



# 2SK4116LS — N-Channel Silicon MOSFET

## 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  $T_a=25^\circ\text{C}$

| Parameter                          | Symbol           | Conditions  | Ratings     | Unit             |
|------------------------------------|------------------|---|-------------|------------------|
| Drain-to-Source Voltage            | $V_{DSS}$        |   | 400         | V                |
| Gate-to-Source Voltage             | $V_{GSS}$        |   | $\pm 30$    | V                |
| Drain Current (DC)                 | $I_{DC}^{*1}$    | Limited only by maximum temperature                               | 12          | A                |
|                                    | $I_{Dpack}^{*2}$ | SANYO's ideal heat dissipation condition                          | 8.9         | A                |
| Drain Current (Pulse)              | $I_{DP}$         | $PW \leq 10\mu\text{s}$ , duty cycle $\leq 1\%$                   | 38          | A                |
| Allowable Power Dissipation        | PD               |   | 2.0         | W                |
|                                    |                  | $T_c=25^\circ\text{C}$ (SANYO's ideal heat dissipation condition) | 33          | W                |
| Channel Temperature                | $T_{ch}$         |   | 150         | $^\circ\text{C}$ |
| Storage Temperature                | $T_{stg}$        |   | -55 to +150 | $^\circ\text{C}$ |
| Avalanche Energy (Single Pulse) *3 | $E_{AS}$         |   | 474         | mJ               |
| Avalanche Current *4               | $I_{AV}$         |   | 12          | A                |

\*1 Shows chip capability

\*2 Package limited

\*3  $V_{DD}=99\text{V}$ ,  $L=5\text{mH}$ ,  $I_{AV}=12\text{A}$

\*4  $L \leq 5\text{mH}$ , single pulse

Marking : K4116

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# 2SK4116LS

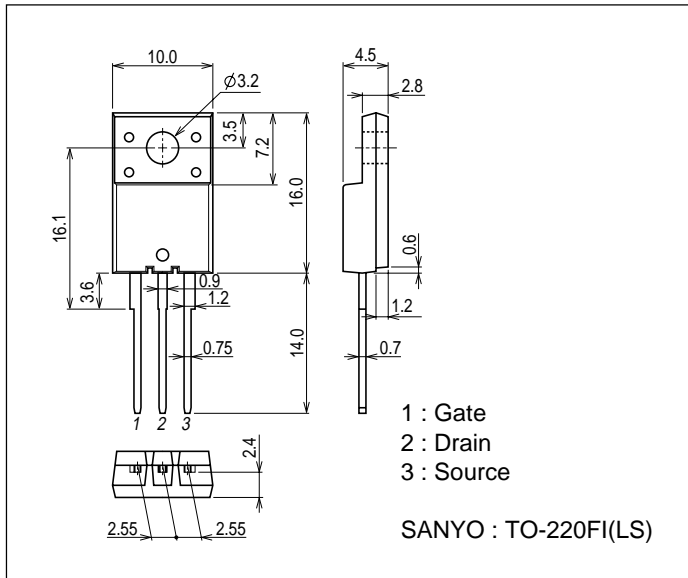
## Electrical Characteristics at Ta=25°C

| 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} $    | $V_{DS}=10V, I_D=6A$               | 2.8     | 5.5  |           | S        |
| Static Drain-to-Source On-State Resistance | $R_{DS(on)}$  | $I_D=6A, V_{GS}=10V$               |         | 0.41 | 0.54      | $\Omega$ |
| Input Capacitance                          | $C_{iss}$     | $V_{DS}=30V, f=1MHz$               |         | 650  |           | pF       |
| Output Capacitance                         | $C_{oss}$     | $V_{DS}=30V, f=1MHz$               |         | 150  |           | pF       |
| Reverse Transfer Capacitance               | $C_{rss}$     | $V_{DS}=30V, f=1MHz$               |         | 34   |           | pF       |
| Turn-ON Delay Time                         | $t_d(on)$     | See specified Test Circuit.        |         | 18   |           | ns       |
| Rise Time                                  | $t_r$         | See specified Test Circuit.        |         | 65   |           | ns       |
| Turn-OFF Delay Time                        | $t_d(off)$    | See specified Test Circuit.        |         | 71   |           | ns       |
| Fall Time                                  | $t_f$         | See specified Test Circuit.        |         | 36   |           | ns       |
| Total Gate Charge                          | $Q_g$         | $V_{DS}=200V, V_{GS}=10V, I_D=12A$ |         | 24.5 |           | nC       |
| Gate-to-Source Charge                      | $Q_{gs}$      | $V_{DS}=200V, V_{GS}=10V, I_D=12A$ |         | 4.5  |           | nC       |
| Gate-to-Drain "Miller" Charge              | $Q_{gd}$      | $V_{DS}=200V, V_{GS}=10V, I_D=12A$ |         | 16   |           | nC       |
| Diode Forward Voltage                      | $V_{SD}$      | $I_S=12A, V_{GS}=0V$               |         | 0.94 | 1.2       | V        |

