

**2SK3121**

## Ultrahigh-Speed Switching Applications

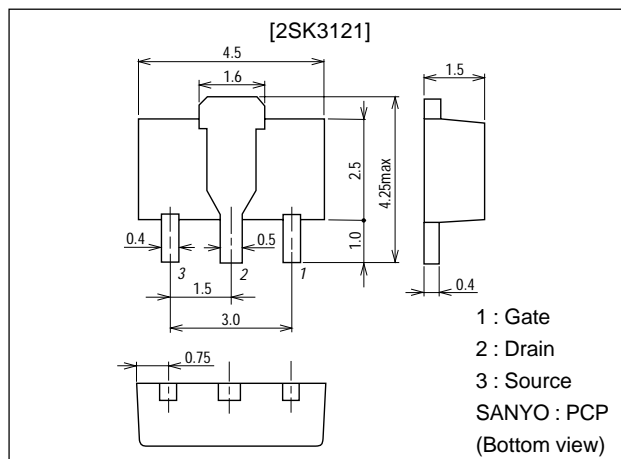
### Features

- Low ON resistance.
- Ultrahigh-speed switching.
- 2.5V drive.

### Package Dimensions

unit:mm

2062A



### Specifications

#### Absolute Maximum Ratings at Ta = 25°C

| Parameter                   | Symbol    | Conditions  | Ratings     | Unit |
|-----------------------------|-----------|---|-------------|------|
| Drain-to-Source Voltage     | $V_{DSS}$ |   | 20          | V    |
| Gate-to-Source Voltage      | $V_{GSS}$ |   | ±10         | V    |
| Drain Current (DC)          | $I_D$     |   | 3           | A    |
| Drain Current (Pulse)       | $I_{DP}$  | $PW \leq 10\mu s$ , duty cycle $\leq 1\%$         | 12          | A    |
| Allowable Power Dissipation | $P_D$     | $T_c = 25^\circ C$                                | 3.5         | W    |
|                             |           | Mounted on a ceramic board (250mm $\times$ 0.8mm) | 1.5         | 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          | $V_{(BR)DSS}$ | $I_D = 1mA$ , $V_{GS} = 0$       | 20      |     |     | V         |
| Zero Gate Voltage Drain Current            | $I_{DSS}$     | $V_{DS} = 20V$ , $V_{GS} = 0$    |         |     | 10  | $\mu A$   |
| Gate-to-Source Leakage Current             | $I_{GSS}$     | $V_{GS} = \pm 8V$ , $V_{DS} = 0$ |         |     | ±10 | $\mu A$   |
| Cutoff Voltage                             | $V_{GS(off)}$ | $V_{DS} = 10V$ , $I_D = 1mA$     | 0.4     |     | 1.3 | V         |
| Forward Transfer Admittance                | $ y_{fs} $    | $V_{DS} = 10V$ , $I_D = 1.5A$    | 3.0     | 4.3 |     | S         |
| Static Drain-to-Source On-State Resistance | $R_{DS(on)1}$ | $I_D = 1.5A$ , $V_{GS} = 4V$     |         | 115 | 150 | $m\Omega$ |
|  | $R_{DS(on)2}$ | $I_D = 500mA$ , $V_{GS} = 2.5V$  |         | 160 | 220 | $m\Omega$ |

