

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}	± 20	V	
Drain current	I_D	± 40	A	
	I_{DP}^*	± 160	A	
Power dissipation	P_D	$T_C=25^\circ\text{C}$	40	W
		$T_A=25^\circ\text{C}$	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	μA
Gate leakage current	I_{GSS}	$V_{GS}=\pm 20\text{V}, V_{DS}=0$			± 10	μA
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}	$V_{DS}=10\text{V}, V_{GS}=0, f=1\text{MHz}$		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