

2SK2923

Silicon N-Channel Power F-MOS FET

■ Features

- Avalanche energy capacity guaranteed
- High-speed switching
- Low ON-resistance
- No secondary breakdown
- Low-voltage drive

■ Applications

- Contactless relay
- Driving circuit for a solenoid
- Driving circuit for a motor
- Control equipment
- Switching power supply

■ Absolute Maximum Ratings ($T_C = 25^\circ\text{C}$)

Parameter	Symbol	Rated	Unit
Drain to Source breakdown voltage	V_{DSS}	150	V
Gate to Source voltage	V_{GSS}	± 20	V
Drain current	DC	I_D	± 20 A
	Pulse	I_{DP}	± 40 A
Avalanche energy capacity	EAS*	200	mJ
Allowable power dissipation	$T_C = 25^\circ\text{C}$	P_D	50 W
	$T_a = 25^\circ\text{C}$		2 W
Channel temperature	T_{ch}	150	$^\circ\text{C}$
Storage temperature	T_{stg}	-55 to +150	$^\circ\text{C}$

* $L = 1 \text{ mH}$, $I_L = 20 \text{ A}$, 1 pulse

■ Electrical Characteristics ($T_C = 25^\circ\text{C}$)

Parameter	Symbol	Conditions	min	typ	max	Unit	
Drain to Source cut-off current	I_{DSS}	$V_{DS} = 120\text{V}$, $V_{GS} = 0$			10	μA	
Gate to Source leakage current	I_{GSS}	$V_{GS} = \pm 20\text{V}$, $V_{DS} = 0$			± 1	μA	
Drain to Source breakdown voltage	V_{DSS}	$I_D = 1\text{mA}$, $V_{GS} = 0$	150			V	
Gate threshold voltage	V_{th}	$V_{DS} = 10\text{V}$, $I_D = 1\text{mA}$	1		2.5	V	
Drain to Source ON-resistance	$R_{DS(on)1}$	$V_{GS} = 10\text{V}$, $I_D = 10\text{A}$		60	80	$\text{m}\Omega$	
	$R_{DS(on)2}$	$V_{GS} = 4\text{V}$, $I_D = 10\text{A}$		70	100	$\text{m}\Omega$	
Forward transfer admittance	$ Y_{fs} $	$V_{DS} = 10\text{V}$, $I_D = 10\text{A}$	10	17		S	
Diode forward voltage	V_{DSF}	$I_{DR} = 20\text{A}$, $V_{GS} = 0$			-1.6	V	
Input capacitance (Common Source)	C_{iss}	$V_{DS} = 10\text{V}$, $V_{GS} = 0$, $f = 1\text{MHz}$		2000		pF	
Output capacitance (Common Source)	C_{oss}				510		pF
Reverse transfer capacitance (Common Source)	C_{riss}				190		pF
Turn-on time (delay time)	$t_{d(on)}$				15		ns
Rise time	t_r	$V_{DD} = 100\text{V}$, $I_D = 10\text{A}$		40		ns	
Fall time	t_f	$V_{GS} = 10\text{V}$, $R_L = 10\Omega$		160		ns	
Turn-off time (delay time)	$t_{d(off)}$			660		ns	
Thermal resistance between channel and case	$R_{th(ch-c)}$				2.5	$^\circ\text{C}/\text{W}$	
Thermal resistance between channel and atmosphere	$R_{th(ch-a)}$				62.5	$^\circ\text{C}/\text{W}$	

