



# 2SK3101LS — N-Channel Silicon MOSFET

## General-Purpose Switching Device Applications

### Features

- Low ON-resistance.
- Low Qg.
- Ultrahigh-Speed Switching Applications.
- Avalanche resistance guarantee.

### Specifications

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

| Parameter                          | Symbol           | Conditions             | Ratings     | Unit |
|------------------------------------|------------------|------------------------|-------------|------|
| Drain-to-Source Voltage            | V <sub>DSS</sub> |                        | 400         | V    |
| Gate-to-Source Voltage             | V <sub>GSS</sub> |                        | ±30         | V    |
| Drain Current (DC)                 | I <sub>D</sub>   |                        | 11          | A    |
| Drain Current (Pulse)              | I <sub>DP</sub>  | PW≤10μs, duty cycle≤1% | 44          | A    |
| Allowable Power Dissipation        | P <sub>D</sub>   |                        | 2.0         | W    |
|                                    |                  | T <sub>c</sub> =25°C   | 40          | W    |
| Channel Temperature                | T <sub>ch</sub>  |                        | 150         | °C   |
| Storage Temperature                | T <sub>stg</sub> |                        | -55 to +150 | °C   |
| Avalanche Energy (Single Pulse) *1 | E <sub>AS</sub>  |                        | 69.1        | mJ   |
| Avalanche Current *2               | I <sub>AV</sub>  |                        | 11          | A    |

\*1 V<sub>DD</sub>=50V, L=1mH, I<sub>AV</sub>=11A

\*2 L≤1mH, single pulse

#### Electrical Characteristics at Ta=25°C

| Parameter                                  | Symbol               | Conditions                                | Ratings |      |      | Unit |
|--|----------------------|---|---------|------|------|------|
|  |                      |   | min     | typ  | max  |      |
| Drain-to-Source Breakdown Voltage          | V <sub>(BR)DSS</sub> | I <sub>D</sub> =1mA, V <sub>GS</sub> =0   | 400     |      |      | V    |
| Zero-Gate Voltage Drain Current            | I <sub>DSS</sub>     | V <sub>DS</sub> =320V, V <sub>GS</sub> =0 |         |      | 1.0  | mA   |
| Gate-to-Source Leakage 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 | 3.0     |      | 4.0  | V    |
| Forward Transfer Admittance                | y <sub>fs</sub>      | V <sub>DS</sub> =10V, I <sub>D</sub> =8A  | 4.0     | 8.0  |      | S    |
| Static Drain-to-Source On-State Resistance | R <sub>DS(on)</sub>  | I <sub>D</sub> =8A, V <sub>GS</sub> =15V  |         | 0.32 | 0.4  | Ω    |

