

# 2SK3731

## N-channel enhancement mode MOSFET

### ■ Features

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

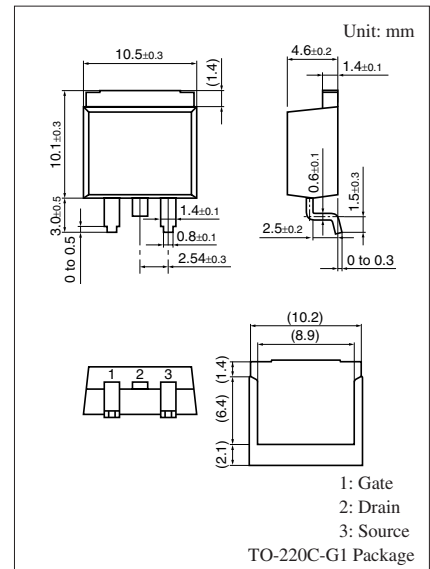
### ■ Applications

- For PDP
- For high-speed switching

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

Parameter	Symbol	Rating	Unit
Drain-source surrender voltage	$V_{DSS}$	230	V
Gate-source surrender voltage	$V_{GSS}$	$\pm 30$	V
Drain current	$I_D$	20	A
Peak drain current	$I_{DP}$	80	A
Avalanche energy capability *	EAS	668	mJ
Power dissipation	$P_D$	50	W
		$T_a = 25^\circ\text{C}$	
Channel temperature	$T_{ch}$	150	$^\circ\text{C}$
Storage temperature	$T_{stg}$	-55 to +150	$^\circ\text{C}$

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



Marking Symbol: K3731

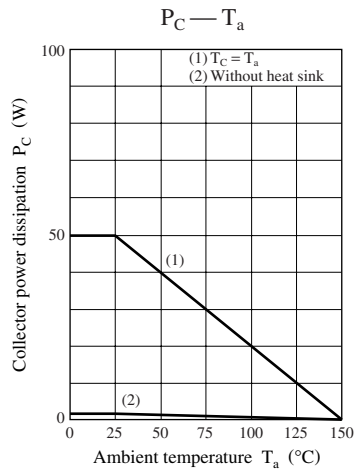
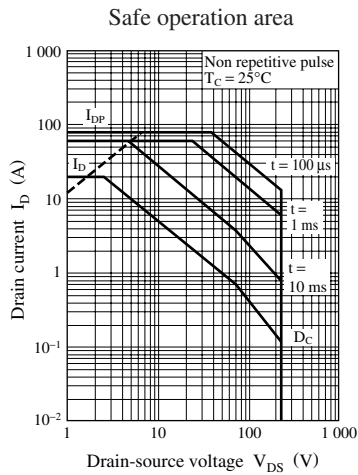
### ■ Electrical Characteristics $T_C = 25^\circ\text{C} \pm 3^\circ\text{C}$

Parameter	Symbol	Conditions	Min	Typ	Max	Unit	
Drain-source surrender voltage	$V_{DSS}$	$I_D = 1 \text{ mA}$ , $V_{GS} = 0$	230			V	
Gate threshold voltage	$V_{th}$	$V_{DS} = 10 \text{ V}$ , $I_D = 1 \text{ mA}$	2.0		4.0	V	
Drain-source cutoff current	$I_{DSS}$	$V_{DS} = 184 \text{ V}$ , $V_{GS} = 0$			10	$\mu\text{A}$	
Gate-source cutoff current	$I_{GSS}$	$V_{GS} = \pm 30 \text{ V}$ , $V_{DS} = 0$			$\pm 1$	$\mu\text{A}$	
Drain-source ON resistance	$R_{DS(on)}$	$V_{GS} = 10 \text{ V}$ , $I_D = 10 \text{ A}$		65	82	$\text{m}\Omega$	
Forward transfer admittance	$ Y_{fs} $	$V_{DS} = 10 \text{ V}$ , $I_D = 10 \text{ A}$	7	14		S	
Short-circuit forward transfer capacitance (Common-source)	$C_{iss}$	$V_{DS} = 25 \text{ V}$ , $V_{GS} = 0$ , $f = 1 \text{ MHz}$		2360		pF	
Short-circuit output capacitance (Common-source)	$C_{oss}$				394		pF
Reverse transfer capacitance (Common-source)	$C_{rss}$				49		pF
Turn-on delay time	$t_{d(on)}$	$V_{DD} \approx 100 \text{ V}$ , $I_D = 10 \text{ A}$ $R_L = 10 \Omega$ , $V_{GS} = 10 \text{ V}$		31		ns	
Rise time	$T_r$			27		ns	
Turn-off delay time	$t_{d(off)}$			214		ns	
Fall time	$t_f$			47		ns	

■ 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	$t_{rr}$	$L = 230\ \mu\text{H}, V_{DD} = 100\text{ V}$		142		ns
Reverse recovery charge	$Q_{rr}$	$I_{DR} = 10\text{ A}, di/dt = 100\text{ A}/\mu\text{s}$		668		nC
Gate charge load	$Q_g$	$V_{DD} = 100\text{ V}, I_D = 10\text{ A}$		43		nC
Gate-source charge	$Q_{gs}$	$V_{GS} = 10\text{ V}$		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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