

## MOS Field Effect Transistor

### 2SK3813

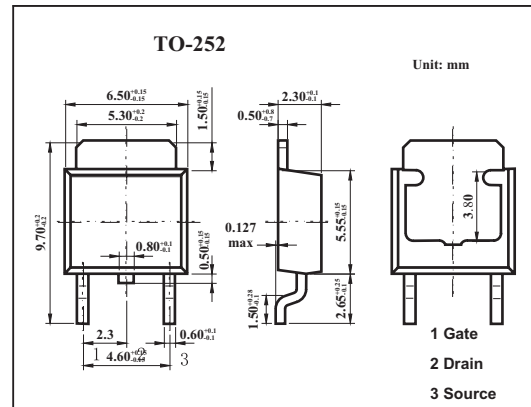
#### ■ Features

- 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	$V_{DS}$	40	V	
Gate to source voltage	$V_{GS}$	$\pm 20$	V	
Drain current	$I_D$	$\pm 60$	A	
	$I_{dp}^*$	$\pm 240$	A	
Power dissipation	$P_D$	$T_a=25^\circ\text{C}$	1.0	W
		$T_c=25^\circ\text{C}$	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	$\mu\text{A}$
Gate leakage current	$I_{GSS}$	$V_{GS}=\pm 20\text{V}, V_{DS}=0$			$\pm 100$	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 $\Omega$
	$R_{DS(on)2}$	$V_{GS}=4.5\text{V}, I_D=30\text{A}$		5.3	7.1	m $\Omega$
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