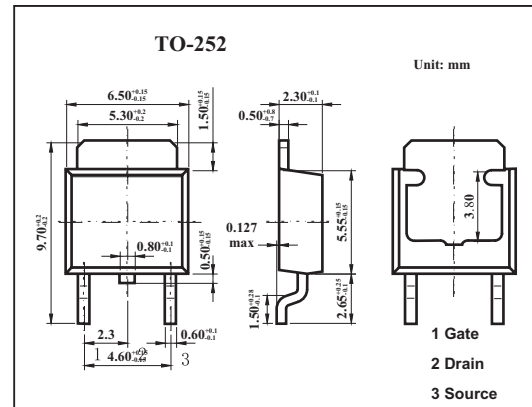


## MOS Field Effect Transistor

### 2SK3638

#### ■ Features

- Low on-state resistance  
 $R_{DS(on)1} = 8.5 \text{ m}\Omega \text{ MAX. (} V_{GS} = 10 \text{ V, } I_D = 32 \text{ A)}$   
 $R_{DS(on)2} = 15 \text{ m}\Omega \text{ MAX. (} V_{GS} = 4.5 \text{ V, } I_D = 18 \text{ A)}$
- Low  $C_{iss}$ :  $C_{iss} = 1100 \text{ pF TYP.}$
- Built-in gate protection diode



#### ■ Absolute Maximum Ratings $T_a = 25^\circ\text{C}$

| Parameter               | Symbol     | Rating      | Unit             |
|-------------------------|------------|-------------|------------------|
| Drain to source voltage | $V_{DS}$   | 20          | V                |
| Gate to source voltage  | $V_{GS}$   | $\pm 20$    | V                |
| Drain current           | $I_D$      | $\pm 64$    | A                |
|                         | $I_{dp}^*$ | $\pm 220$   | A                |
| Power dissipation       | $P_D$      | 36          | W                |
|                         |            | 1.0         |                  |
| Channel temperature     | $T_{ch}$   | 150         | $^\circ\text{C}$ |
| Storage temperature     | $T_{stg}$  | -55 to +150 | $^\circ\text{C}$ |

\*  $PW \leq 10 \mu\text{s}$ , Duty Cycle  $\leq 1\%$

#### ■ Electrical Characteristics $T_a = 25^\circ\text{C}$

| Parameter                           | Symbol        | Testconditions                                                          | Min | Typ  | Max      | Unit             |
|-------------------------------------|---------------|-------------------------------------------------------------------------|-----|------|----------|------------------|
| Drain cut-off current               | $I_{DSS}$     | $V_{DS}=20\text{V}, V_{GS}=0$                                           |     |      | 10       | $\mu\text{A}$    |
| Gate leakage current                | $I_{GSS}$     | $V_{GS}=\pm 20\text{V}, V_{DS}=0$                                       |     |      | $\pm 10$ | $\mu\text{A}$    |
| Gate cut off voltage                | $V_{GS(off)}$ | $V_{DS}=10\text{V}, I_D=1\text{mA}$                                     | 1.5 |      | 2.5      | V                |
| Forward transfer admittance         | $ Y_{fs} $    | $V_{DS}=10\text{V}, I_D=32\text{A}$                                     | 12  | 25   |          | S                |
| Drain to source on-state resistance | $R_{DS(on)1}$ | $V_{GS}=10\text{V}, I_D=32\text{A}$                                     |     | 6.8  | 8.5      | $\text{m}\Omega$ |
|                                     | $R_{DS(on)2}$ | $V_{GS}=4.5\text{V}, I_D=18\text{A}$                                    |     | 10   | 15       | $\text{m}\Omega$ |
| Input capacitance                   | $C_{iss}$     | $V_{DS}=10\text{V}, V_{GS}=0, f=1\text{MHz}$                            |     | 1100 |          | pF               |
| Output capacitance                  | $C_{oss}$     |                                                                         |     | 450  |          | pF               |
| Reverse transfer capacitance        | $C_{rss}$     |                                                                         |     | 170  |          | pF               |
| Turn-on delay time                  | $t_{on}$      | $I_D=32\text{A}, V_{GS(on)}=10\text{V}, R_G=0\Omega, V_{DD}=10\text{V}$ |     | 10   |          | ns               |
| Rise time                           | $t_r$         |                                                                         |     | 4.3  |          | ns               |
| Turn-off delay time                 | $t_{off}$     |                                                                         |     | 35   |          | ns               |
| Fall time                           | $t_f$         |                                                                         |     | 9.7  |          | ns               |
| Total Gate Charge                   | $Q_G$         | $V_{DD} = 16\text{V}$                                                   |     | 22   |          | nC               |
| Gate to Source Charge               | $Q_{GS}$      | $V_{GS} = 10 \text{ V}$                                                 |     | 4.3  |          | nC               |
| Gate to Drain Charge                | $Q_{GD}$      | $I_D = 64\text{A}$                                                      |     | 5.1  |          | nC               |