Marking : KU

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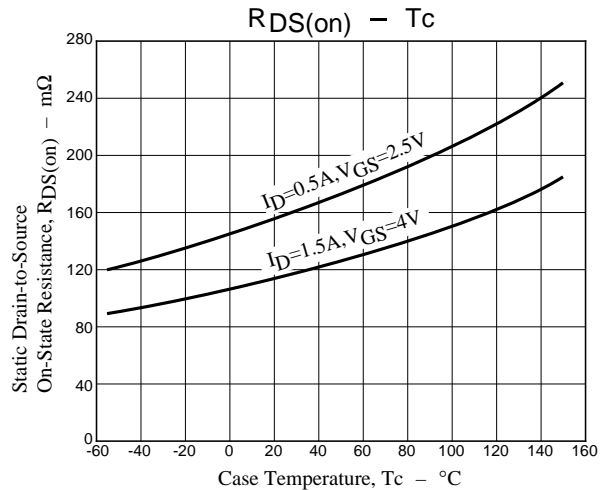
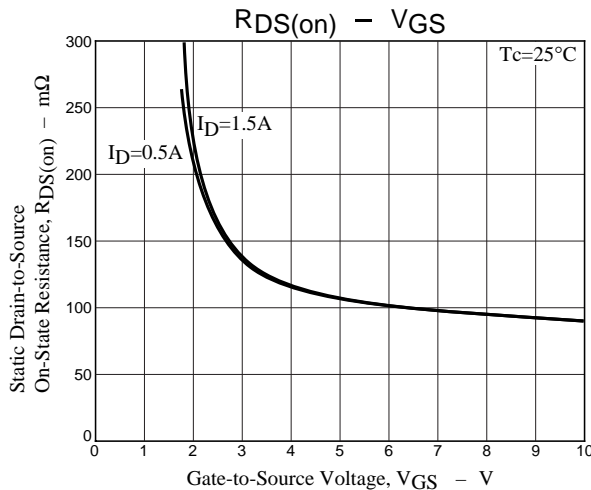
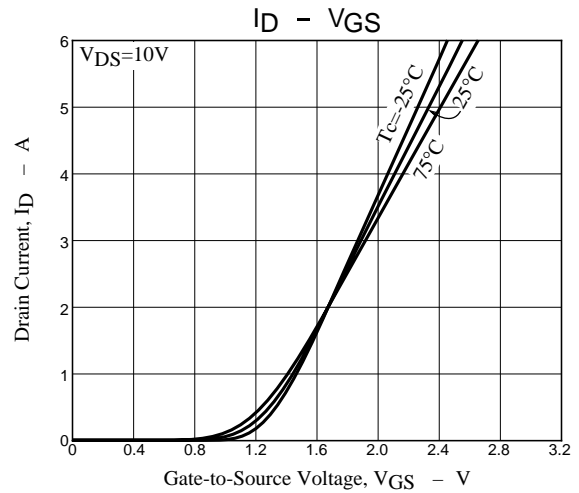
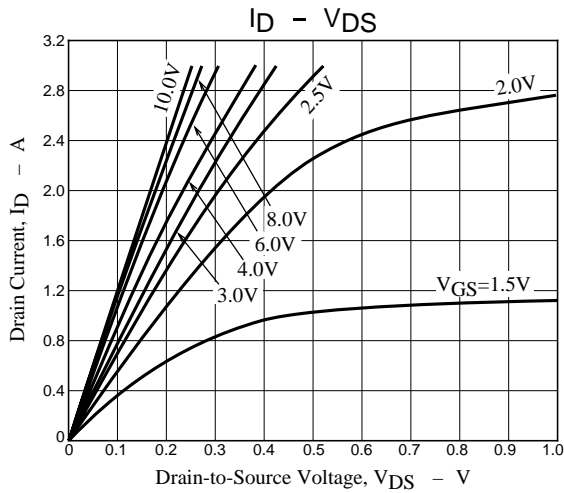
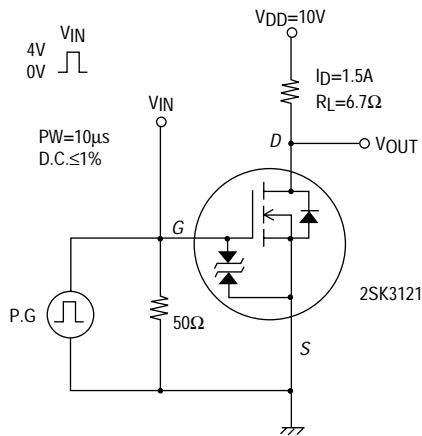
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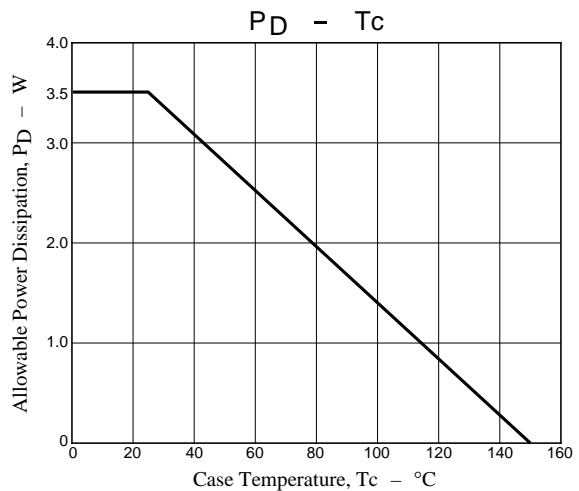
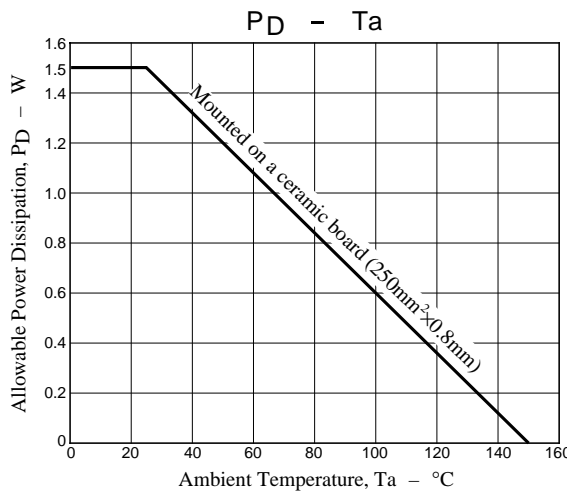
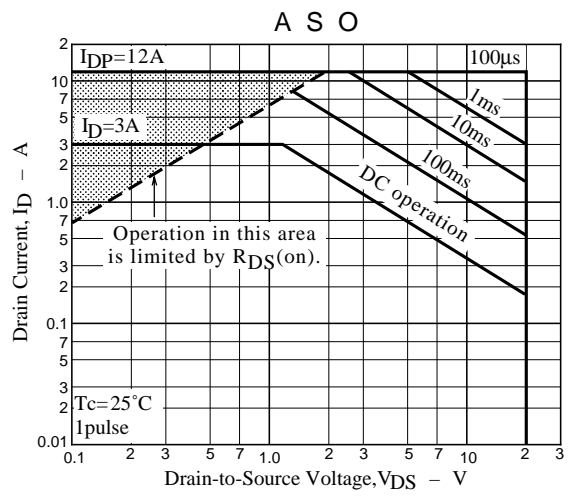
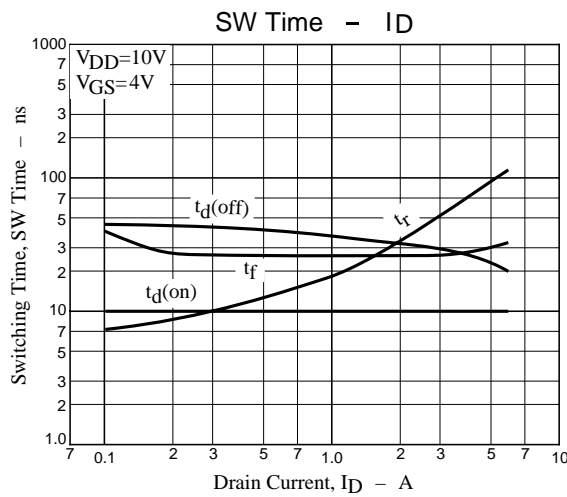
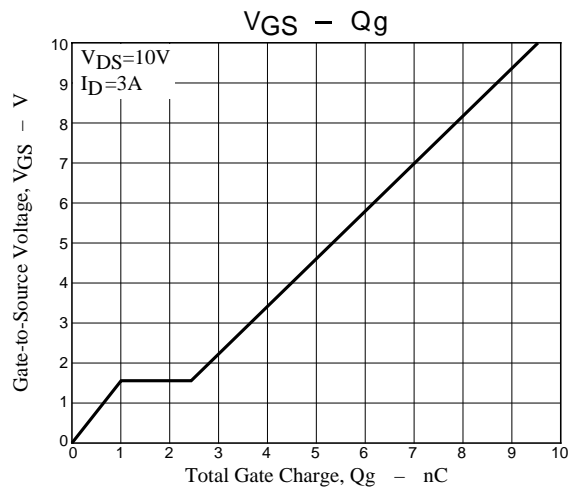
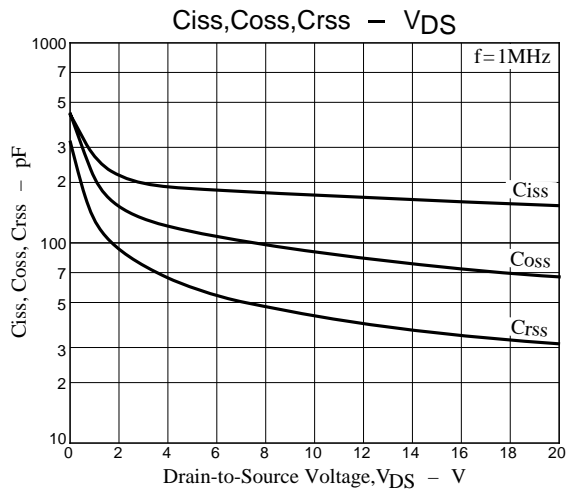
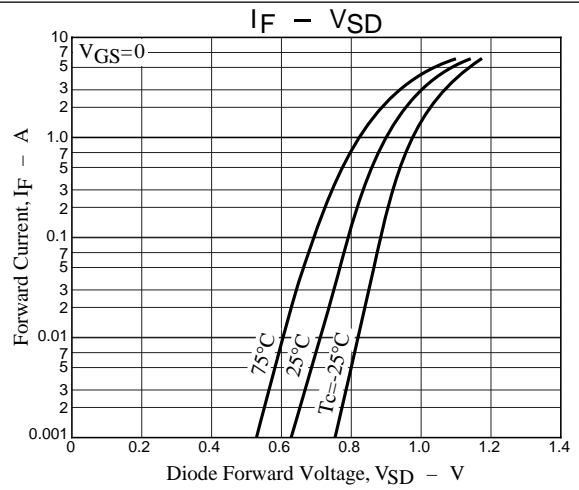
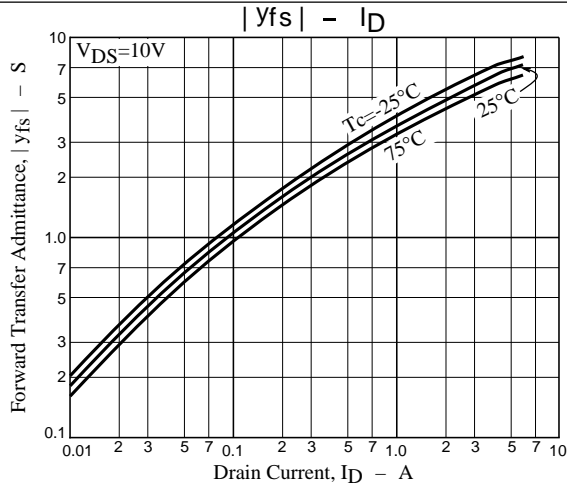
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| Parameter                     | Symbol       | Conditions                       | Ratings |     |     | Unit |
