



SANYO Semiconductors

## DATA SHEET

An ON Semiconductor Company

N-Channel Silicon MOSFET

# 2SK4117LS — 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>      |                                                      | 400         | V    |
| Gate-to-Source Voltage             | V <sub>GSS</sub>      |                                                      | ±30         | V    |
| Drain Current (DC)                 | I <sub>DC</sub> *1    | Limited only by maximum temperature                  | 15          | A    |
|                                    | I <sub>Dpack</sub> *2 | Tc=25°C (SANYO's ideal heat dissipation condition)*3 | 10.4        | A    |
| Drain Current (Pulse)              | I <sub>DP</sub>       | PW≤10μs, duty cycle≤1%                               | 47          | A    |
| Allowable Power Dissipation        | P <sub>D</sub>        |                                                      | 2.0         | W    |
|                                    |                       | Tc=25°C (SANYO's ideal heat dissipation condition)*3 | 35          | W    |
| Channel Temperature                | T <sub>ch</sub>       |                                                      | 150         | °C   |
| Storage Temperature                | T <sub>stg</sub>      |                                                      | -55 to +150 | °C   |
| Avalanche Energy (Single Pulse) *4 | E <sub>AS</sub>       |                                                      | 296         | mJ   |
| Avalanche Current *5               | I <sub>AV</sub>       |                                                      | 15          | A    |

\*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<sub>DD</sub>=99V, L=2mH, I<sub>AV</sub>=15A

\*5 L≤2mH, single pulse

Marking : K4117

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SANYO Semiconductor Co., Ltd.

<http://semicon.sanyo.com/en/network>

# 2SK4117LS

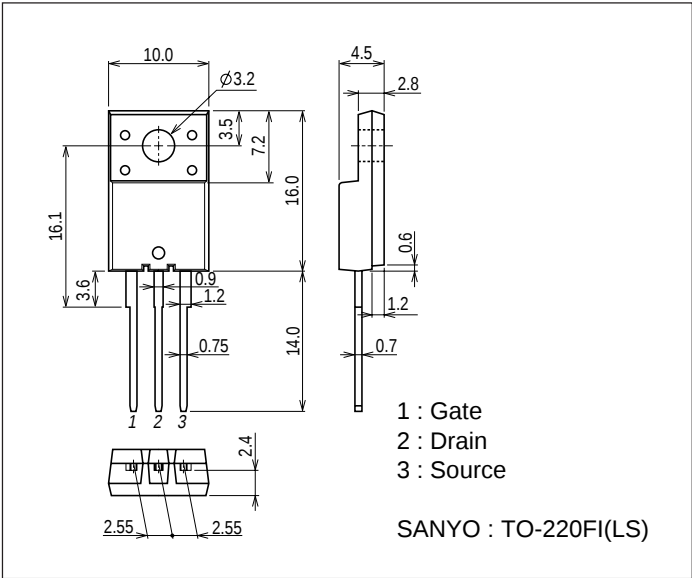
## Electrical Characteristics at Ta=25°C

