



SANYO Semiconductors

## DATA SHEET

An ON Semiconductor Company

# 2SK4198LS — N-Channel Silicon MOSFET

## General-Purpose Switching Device Applications

### Features

- ON-resistance  $R_{DS(on)}=1.8\Omega(\text{typ.})$
- Input capacitance  $C_{iss}=360\text{pF}(\text{typ.})$
- 10V drive
- Repetitive avalanche guarantee

### Specifications

Absolute Maximum Ratings at  $T_a=25^\circ\text{C}$ 

| Parameter                          | Symbol         | Conditions  | Ratings     | Unit             |
|------------------------------------|----------------|---|-------------|------------------|
| Drain-to-Source Voltage            | $V_{DSS}$      |   | 600         | V                |
| Gate-to-Source Voltage             | $V_{GSS}$      |   | $\pm 30$    | V                |
| Drain Current (DC)                 | $I_{DC}^*1$    | Limited only by maximum temperature $T_{ch}=150^\circ\text{C}$      | 5           | A                |
|                                    | $I_{Dpack}^*2$ | $T_c=25^\circ\text{C}$ (SANYO's ideal heat dissipation condition)*3 | 4           | A                |
| Drain Current (Pulse)              | $I_{DP}$       | $PW \leq 10\mu\text{s}$ , duty cycle $\leq 1\%$                     | 18          | A                |
| Allowable Power Dissipation        | PD             |   | 2.0         | W                |
|                                    |                | $T_c=25^\circ\text{C}$ (SANYO's ideal heat dissipation condition)*3 | 30          | W                |
| Channel Temperature                | $T_{ch}$       |   | 150         | $^\circ\text{C}$ |
| Storage Temperature                | $T_{stg}$      |   | -55 to +150 | $^\circ\text{C}$ |
| Avalanche Energy (Single Pulse) *4 | $E_{AS}$       |   | 74.6        | mJ               |
| Avalanche Current *5               | $I_{AV}$       |   | 5           | A                |
| Avalanche Energy (Repetition)      | $E_{AR}$       | Limited only by maximum temperature $T_{ch}=150^\circ\text{C}$      | 3           | mJ               |

Note : \*1 Shows chip capability.

\*2 Package limited.

\*3 SANYO's condition is radiation from backside.

The method is applying silicone grease to the backside of the device and attaching the device to water-cooled radiator made of aluminium.

\*4  $V_{DD}=99\text{V}$ ,  $L=5\text{mH}$ ,  $I_{AV}=4.5\text{A}$ \*5  $L \leq 5\text{mH}$ , Single pulse

Marking : K4198

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# 2SK4198LS

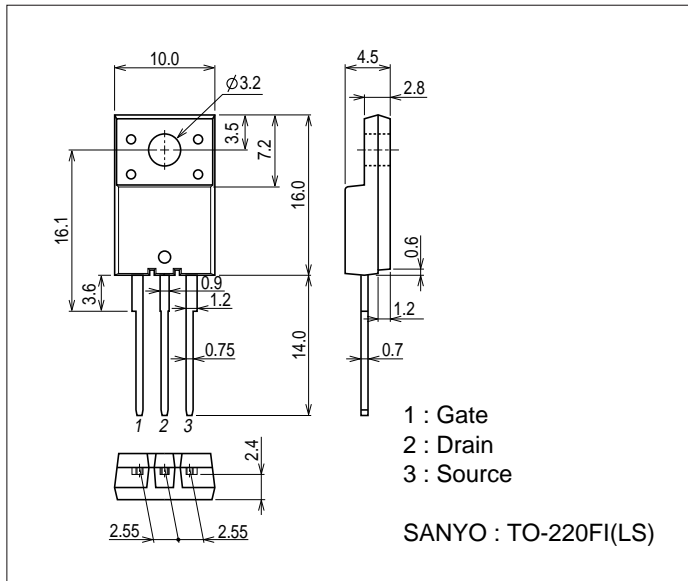
## Electrical Characteristics at Ta=25°C

