



# 2SK2349

## High-Voltage, High-Speed Switching Applications

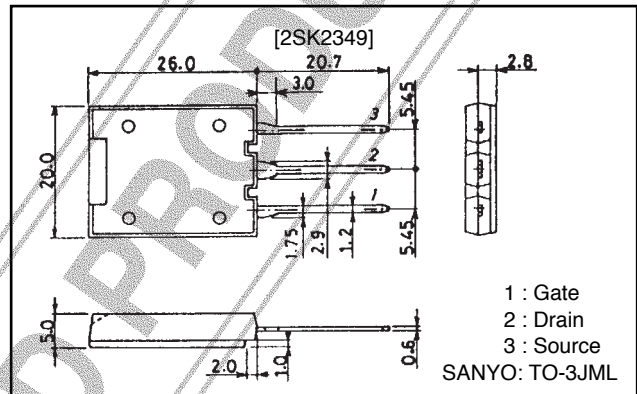
### Features

- Low ON resistance, ultrahigh-speed switching.
- High reliability (Adoption of HVP process).

### Package Dimensions

unit: mm

2131-TO-3JML



### Specifications

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

| Parameter                   | Symbol           | Conditions             | Ratings     | Unit |
|-----------------------------|------------------|------------------------|-------------|------|
| Drain-to-Source Voltage     | V <sub>DSS</sub> |                        | 1500        | V    |
| Gate-to-Source Voltage      | V <sub>GSS</sub> |                        | ±30         | V    |
| Drain Current (DC)          | I <sub>D</sub>   |                        | 10          | A    |
| Drain Current (pulse)       | I <sub>DP</sub>  | PW≤10μs, duty cycle≤1% | 20          | A    |
| Allowable Power Dissipation | P <sub>D</sub>   | T <sub>c</sub> =25°C   | 4.6         | W    |
| Channel Temperature         | T <sub>ch</sub>  |                        | 150         | °C   |
| Storage temperature         | T <sub>stg</sub> |                        | -55 to +150 | °C   |

### Electrical Characteristics

 at Ta=25°C

| Parameter                                  | Symbol               | Conditions                                 | Ratings |      |      | Unit |
|--|----------------------|--|---------|------|------|------|
|  |                      |  | min     | typ  | max  |      |
| D-S Breakdown Voltage                      | V <sub>(BR)DSS</sub> | I <sub>D</sub> =1mA, V <sub>GS</sub> =0    | 1500    |      |      | V    |
| Zero-Gate Voltage Drain Current            | I <sub>DSS</sub>     | V <sub>DS</sub> =1500V, V <sub>GS</sub> =0 |         |      | 1.0  | mA   |
| Gate-to Source Leak Current                | I <sub>GSS</sub>     | V <sub>GS</sub> =±30V, V <sub>DS</sub> =0  |         |      | ±100 | nA   |
| Cutoff Voltage                             | V <sub>GS(off)</sub> | V <sub>DS</sub> =10V, I <sub>D</sub> =1mA  | 1.5     |      | 3.5  | V    |
| Forward Transfer Admittance                | y <sub>fs</sub>      | V <sub>DS</sub> =20V, I <sub>D</sub> =5A   | 2.0     | 4.0  |      | S    |
| Static Drain-to-Source ON-State Resistance | R <sub>DSON</sub>    | I <sub>D</sub> =5A, V <sub>GS</sub> =10V   |         | 1.5  | 2.5  | Ω    |
| Input Capacitance                          | C <sub>iss</sub>     | V <sub>DS</sub> =20V, f=1MHz               |         | 2900 |      | pF   |
| Output Capacitance                         | C <sub>oss</sub>     | V <sub>DS</sub> =20V, f=1MHz               |         | 400  |      | pF   |
| Reverse Transfer Capacitance               | C <sub>rss</sub>     | V <sub>DS</sub> =20V, f=1MHz               |         | 200  |      | pF   |

