

# 2SK809, 2SK809A

## Silicon N-channel Power F-MOS FET

### ■ Features

- Low ON resistance  $R_{DS(on)}$  :  $R_{DS(on)} = 1.5\Omega$  (typ.)
- High switching rate :  $t_r = 85\text{ns}$  (typ.)
- No secondary breakdown
- High breakdown voltage, large power

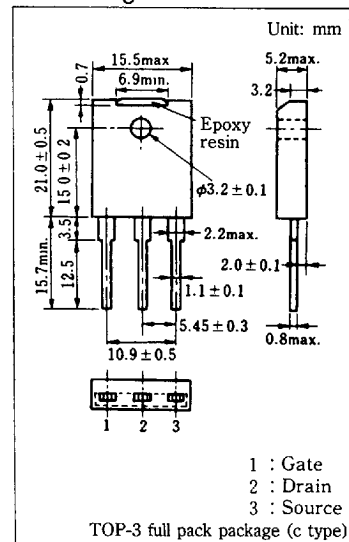
### ■ Application

- No contact relay
- Solenoid drive
- Motor drive
- Control equipment
- Switching power source

### ■ Absolute Maximum Ratings ( $T_c = 25^\circ\text{C}$ )

| Item                 | Symbol                   | Value           | Unit             |
|----------------------|--------------------------|-----------------|------------------|
| Drain-source voltage | $V_{DS}$                 | 800             | V                |
|                      |                          | 900             |                  |
| Gate-source voltage  | $V_{GS}$                 | $\pm 20$        | V                |
| Drain current        | DC                       | $I_D$           | A                |
|                      | Peak-to-peak value       | $I_{DP}$        |                  |
| Power dissipation    | $T_c = 25^\circ\text{C}$ | $P_D$           | W                |
|                      | $T_a = 25^\circ\text{C}$ | 3.0             |                  |
| Channel temperature  | $T_{ch}$                 | 150             | $^\circ\text{C}$ |
| Storage temperature  | $T_{stg}$                | $-55 \sim +150$ | $^\circ\text{C}$ |

### ■ Package Dimensions



### ■ Electrical Characteristics ( $T_c = 25^\circ\text{C}$ )

| Item                         | Symbol            | Condition                                                                              | min. | typ. | max.    | Unit          |
|------------------------------|-------------------|----------------------------------------------------------------------------------------|------|------|---------|---------------|
| Drain current                | $I_{DS}$          | $V_{DS} = 640\text{V}$ , $V_{GS} = 0$                                                  |      |      | 0.1     | mA            |
| Gate-source current          | $I_{GS}$          | $V_{GS} = \pm 20\text{V}$ , $V_{DS} = 0$                                               |      |      | $\pm 1$ | $\mu\text{A}$ |
| Drain-source voltage         | $V_{DS}$          | $I_D = 1\text{mA}$ , $V_{GS} = 0$                                                      | 800  |      |         | V             |
|                              |                   |                                                                                        | 900  |      |         |               |
| Gate threshold voltage       | $V_{th}$          | $V_{DS} = 25\text{V}$ , $I_D = 1\text{mA}$                                             | 1    |      | 5       | V             |
| Drain-source ON resistance   | $R_{DS(on)}$      | $V_{GS} = 10\text{V}$ , $I_D = 3\text{A}$                                              |      | 1.5  | 3.0     | $\Omega$      |
| Forward transfer admittance  | $ Y_{fs} $        | $V_{DS} = 25\text{V}$ , $I_D = 3\text{A}$                                              | 1.5  | 2.8  |         | S             |
| Input capacitance            | $C_{iss}$         | $V_{DS} = 20\text{V}$ , $V_{GS} = 0$ , $f = 1\text{MHz}$                               |      | 1270 |         | pF            |
| Output capacitance           | $C_{oss}$         |                                                                                        |      | 220  |         | pF            |
| Reverse transfer capacitance | $C_{rss}$         |                                                                                        |      | 80   |         | pF            |
| Turn-on time                 | $t_{on}$          | $V_{GS} = 10\text{V}$ , $I_D = 3\text{A}$<br>$V_{DD} = 200\text{V}$ , $R_L = 66\Omega$ |      | 60   |         | ns            |
| Fall time                    | $t_f$             |                                                                                        |      | 85   |         | ns            |
| Delay time                   | $t_d(\text{off})$ |                                                                                        |      | 280  |         | ns            |

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