Marking : K3101

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# 2SK3101LS

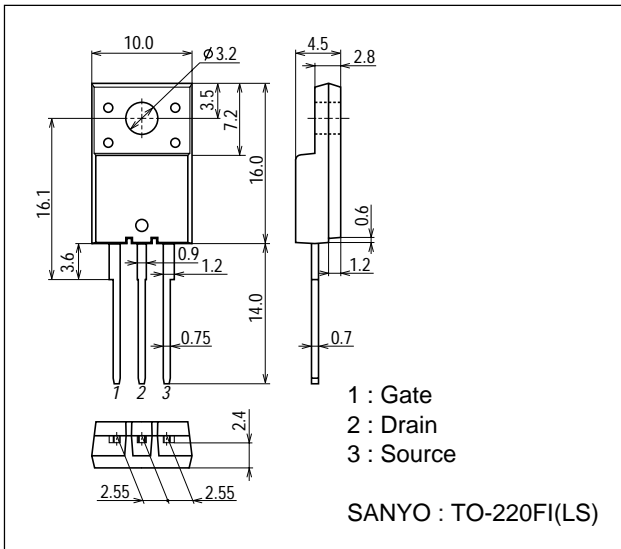
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| Parameter                    | Symbol     | Conditions                         | Ratings |      |     | Unit |
|------------------------------|------------|------------------------------------|---------|------|-----|------|
|                              |            |                                    | min     | typ  | max |      |
| Input Capacitance            | Ciss       | $V_{DS}=20V, f=1MHz$               |         | 1850 |     | pF   |
| Output Capacitance           | Coss       | $V_{DS}=20V, f=1MHz$               |         | 480  |     | pF   |
| Reverse Transfer Capacitance | Crss       | $V_{DS}=20V, f=1MHz$               |         | 240  |     | pF   |
| Turn-ON Delay Time           | $t_d(on)$  | See specified Test Circuit.        |         | 19   |     | ns   |
| Rise Time                    | $t_r$      | See specified Test Circuit.        |         | 35   |     | ns   |
| Turn-OFF Delay Time          | $t_d(off)$ | See specified Test Circuit.        |         | 140  |     | ns   |
| Fall Time                    | $t_f$      | See specified Test Circuit.        |         | 41   |     | ns   |
| Total Gate Charge            | Qg         | $V_{DS}=200V, V_{GS}=10V, I_D=11A$ |         | 58   |     | nC   |
| Diode Forward Voltage        | VSD        | $I_S=11A, V_{GS}=0$                |         | 0.9  | 1.2 | V    |