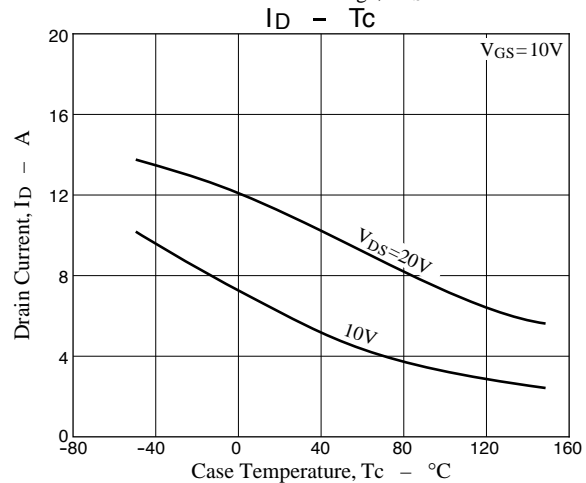
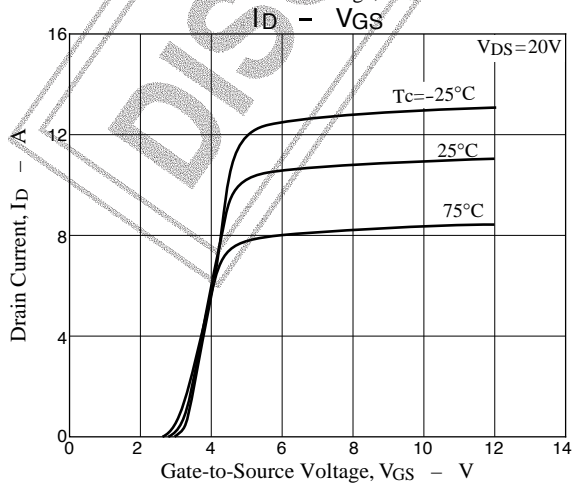
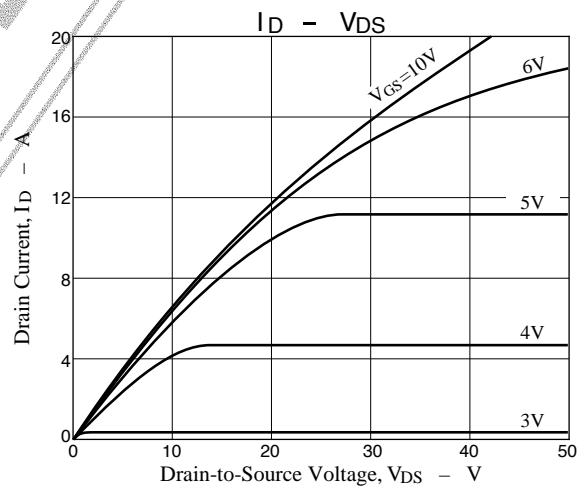
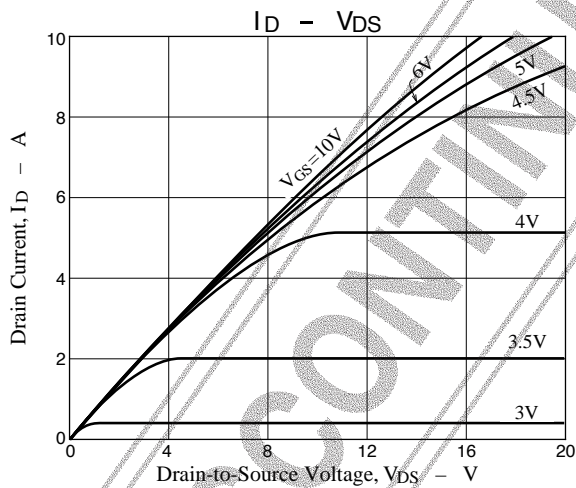
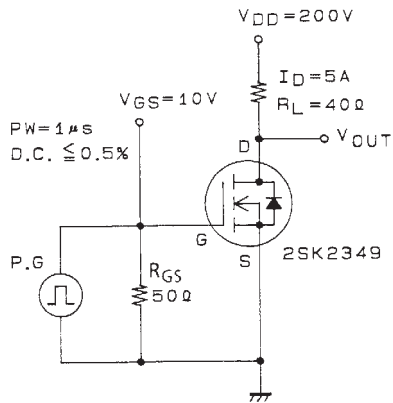
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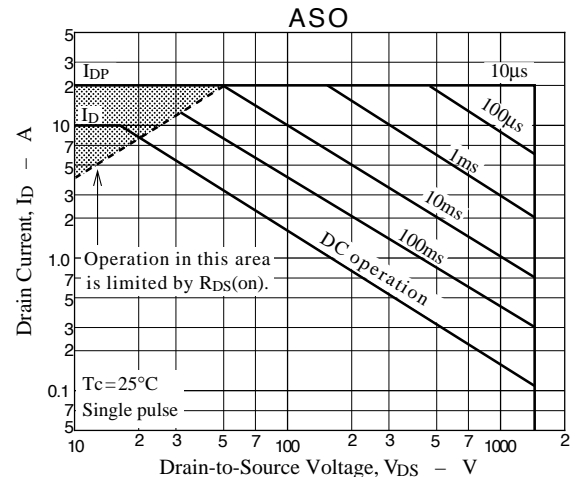
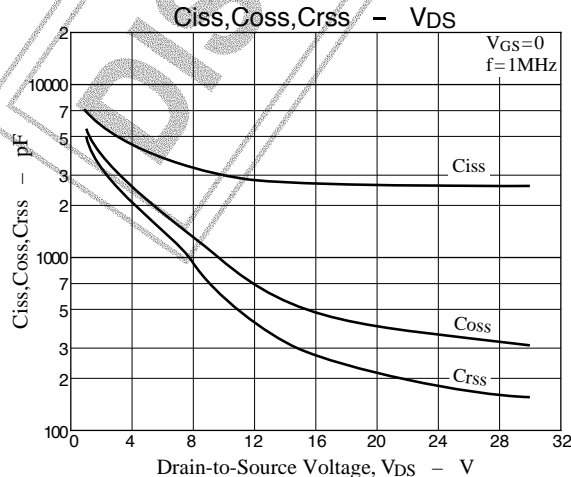
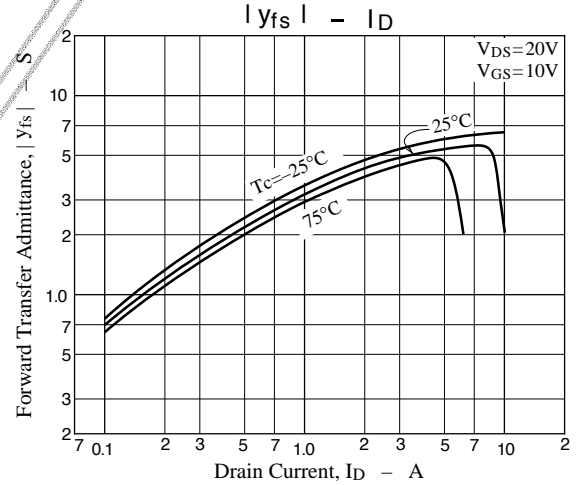
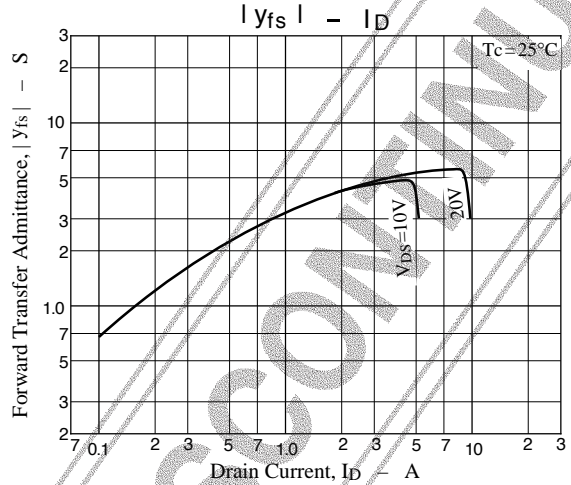
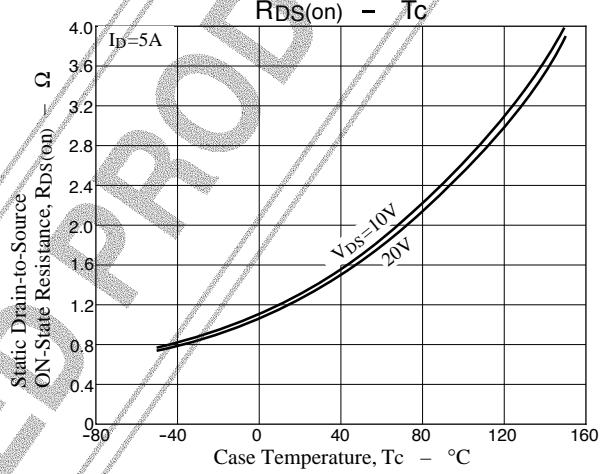
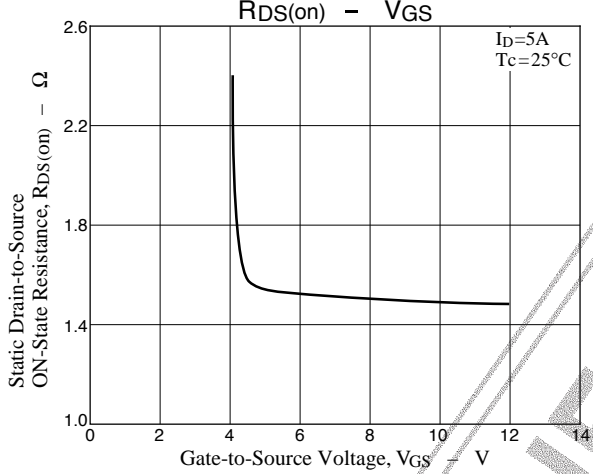
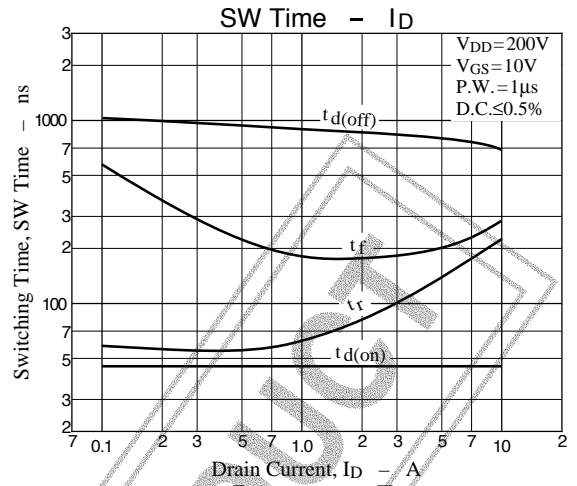
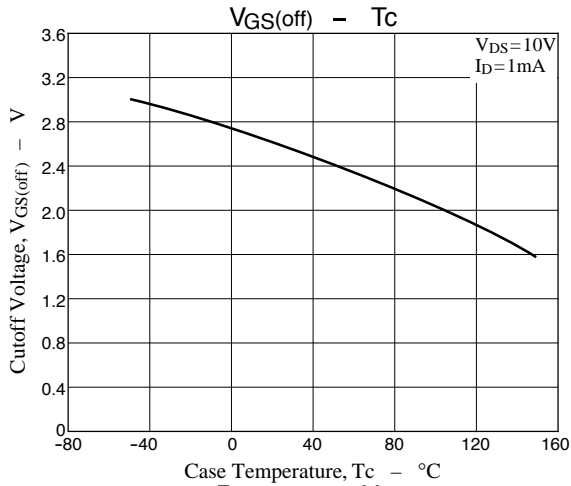