| Parameter                                  | Symbol        | Conditions                        | Ratings |      |           | Unit     |
|--|---------------|-----------------------------------|---------|------|-----------|----------|
|  |               |                                   | min     | typ  | max       |          |
| Drain-to-Source Breakdown Voltage          | $V_{(BR)DSS}$ | $I_D=10mA, V_{GS}=0V$             | 600     |      |           | V        |
| Zero-Gate Voltage Drain Current            | $I_{DSS}$     | $V_{DS}=480V, V_{GS}=0V$          |         |      | 100       | $\mu A$  |
| Gate-to-Source Leakage Current             | $I_{GSS}$     | $V_{GS}=\pm 30V, V_{DS}=0V$       |         |      | $\pm 100$ | nA       |
| Cutoff Voltage                             | $V_{GS(off)}$ | $V_{DS}=10V, I_D=1mA$             | 3       |      | 5         | V        |
| Forward Transfer Admittance                | $ y_{fs} $    | $V_{DS}=10V, I_D=2.5A$            | 1.2     | 2.4  |           | S        |
| Static Drain-to-Source On-State Resistance | $R_{DS(on)}$  | $I_D=2.5A, V_{GS}=10V$            |         | 1.8  | 2.34      | $\Omega$ |
| Input Capacitance                          | $C_{iss}$     | $V_{DS}=30V, f=1MHz$              |         | 360  |           | pF       |
| Output Capacitance                         | $C_{oss}$     | $V_{DS}=30V, f=1MHz$              |         | 69   |           | pF       |
| Reverse Transfer Capacitance               | $C_{rss}$     | $V_{DS}=30V, f=1MHz$              |         | 15   |           | pF       |
| Turn-ON Delay Time                         | $t_{d(on)}$   | See specified Test Circuit.       |         | 13   |           | ns       |
| Rise Time                                  | $t_r$         | See specified Test Circuit.       |         | 28   |           | ns       |
| Turn-OFF Delay Time                        | $t_{d(off)}$  | See specified Test Circuit.       |         | 39   |           | ns       |
| Fall Time                                  | $t_f$         | See specified Test Circuit.       |         | 15   |           | ns       |
| Total Gate Charge                          | $Q_g$         | $V_{DS}=200V, V_{GS}=10V, I_D=5A$ |         | 14.3 |           | nC       |
| Gate-to-Source Charge                      | $Q_{gs}$      | $V_{DS}=200V, V_{GS}=10V, I_D=5A$ |         | 3.0  |           | nC       |
| Gate-to-Drain "Miller" Charge              | $Q_{gd}$      | $V_{DS}=200V, V_{GS}=10V, I_D=5A$ |         | 8.2  |           | nC       |
| Diode Forward Voltage                      | $V_{SD}$      | $I_S=5A, V_{GS}=0V$               |         | 0.9  | 1.2       | V        |

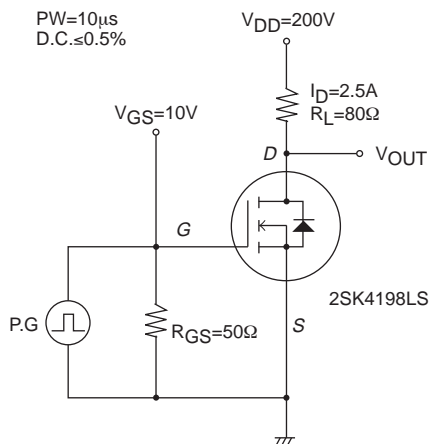
## Package Dimensions

unit : mm (typ)