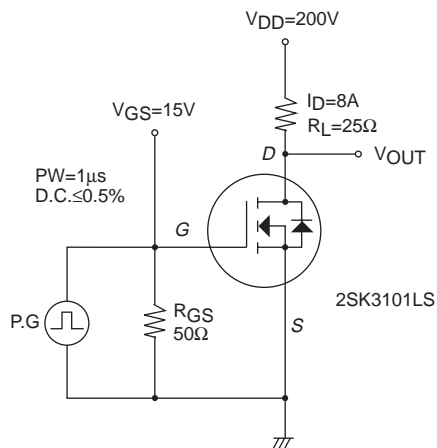
## Package Dimensions

unit : mm

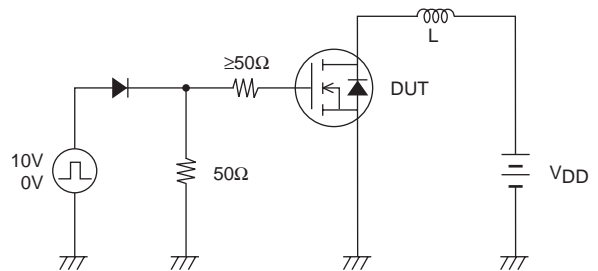
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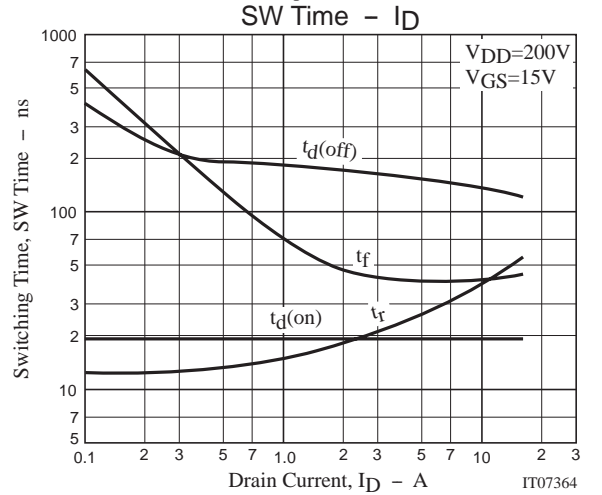
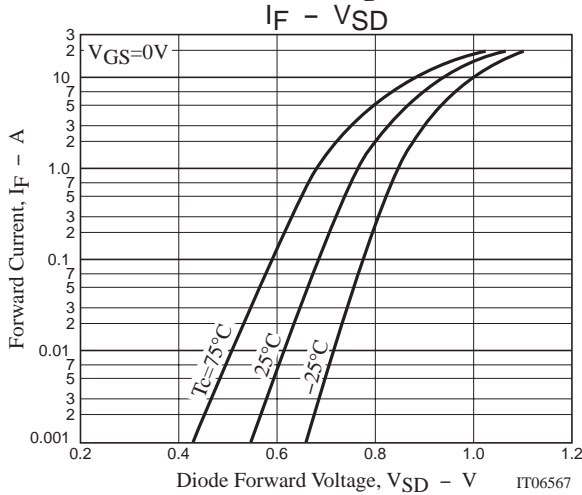
