

SANYO Semiconductors DATA SHEET

N-Channel Silicon MOSFET

2SK4089LS — General-Purpose Switching Device **Applications**

Features

- · Low ON-resistance, low input capacitance, ultrahigh-speed switching.
- · High reliability (Adoption of 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 | VDSS | | 650 | V |
| Gate-to-Source Voltage | VGSS | | ±30 | V |
| Drain Current (DC) | I _{Dc} *1 | Limited only by maximum temperature | 12 | Α |
| | I _{Dpack} *2 | SANYO's ideal heat dissipation condition | 8.5 | Α |
| Drain Current (Pulse) | IDP | PW≤10μs, duty cycle≤1% | 48 | Α |
| Allowable Power Dissipation | Do | | 2.0 | W |
| | PD | Tc=25°C (SANYO's ideal heat dissipation condition) | 40 | W |
| Channel Temperature | Tch | | 150 | °C |
| Storage Temperature | Tstg | | -55 to +150 | °C |
| Avalanche Energy (Single Pulse) *3 | EAS | | 84 | mJ |
| Avalanche Current *4 | IAV | | 12 | Α |

^{*1} Shows chip capability

Marking: K4089

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^{*2} Package limited

^{*3} VDD=99V, L=1mH, IAV=12A

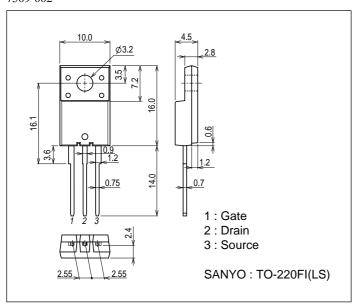
^{*4} L≤1mH, single pulse

Electrical Characteristics at Ta=25°C

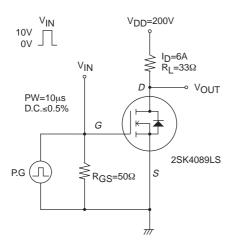
| Parameter | Symbol | Conditions | Ratings | | | Unit |
|--|---------------------|--|---------|------|------|-------|
| | | | min | typ | max | Offic |
| Drain-to-Source Breakdown Voltage | V(BR)DSS | ID=10mA, VGS=0V | 650 | | | V |
| Zero-Gate Voltage Drain Current | IDSS | V _{DS} =520V, V _{GS} =0V | | | 100 | μΑ |
| Gate-to-Source Leakage Current | IGSS | VGS=±30V, VDS=0V | | | ±100 | nA |
| Cutoff Voltage | VGS(off) | V _{DS} =10V, I _D =1mA | 3 | | 5 | V |
| Forward Transfer Admittance | yfs | V _{DS} =10V, I _D =6A | 3.8 | 7.5 | | S |
| Static Drain-to-Source On-State Resistance | RDS(on) | ID=6A, VGS=10V | | 0.55 | 0.72 | Ω |
| Input Capacitance | Ciss | V _{DS} =30V, f=1MHz | | 1200 | | pF |
| Output Capacitance | Coss | V _{DS} =30V, f=1MHz | | 208 | | pF |
| Reverse Transfer Capacitance | Crss | V _{DS} =30V, f=1MHz | | 44 | | pF |
| Turn-ON Delay Time | t _d (on) | See specified Test Circuit. | | 27 | | ns |
| Rise Time | t _r | See specified Test Circuit. | | 66 | | ns |
| Turn-OFF Delay Time | td(off) | See specified Test Circuit. | | 140 | | ns |
| Fall Time | tf | See specified Test Circuit. | | 45 | | ns |
| Total Gate Charge | Qg | V _{DS} =200V, V _{GS} =10V, I _D =12A | | 45.4 | | nC |
| Gate-to-Source Charge | Qgs | VDS=200V, VGS=10V, ID=12A | | 7.7 | | nC |
| Gate-to-Drain "Miller" Charge | Qgd | V _{DS} =200V, V _{GS} =10V, I _D =12A | | 26.1 | | nC |
| Diode Forward Voltage | V _{SD} | I _S =12A, V _{GS} =0V | | 0.9 | 1.2 | V |

