

2SK3193

Silicon N-channel power MOSFET

For switching

■ Features

- Avalanche energy capability guaranteed
- High-speed switching
- Low ON resistance R_{on}
- No secondary breakdown

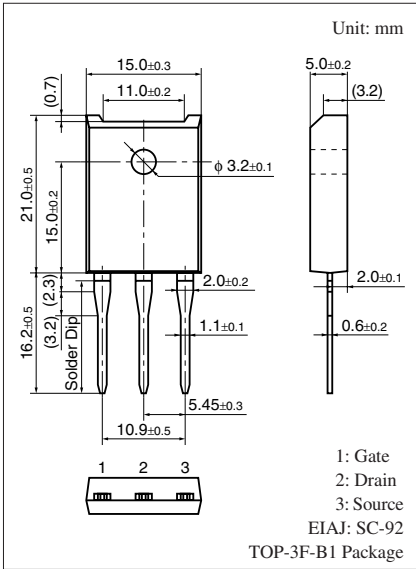
■ Absolute Maximum Ratings $T_C = 25^\circ\text{C}$

Parameter	Symbol	Rating	Unit
Drain-source surrender voltage	V _{DSS}	350	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	200	mJ
Power dissipation	P _D	100	W
		3	
	T _a = 25°C		
Channel temperature	T _{ch}	150	°C
Storage temperature	T _{stg}	−55 to +150	°C

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

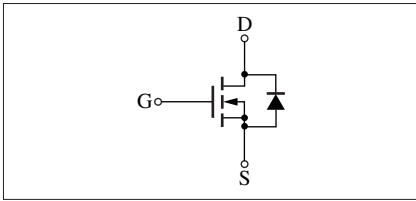
■ Electrical Characteristics $T_C = 25^\circ\text{C} \pm 3^\circ\text{C}$

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Drain-source surrender voltage	V_{DSS}	$I_D = 1 \text{ mA}$, $V_{GS} = 0$	350			V
Drain-source cutoff current	I_{DSS}	$V_{DS} = 280 \text{ V}$, $V_{GS} = 0$			10	μA
Gate-source cutoff current	I_{GSS}	$V_{GS} = \pm 30 \text{ V}$, $V_{DS} = 0$			± 1	μA
Gate threshold voltage	V_{th}	$V_{DS} = 10 \text{ V}$, $I_D = 1 \text{ mA}$	2		4	V
Drain-source ON resistance	$R_{DS(on)}$	$V_{GS} = 10 \text{ V}$, $I_D = 10 \text{ A}$		120	150	$\text{m}\Omega$
Forward transfer admittance	$ Y_{fs} $	$V_{DS} = 10 \text{ V}$, $I_D = 10 \text{ A}$	6	12		S
Short-circuit forward transfer capacitance (Common source)	C_{iss}	$V_{DS} = 10 \text{ V}$, $V_{GS} = 0$, $f = 1 \text{ MHz}$		3900		pF
Short-circuit output capacitance (Common source)	C_{oss}			1340		pF
Reverse transfer capacitance (Common source)	C_{rss}			560		pF
Turn-on delay time	$t_{d(on)}$	$V_{DD} = 150 \text{ V}$, $I_D = 10 \text{ A}$ $R_L = 15 \Omega$, $V_{GS} = 10 \text{ V}$		40		ns
Rise time	t_r			75		ns
Turn-off delay time	$t_{d(off)}$			340		ns
Fall time	t_f			95		ns



Marking Symbol: K3193

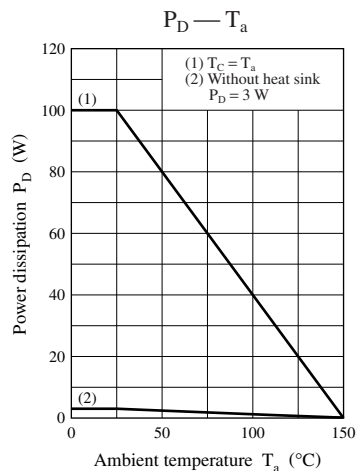
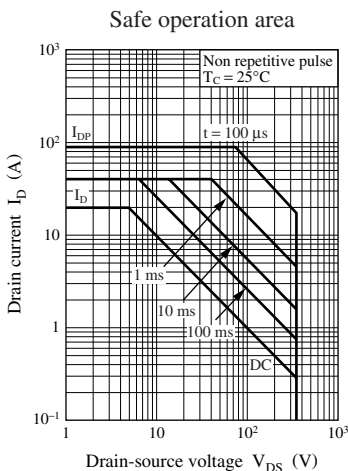
Internal Connection



■ 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}	$I_{DR} = 20\text{ A}$, $V_{GS} = 0$			-1.4	V
Reverse recovery time	t_{rr}	$L = 230\text{ }\mu\text{H}$, $V_{DD} = 100\text{ V}$ $I_{DR} = 10\text{ A}$, $di/dt = 100\text{ A}/\mu\text{s}$		260		ns
Reverse recovery charge	Q_{rr}			1.8		μC
Gate charge load	Q_g	$V_{DD} = 100\text{ V}$, $I_D = 10\text{ A}$ $V_{GS} = 10\text{ V}$		90		nC
Gate-source charge	Q_{gs}			10		nC
Gate-drain charge	Q_{gd}			30		nC
Thermal resistance (ch-c)	$R_{th(ch-c)}$				1.25	$^\circ\text{C}/\text{W}$
Thermal resistance (ch-a)	$R_{th(ch-a)}$				41.7	$^\circ\text{C}/\text{W}$

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



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