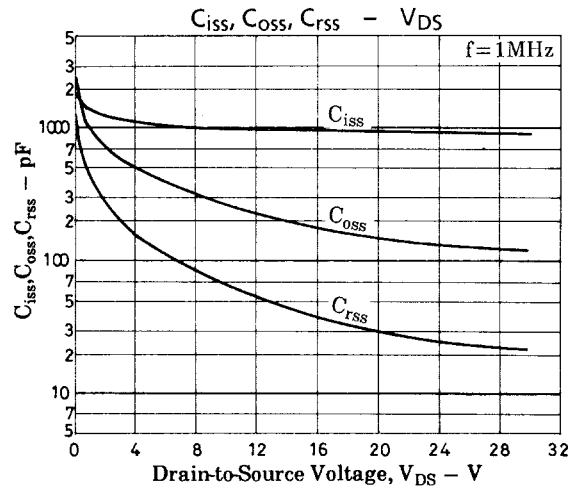
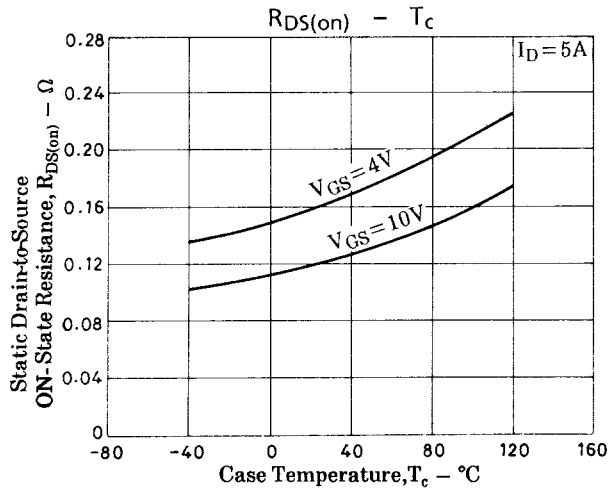
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| Parameter                    | Symbol       | Conditions                 | Ratings |     |     | Unit |
|------------------------------|--------------|----------------------------|---------|-----|-----|------|
|                              |              |                            | min     | typ | max |      |
| Input Capacitance            | $C_{iss}$    | $V_{DS}=20V, f=1MHz$       |         | 950 |     | pF   |
| Output Capacitance           | $C_{oss}$    | $V_{DS}=20V, f=1MHz$       |         | 150 |     | pF   |
| Reverse Transfer Capacitance | $C_{rss}$    | $V_{DS}=20V, f=1MHz$       |         | 30  |     | pF   |
| Turn-ON Delay Time           | $t_{d(on)}$  | See specified Test Circuit |         | 13  |     | ns   |
| Rise Time                    | $t_r$        | See specified Test Circuit |         | 22  |     | ns   |
| Turn-OFF Delay Time          | $t_{d(off)}$ | See specified Test Circuit |         | 80  |     | ns   |
| Fall Time                    | $t_f$        | See specified Test Circuit |         | 55  |     | ns   |
| Diode Forward Voltage        | $V_{SD}$     | $I_S=10A, V_{GS}=0$        |         | 1.0 | 1.5 | V    |

## Switching Time Test Circuit



# 2SK1904



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