

**2SK1422**

Ultrahigh-Speed Switching Applications

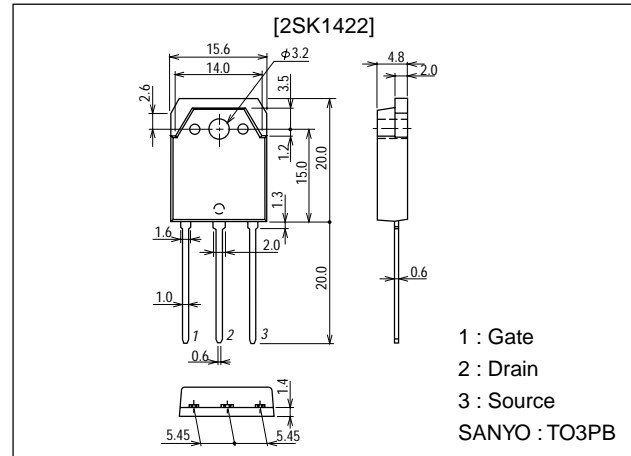
Features

- Low ON-state resistance.
- Ultrahigh-speed switching.
- Converters.

Package Dimensions

unit:mm

2056A



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 | | 50 | A |
| Drain Current (Pulse) | I_{DP} | $PW \leq 10 \mu s$, duty cycle $\leq 1\%$ | 200 | A |
| Allowable Power Dissipation | P_D | $T_c = 25^\circ C$ | 100 | W |
| | | | 2.5 | W |
| Channel Temperature | T_{ch} | | 150 | $^\circ C$ |
| Storage Temperature | T_{stg} | | -55 to +150 | $^\circ C$ |

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 |
| Zero-Gate Voltage Drain Current | I_{DSS} | $V_{DS} = 60V$, $V_{GS} = 0$ | | | 100 | μA |
| Gate-to-Source Leakage Current | I_{GSS} | $V_{GS} = \pm 20V$, $V_{DS} = 0$ | | | ± 100 | nA |
| Cutoff Voltage | $V_{GS(off)}$ | $V_{DS} = 10V$, $I_D = 1mA$ | 1.5 | | 2.5 | V |
| Forward Transfer Admittance | $ y_{fs} $ | $V_{DS} = 10V$, $I_D = 25A$ | 15 | 25 | | S |
| Static Drain-to-Source ON-State Resistance | $R_{DS(on)}$ | $I_D = 25A$, $V_{GS} = 10V$ | | 0.02 | 0.026 | Ω |

(Note) Be careful in handling the 2SK1422 because it has no protection diode between gate and source.

