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# 2SK3031

## Silicon N-channel power MOSFET

### ■ Features

- Avalanche energy capability guaranteed
- High-speed switching
- Low ON resistance  $R_{on}$
- No secondary breakdown
- Low-voltage drive
- High electrostatic energy capability

### ■ Applications

- Non-contact relay
- Solenoid drive
- Motor drive
- Control equipment
- Switching mode regulator

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

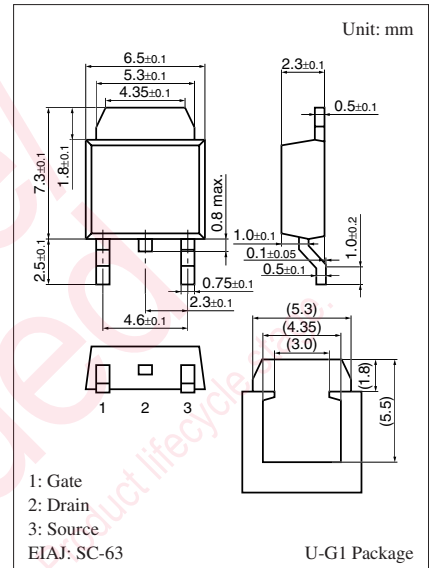
Parameter	Symbol	Rating	Unit
Drain-source surrender voltage	$V_{DSS}$	100	V
Gate-source surrender voltage	$V_{GSS}$	$\pm 20$	V
Drain current	$I_D$	$\pm 15$	A
Peak drain current	$I_{DP}$	$\pm 45$	A
Avalanche energy capability *	EAS	7.2	mJ
Power dissipation	$P_D$	20	W
		$T_a = 25^\circ\text{C}$	1
Channel temperature	$T_{ch}$	150	$^\circ\text{C}$
Storage temperature	$T_{stg}$	-55 to +150	$^\circ\text{C}$

Note) \*:  $L = 0.1 \text{ mH}$ ,  $I_L = 12 \text{ A}$ , 1 pulse

### ■ Electrical Characteristics $T_C = 25^\circ\text{C} \pm 3^\circ\text{C}$

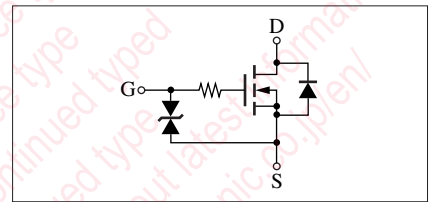
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Drain-source surrender voltage	$V_{DSS}$	$I_D = 1 \text{ mA}$ , $V_{GS} = 0$	100			V
Drain-source cutoff current	$I_{DSS}$	$V_{DS} = 80 \text{ V}$ , $V_{GS} = 0$			10	$\mu\text{A}$
Gate-source cutoff current	$I_{GSS}$	$V_{GS} = \pm 20 \text{ V}$ , $V_{DS} = 0$			$\pm 10$	$\mu\text{A}$
Gate threshold voltage	$V_{th}$	$V_{DS} = 10 \text{ V}$ , $I_D = 1 \text{ mA}$	1.0		2.5	V
Forward transfer admittance	$ Y_{fs} $	$V_{DS} = 10 \text{ V}$ , $I_D = 8 \text{ A}$	6	11		S
Drain-source ON resistance	$R_{DS(on)1}$	$V_{GS} = 10 \text{ V}$ , $I_D = 8 \text{ A}$		90	135	m $\Omega$
	$R_{DS(on)2}$	$V_{GS} = 4 \text{ V}$ , $I_D = 8 \text{ A}$		105	160	
Diode forward voltage	$V_{DSF}$	$I_{DR} = 15 \text{ A}$ , $V_{GS} = 0$			-1.4	V
Short-circuit forward transfer capacitance (Common source)	$C_{iss}$	$V_{DS} = 10 \text{ V}$ , $V_{GS} = 0$ , $f = 1 \text{ MHz}$		300		pF
					190	
Short-circuit output capacitance (Common source)	$C_{oss}$			33		pF
Reverse transfer capacitance (Common source)	$C_{rss}$					pF
Turn-on delay time	$t_{d(on)}$	$V_{DD} = 30 \text{ V}$ , $I_D = 8 \text{ A}$ , $R_L = 3.75 \Omega$		20		ns
Rise time	$t_r$	$V_{GS} = 10 \text{ V}$		90		ns
Fall time	$t_f$			330		ns
Turn-off delay time	$t_{d(off)}$			1450		ns
Thermal resistance (ch-c)	$R_{th(ch-c)}$				6.25	$^\circ\text{C/W}$
Thermal resistance (ch-a)	$R_{th(ch-a)}$				125	$^\circ\text{C/W}$

Note) Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.



Marking Symbol: K3031

Internal Connection



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