

2SK3031

Silicon N-Channel Power F-MOS FET

■ Features

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

■ Applications

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

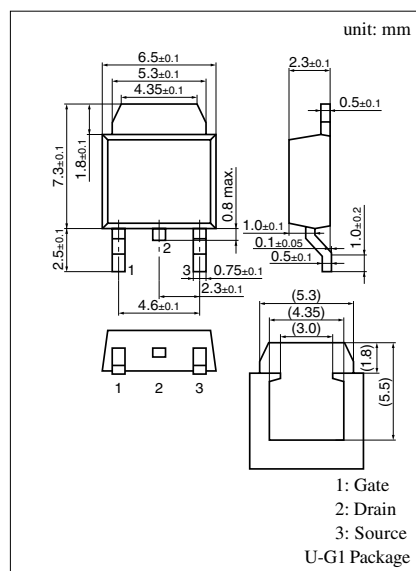
■ Absolute Maximum Ratings ($T_C = 25^\circ\text{C}$)

Parameter		Symbol	Ratings	Unit
Drain to Source breakdown voltage		V_{DS}	100	V
Gate to Source voltage		V_{GS}	± 20	V
Drain current	DC	I_D	± 15	A
	Pulse	I_{DP}	± 30	A
Avalanche energy capacity		EAS*	11.25	mJ
Allowable power dissipation	$T_C = 25^\circ\text{C}$	P_D	20	W
	$T_a = 25^\circ\text{C}$		1	
Channel temperature		T_{ch}	150	$^\circ\text{C}$
Storage temperature		T_{stg}	-55 to $+150$	$^\circ\text{C}$

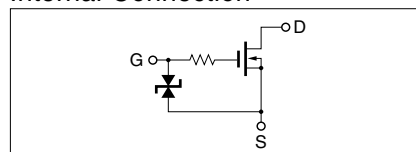
* $L = 0.1\text{mH}$, $I_L = 15\text{A}$, 1 pulse

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

Parameter	Symbol	Conditions	min	typ	max	Unit
Drain to Source cut-off current	I_{DSS}	$V_{DS} = 80\text{V}$, $V_{GS} = 0$			10	μA
Gate to Source leakage current	I_{GSS}	$V_{GS} = \pm 20\text{V}$, $V_{DS} = 0$			± 10	μA
Drain to Source breakdown voltage	V_{DSS}	$I_D = 1\text{mA}$, $V_{GS} = 0$	100			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	$R_{DS(on)1}$	$V_{GS} = 10\text{V}$, $I_D = 8\text{A}$		90	135	$\text{m}\Omega$
	$R_{DS(on)2}$	$V_{GS} = 4\text{V}$, $I_D = 8\text{A}$		100	160	$\text{m}\Omega$
Forward transfer admittance	$ Y_{fs} $	$V_{DS} = 10\text{V}$, $I_D = 8\text{A}$	4	7.5		S
Diode forward voltage	V_{DSF}	$I_{DR} = 15\text{A}$, $V_{GS} = 0$			-1.6	V
Input capacitance (Common Source)	C_{iss}	$V_{DS} = 10\text{V}$, $V_{GS} = 0$, $f = 1\text{MHz}$		300		pF
Output capacitance (Common Source)	C_{oss}			190		pF
Reverse transfer capacitance (Common Source)	C_{rss}			30		pF
Turn-on time (delay time)	$t_{d(on)}$	$V_{DD} = 30\text{V}$, $I_D = 8\text{A}$ $V_{GS} = 10\text{V}$, $R_L = 3.75\Omega$		20		ns
Rise time	t_r			85		ns
Fall time	t_f			330		ns
Turn-off time (delay time)	$t_{d(off)}$			1440		ns
Thermal resistance between channel and case	$R_{th(ch-c)}$				6.25	$^\circ\text{C/W}$
Thermal resistance between channel and atmosphere	$R_{th(ch-a)}$				125	$^\circ\text{C/W}$



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