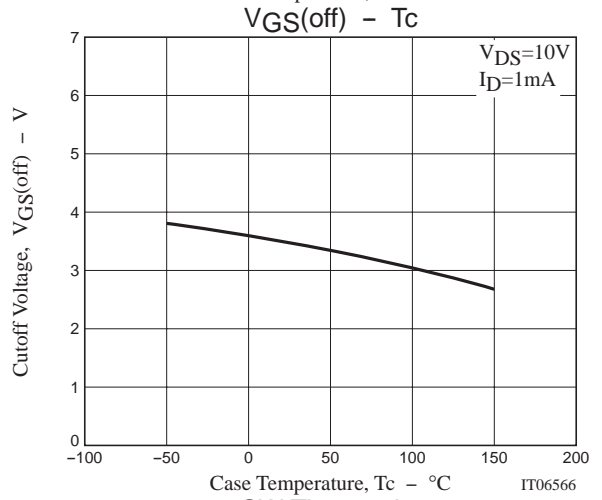
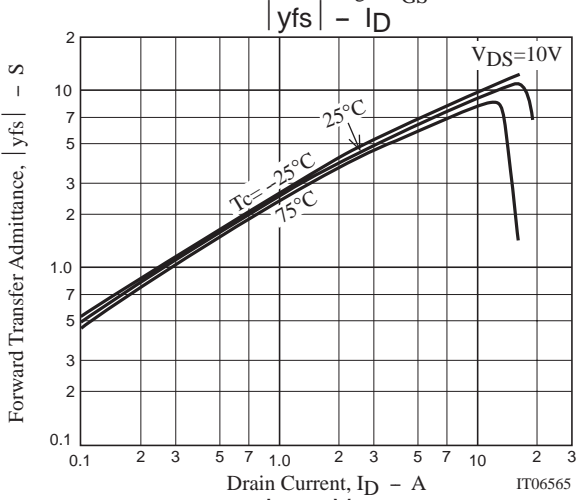
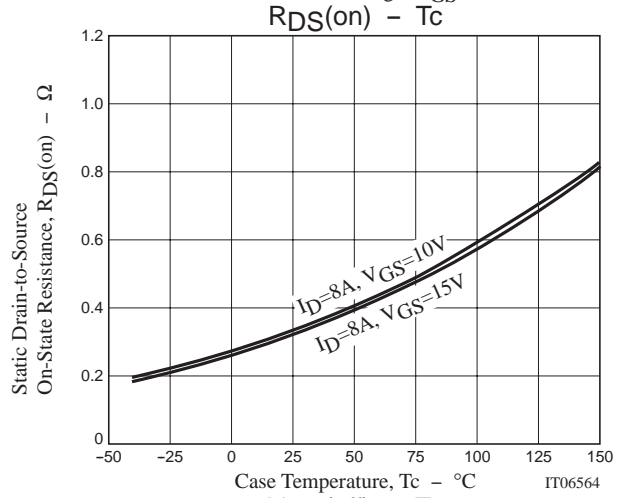
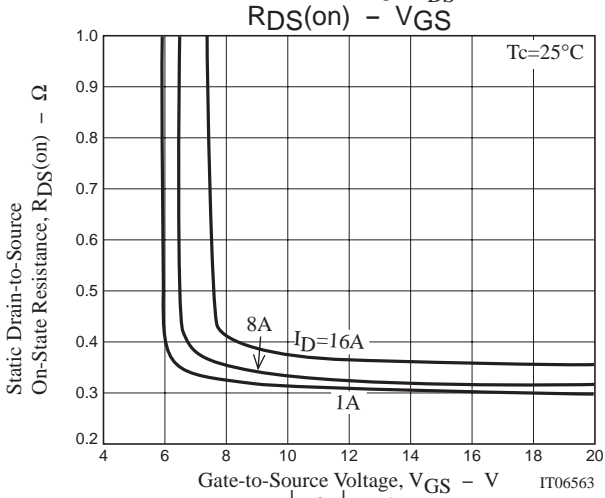
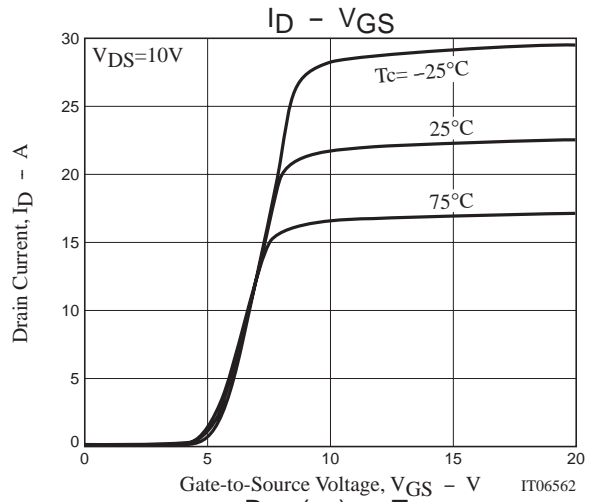
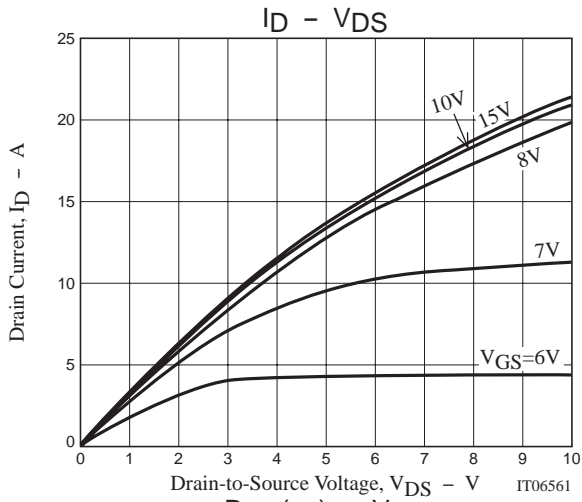
## Switching Time Test Circuit



