

**2SK1428**

## Ultrahigh-Speed Switching Applications

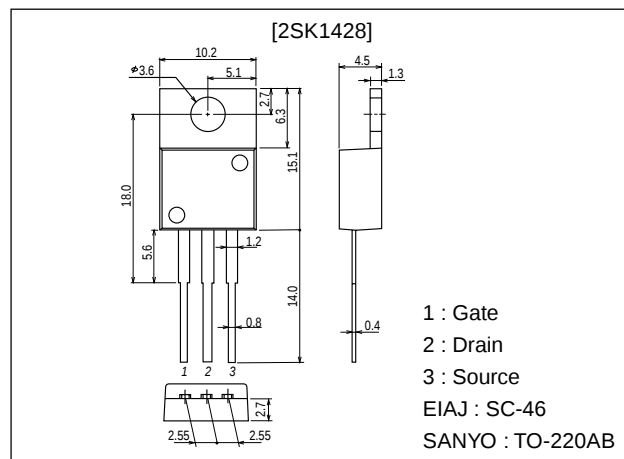
### Features

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

### Package Dimensions

unit:mm

2052C



### 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      | $V_{GS}$ |                        | ±20         | V    |
| Drain Current (DC)          | $I_D$    |                        | 20          | A    |
| Drain Current (Pulse)       | $I_{DP}$ | PW≤10μs, duty cycle≤1% | 80          | A    |
| Allowable Power Dissipation | $P_D$    | Tc=25°C                | 60          | W    |
|                             |          |                        | 1.75        | W    |
| Channel Temperature         | Tch      |                        | 150         | °C   |
| Storage Temperature         | Tstg     |                        | -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    |
| Zero-Gate Voltage Drain Current            | $I_{DSS}$     | $V_{DS}=100V, V_{GS}=0$ |         |       | 100  | μA   |
| Gate-to-Source Leakage Current             | $I_{GSS}$     | $V_{GS}=±20V, V_{DS}=0$ |         |       | ±100 | nA   |
| Cutoff Voltage                             | $V_{GS(off)}$ | $V_{DS}=10V, I_D=1mA$   | 1.5     |       | 2.5  | V    |
| Forward Transfer Admittance                | yfs           | $V_{DS}=10V, I_D=12A$   | 8.0     | 14    |      | S    |
| Static Drain-to-Source ON-State Resistance | $R_{DS(on)}$  | $I_D=12A, V_{GS}=10V$   |         | 0.075 | 0.10 | Ω    |

(Note) Be careful in handling the 2SK1428 because it has no protection diode between gate and source.