|-------------------------------|--------------|----------------------------------|---------|-----|-----|------|
|                               |              |                                  | min     | typ | max |      |
| Input Capacitance             | Ciss         | $V_{DS}=10V, f=1MHz$             |         | 170 |     | pF   |
| Output Capacitance            | Coss         | $V_{DS}=10V, f=1MHz$             |         | 90  |     | pF   |
| Reverse Transfer Capacitance  | Crss         | $V_{DS}=10V, f=1MHz$             |         | 43  |     | pF   |
| Turn-ON Delay Time            | $t_{d(on)}$  | See specified Test Circuit       |         | 10  |     | ns   |
| Rise Time                     | $t_r$        | See specified Test Circuit       |         | 25  |     | ns   |
| Turn-OFF Delay Time           | $t_{d(off)}$ | See specified Test Circuit       |         | 32  |     | ns   |
| Fall Time                     | $t_f$        | See specified Test Circuit       |         | 27  |     | ns   |
| Total Gate Charge             | Qg           | $V_{DS}=10V, V_{GS}=10V, I_D=3A$ |         | 9.5 |     | nC   |
| Gate-to-Source Charge         | Qgs          |                                  |         | 1   |     | nC   |
| Gate-to-Drain "Miller" Charge | Qgd          |                                  |         | 1.5 |     | nC   |
| Diode Forward Voltage         | $V_{SD}$     | $I_S=3A, V_{GS}=0$               |         | 1.0 | 1.2 | V    |

## Switching Time Test Circuit



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