

# 2SK3731

## N-channel enhancement mode MOSFET

### ■ Features

- Low on-resistance, low  $Q_g$
- High avalanche resistance

### ■ Applications

- For PDP
- For high-speed switching

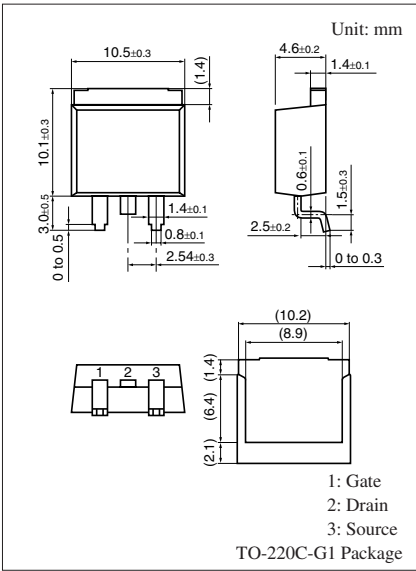
### ■ Absolute Maximum Ratings $T_C = 25^\circ\text{C}$

Parameter	Symbol	Rating	Unit
Drain-source surrender voltage	V <sub>DSS</sub>	230	V
Gate-source surrender voltage	V <sub>GSS</sub>	±30	V
Drain current	I <sub>D</sub>	20	A
Peak drain current	I <sub>DP</sub>	80	A
Avalanche energy capability *	EAS	668	mJ
Power dissipation	P <sub>D</sub>	50	W
		1.4	
T <sub>a</sub> = 25°C			
Channel temperature	T <sub>ch</sub>	150	°C
Storage temperature	T <sub>stg</sub>	−55 to +150	°C

Note) \*:  $L = 2.79$  mH,  $I_L = 20$  A,  $V_{DD} = 50$  V, 1 pulse,  $T_a = 25^\circ\text{C}$

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

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Drain-source surrender voltage	$V_{DSS}$	$I_D = 1$ mA, $V_{GS} = 0$	230			V
Gate threshold voltage	$V_{th}$	$V_{DS} = 10$ V, $I_D = 1$ mA	2.0		4.0	V
Drain-source cutoff current	$I_{DSS}$	$V_{DS} = 184$ V, $V_{GS} = 0$			10	$\mu\text{A}$
Gate-source cutoff current	$I_{GSS}$	$V_{GS} = \pm 30$ V, $V_{DS} = 0$			$\pm 1$	$\mu\text{A}$
Drain-source ON resistance	$R_{DS(on)}$	$V_{GS} = 10$ V, $I_D = 10$ A		65	82	m $\Omega$
Forward transfer admittance	$ Y_{fs} $	$V_{DS} = 10$ V, $I_D = 10$ A	7	14		S
Short-circuit forward transfer capacitance (Common-source)	$C_{iss}$	$V_{DS} = 25$ V, $V_{GS} = 0$ , $f = 1$ MHz		2 360		pF
Short-circuit output capacitance (Common-source)	$C_{oss}$			394		pF
Reverse transfer capacitance (Common-source)	$C_{rss}$			49		pF
Turn-on delay time	$t_{d(on)}$	$V_{DD} \approx 100$ V, $I_D = 10$ A $R_L = 10$ $\Omega$ , $V_{GS} = 10$ V		31		ns
Rise time	$T_r$			27		ns
Turn-off delay time	$t_{d(off)}$			214		ns
Fall time	$t_f$			47		ns

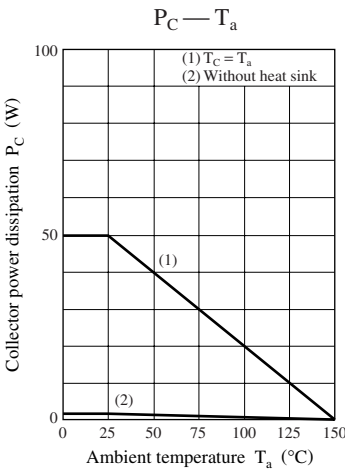
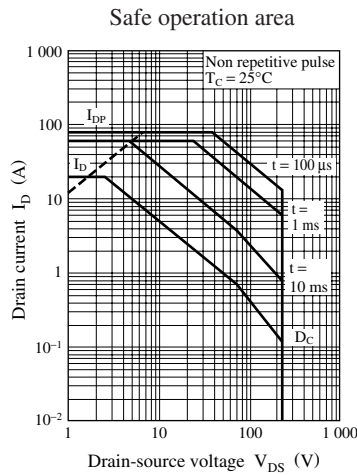


Marking Symbol: K3731

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

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Diode forward voltage	$V_{DSF}$	$I_{DR} = 20\text{ A}$ , $V_{GS} = 0$			-1.5	V
Reverse recovery time	$t_{rr}$	$L = 230\text{ }\mu\text{H}$ , $V_{DD} = 100\text{ V}$ $I_{DR} = 10\text{ A}$ , $di/dt = 100\text{ A}/\mu\text{s}$		142		ns
Reverse recovery charge	$Q_{rr}$			668		nC
Gate charge load	$Q_g$	$V_{DD} = 100\text{ V}$ , $I_D = 10\text{ A}$ $V_{GS} = 10\text{ V}$		43		nC
Gate-source charge	$Q_{gs}$			6.6		nC
Gate-drain charge	$Q_{gd}$			16		nC
Thermal resistance (ch-c)	$R_{th(ch-c)}$				2.5	$^\circ\text{C}/\text{W}$
Thermal resistance (ch-a)	$R_{th(ch-a)}$				89.2	$^\circ\text{C}/\text{W}$

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



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