| Parameter                                  | Symbol        | Conditions                         | Ratings |      |           | Unit     |
|--------------------------------------------|---------------|------------------------------------|---------|------|-----------|----------|
|                                            |               |                                    | min     | typ  | max       |          |
| Drain-to-Source Breakdown Voltage          | $V_{(BR)DSS}$ | $I_D=10mA, V_{GS}=0V$              | 400     |      |           | V        |
| Zero-Gate Voltage Drain Current            | $I_{DSS}$     | $V_{DS}=320V, V_{GS}=0V$           |         |      | 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} $    | $V_{DS}=10V, I_D=7.5A$             | 3.6     | 7.2  |           | S        |
| Static Drain-to-Source On-State Resistance | $R_{DS(on)}$  | $I_D=7.5A, V_{GS}=10V$             |         | 0.32 | 0.42      | $\Omega$ |
| Input Capacitance                          | $C_{iss}$     | $V_{DS}=30V, f=1MHz$               |         | 755  |           | pF       |
| Output Capacitance                         | $C_{oss}$     | $V_{DS}=30V, f=1MHz$               |         | 180  |           | pF       |
| Reverse Transfer Capacitance               | $C_{rss}$     | $V_{DS}=30V, f=1MHz$               |         | 42   |           | pF       |
| Turn-ON Delay Time                         | $t_d(on)$     | See specified Test Circuit.        |         | 16   |           | ns       |
| Rise Time                                  | $t_r$         | See specified Test Circuit.        |         | 62   |           | ns       |
| Turn-OFF Delay Time                        | $t_d(off)$    | See specified Test Circuit.        |         | 101  |           | ns       |
| Fall Time                                  | $t_f$         | See specified Test Circuit.        |         | 56   |           | ns       |
| Total Gate Charge                          | $Q_g$         | $V_{DS}=200V, V_{GS}=10V, I_D=15A$ |         | 30.6 |           | nC       |
| Gate-to-Source Charge                      | $Q_{gs}$      | $V_{DS}=200V, V_{GS}=10V, I_D=15A$ |         | 5.2  |           | nC       |
| Gate-to-Drain "Miller" Charge              | $Q_{gd}$      | $V_{DS}=200V, V_{GS}=10V, I_D=15A$ |         | 19.5 |           | nC       |
| Diode Forward Voltage                      | $V_{SD}$      | $I_S=15A, V_{GS}=0V$               |         | 0.9  | 1.2       | V        |

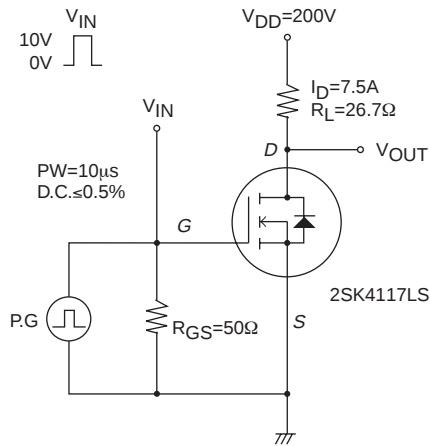
## Package Dimensions

unit : mm (typ)

