

## 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
- Diving circuit for a solenoid
- Driving circuit for a motor
- Control equipment
- Switching power supply

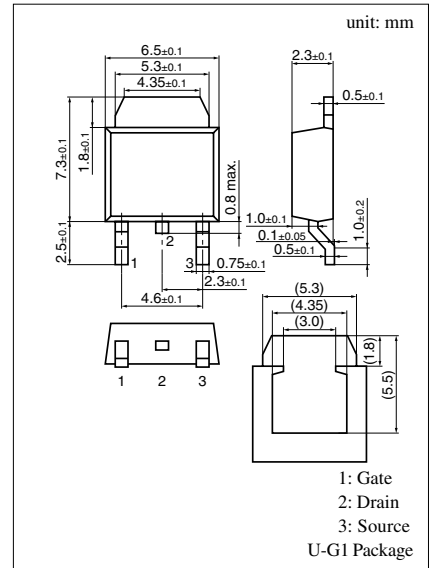
■ Absolute Maximum Ratings ( $T_C = 25^\circ\text{C}$ )

Parameter	Symbol	Rated	Unit
Drain to Source breakdown voltage	$V_{DS}$	100	V
Gate to Source voltage	$V_{GS}$	$\pm 20$	V
Drain current	DC	$I_D$	$\pm 15$ A
	Pulse	$I_{DP}$	$\pm 30$ 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 W
Channel temperature	$T_{ch}$	150	$^\circ\text{C}$
Storage temperature	$T_{stg}$	-55 to +150	$^\circ\text{C}$

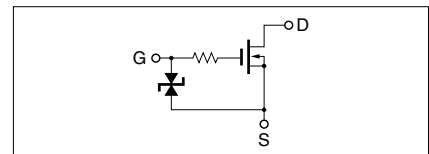
\*  $L = 0.1\text{mH}$ ,  $I_L = 15\text{A}$ , 1 pulse

■ 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	$\mu\text{A}$	
Gate to Source leakage current	$I_{GSS}$	$V_{GS} = \pm 20\text{V}$ , $V_{DS} = 0$			$\pm 10$	$\mu\text{A}$	
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)	$t_{d(on)}$	$V_{DD} = 30\text{V}$ , $I_D = 8\text{A}$		20		ns	
Rise time	$t_r$		$V_{GS} = 10\text{V}$ , $R_L = 3.75\Omega$		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	$^\circ\text{C}/\text{W}$	
Thermal resistance between channel and atmosphere	$R_{th(ch-a)}$				125	$^\circ\text{C}/\text{W}$	



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