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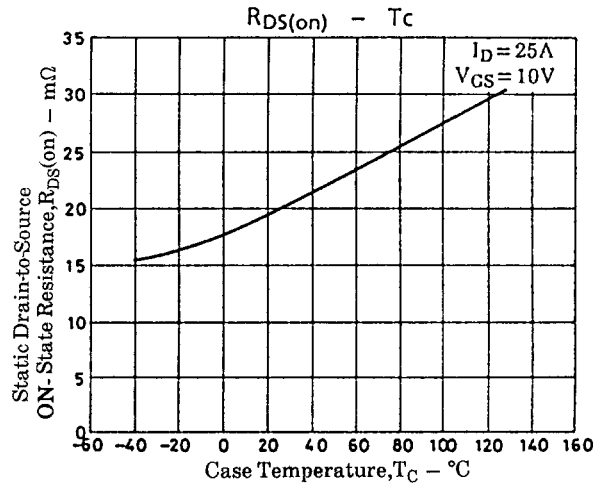
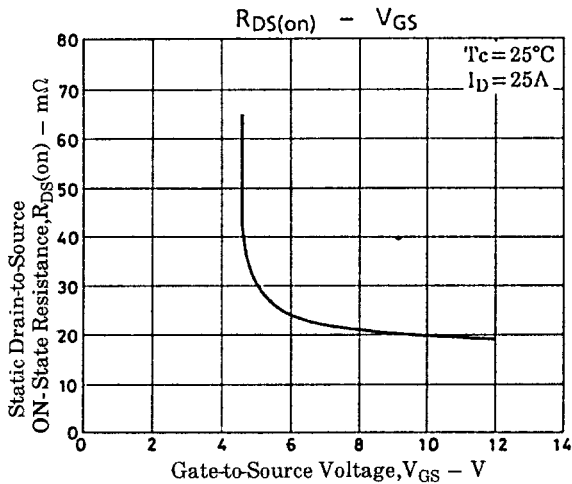
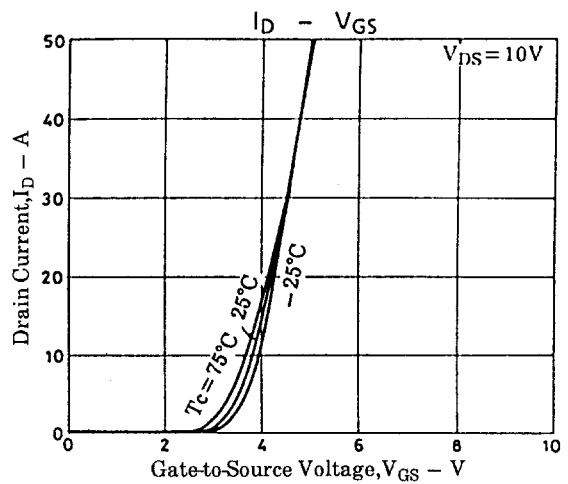
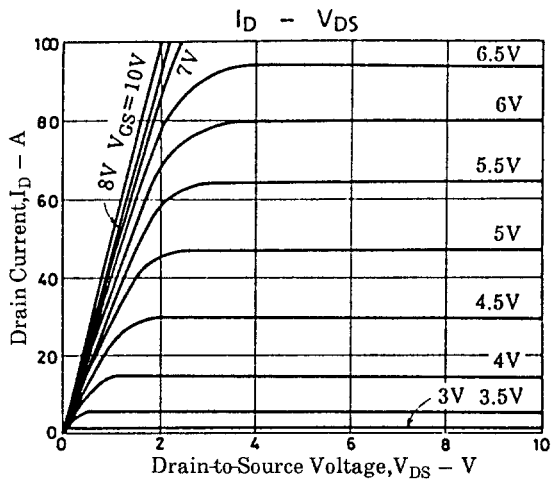
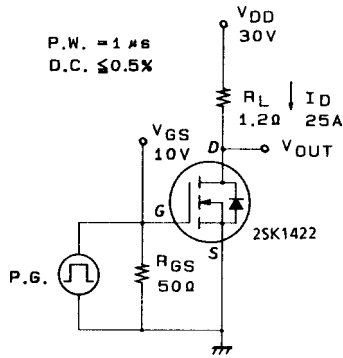
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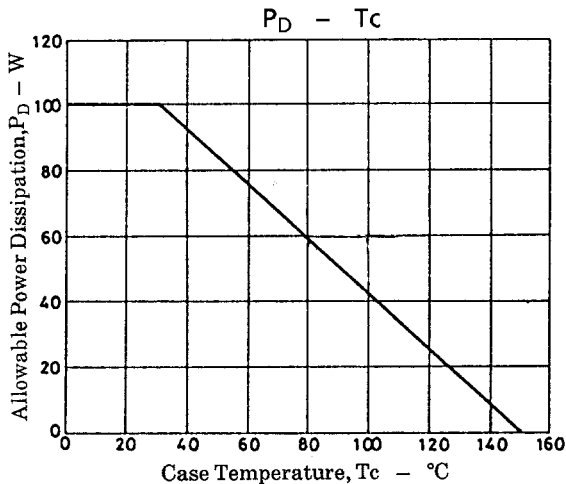
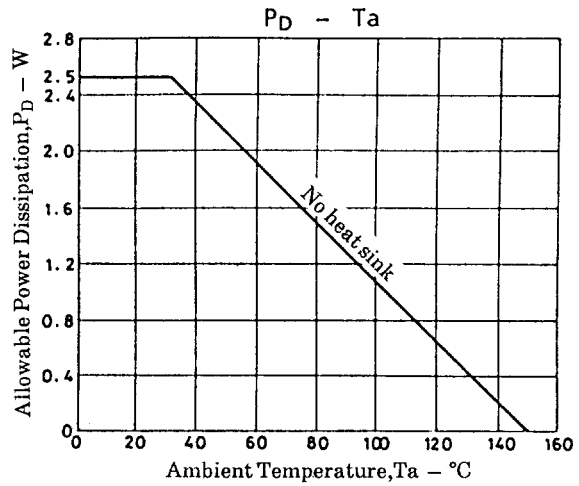
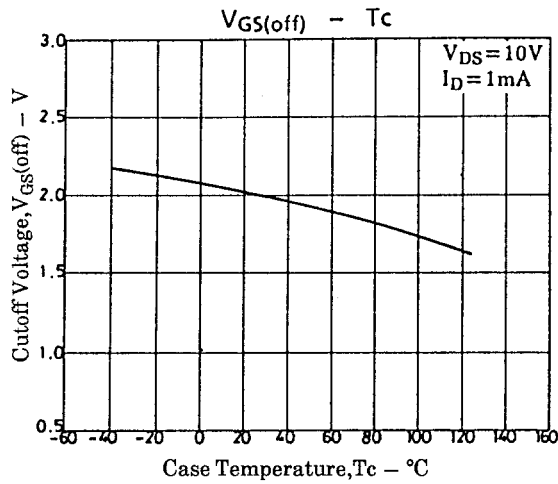
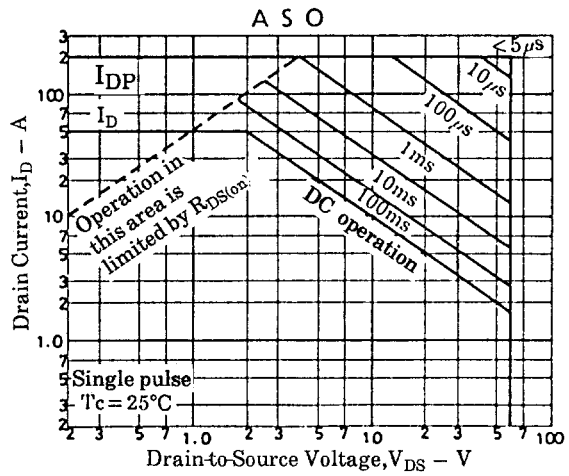
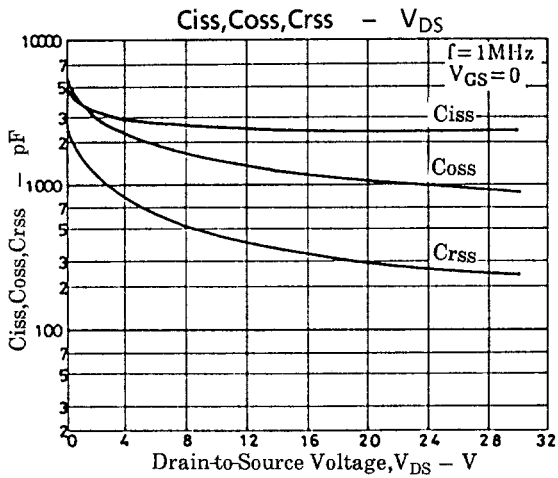
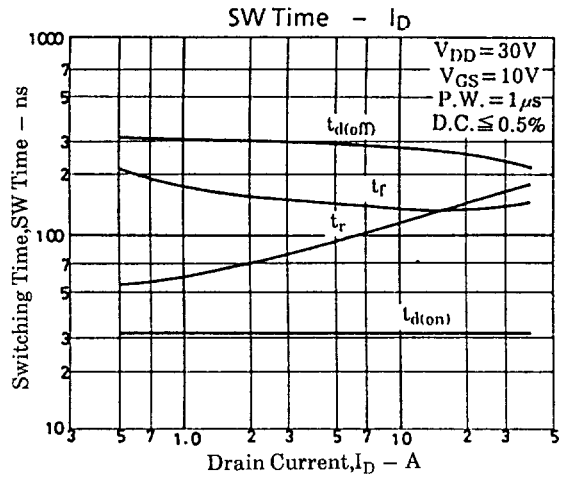
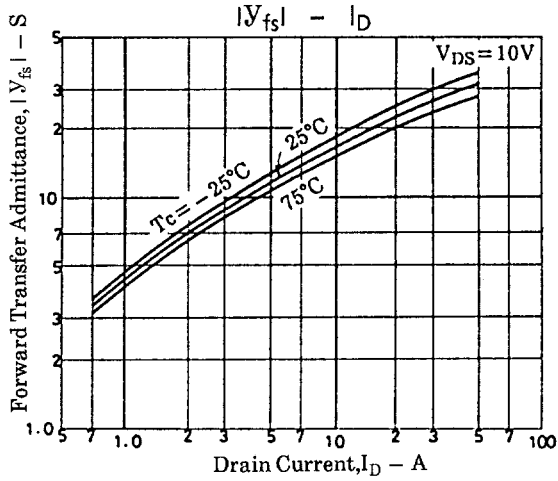
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| Parameter | Symbol | Conditions | Ratings | | | Unit |
|------------------------------|--------------|--|---------|------|-----|------|
| | | | min | typ | max | |
| Input Capacitance | Ciss | $V_{DS}=20V, f=1MHz$ | | 2400 | | pF |
| Output Capacitance | Coss | $V_{DS}=20V, f=1MHz$ | | 1100 | | pF |
| Reverse Transfer Capacitance | Crss | $V_{DS}=20V, f=1MHz$ | | 300 | | pF |
| Turn-ON Delay Time | $t_{d(on)}$ | $I_D=25A, V_{GS}=10V, V_{DD}=30V, R_{GS}=50\Omega$ | | 31 | | ns |
| Rise Time | t_r | $I_D=25A, V_{GS}=10V, V_{DD}=30V, R_{GS}=50\Omega$ | | 159 | | ns |
| Turn-OFF Delay Time | $t_{d(off)}$ | $I_D=25A, V_{GS}=10V, V_{DD}=30V, R_{GS}=50\Omega$ | | 240 | | ns |
| Fall Time | t_f | $I_D=25A, V_{GS}=10V, V_{DD}=30V, R_{GS}=50\Omega$ | | 140 | | ns |
| Diode Forward Voltage | V_{SD} | $I_S=50A, V_{GS}=0$ | | | 1.8 | V |

Switching Time Test Circuit



2SK1422



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