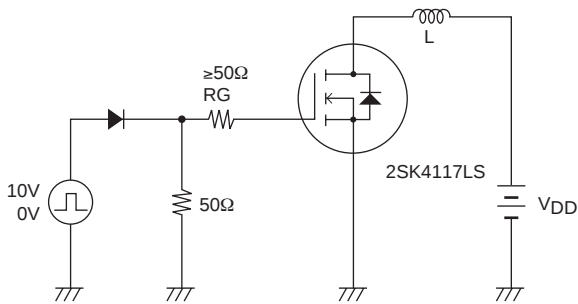
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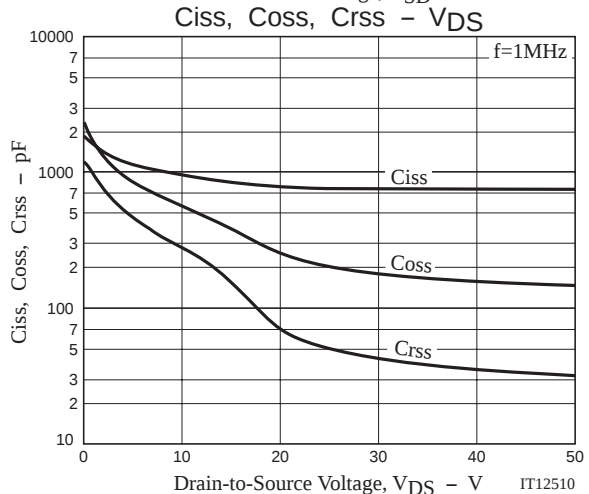
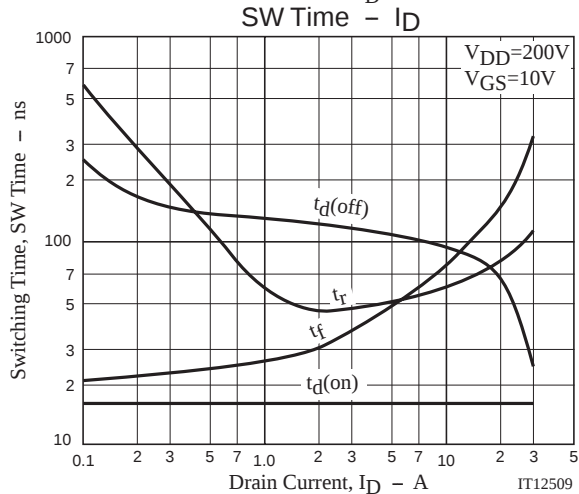
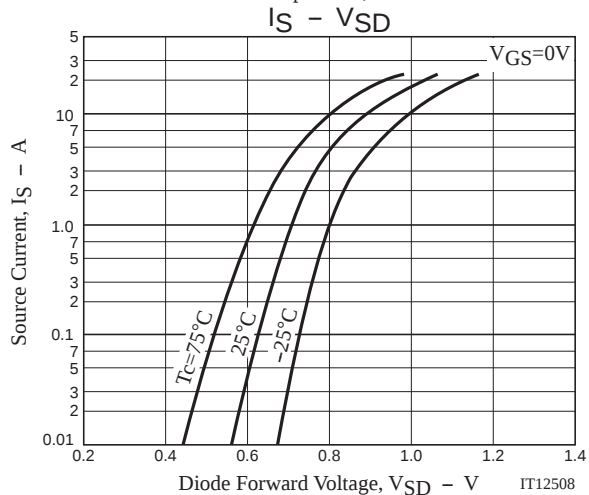