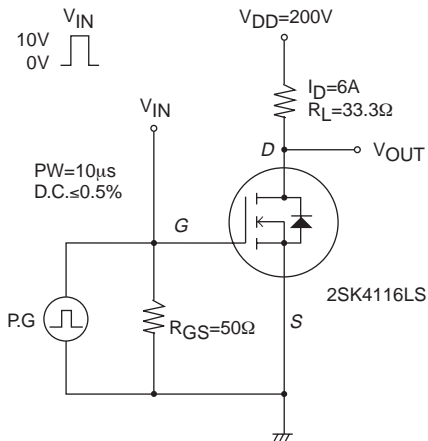
## Package Dimensions

unit : mm (typ)

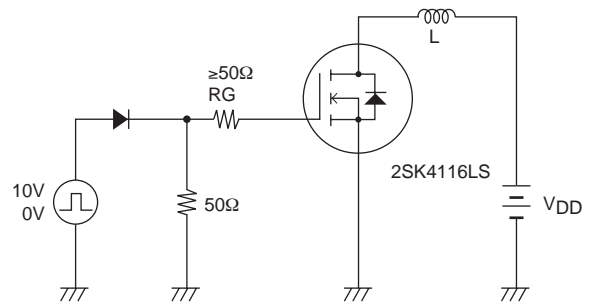
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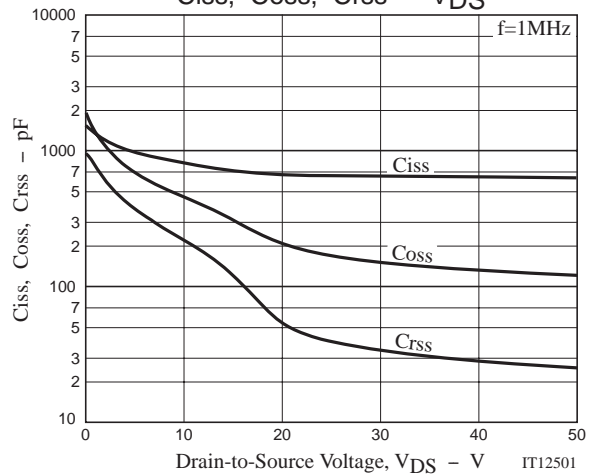
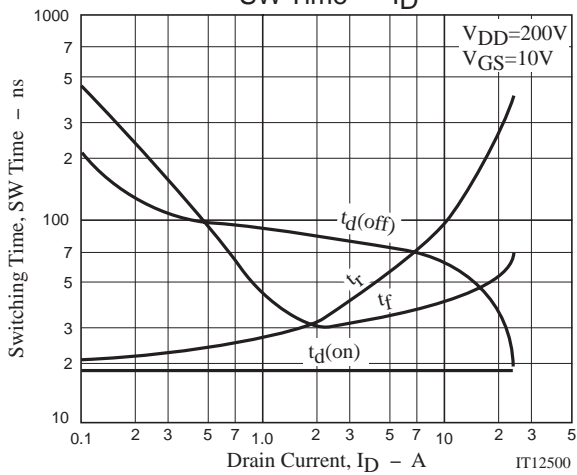
