

MOS Field Effect Transistor

2SK3813

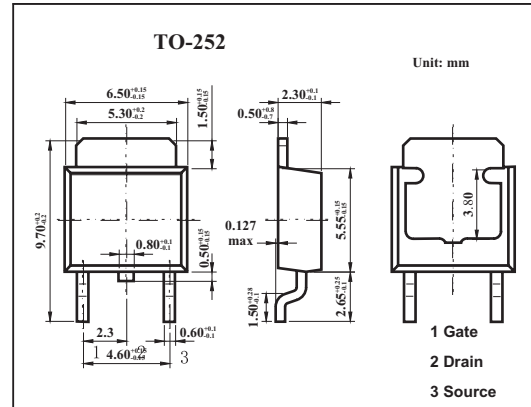
■ Features

- Low On-state resistance

$R_{DS(on)1} = 5.3 \text{ m}\Omega \text{ MAX. (} V_{GS} = 10 \text{ V, } I_D = 30 \text{ A)}$

$R_{DS(on)2} = 7.1 \text{ m}\Omega \text{ MAX. (} V_{GS} = 4.5 \text{ V, } I_D = 30 \text{ A)}$

- Low C_{iss} : $C_{iss} = 5500 \text{ pF TYP.}$



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

| Parameter | Symbol | Rating | Unit |
|-------------------------|------------|------------------------|------------------|
| Drain to source voltage | V_{DSS} | 40 | V |
| Gate to source voltage | V_{GSS} | ± 20 | V |
| Drain current | I_D | ± 60 | A |
| | I_{dp}^* | ± 240 | A |
| Power dissipation | P_D | $T_A=25^\circ\text{C}$ | 1.0 |
| | | $T_C=25^\circ\text{C}$ | 84 |
| 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} | $V_{DS}=40\text{V, } V_{GS}=0$ | | | 10 | μA |
| Gate leakage current | I_{GSS} | $V_{GS}=\pm 20\text{V, } V_{DS}=0$ | | | ± 100 | nA |
| 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} $ | $V_{DS}=10\text{V, } I_D=30\text{A}$ | 21 | 42 | | S |
| Drain to source on-state resistance | $R_{DS(on)1}$ | $V_{GS}=10\text{V, } I_D=30\text{A}$ | | 4.2 | 5.3 | m Ω |
| | $R_{DS(on)2}$ | $V_{GS}=4.5\text{V, } I_D=30\text{A}$ | | 5.3 | 7.1 | m Ω |
| Input capacitance | C_{iss} | $V_{DS}=10\text{V, } V_{GS}=0, f=1\text{MHz}$ | | 5500 | | pF |
| Output capacitance | C_{oss} | | | 740 | | pF |
| Reverse transfer capacitance | C_{rss} | | | 490 | | pF |
| Turn-on delay time | t_{on} | | | | 25 | ns |
| Rise time | t_r | $I_D=30\text{A, } V_{GS(on)}=10\text{V, } R_G=0\Omega, V_{DD}=20\text{V}$ | | 8.5 | | ns |
| Turn-off delay time | t_{off} | | | 81 | | ns |
| Fall time | t_f | | | 10 | | ns |
| Total Gate Charge | Q_G | $V_{DD} = 32\text{V}$ | | 96 | | nC |
| Gate to Source Charge | Q_{GS} | $V_{GS} = 10 \text{ V}$ | | 18 | | nC |
| Gate to Drain Charge | Q_{GD} | $I_D = 60\text{A}$ | | 23.5 | | nC |