

# 2SK1478

## Silicon N-Channel Power F-MOS FET

### ■ Features

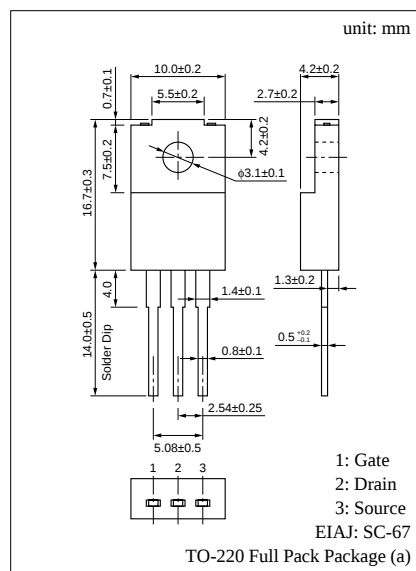
- Low ON-resistance  $R_{DS(on)}$ :  $R_{DS(on)} = 0.4\Omega$  (typ.)
- High-speed switching:  $t_f = 44ns$  (typ.)
- No secondary breakdown
- High breakdown voltage, large allowable power dissipation

### ■ Applications

- Contactless relay
- Diving circuit for a solenoid
- Driving circuit for a motor
- Control equipment
- Switching power supply

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

| Parameter                         | Symbol             | Ratings     | Unit       |
|-----------------------------------|--------------------|-------------|------------|
| Drain to Source breakdown voltage | $V_{DSS}$          | 250         | V          |
| Gate to Source voltage            | $V_{GSS}$          | $\pm 20$    | V          |
| Drain current                     | DC                 | $I_D$       | $\pm 8$ A  |
|                                   | Pulse              | $I_{DP}$    | $\pm 16$ A |
| Allowable power dissipation       | $T_C = 25^\circ C$ | $P_D$       | 40 W       |
|                                   | $T_a = 25^\circ C$ |             | 2          |
| Channel temperature               | $T_{ch}$           | 150         | $^\circ C$ |
| Storage temperature               | $T_{stg}$          | -55 to +150 | $^\circ C$ |



### ■ Electrical Characteristics ( $T_C = 25^\circ C$ )

| Parameter                                    | Symbol       | Conditions                                                  | min | typ  | max     | Unit     |
|----------------------------------------------|--------------|-------------------------------------------------------------|-----|------|---------|----------|
| Drain to Source cut-off current              | $I_{DSS}$    | $V_{DS} = 200V, V_{GS} = 0$                                 |     |      | 0.1     | mA       |
| Gate to Source leakage current               | $I_{GSS}$    | $V_{GS} = \pm 20V, V_{DS} = 0$                              |     |      | $\pm 1$ | $\mu A$  |
| Drain to Source breakdown voltage            | $V_{DSS}$    | $I_D = 1mA, V_{GS} = 0$                                     | 250 |      |         | V        |
| Gate threshold voltage                       | $V_{th}$     | $V_{DS} = 25V, I_D = 1mA$                                   | 1   |      | 5       | V        |
| Drain to Source ON-resistance                | $R_{DS(on)}$ | $V_{GS} = 10V, I_D = 5A$                                    |     | 0.4  | 0.6     | $\Omega$ |
| Forward transfer admittance                  | $ Y_{fs} $   | $V_{DS} = 25V, I_D = 5A$                                    | 2.7 | 4.7  |         | S        |
| Input capacitance (Common Source)            | $C_{iss}$    | $V_{DS} = 10V, V_{GS} = 0, f = 1MHz$                        |     | 1100 |         | pF       |
| Output capacitance (Common Source)           | $C_{oss}$    |                                                             |     | 200  |         | pF       |
| Reverse transfer capacitance (Common Source) | $C_{rss}$    |                                                             |     | 60   |         | pF       |
| Turn-on time                                 | $t_{on}$     | $V_{GS} = 10V, I_D = 5A$<br>$V_{DD} = 100V, R_L = 20\Omega$ |     | 72   |         | ns       |
| Fall time                                    | $t_f$        |                                                             |     | 44   |         | ns       |
| Turn-off time (delay time)                   | $t_{d(off)}$ |                                                             |     | 136  |         | ns       |