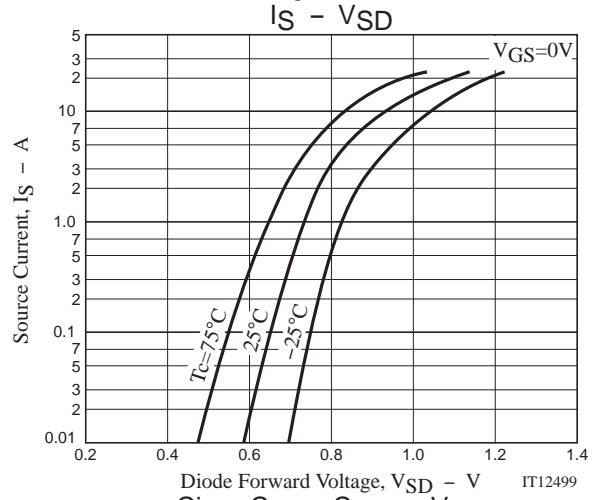
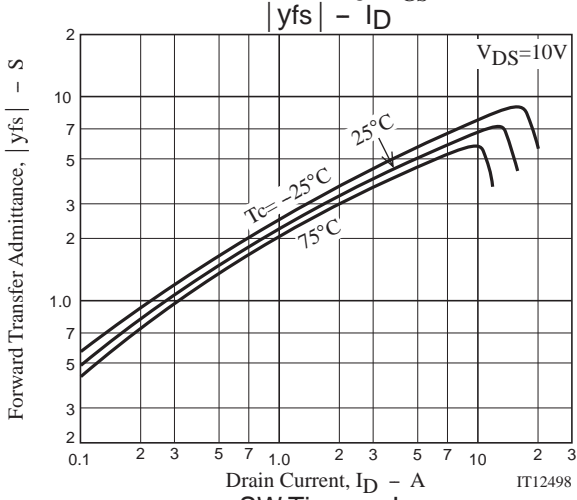
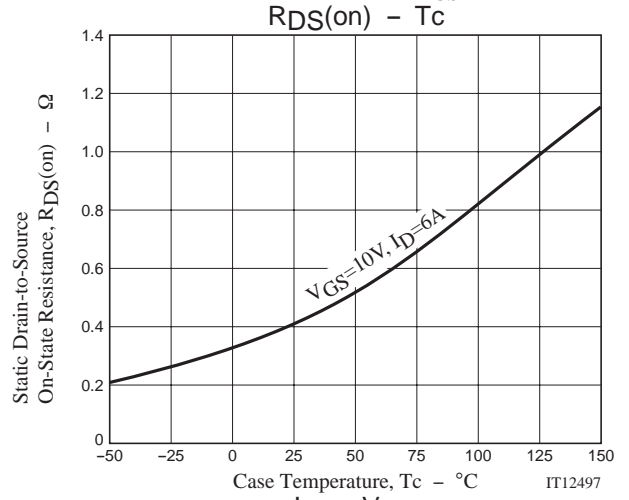
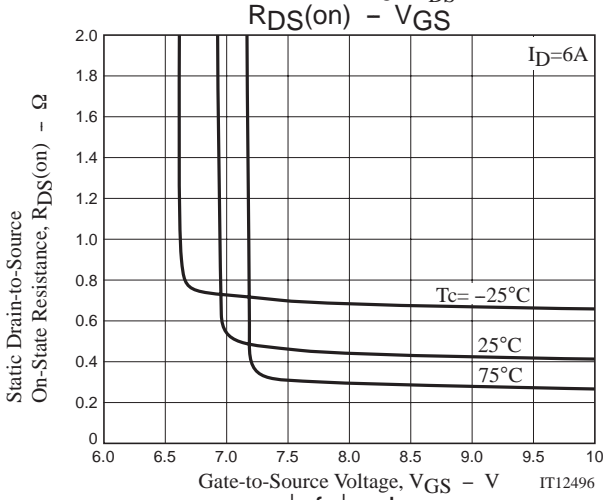
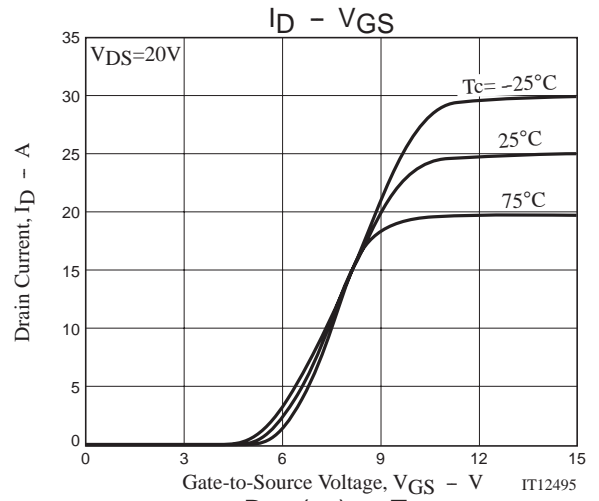
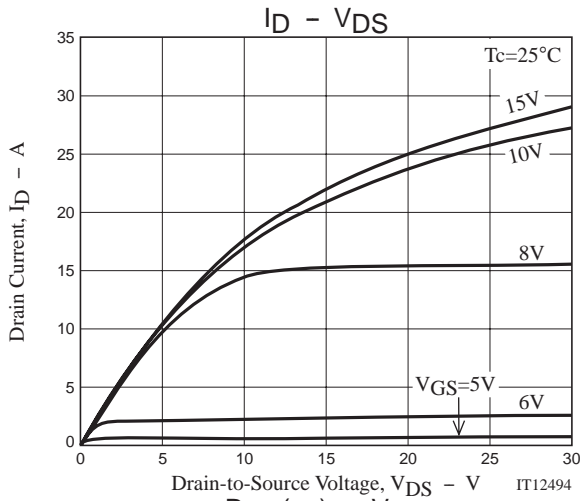
## Switching Time Test Circuit



