

# 2SK3033 (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

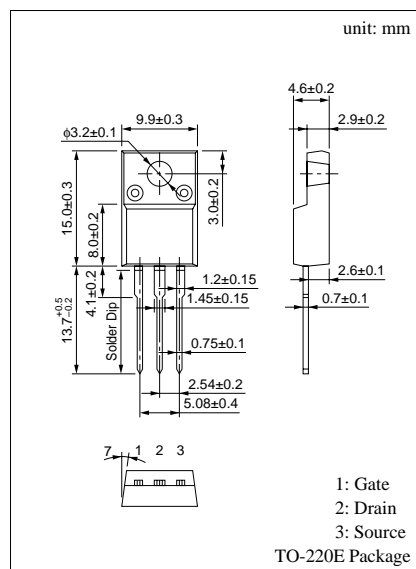
### ■ Absolute Maximum Ratings ( $T_C = 25^\circ\text{C}$ )

Parameter	Symbol	Ratings	Unit
Drain to Source breakdown voltage	$V_{DS}$	100	V
Gate to Source voltage	$V_{GS}$	$\pm 20$	V
Drain current	DC	$I_D$	A
	Pulse	$I_{DP}$	A
Avalanche energy capacity	EAS*	80	mJ
Allowable power dissipation	$T_C = 25^\circ\text{C}$	$P_D$	W
	$T_a = 25^\circ\text{C}$	2	
Channel temperature	$T_{ch}$	150	$^\circ\text{C}$
Storage temperature	$T_{stg}$	$-55$ to $+150$	$^\circ\text{C}$

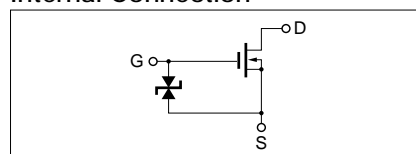
\*  $L = 0.1\text{mH}$ ,  $I_L = 40\text{A}$ , 1 pulse

### ■ 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	$R_{DS(on)1}$	$V_{GS} = 10\text{V}$ , $I_D = 20\text{A}$		35	60	$\text{m}\Omega$
	$R_{DS(on)2}$	$V_{GS} = 4\text{V}$ , $I_D = 20\text{A}$		40	75	$\text{m}\Omega$
Forward transfer admittance	$ Y_{fs} $	$V_{DS} = 10\text{V}$ , $I_D = 20\text{A}$	13	26		S
Diode forward voltage	$V_{DSF}$	$I_{DR} = 20\text{A}$ , $V_{GS} = 0$			$-1.4$	V
Input capacitance (Common Source)	$C_{iss}$	$V_{DS} = 10\text{V}$ , $V_{GS} = 0$ , $f = 1\text{MHz}$		2400		pF
Output capacitance (Common Source)	$C_{oss}$			530		pF
Reverse transfer capacitance (Common Source)	$C_{rss}$			220		pF
Turn-on time (delay time)	$t_{d(on)}$	$V_{DD} = 30\text{V}$ , $I_D = 20\text{A}$ $V_{GS} = 10\text{V}$ , $R_L = 1.5\Omega$		12		ns
Rise time	$t_r$			20		ns
Fall time	$t_f$			120		ns
Turn-off time (delay time)	$t_{d(off)}$			600		ns
Thermal resistance between channel and case	$R_{th(ch-c)}$				2.08	$^\circ\text{C/W}$
Thermal resistance between channel and atmosphere	$R_{th(ch-a)}$				62.5	$^\circ\text{C/W}$



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