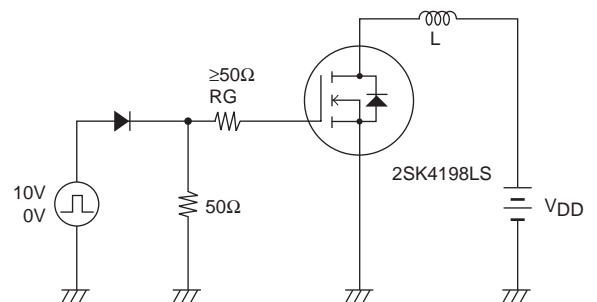
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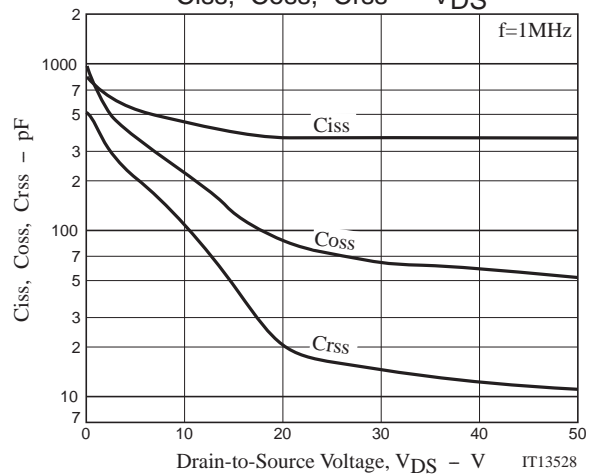
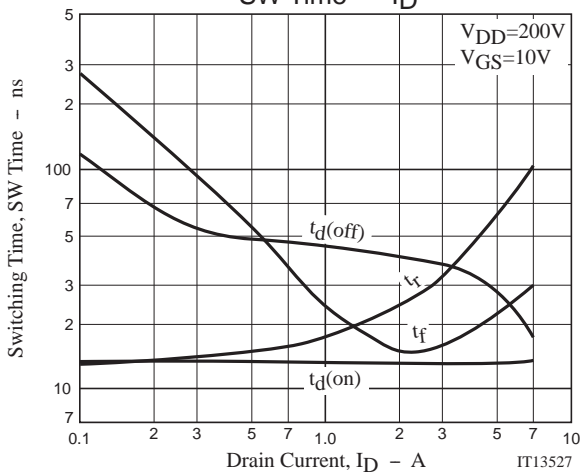
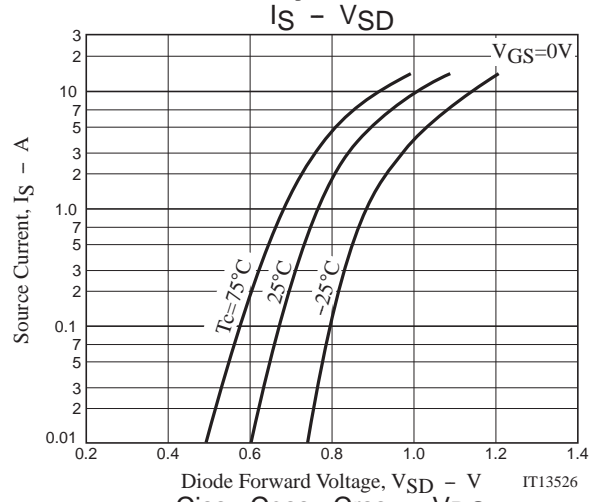
