

**2SK1461**

## Ultrahigh-Speed Switching Applications

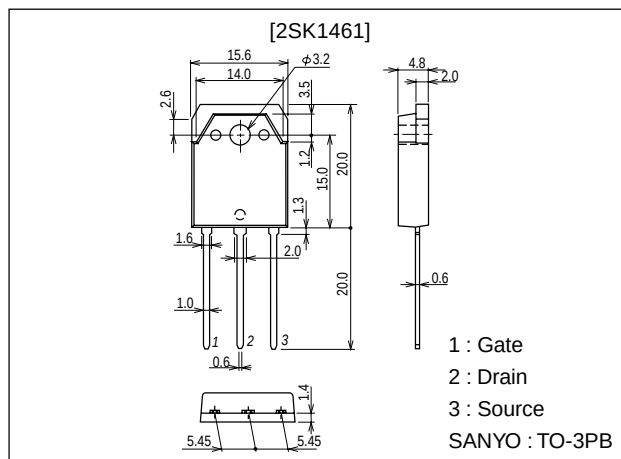
### Features

- 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     | $V_{DS}$ |                        | 900         | V    |
| Gate-to-Source Voltage      | $V_{GS}$ |                        | ±30         | V    |
| Drain Current (DC)          | $I_D$    |                        | 5           | A    |
| Drain Current (Pulse)       | $I_{DP}$ | PW≤10μs, duty cycle≤1% | 10          | A    |
| Allowable Power Dissipation | $P_D$    | Tc=25°C                | 120         | W    |
|                             |          |                        | 2.5         | 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          | $V_{(BR)DSS}$ | $I_D=1mA, V_{GS}=0$     | 900     |     |      | V    |
| Zero-Gate Voltage Drain Current            | $I_{DSS}$     | $V_{DS}=900V, V_{GS}=0$ |         |     | 1.0  | mA   |
| Gate-to-Source Leakage Current             | $I_{GSS}$     | $V_{GS}=±30V, V_{DS}=0$ |         |     | ±100 | nA   |
| Cutoff Voltage                             | $V_{GS(off)}$ | $V_{DS}=10V, I_D=1mA$   | 2.0     |     | 3.0  | V    |
| Forward Transfer Admittance                | yfs           | $V_{DS}=20V, I_D=2A$    | 1.0     | 2.0 |      | S    |
| Static Drain-to-Source ON-State Resistance | $R_{DS(on)}$  | $I_D=2A, V_{GS}=10V$    |         | 2.8 | 3.6  | Ω    |

(Note) Be careful in handling the 2SK1461 because it has no protection diode between gate and source.

