

# 2SK1214

## Silicon N-channel Power F-MOS FET

### ■ Features

- Low ON resistance  $R_{DS(on)}$  :  $R_{DS(on)} 1 = 0.06\Omega$  (typ.)
- High switching rate :  $t_f = 110\text{ns}$  (typ.)
- No secondary breakdown
- Low voltage drive is possible ( $V_{GS} = 4\text{V}$ ).

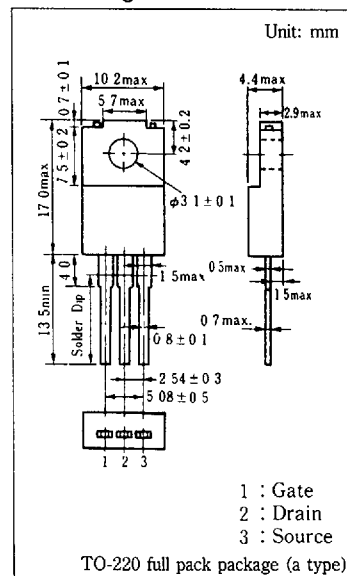
### ■ Application

- DC-DC converter
- No contact relay
- Solenoid drive
- Motor drive

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

| Item                 | Symbol                   | Value           | Unit             |
|----------------------|--------------------------|-----------------|------------------|
| Drain-source voltage | $V_{DS}$                 | 80              | V                |
| Gate-source voltage  | $V_{GS}$                 | $\pm 20$        | V                |
| Drain current        | At 4V driving            | $I_D$           | 12               |
|                      | DC                       | $I_D$           | 20               |
|                      | Peak-to-peak value       | $I_{DP}$        | 40               |
| Power dissipation    | $T_c = 25^\circ\text{C}$ | $P_D$           | 45               |
|                      | $T_a = 25^\circ\text{C}$ |                 | 2.0              |
| 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                | $I_{DS}$          | $V_{DS} = 65\text{V}$ , $V_{GS} = 0$                     |      |      | 10      | $\mu\text{A}$ |
| Gate-source current          | $I_{GSS}$         | $V_{GS} = \pm 20\text{V}$ , $V_{DS} = 0$                 |      |      | $\pm 1$ | $\mu\text{A}$ |
| Drain-source voltage         | $V_{DS}$          | $I_D = 1\text{mA}$ , $V_{GS} = 0$                        | 80   |      |         | V             |
| Gate threshold voltage       | $V_{th}$          | $V_{DS} = 10\text{V}$ , $I_D = 1\text{mA}$               | 1    |      | 2.5     | V             |
| Drain-source ON resistance   | $R_{DS(on)1}$     | $V_{GS} = 10\text{V}$ , $I_D = 6\text{A}$                |      | 0.06 | 0.09    | $\Omega$      |
| Drain-source ON resistance   | $R_{DS(on)2}$     | $V_{GS} = 4\text{V}$ , $I_D = 6\text{A}$                 |      | 0.09 | 0.135   | $\Omega$      |
| Forward transfer admittance  | $ Y_{fs} $        | $V_{DS} = 10\text{V}$ , $I_D = 6\text{A}$                | 6    | 10   |         | S             |
| Input capacitance            | $C_{iss}$         | $V_{DS} = 10\text{V}$ , $V_{GS} = 0$ , $f = 1\text{MHz}$ |      | 1450 |         | pF            |
| Output capacitance           | $C_{oss}$         |                                                          |      | 550  |         | pF            |
| Reverse transfer capacitance | $C_{rss}$         |                                                          |      | 190  |         | pF            |
| Turn-on time                 | $t_{on}$          |                                                          |      | 60   |         | ns            |
| Fall time                    | $t_f$             | $V_{GS} = 10\text{V}$ , $I_D = 6\text{A}$                |      | 110  |         | ns            |
| Delay time                   | $t_d(\text{off})$ | $V_{DD} \approx 30\text{V}$ , $R_L = 5\Omega$            |      | 330  |         | ns            |

