

MOS Field Effect Transistor

2SK3641

■ Features

- Low on-state resistance
 $R_{DS(on)1} = 14 \text{ m}\Omega \text{ MAX. (} V_{GS} = 10 \text{ V, } I_D = 18 \text{ A)}$
 $R_{DS(on)2} = 25 \text{ m}\Omega \text{ MAX. (} V_{GS} = 4.5 \text{ V, } I_D = 15 \text{ A)}$
- Low C_{iss} : $C_{iss} = 930 \text{ pF TYP.}$

■ 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	± 36	A
	I_{dp}^*	± 140	A
Power dissipation	P_D	$T_c = 25^\circ\text{C}$	29
		$T_a = 25^\circ\text{C}$	1.0
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 cut off voltage	$V_{GS(off)}$	$V_{DS} = 10\text{V}, I_D = 1\text{mA}$	1.5		2.5	V
Forward transfer admittance	$ Y_{fs} $	$V_{DS} = 10\text{V}, I_D = 18\text{A}$	5.5	11		S
Drain to source on-state resistance	$R_{DS(on)1}$	$V_{GS} = 10\text{V}, I_D = 18\text{A}$		11	14	$\text{m}\Omega$
	$R_{DS(on)2}$	$V_{GS} = 4.5\text{V}, I_D = 15\text{A}$		17	25	$\text{m}\Omega$
Input capacitance	C_{iss}	$V_{DS} = 10\text{V}, V_{GS} = 0, f = 1\text{MHz}$		930		pF
Output capacitance	C_{oss}		250		pF	
Reverse transfer capacitance	C_{rss}		160		pF	
Turn-on delay time	t_{on}	$I_D = 18\text{A}, V_{GS(on)} = 15\text{V}, R_G = 10 \Omega, V_{DD} = 10\text{V}$		9.4		ns
Rise time	t_r		8.6		ns	
Turn-off delay time	t_{off}		34		ns	
Fall time	t_f		11		ns	
Total Gate Charge	Q_G	$V_{DD} = 24\text{V}$		22		nC
Gate to Source Charge	Q_{GS}	$V_{GS} = 10 \text{ V}$		3.6		nC
Gate to Drain Charge	Q_{GD}	$I_D = 36\text{A}$		7.4		nC
Body Diode Forward Voltage Note	$V_{F(S-D)}$	$I_F = 36 \text{ A}, V_{GS} = 0 \text{ V}$		1.0		V
Reverse Recovery Time	t_{rr}	$I_F = 36 \text{ A}, V_{GS} = 0 \text{ V}$		24		ns
Reverse Recovery Charge	Q_{rr}	$di/dt = 100 \text{ A}/\mu\text{s}$		15		nC