Package Dimensions

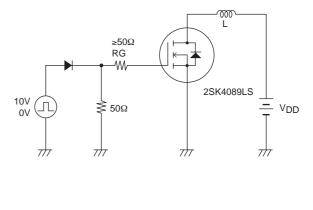
unit : mm (typ) 7509-002

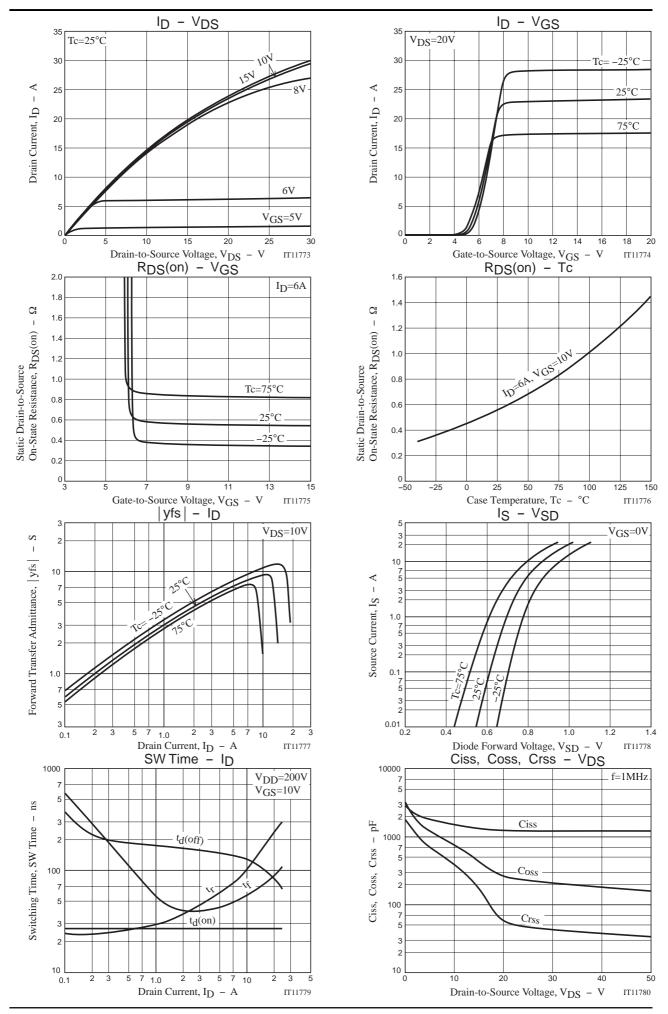


Switching Time Test Circuit

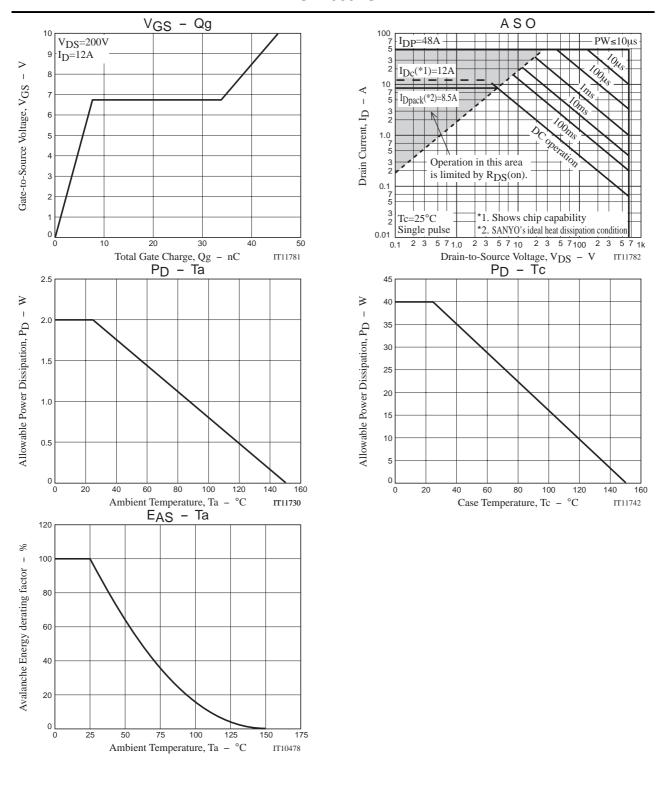


Avalanche Resistance Test Circuit





2SK4089LS



Note on usage: Since the 2SK4089LS is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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