

# 2SK3193

## Silicon N-channel power MOSFET

For switching

### ■ Features

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

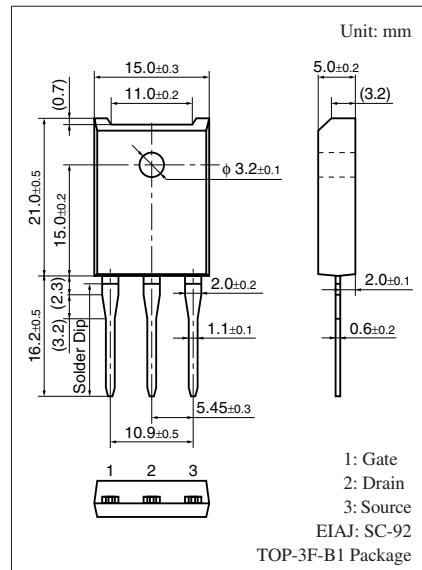
### ■ Absolute Maximum Ratings $T_C = 25^\circ\text{C}$

Parameter	Symbol	Rating	Unit
Drain-source surrender voltage	$V_{DSS}$	350	V
Gate-source surrender voltage	$V_{GSS}$	$\pm 30$	V
Drain current	$I_D$	$\pm 20$	A
Peak drain current	$I_{DP}$	$\pm 80$	A
Avalanche energy capability *	EAS	200	mJ
Power dissipation	$P_D$	100	W
		3	
Channel temperature	$T_{ch}$	150	$^\circ\text{C}$
Storage temperature	$T_{stg}$	-55 to +150	$^\circ\text{C}$

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

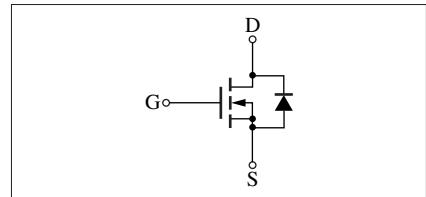
### ■ Electrical Characteristics $T_C = 25^\circ\text{C} \pm 3^\circ\text{C}$

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	$\mu\text{A}$
Gate-source cutoff current	$I_{GSS}$	$V_{GS} = \pm 30 \text{ V}$ , $V_{DS} = 0$			$\pm 1$	$\mu\text{A}$
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	$t_{d(on)}$	$V_{DD} = 150 \text{ V}$ , $I_D = 10 \text{ A}$		40		ns
Rise time	$t_r$	$R_L = 15 \Omega$ , $V_{GS} = 10 \text{ V}$		75		ns
Turn-off delay time	$t_{d(off)}$			340		ns
Fall time	$t_f$			95		ns



Marking Symbol: K3193

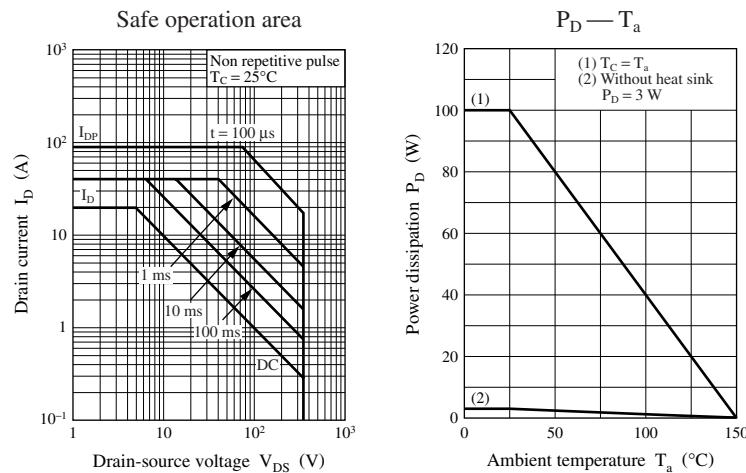
### Internal Connection



■ 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	$t_{rr}$	$L = 230 \mu\text{H}, V_{DD} = 100 \text{ V}$		260		ns
Reverse recovery charge	$Q_{rr}$	$I_{DR} = 10 \text{ A}, dI/dt = 100 \text{ A}/\mu\text{s}$		1.8		$\mu\text{C}$
Gate charge load	$Q_g$	$V_{DD} = 100 \text{ V}, I_D = 10 \text{ A}$		90		nC
Gate-source charge	$Q_{gs}$	$V_{GS} = 10 \text{ V}$		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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