



N-Channel Silicon MOSFET  
**2SK4099LS — General-Purpose Switching Device Applications**

### Features

- Low ON-resistance, low input capacitance, ultrahigh-speed switching.
- Adoption of high reliability HVP process.
- Attachment workability is good by Mica-less package.
- Avalanche resistance guarantee.

### Specifications

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

| Parameter                                     | Symbol                           | Conditions  | Ratings     | Unit |
|---|----------------------------------|---|-------------|------|
| Drain-to-Source Voltage                       | V <sub>DSS</sub>                 |   | 600         | V    |
| Gate-to-Source Voltage                        | V <sub>GSS</sub>                 |   | ±30         | V    |
| Drain Current (DC)                            | I <sub>Dc</sub> <sup>*1</sup>    | Limited only by maximum temperature                             | 8.5         | A    |
|   | I <sub>Dpack</sub> <sup>*2</sup> | SANYO's ideal heat dissipation condition                        | 6.9         | A    |
| Drain Current (Pulse)                         | I <sub>DP</sub>                  | PW≤10μs, duty cycle≤1%  | 34          | A    |
| Allowable Power Dissipation                   | P <sub>D</sub>                   |   | 2.0         | W    |
|   |                                  | T <sub>c</sub> =25°C (SANYO's ideal heat dissipation condition) | 35          | W    |
| Channel Temperature                           | T <sub>ch</sub>                  |   | 150         | °C   |
| Storage Temperature                           | T <sub>stg</sub>                 |   | -55 to +150 | °C   |
| Avalanche Energy (Single Pulse) <sup>*3</sup> | E <sub>AS</sub>                  |   | 215         | mJ   |
| Avalanche Current <sup>*4</sup>               | I <sub>AV</sub>                  |   | 8.5         | A    |

<sup>\*1</sup> Shows chip capability

<sup>\*2</sup> Package limited

<sup>\*3</sup> V<sub>DD</sub>=99V, L=5mH, I<sub>AV</sub>=8.5A

<sup>\*4</sup> L≤5mH, single pulse

Marking : K4099

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2SK4099LS

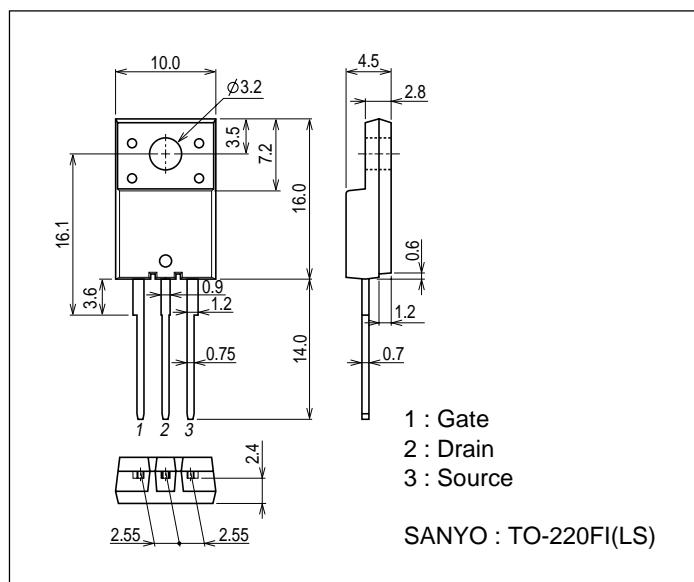
## Electrical Characteristics at Ta=25°C