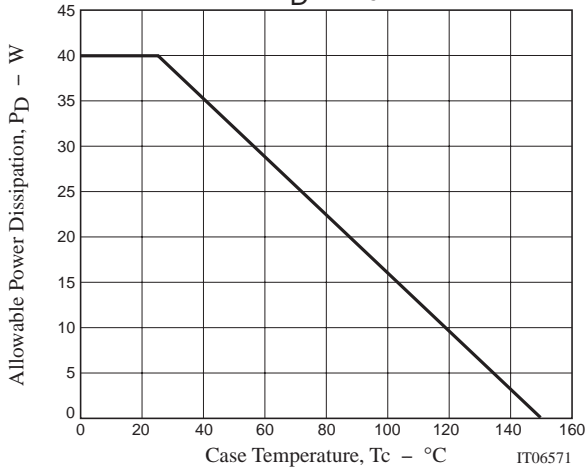
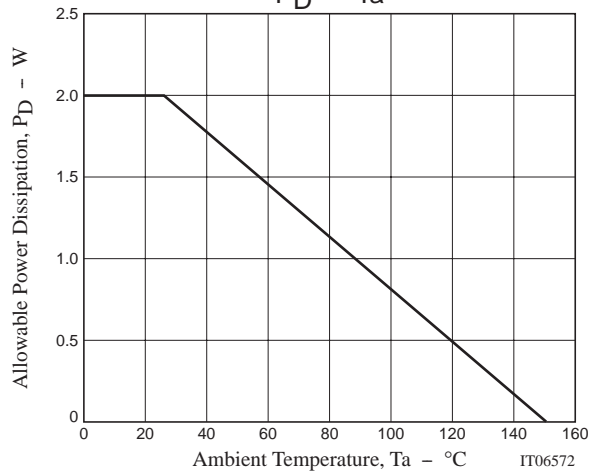
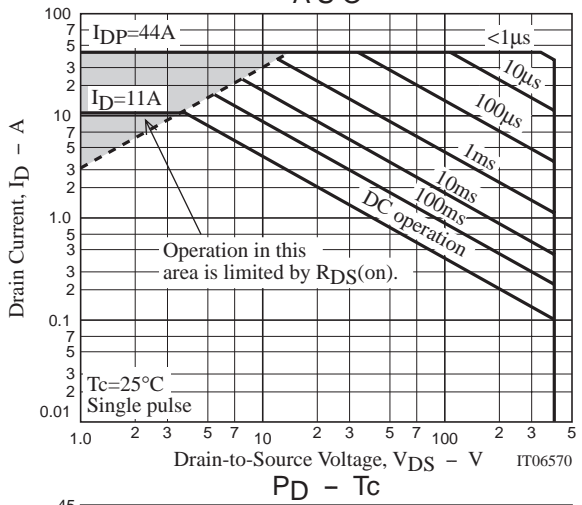
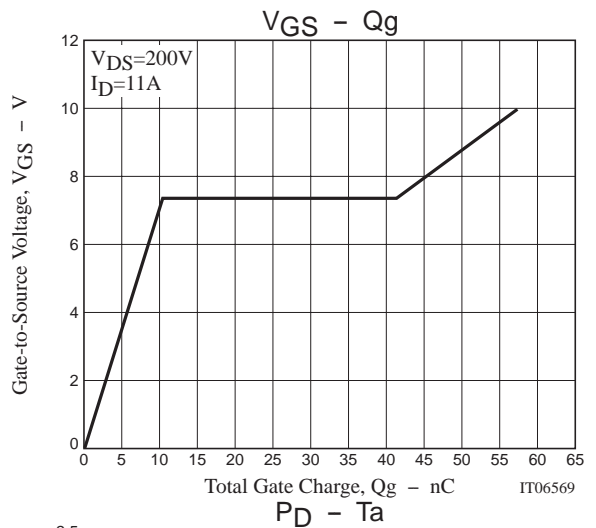
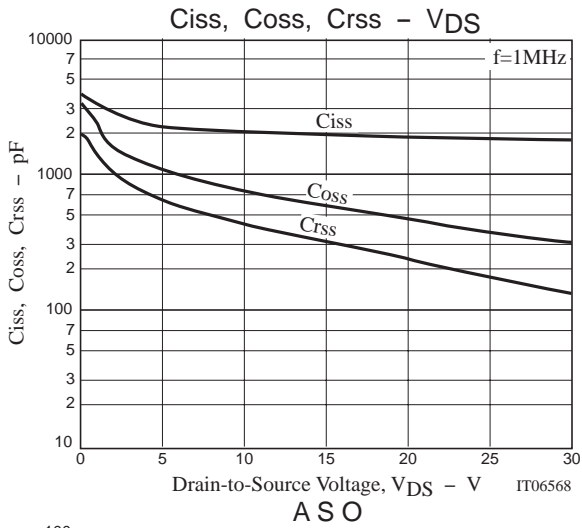
## Unclamped Inductive Test Circuit



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Note on usage : Be careful in handling the 2SK3101LS because it has no protection diode between gate and source.

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