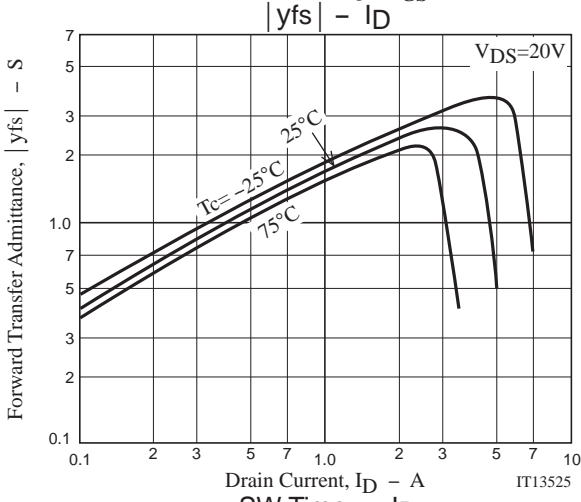
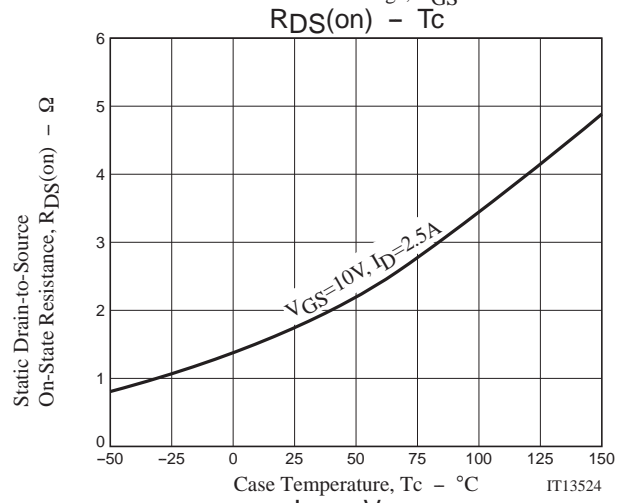
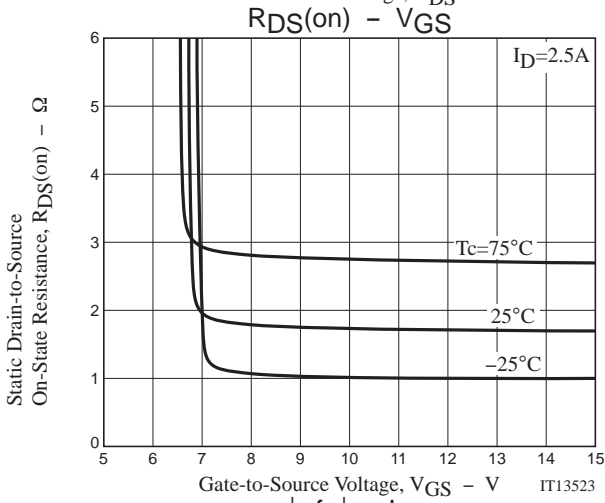
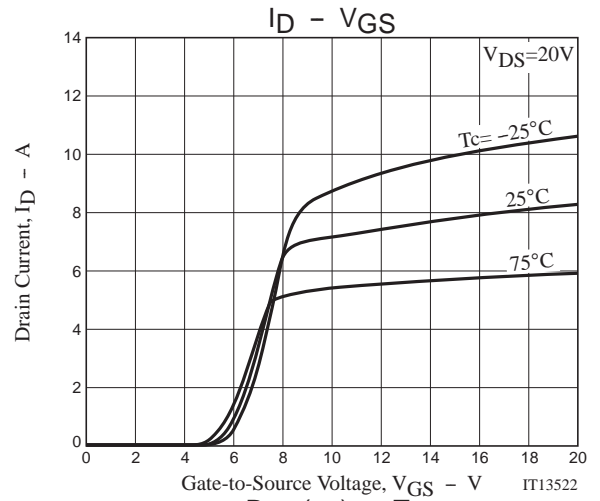
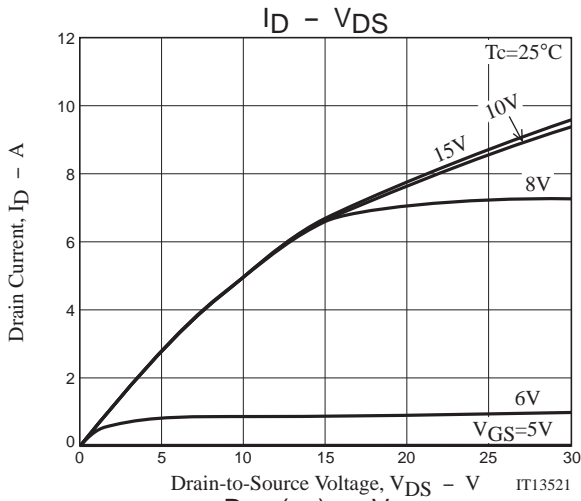
## Switching Time Test Circuit

