2SK3031

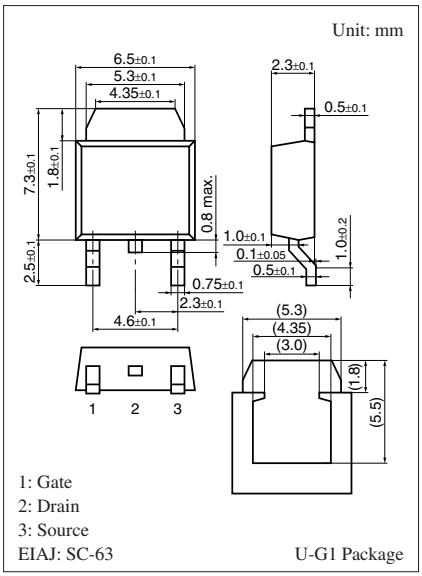
Silicon N-channel power MOSFET

■ Features

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

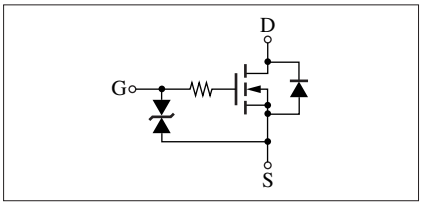
■ Applications

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



Marking Symbol: K3031

Internal Connection



■ Absolute Maximum Ratings $T_C = 25°C$

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

Note) *: L = 0.1 mH, I_L = 12 A, 1 pulse

■ Electrical Characteristics $T_C = 25°C \pm 3°C$

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

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

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