

## MOS Field Effect Transistor 2SK3404

### ■ Features

- 4.5-V drive available
- Low on-state resistance  
 $R_{DS(on)1} = 14 \text{ m}\Omega \text{ MAX. (} V_{GS} = 10 \text{ V, } I_D = 20 \text{ A)}$
- Low gate charge  
 $Q_G = 25 \text{ nC TYP. (} I_D = 40 \text{ A, } V_{DD} = 24 \text{ V, } V_{GS} = 10 \text{ V)}$
- Built-in gate protection diode
- Surface mount device available



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

Parameter	Symbol	Rating	Unit
Drain to source voltage	$V_{DS}$	30	V
Gate to source voltage	$V_{GS}$	$\pm 20$	V
Drain current	$I_D$	$\pm 40$	A
	$I_{DP}^*$	$\pm 160$	A
Power dissipation	$P_D$	$T_C=25^\circ\text{C}$	40
		$T_A=25^\circ\text{C}$	1.5
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	$I_{DSS}$	$V_{DS}=30\text{V}, V_{GS}=0$			10	$\mu\text{A}$
Gate leakage current	$I_{GSS}$	$V_{GS}=\pm 20\text{V}, V_{DS}=0$			$\pm 10$	$\mu\text{A}$
Gate cutoff voltage	$V_{GS(off)}$	$V_{DS}=10\text{V}, I_D=1\text{mA}$	1.5		2.5	V
Forward transfer admittance	$ Y_{fs} $	$V_{DS}=10\text{V}, I_D=20\text{A}$	8.0			S
Drain to source on-state resistance	$R_{DS(on)1}$	$V_{GS}=10\text{V}, I_D=20\text{A}$		11	14	$\text{m}\Omega$
	$R_{DS(on)2}$	$V_{GS}=4.5\text{V}, I_D=20\text{A}$		15	21	$\text{m}\Omega$
Input capacitance	$C_{iss}$	$V_{DS}=10\text{V}, V_{GS}=0, f=1\text{MHz}$ $I_D=20\text{A}, V_{GS(on)}=10\text{V}, R_G=10\Omega, V_{DD}=15\text{V}$		1400		pF
Output capacitance	$C_{oss}$		410		pF	
Reverse transfer capacitance	$C_{rss}$		180		pF	
Turn-on delay time	$t_{on}$		20		ns	
Rise time	$t_r$		9		ns	
Turn-off delay time	$t_{off}$		50		ns	
Fall time	$t_f$		14		ns	
Total Gate Charge	$Q_G$	$I_D=40\text{A}, V_{DD}=24\text{V}, V_{GS}=10\text{V}$		25		nC
Gate to Source Charge	$Q_{GS}$		5.0		nC	
Gate to Drain Charge	$Q_{GD}$		7.0		nC	