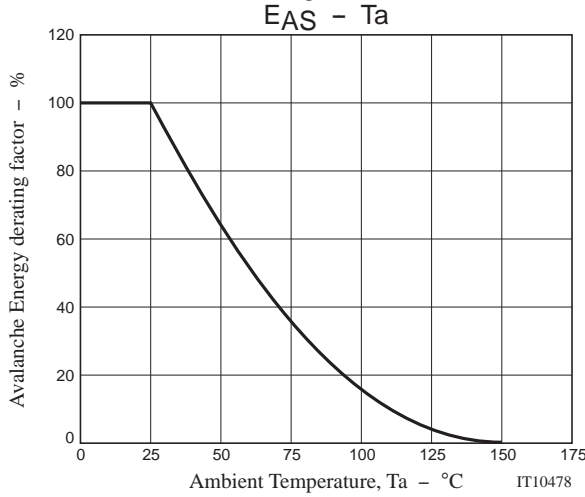
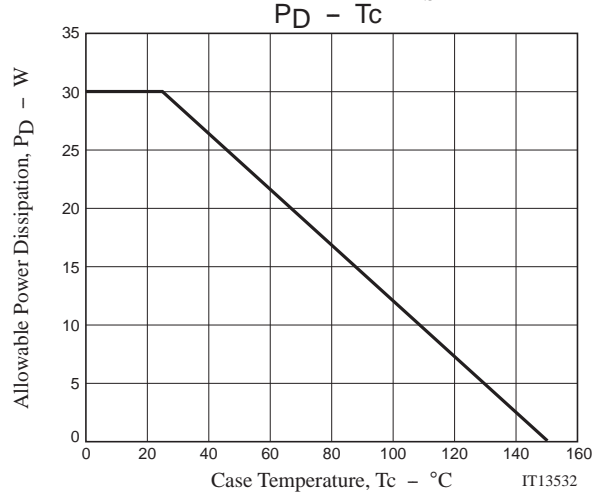
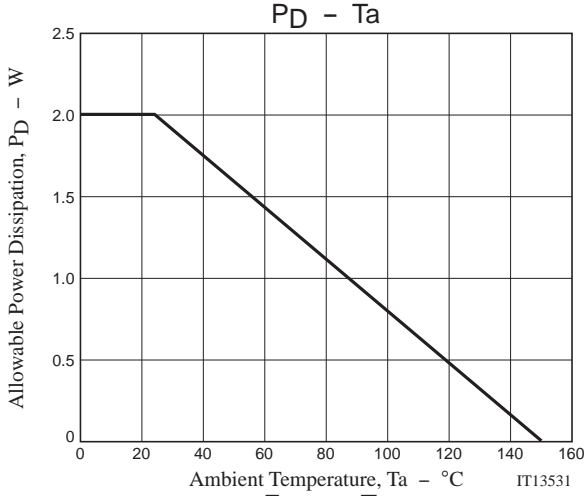
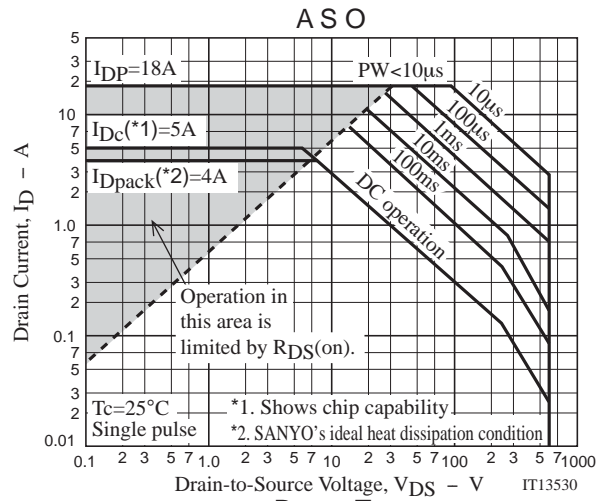
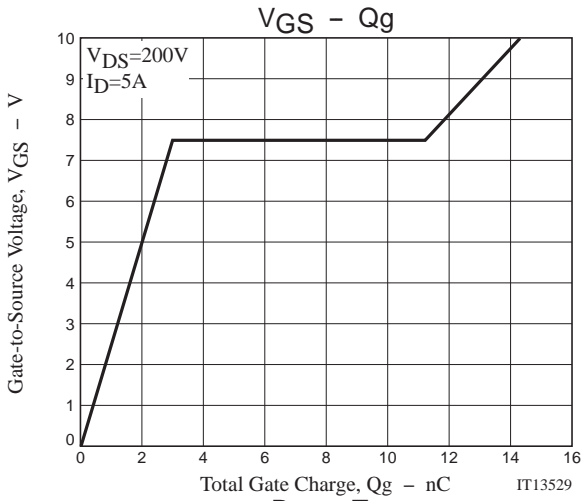


## Avalanche Resistance Test Circuit



# 2SK4198LS





Note on usage : Since the 2SK4198LS is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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