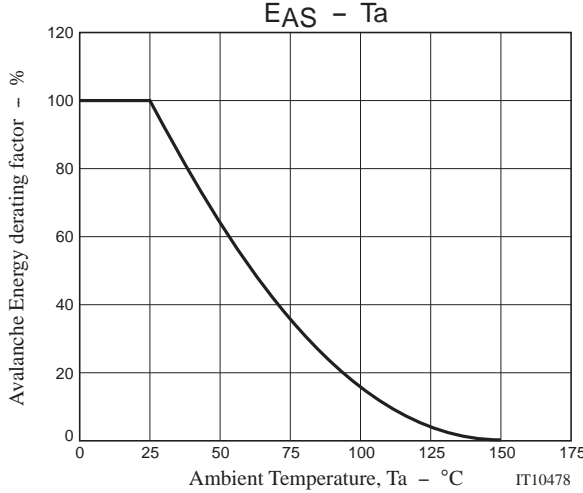
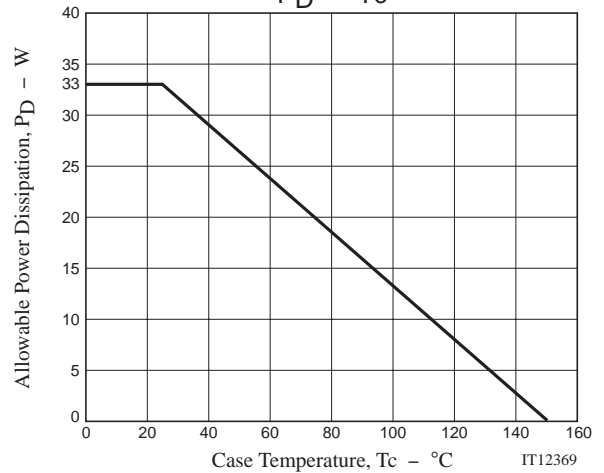
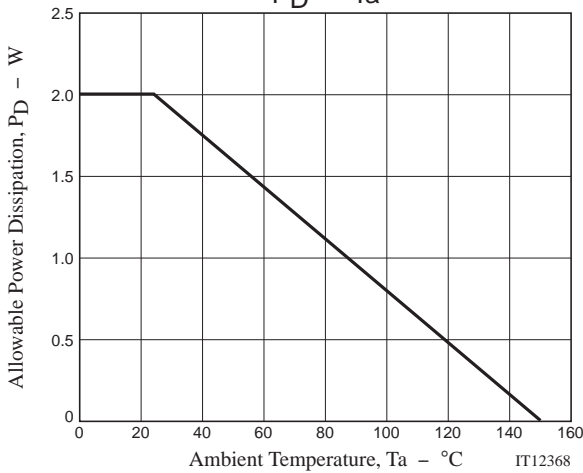
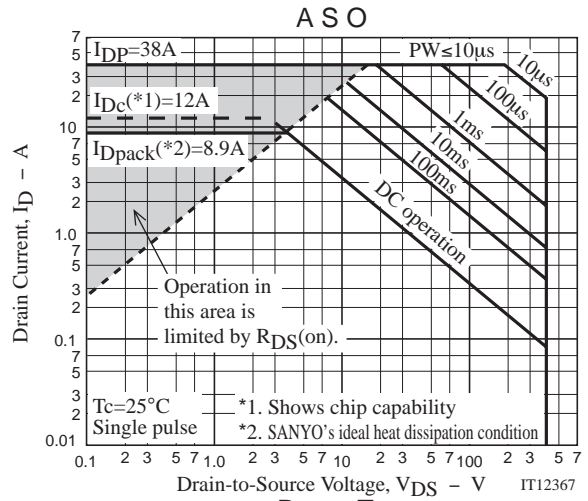
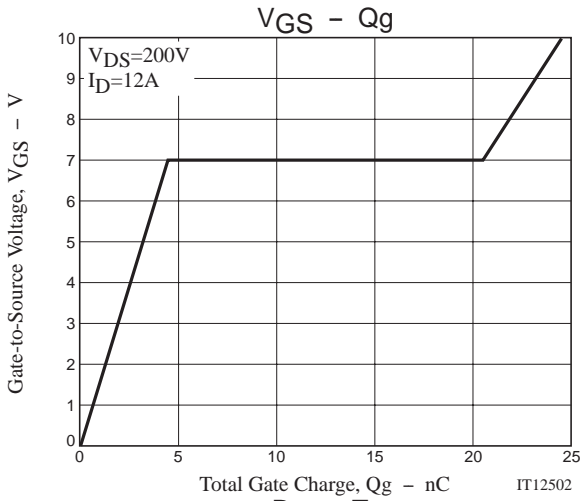
## Avalanche Resistance Test Circuit



# 2SK4116LS



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Note on usage : Since the 2SK4116LS is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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