

2SK3892

Silicon N-channel power MOSFET

For contactless relay, diving circuit for a solenoid, driving circuit for a motor, control equipment and switching power supply

■ Features

- Gate-source surrender voltage $V_{GSS} : \pm 30$ guaranteed
- Avalanche energy capacity guaranteed: $EAS > 986$ mJ
- High-speed switching: $t_f = 39$ ns

■ Absolute Maximum Ratings $T_C = 25^\circ C$

| Parameter | Symbol | Rating | Unit |
|--------------------------------|-----------|--------------------|------------|
| Drain-source surrender voltage | V_{DSS} | 200 | V |
| Gate-source surrender voltage | V_{GSS} | ± 30 | V |
| Drain current | I_D | 22 | A |
| Peak drain current | I_{DP} | 88 | A |
| Avalanche energy capability * | EAS | 986 | mJ |
| Drain power dissipation | P_D | 40 | W |
| | | $T_a = 25^\circ C$ | 2.0 |
| Junction temperature | T_j | 150 | $^\circ C$ |
| Storage temperature | T_{stg} | -55 to +150 | $^\circ C$ |

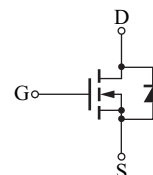
Note) *: $L = 2.67$ mH, $I_L = 22$ A, $V_{DD} = 50$ V, 1 pulse

■ Package

- Code
TO-220D-A1
- Pin Name
1: Gate
2: Drain
3: Source

■ Marking Symbol: K3892

■ Internal Connection



■ Electrical Characteristics $T_C = 25^\circ C \pm 3^\circ C$

| Parameter | Symbol | Conditions | Min | Typ | Max | Unit | |
|--|--------------|--|-----|-------|-----------|------------|----|
| Drain-source surrender voltage | V_{DSS} | $I_D = 1$ mA, $V_{GS} = 0$ | 200 | | | V | |
| Drain-source cutoff current | I_{DSS} | $V_{DS} = 160$ V, $V_{GS} = 0$ | | | 10 | μA | |
| Gate-source cutoff current | I_{GSS} | $V_{GS} = \pm 30$ V, $V_{DS} = 0$ | | | ± 1.0 | μA | |
| Gate threshold voltage | V_{th} | $V_{DS} = 10$ V, $I_D = 1.0$ mA | 2.5 | | 4.5 | V | |
| Drain-source ON resistance | $R_{DS(on)}$ | $V_{GS} = 10$ V, $I_D = 11.0$ A | | 48 | 62 | m Ω | |
| Forward transfer admittance | $ Y_{fs} $ | $V_{DS} = 10$ V, $I_D = 11.0$ A | 7 | 15 | | S | |
| Short-circuit input capacitance (Common source) | C_{iss} | $V_{DS} = 25$ V, $V_{GS} = 0$, $f = 1$ MHz | | 3 177 | | pF | |
| Short-circuit output capacitance (Common source) | C_{oss} | | | | 456 | | pF |
| Reverse transfer capacitance (Common source) | C_{rss} | | | | 41 | | pF |
| Turn-on delay time | $t_{d(on)}$ | | | | 54 | | ns |
| Rise time | t_r | $V_{DD} = 100$ V, $I_D = 11.0$ A $R_L = 9.1 \Omega$, $V_{GS} = 10$ V | | 60 | | ns | |
| Turn-off delay time | $t_{d(off)}$ | | | 194 | | ns | |
| Fall time | t_f | | | 39 | | ns | |

Note) Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

■ Electrical Characteristics (continued) $T_C = 25^\circ\text{C} \pm 3^\circ\text{C}$

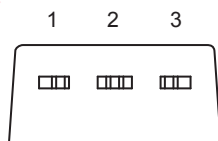
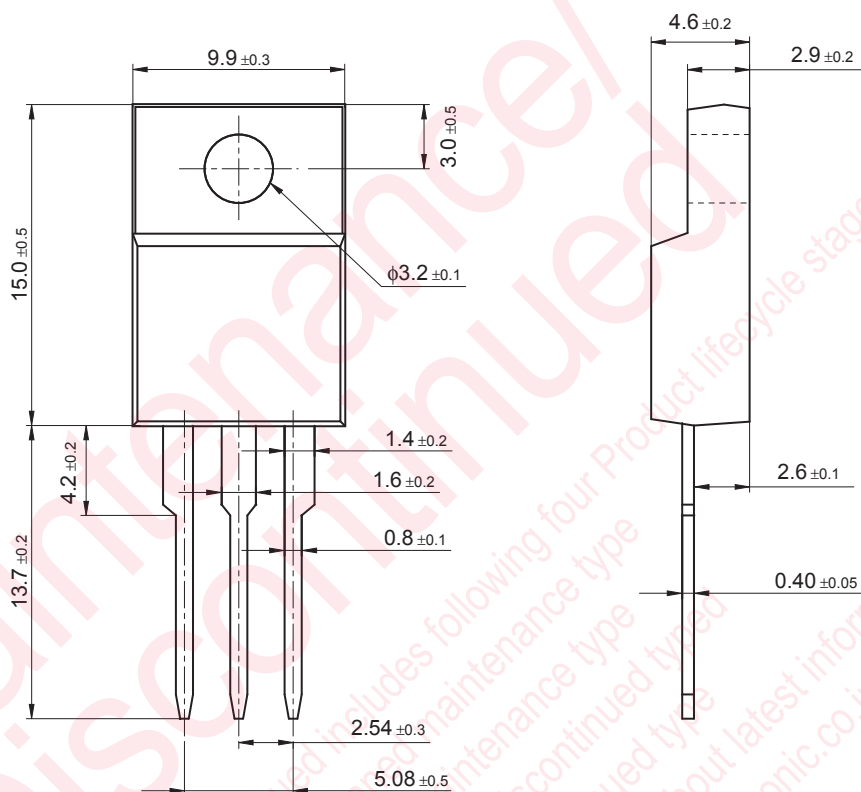
| Parameter | Symbol | Conditions | Min | Typ | Max | Unit |
|---------------------------|----------------|--|-----|-----|------|---------------------------|
| Diode forward voltage | V_{DSF} | $I_{DR} = 22\text{ A}, V_{GS} = 0$ | | | -1.5 | V |
| Reverse recovery time | t_{rr} | $L = 230\ \mu\text{H}, V_{DD} = 100\text{ V}$ | | 127 | | ns |
| Reverse recovery charge | Q_{rr} | $I_{DR} = 11.0\text{ A}, d_f / d_t = 100\text{ A}/\mu\text{s}$ | | 756 | | nC |
| Gate charge load | Q_g | $V_{DD} = 100\text{ V}, I_D = 11.0\text{ A}, V_{GS} = 10\text{ V}$ | | 50 | | nC |
| Gate-source charge | Q_{gs} | | | 12 | | nC |
| Gate-drain charge | Q_{gd} | | | 18 | | nC |
| Thermal resistance (ch-c) | $R_{th(ch-c)}$ | | | | 3.13 | $^\circ\text{C}/\text{W}$ |
| Thermal resistance (ch-a) | $R_{th(ch-a)}$ | | | | 62.5 | $^\circ\text{C}/\text{W}$ |

Note) Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

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 Discontinued type
 planned maintenance type
 maintenance type
 planned discontinued type
 discontinued type
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TO-220D-A1

Unit: mm



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