| Parameter                                  | Symbol   | Conditions                  | Ratings |      |      | Unit |
|--|----------|-----------------------------|---------|------|------|------|
|  |          |                             | min     | typ  | max  |      |
| Drain-to-Source Breakdown Voltage          | V(BR)DSS | Id=10mA, VGS=0V             | 600     |      |      | V    |
| Zero-Gate Voltage Drain Current            | IdSS     | VDS=480V, VGS=0V            |         |      | 100  | µA   |
| Gate-to-Source Leakage Current             | IGSS     | VGS=±30V, VDS=0V            |         |      | ±100 | nA   |
| Cutoff Voltage                             | VGS(off) | VDS=10V, Id=1mA             | 3       |      | 5    | V    |
| Forward Transfer Admittance                | yfs      | VDS=10V, Id=4A              | 2.7     | 5.4  |      | S    |
| Static Drain-to-Source On-State Resistance | RDS(on)  | Id=4A, VGS=10V              |         | 0.72 | 0.94 | Ω    |
| Input Capacitance                          | Ciss     | VDS=30V, f=1MHz             |         | 750  |      | pF   |
| Output Capacitance                         | Coss     | VDS=30V, f=1MHz             |         | 140  |      | pF   |
| Reverse Transfer Capacitance               | Crss     | VDS=30V, f=1MHz             |         | 31   |      | pF   |
| Turn-ON Delay Time                         | td(on)   | See specified Test Circuit. |         | 16   |      | ns   |
| Rise Time                                  | tr       | See specified Test Circuit. |         | 37   |      | ns   |
| Turn-OFF Delay Time                        | td(off)  | See specified Test Circuit. |         | 106  |      | ns   |
| Fall Time                                  | tf       | See specified Test Circuit. |         | 41   |      | ns   |
| Total Gate Charge                          | Qg       | VDS=200V, VGS=10V, Id=8.5A  |         | 29   |      | nC   |
| Gate-to-Source Charge                      | Qgs      | VDS=200V, VGS=10V, Id=8.5A  |         | 5.2  |      | nC   |
| Gate-to-Drain "Miller" Charge              | Qgd      | VDS=200V, VGS=10V, Id=8.5A  |         | 16.5 |      | nC   |
| Diode Forward Voltage                      | VSD      | Is=8.5A, VGS=0V             |         | 0.9  | 1.2  | V    |

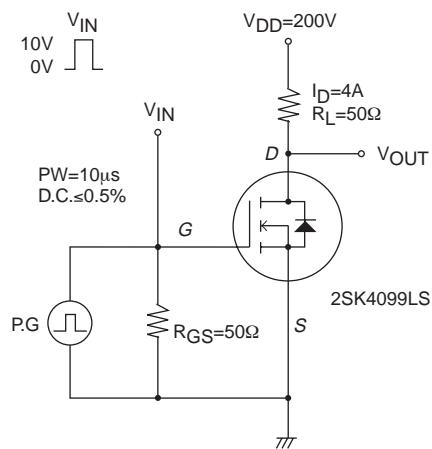
## Package Dimensions

unit : mm (typ)

