

2SK3731

N-channel enhancement mode MOSFET

■ Features

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

■ Applications

- For PDP
- For high-speed switching

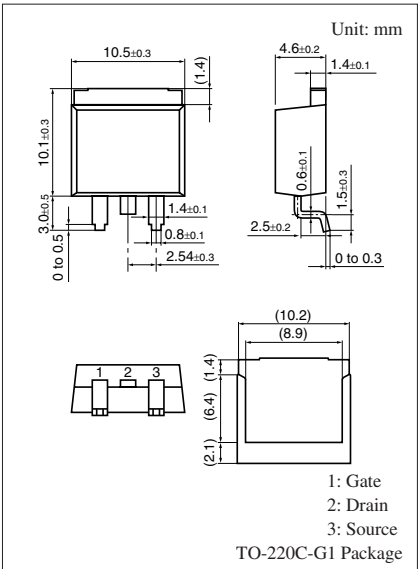
■ Absolute Maximum Ratings $T_C = 25^\circ\text{C}$

Parameter	Symbol	Rating	Unit
Drain-source surrender voltage	V _{DSS}	230	V
Gate-source surrender voltage	V _{GSS}	±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
		1.4	
T _a = 25°C			
Channel temperature	T _{ch}	150	°C
Storage temperature	T _{stg}	−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	μA
Gate-source cutoff current	I_{GSS}	$V_{GS} = \pm 30$ V, $V_{DS} = 0$			± 1	μA
Drain-source ON resistance	$R_{DS(on)}$	$V_{GS} = 10$ V, $I_D = 10$ A		65	82	m Ω
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 $R_L = 10$ Ω , $V_{GS} = 10$ V		31		ns
Rise time	T_r			27		ns
Turn-off delay time	$t_{d(off)}$			214		ns
Fall time	t_f			47		ns



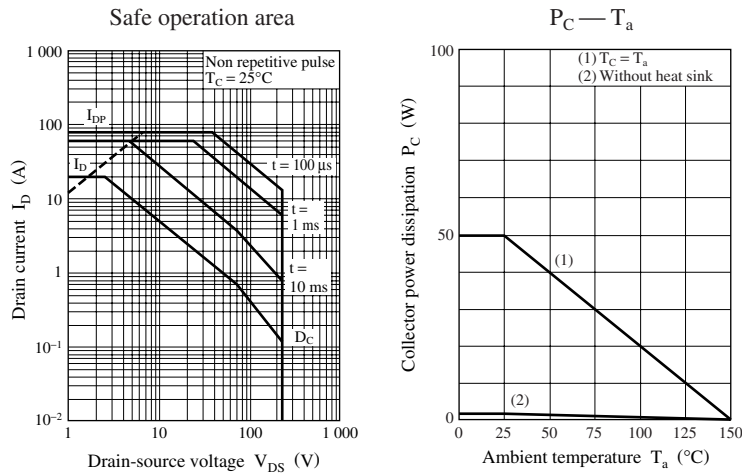
Marking Symbol: K3731

■ 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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