

## MOS Field Effect Transistor

### 2SK3814

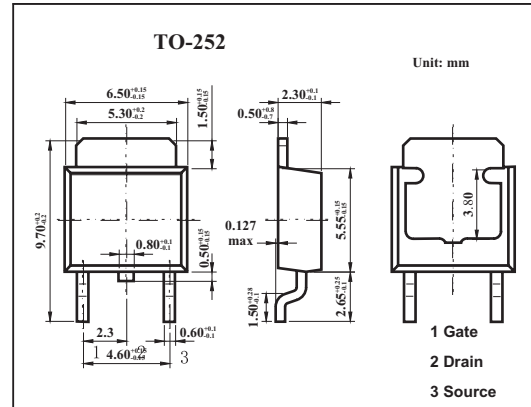
#### ■ Features

- Low On-state resistance

$R_{DS(on)1} = 8.7\text{m}\Omega$  MAX. ( $V_{GS} = 10\text{V}$ ,  $I_D = 30\text{A}$ )

$R_{DS(on)2} = 10.5\text{m}\Omega$  MAX. ( $V_{GS} = 4.5\text{V}$ ,  $I_D = 30\text{A}$ )

- Low  $C_{iss}$ :  $C_{iss} = 5450\text{pF}$  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	$I_D$	$\pm 60$	A
	$I_{dp}^*$	$\pm 240$	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	Test conditions	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	$I_{GSS}$	$V_{GS}=\pm 20\text{V}, V_{DS}=0$			$\pm 100$	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	44		S
Drain to source on-state resistance	$R_{DS(on)1}$	$V_{GS}=10\text{V}, I_D=30\text{A}$		7.0	8.7	m $\Omega$
	$R_{DS(on)2}$	$V_{GS}=4.5\text{V}, I_D=30\text{A}$		7.9	10.5	m $\Omega$
Input capacitance	$C_{iss}$	$V_{DS}=10\text{V}, V_{GS}=0, f=1\text{MHz}$		5450		pF
Output capacitance	$C_{oss}$			550		pF
Reverse transfer capacitance	$C_{rss}$			350		pF
Turn-on delay time	$t_{on}$			23		ns
Rise time	$t_r$	$I_D=30\text{A}, V_{GS(on)}=10\text{V}, R_G=0\ \Omega, V_{DD}=30\text{V}$		8.5		ns
Turn-off delay time	$t_{off}$			85		ns
Fall time	$t_f$			7.7		ns
Total Gate Charge	$Q_G$	$V_{DD} = 48\text{V}$		95		nC
Gate to Source Charge	$Q_{GS}$	$V_{GS} = 10\text{V}$		17		nC
Gate to Drain Charge	$Q_{GD}$	$I_D = 60\text{A}$		26		nC