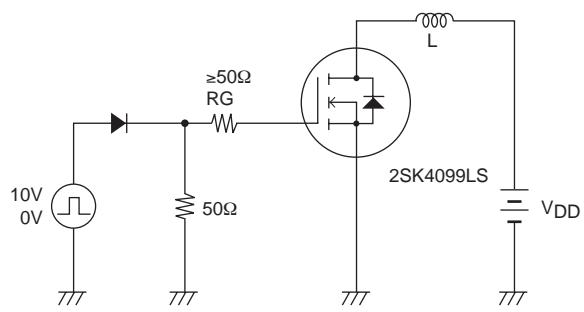
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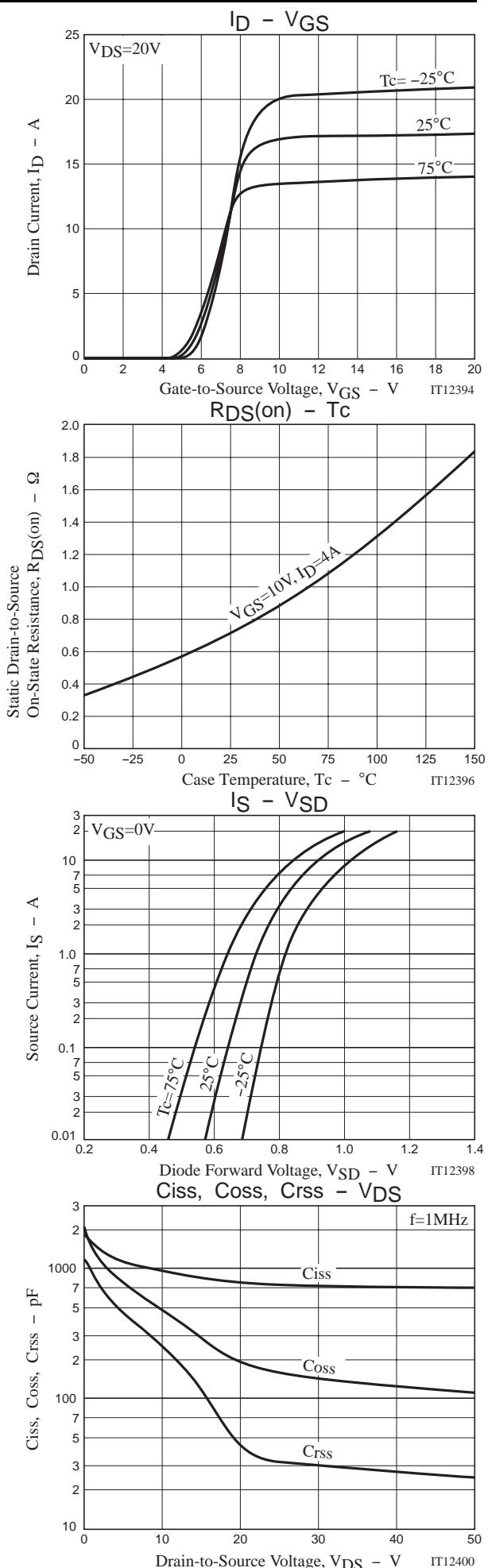
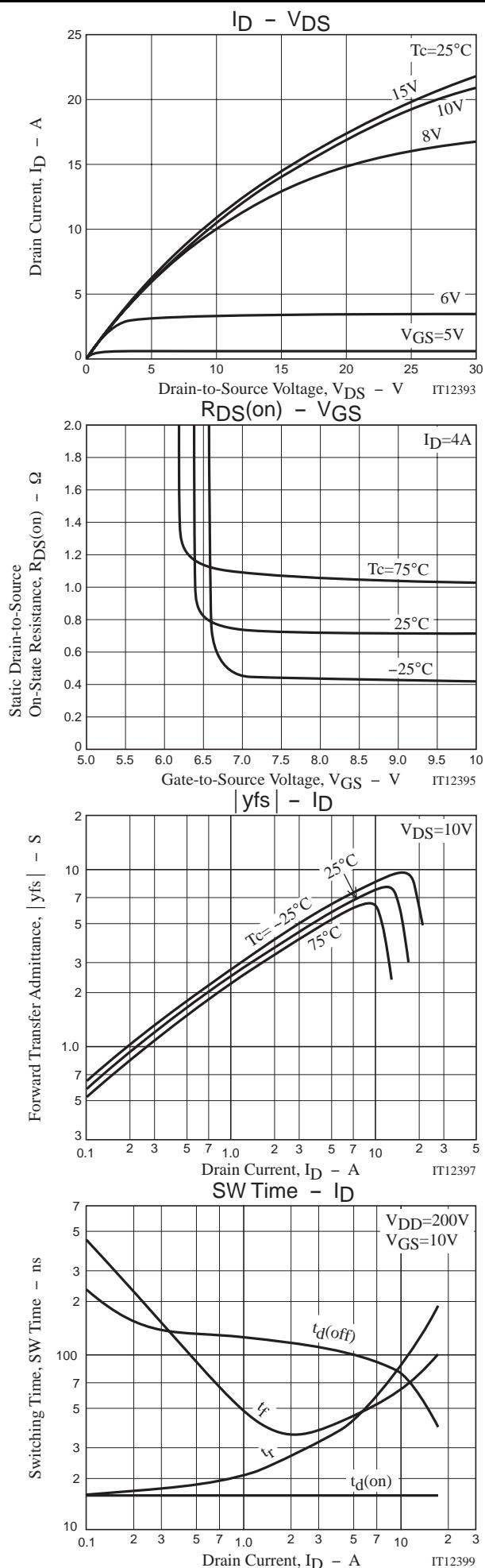
## Switching Time Test Circuit