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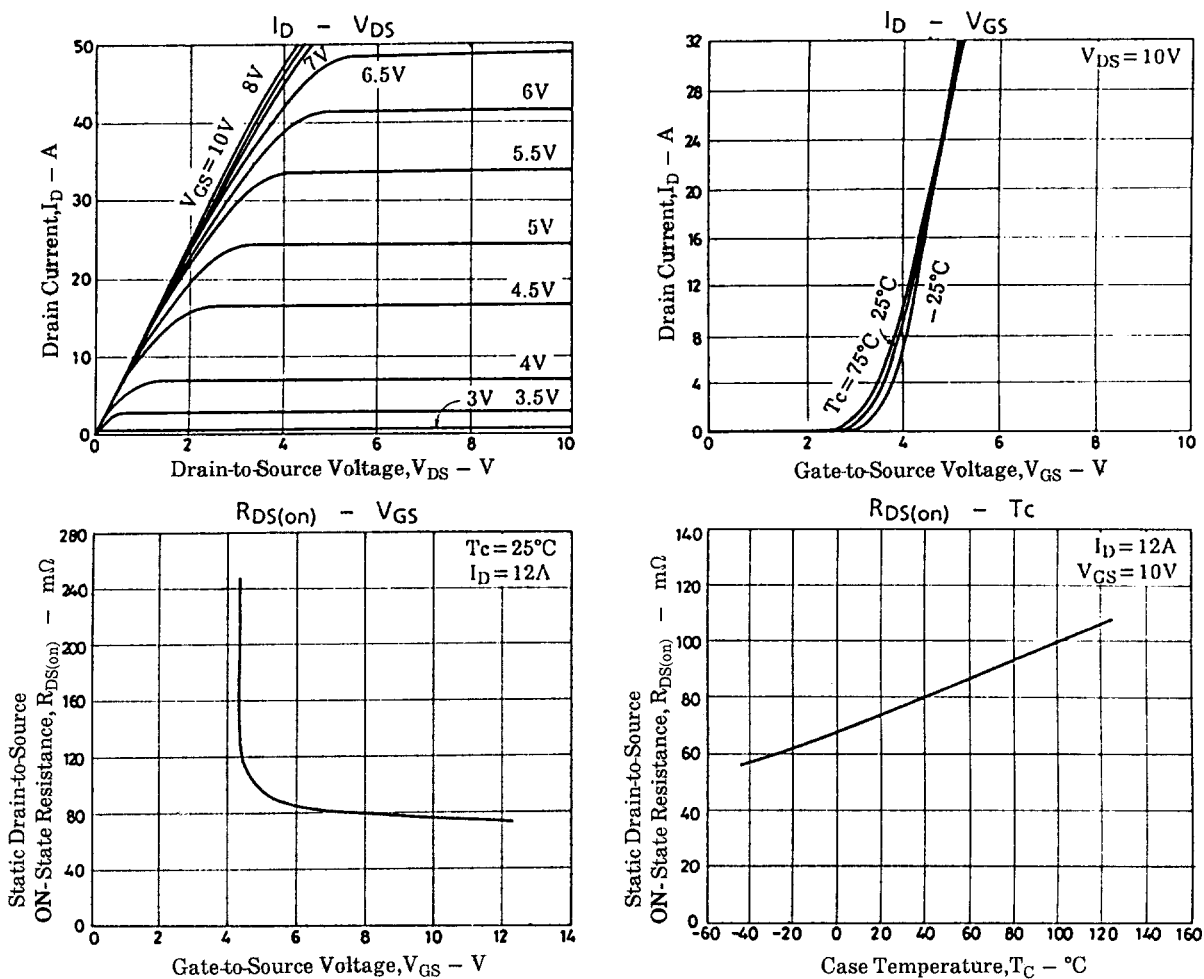
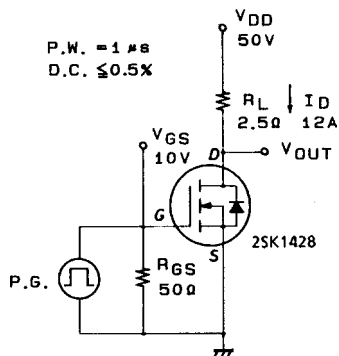
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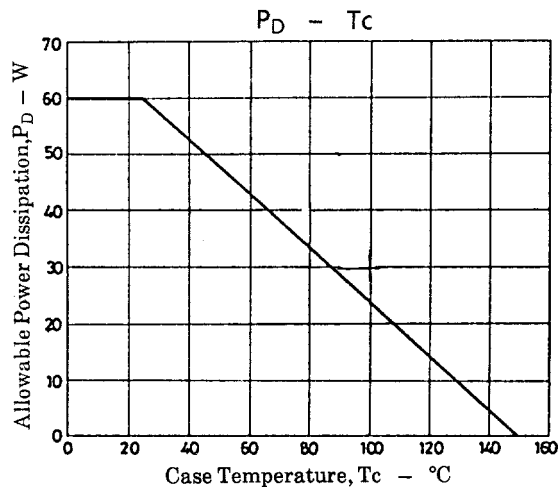
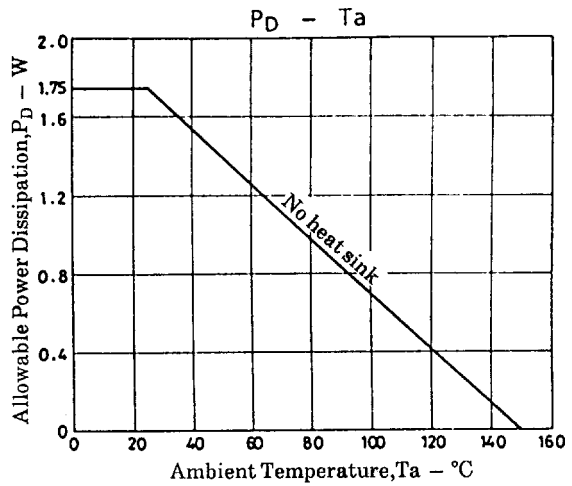
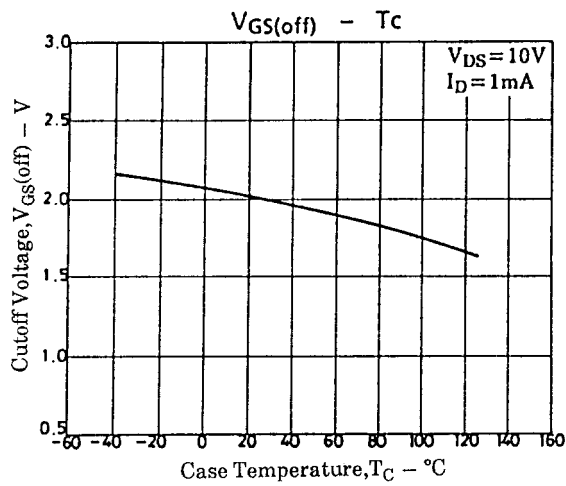
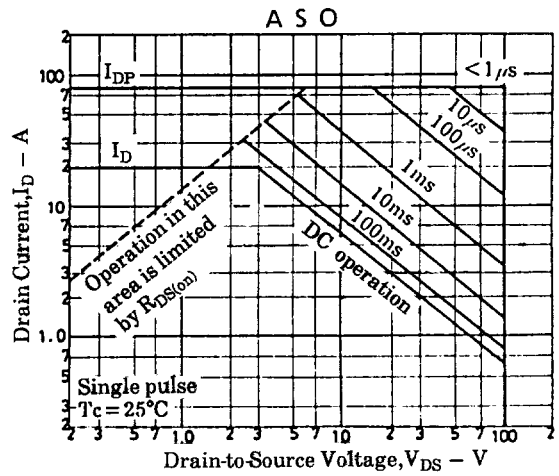
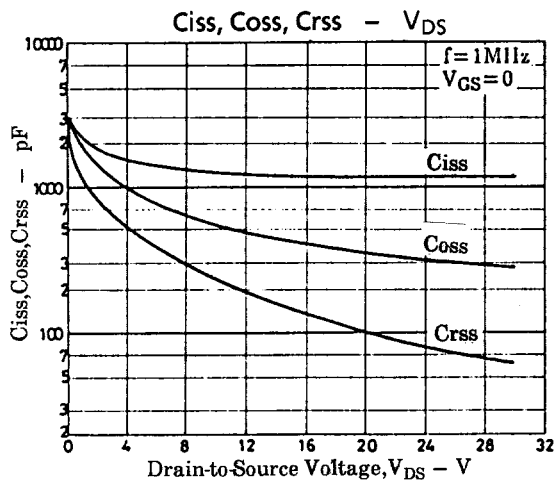
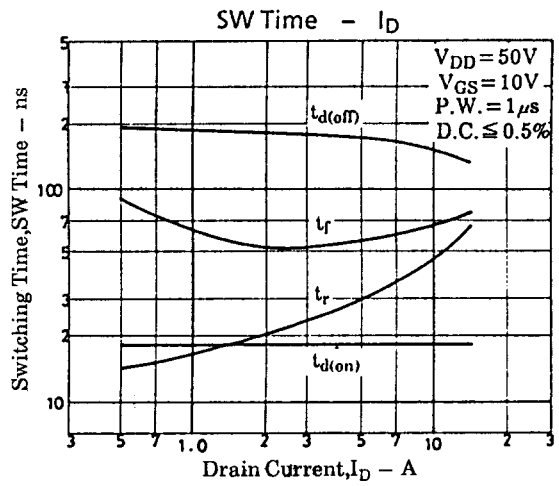
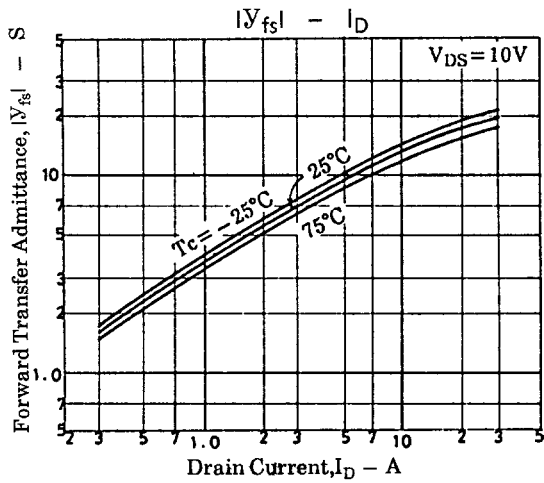
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| Parameter                    | Symbol       | Conditions                                         | Ratings |      |     | Unit |
|------------------------------|--------------|----------------------------------------------------|---------|------|-----|------|
|                              |              |                                                    | min     | typ  | max |      |
| Input Capacitance            | Ciss         | $V_{DS}=20V, f=1MHz$                               |         | 1200 |     | pF   |
| Output Capacitance           | Coss         | $V_{DS}=20V, f=1MHz$                               |         | 350  |     | pF   |
| Reverse Transfer Capacitance | Crss         | $V_{DS}=20V, f=1MHz$                               |         | 100  |     | pF   |
| Turn-ON Delay Time           | $t_{d(on)}$  | $I_D=12A, V_{GS}=10V, V_{DD}=30V, R_{GS}=50\Omega$ |         | 18   |     | ns   |
| Rise Time                    | $t_r$        | $I_D=12A, V_{GS}=10V, V_{DD}=30V, R_{GS}=50\Omega$ |         | 52   |     | ns   |
| Turn-OFF Delay Time          | $t_{d(off)}$ | $I_D=12A, V_{GS}=10V, V_{DD}=30V, R_{GS}=50\Omega$ |         | 140  |     | ns   |
| Fall Time                    | $t_f$        | $I_D=12A, V_{GS}=10V, V_{DD}=30V, R_{GS}=50\Omega$ |         | 70   |     | ns   |
| Diode Forward Voltage        | $V_{SD}$     | $I_S=20A, V_{GS}=0$                                |         |      | 1.8 | V    |

Switching Time Test Circuit





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