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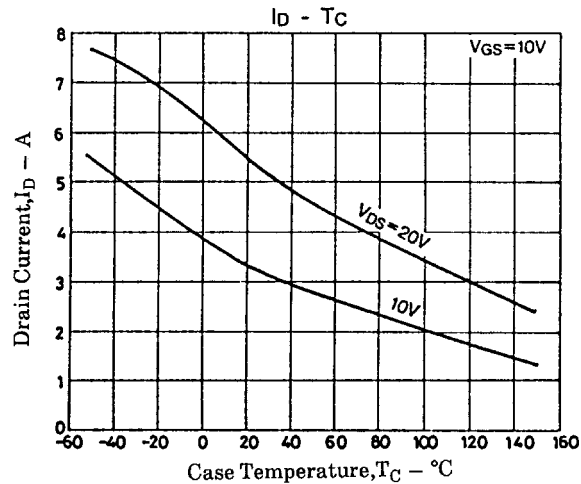
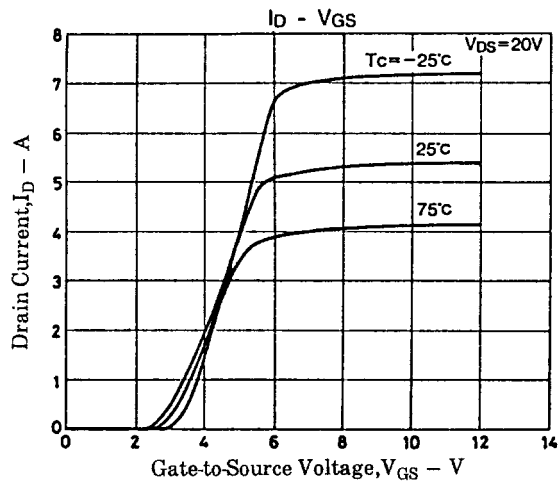
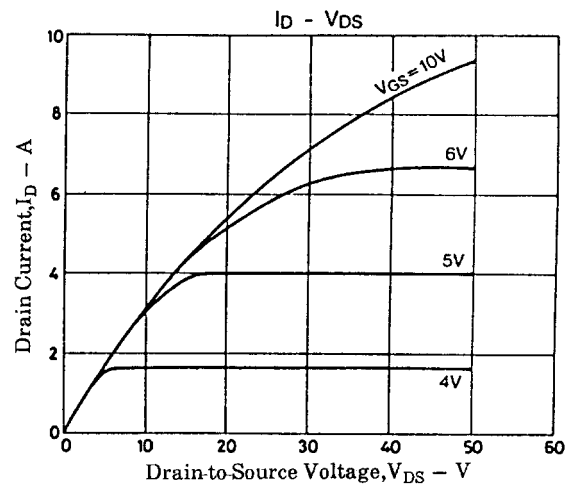
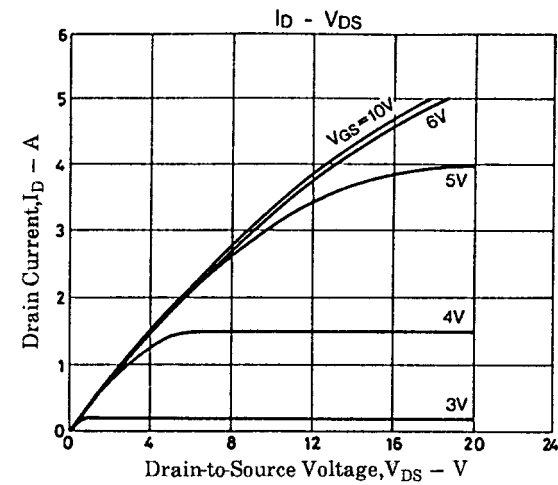
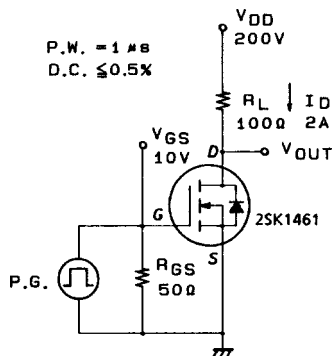
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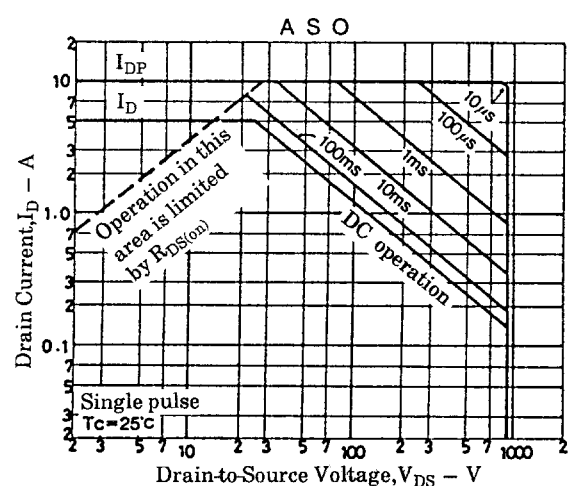
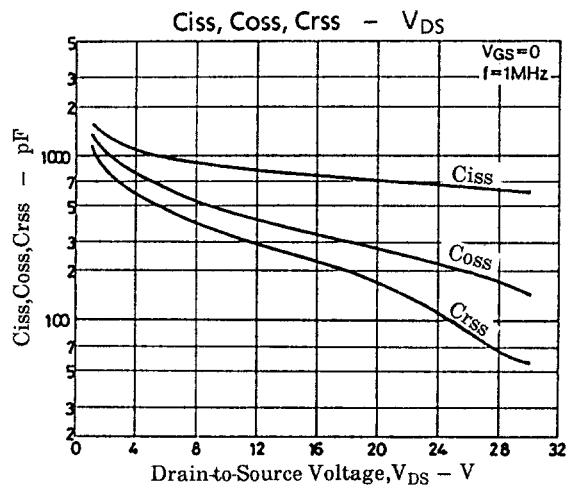
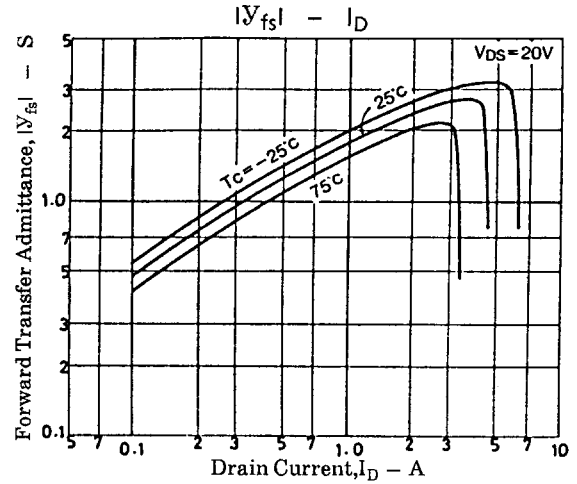
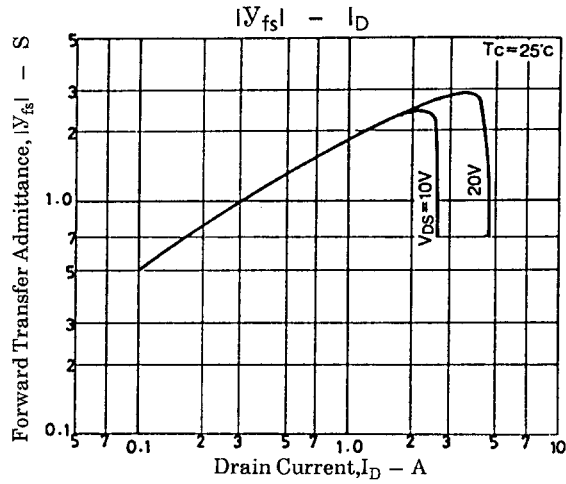
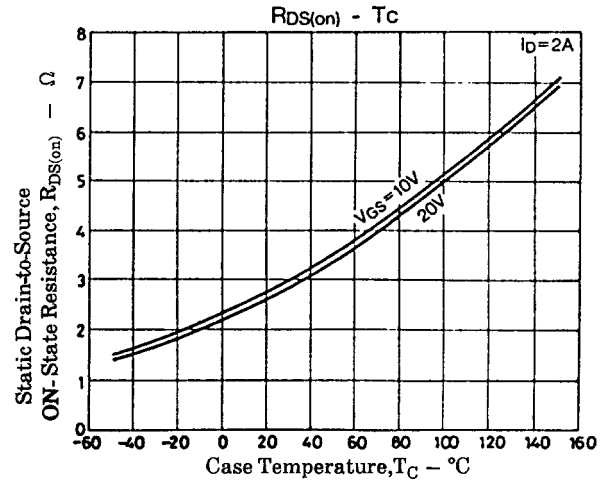
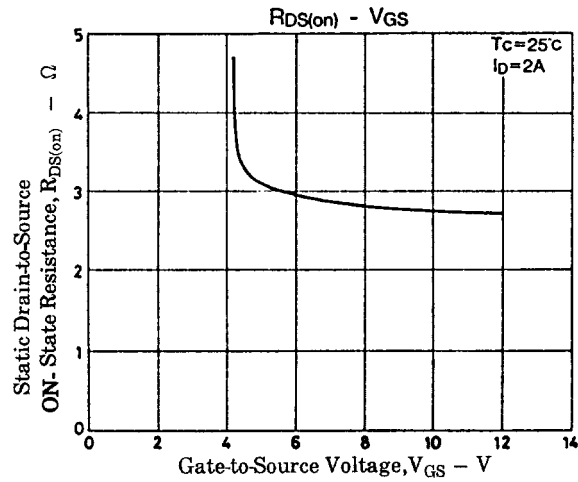
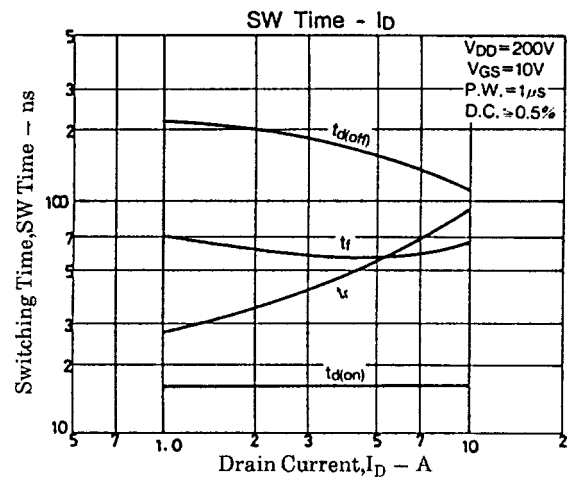
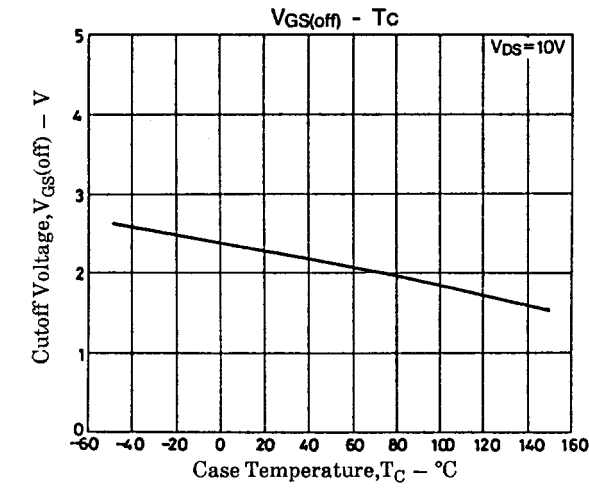
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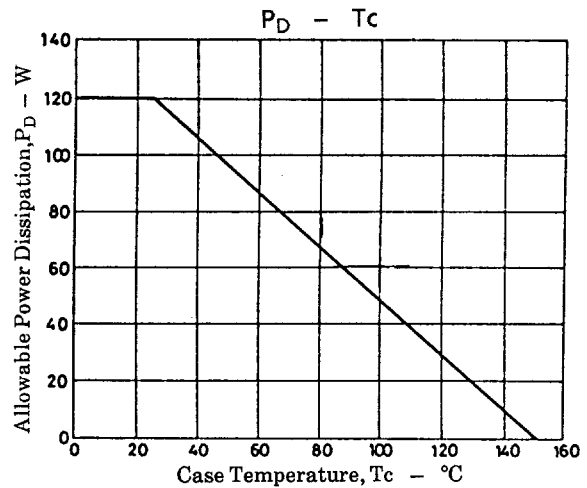
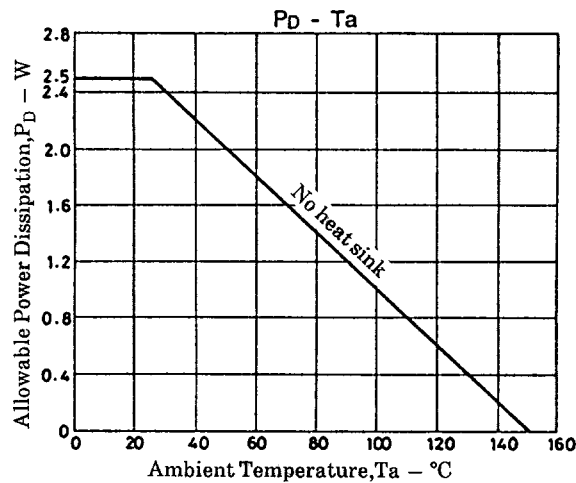