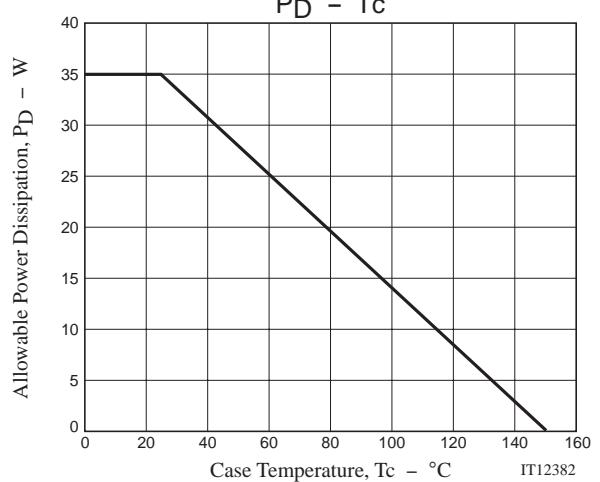
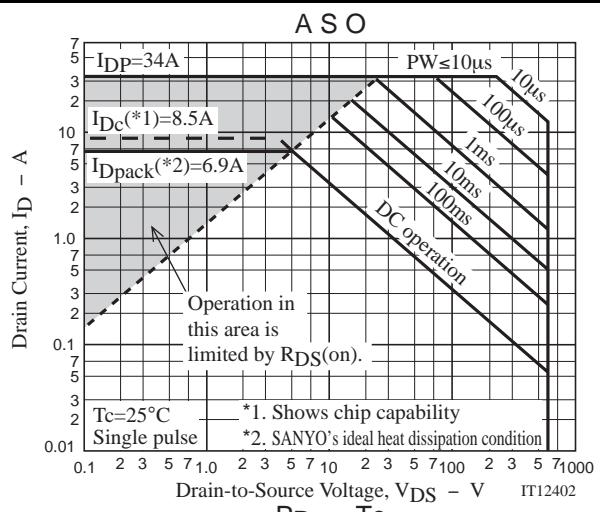
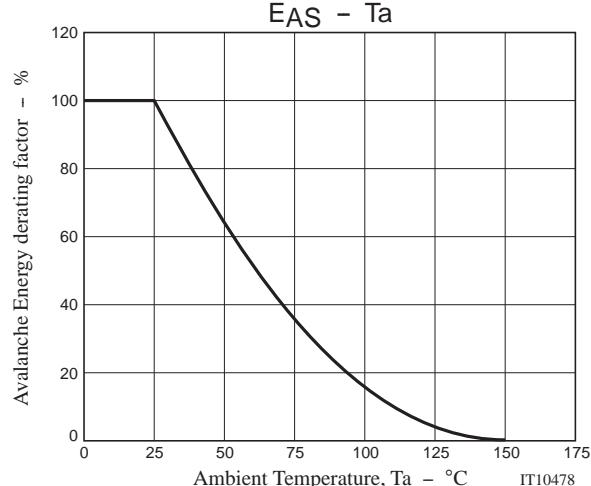
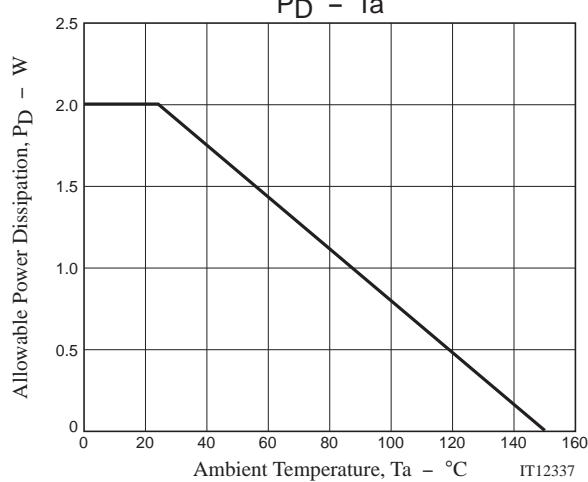
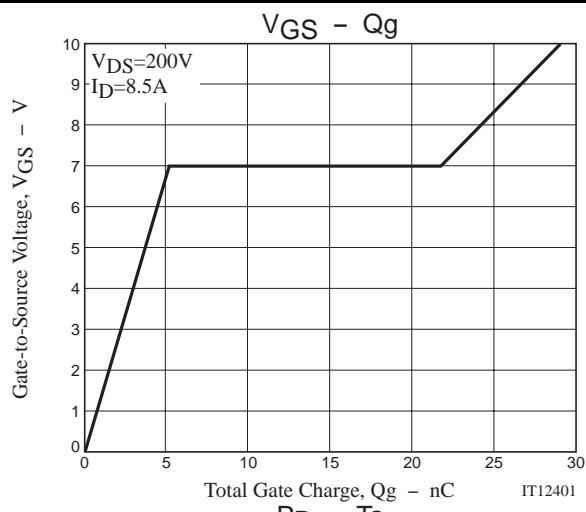
## Avalanche Resistance Test Circuit



# 2SK4099LS



# 2SK4099LS



Note on usage : Since the 2SK4099LS is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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