

2SK3193

Silicon N-channel power MOSFET

For switching

■ Features

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

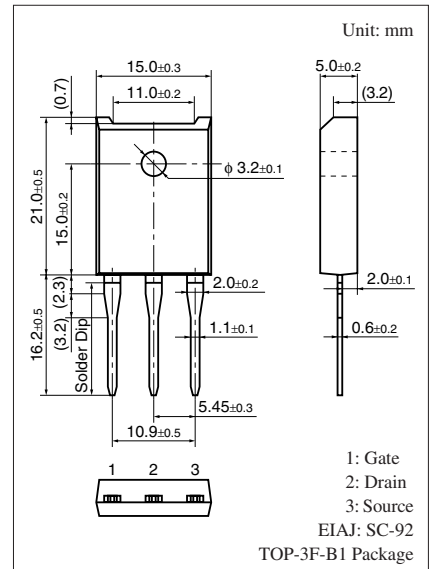
■ Absolute Maximum Ratings $T_C = 25^\circ\text{C}$

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
		$T_a = 25^\circ\text{C}$	
Channel temperature	T_{ch}	150	$^\circ\text{C}$
Storage temperature	T_{stg}	-55 to +150	$^\circ\text{C}$

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

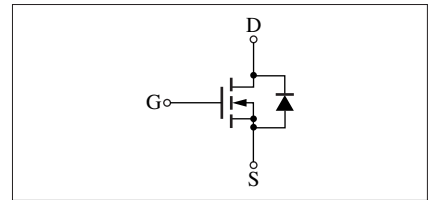
■ Electrical Characteristics $T_C = 25^\circ\text{C} \pm 3^\circ\text{C}$

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	
					1340		pF
					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

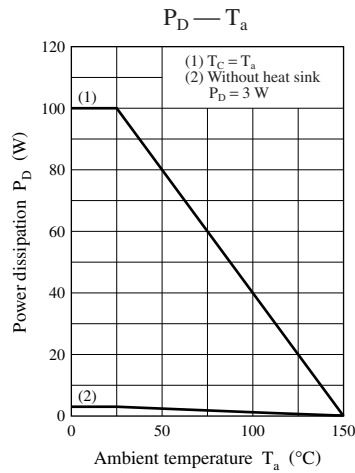
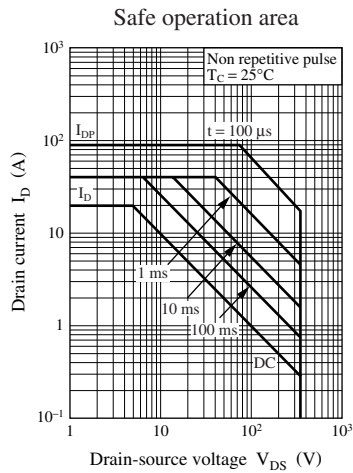
Internal Connection



■ 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}	$L = 230\ \mu\text{H}, V_{DD} = 100\text{ V}$		260		ns
Reverse recovery charge	Q_{rr}	$I_{DR} = 10\text{ A}, di/dt = 100\text{ A}/\mu\text{s}$		1.8		μC
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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