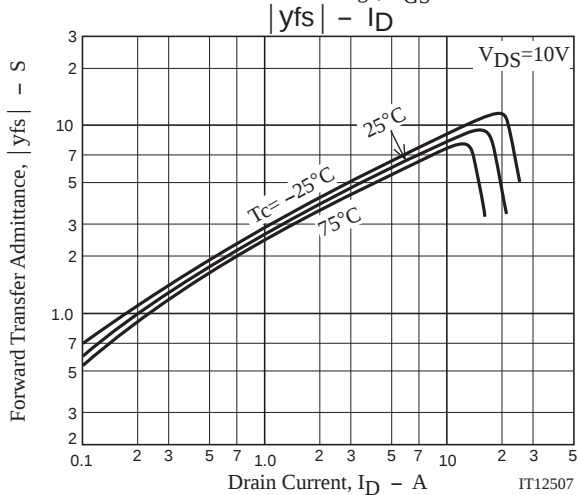
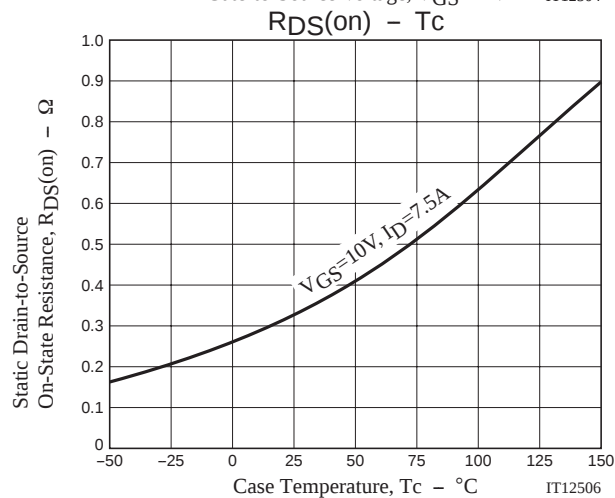
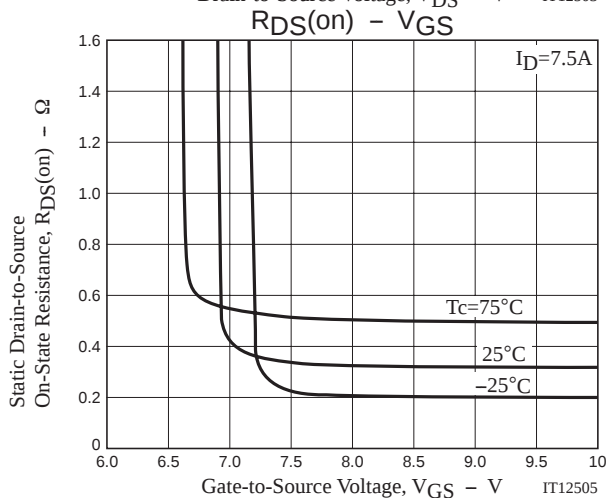
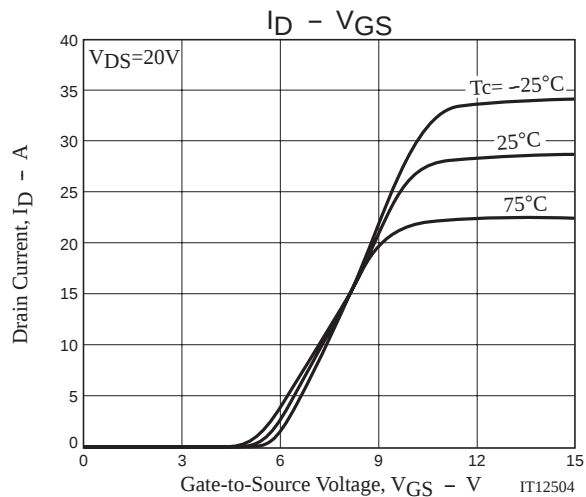
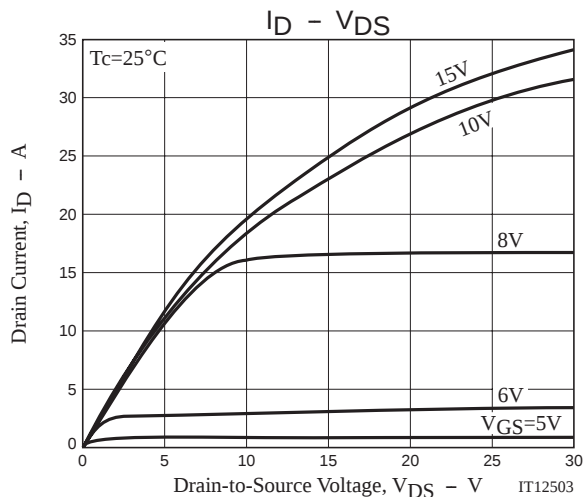
## Switching Time Test Circuit

