Panasonic

2SK3023 (Tentative)

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
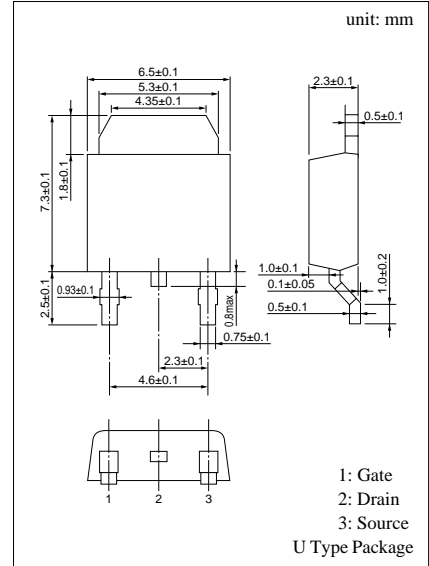● Control equipment
● Switching power supply

■ Absolute Maximum Ratings $(T_C = 25°C)$

Parameter		Symbol	Ratings	Unit
Drain to Source breakdown voltage		V_{DSS}	60	V
Gate to Source voltage		V_{GSS}	±20	V
Drain current	DC	I_D	±10	A
	Pulse	I_{DP}	±20	A
Avalanche energy capacity		EAS^*	5	mJ
Allowable power dissipation	$T_C = 25°C$	P_D	10	W
	$Ta = 25°C$		1	
Channel temperature		T_{ch}	150	°C
Storage temperature		T_{stg}	−55 to +150	°C

* $L = 0.1mH$, $I_L = 10A$, 1 pulse

unit: mm

1: Gate
2: Drain
3: Source
U Type Package

Internal Connection

■ Electrical Characteristics $(T_C = 25°C)$

Parameter	Symbol	Conditions	min	typ	max	Unit
Drain to Source cut-off current	I_{DSS}	$V_{DS} = 50V$, $V_{GS} = 0$			10	μA
Gate to Source leakage current	I_{GSS}	$V_{GS} = ±20V$, $V_{DS} = 0$			±10	μA
Drain to Source breakdown voltage	V_{DSS}	$I_D = 1mA$, $V_{GS} = 0$	60			V
Gate threshold voltage	V_{th}	$V_{DS} = 10V$, $I_D = 1mA$	1		2.5	V
Drain to Source ON-resistance	$R_{DS(on)1}$	$V_{GS} = 10V$, $I_D = 5A$		50	80	mΩ
	$R_{DS(on)2}$	$V_{GS} = 4V$, $I_D = 5A$		70	110	mΩ
Forward transfer admittance	$|Y_{fs}|$	$V_{DS} = 10V$, $I_D = 5A$	3	5		S
Diode forward voltage	V_{DSF}	$I_{DR} = 10A$, $V_{GS} = 0$			−1.4	V
Input capacitance (Common Source)	C_{iss}	$V_{DS} = 10V$, $V_{GS} = 0$, f = 1MHz		300		pF
Output capacitance (Common Source)	C_{oss}			165		pF
Reverse transfer capacitance (Common Source)	C_{rss}			65		pF
Turn-on time (delay time)	$t_{d(on)}$	$V_{DD} = 30V$, $I_D = 5A$ $V_{GS} = 10V$, $R_L = 6Ω$		15		ns
Rise time	t_r			70		ns
Fall time	t_f			290		ns
Turn-off time (delay time)	$t_{d(off)}$			860		ns
Thermal resistance between channel and case	$R_{th(ch-c)}$				12.5	°C/W
Thermal resistance between channel and atmosphere	$R_{th(ch-a)}$				125	°C/W