

MOS Field Effect Transistor 2SK3431

■ Features

- Super low on-state resistance:
 $R_{DS(on)1} = 5.6m\ \Omega$ MAX. ($V_{GS} = 10\ V$, $I_D = 42\ A$)
 $R_{DS(on)2} = 8.9\ m\ \Omega$ MAX. ($V_{GS} = 4\ V$, $I_D = 42\ A$)
- Low C_{iss} : $C_{iss} = 6100\ pF$ TYP.
- Built-in gate protection diode



■ Absolute Maximum Ratings $T_a = 25^\circ C$

Parameter	Symbol	Rating	Unit
Drain to source voltage	V_{DS}	40	V
Gate to source voltage	V_{GS}	± 20	V
Drain current	I_D	± 83	A
	I_{DP}^*	± 332	A
Power dissipation	P_D	$T_C=25^\circ C$	100
		$T_A=25^\circ C$	1.5
Channel temperature	T_{ch}	150	$^\circ C$
Storage temperature	T_{stg}	-55 to +150	$^\circ C$

* $PW \leq 10\ \mu s$, Duty Cycle $\leq 1\%$

■ Electrical Characteristics $T_a = 25^\circ C$

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Drain cut-off current	I_{DSS}	$V_{DS}=40V, V_{GS}=0$			10	μA
Gate leakage current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0$			± 10	μA
Gate cutoff voltage	$V_{GS(off)}$	$V_{DS}=10V, I_D=1mA$	1.5	2.0	2.5	V
Forward transfer admittance	$ Y_{fs} $	$V_{DS}=10V, I_D=42A$	30	60		S
Drain to source on-state resistance	$R_{DS(on)1}$	$V_{GS}=10V, I_D=42A$		4.5	5.6	$m\ \Omega$
	$R_{DS(on)2}$	$V_{GS}=4V, I_D=42A$		6.2	8.9	$m\ \Omega$
Input capacitance	C_{iss}	$V_{DS}=10V, V_{GS}=0, f=1MHz$		6100		pF
Output capacitance	C_{oss}			1400		pF
Reverse transfer capacitance	C_{rss}			700		pF
Turn-on delay time	t_{on}				120	
Rise time	t_r	$I_D=42A, V_{GS(on)}=10V, R_G=10\ \Omega, V_{DD}=20V$		1800		ns
Turn-off delay time	t_{off}			350		ns
Fall time	t_f			440		ns
Total Gate Charge	Q_G				110	
Gate to Source Charge	Q_{GS}	$I_D=83A, V_{DD}=32V, V_{GS}=10V$		18		nC
Gate to Drain Charge	Q_{GD}			31		nC