

## MOS Field Effect Transistor

### 2SK3900

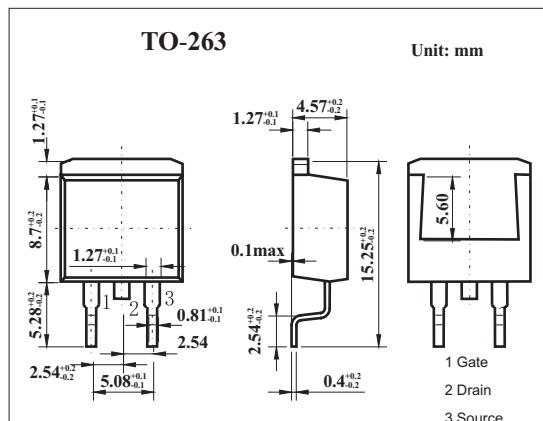
#### ■ Features

- Low On-state resistance

$R_{DS(on)1} = 8.0\text{m}\Omega$  MAX. ( $V_{GS} = 10\text{ V}$ ,  $I_D = 41\text{ A}$ )

$R_{DS(on)2} = 10\text{ m}\Omega$  MAX. ( $V_{GS} = 4.5\text{ V}$ ,  $I_D = 41\text{ A}$ )

- Low  $C_{iss}$ :  $C_{iss} = 3500\text{ pF}$  TYP.



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

| Parameter               | Symbol     | Rating      | Unit             |
|-------------------------|------------|-------------|------------------|
| Drain to source voltage | $V_{DS}$   | 60          | V                |
| Gate to source voltage  | $V_{GS}$   | $\pm 20$    | V                |
| Drain current           | $I_D$      | $\pm 82$    | A                |
|                         | $I_{DP}^*$ | $\pm 246$   | A                |
| Power dissipation       | $P_D$      | 1.5         | W                |
|                         |            | 104         |                  |
| Channel temperature     | $T_{ch}$   | 150         | $^\circ\text{C}$ |
| Storage temperature     | $T_{stg}$  | -55 to +150 | $^\circ\text{C}$ |

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

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

| Parameter                           | Symbol        | Testconditions                                                                  | Min  | Typ  | Max      | Unit             |
|-------------------------------------|---------------|---------------------------------------------------------------------------------|------|------|----------|------------------|
| Drain cut-off current               | $I_{DSS}$     | $V_{DS}=60\text{V}, V_{GS}=0$                                                   |      |      | 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  | 2.0  | 2.5      | V                |
| Forward transfer admittance         | $ Y_{fs} $    | $V_{DS}=10\text{V}, I_D=41\text{A}$                                             | 28.1 | 56   |          | S                |
| Drain to source on-state resistance | $R_{DS(on)1}$ | $V_{GS}=10\text{V}, I_D=41\text{A}$                                             |      | 6.3  | 8.0      | $\text{m}\Omega$ |
|                                     | $R_{DS(on)2}$ | $V_{GS}=4.5\text{V}, I_D=41\text{A}$                                            |      | 7.4  | 10       | $\text{m}\Omega$ |
| Input capacitance                   | $C_{iss}$     | $V_{DS}=10\text{V}, V_{GS}=0, f=1\text{MHz}$                                    |      | 3500 |          | pF               |
| Output capacitance                  | $C_{oss}$     |                                                                                 |      | 660  |          | pF               |
| Reverse transfer capacitance        | $C_{rss}$     |                                                                                 |      | 240  |          | pF               |
| Turn-on delay time                  | $t_{on}$      | $I_D=41\text{A}, V_{GS(on)}=10\text{V}, R_G=0\text{ }\Omega, V_{DD}=30\text{V}$ |      | 18   |          | ns               |
| Rise time                           | $t_r$         |                                                                                 |      | 11   |          | ns               |
| Turn-off delay time                 | $t_{off}$     |                                                                                 |      | 62   |          | ns               |
| Fall time                           | $t_f$         |                                                                                 |      | 5.5  |          | ns               |
| Total Gate Charge                   | $Q_G$         | $V_{DD} = 48\text{V}$                                                           |      | 65.5 |          | nC               |
| Gate to Source Charge               | $Q_{GS}$      | $V_{GS} = 10\text{ V}$                                                          |      | 11.5 |          | nC               |
| Gate to Drain Charge                | $Q_{GD}$      | $I_D = 82\text{A}$                                                              |      | 16.5 |          | nC               |