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| Parameter                    | Symbol       | Conditions                                         | Ratings |     |     | Unit |
|------------------------------|--------------|----------------------------------------------------|---------|-----|-----|------|
|                              |              |                                                    | min     | typ | max |      |
| Input Capacitance            | Ciss         | $V_{DS}=20V, f=1MHz$                               |         | 700 |     | pF   |
| Output Capacitance           | Coss         | $V_{DS}=20V, f=1MHz$                               |         | 300 |     | pF   |
| Reverse Transfer Capacitance | Crss         | $V_{DS}=20V, f=1MHz$                               |         | 170 |     | pF   |
| Turn-ON Delay Time           | $t_{d(on)}$  | $I_D=2A, V_{GS}=10V, V_{DD}=200V, R_{GS}=50\Omega$ |         | 15  |     | ns   |
| Rise Time                    | $t_r$        | $I_D=2A, V_{GS}=10V, V_{DD}=200V, R_{GS}=50\Omega$ |         | 35  |     | ns   |
| Turn-OFF Delay Time          | $t_{d(off)}$ | $I_D=2A, V_{GS}=10V, V_{DD}=200V, R_{GS}=50\Omega$ |         | 200 |     | ns   |
| Fall Time                    | $t_f$        | $I_D=2A, V_{GS}=10V, V_{DD}=200V, R_{GS}=50\Omega$ |         | 65  |     | ns   |
| Diode Forward Voltage        | $V_{SD}$     | $I_S=5A, V_{GS}=0$                                 |         |     | 1.8 | V    |

Switching Time Test Circuit







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