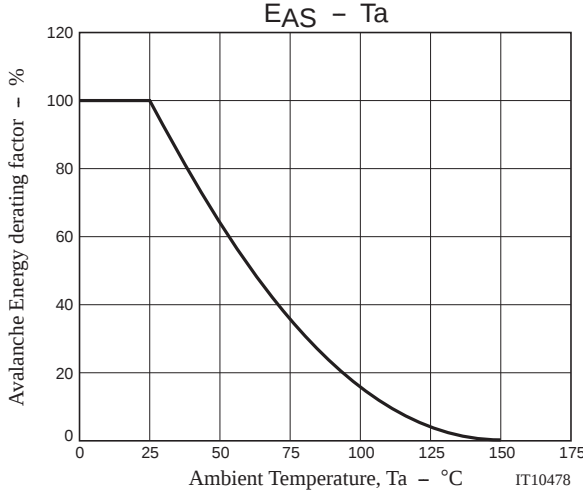
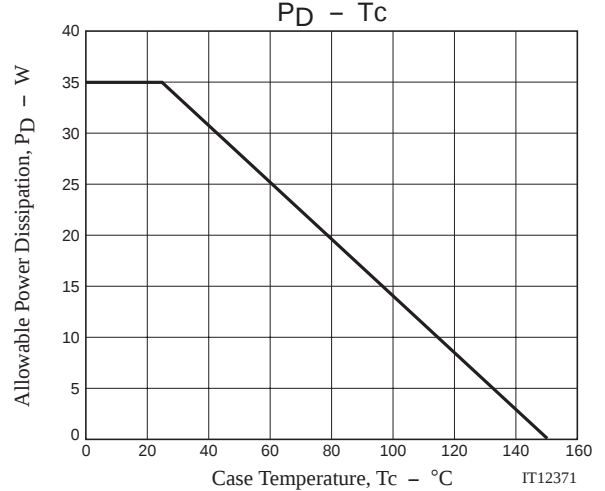
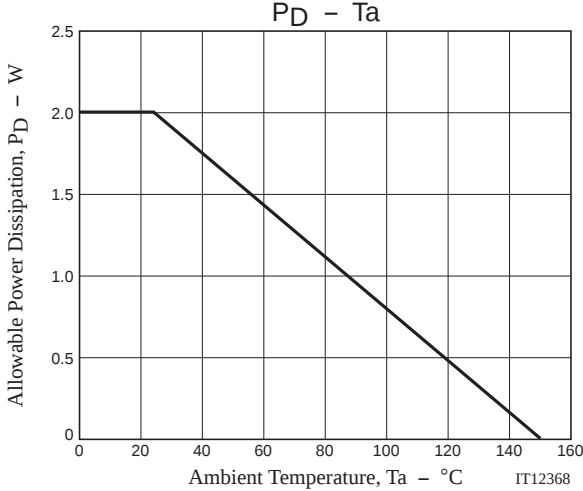
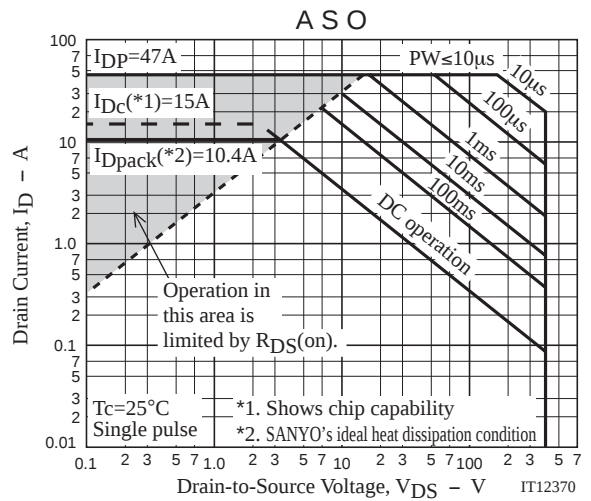
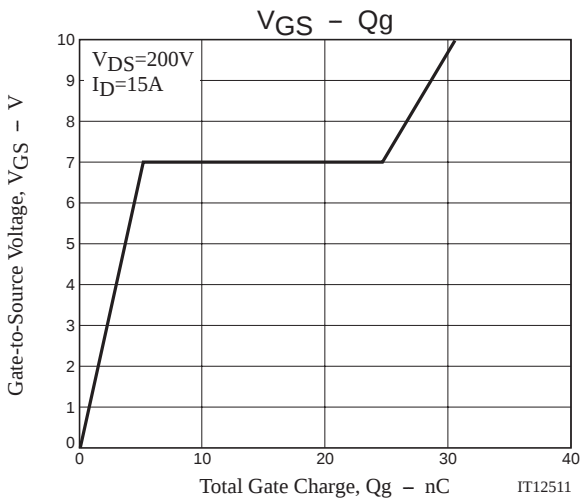


## Avalanche Resistance Test Circuit



2SK4117LS





Note on usage : Since the 2SK4117LS is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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