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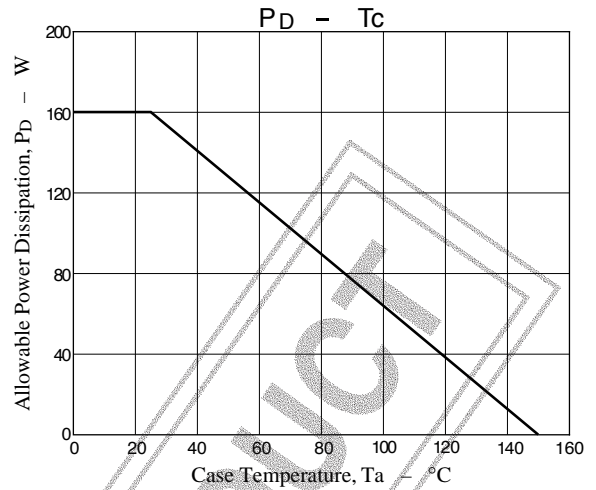
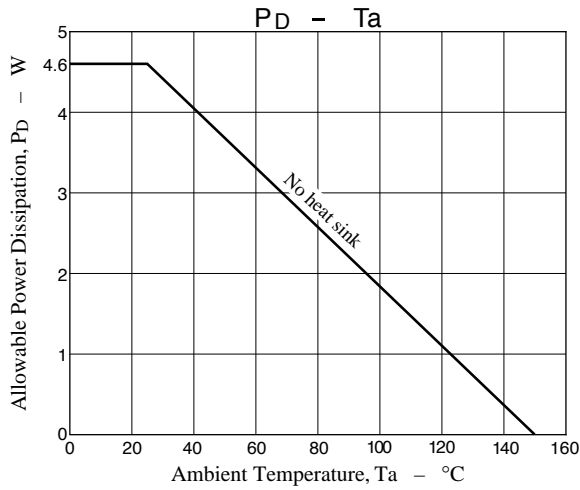
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| Parameter             | Symbol       | Conditions  | Ratings |     |     | Unit    |
|-----------------------|--------------|---|---------|-----|-----|---------|
|                       |              |   | min     | typ | max |         |
| Turn-ON Delay Time    | $t_{d(on)}$  | $I_D=5A, V_{GS}=10V,$<br>$V_{DD}=200V, R_{GS}=50\Omega$ |         | 45  |     | ns      |
| Rise Time             | $t_r$        |   |         | 150 |     | ns      |
| Turn-OFF Delay Time   | $t_{d(off)}$ |   |         | 800 |     | ns      |
| Fall Time             | $t_f$        |   |         | 200 |     | ns      |
| Diode Forward Voltage | $V_{SD}$     | $I_S=10A, V_{GS}=0$                                     |         |     | 1.5 | V       |
| Reverse Recovery Time | $t_{rr}$     | $I_S=10A, di/dt=100A/\mu s$                             |         | 1.0 | 2.0 | $\mu s$ |

## Switching Time Test Circuit







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