

2SK3192

Silicon N-channel power F-MOSFET

■ Features

- Avalanche energy capacity guaranteed
- High-speed switching
- Low on-resistance
- No secondary breakdown

■ Applications

- PDP
- Switching power supply

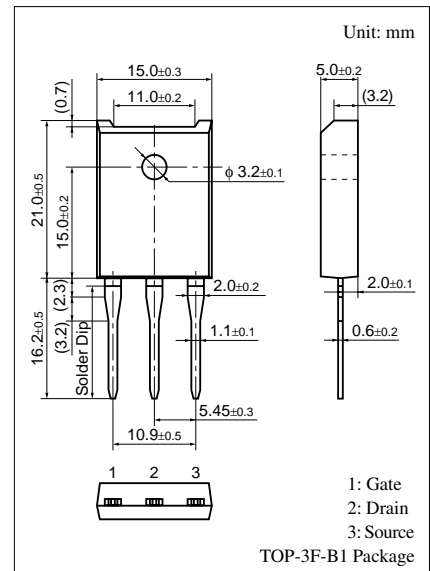
■ Absolute Maximum Ratings $T_C = 25^\circ\text{C}$

Parameter	Symbol	Rating	Unit
Drain-source breakdown voltage	V_{DSS}	250	V
Gate to source voltage	V_{GSS}	± 30	V
Drain current	DC	I_D	± 30 A
	Pulse	I_{DP}	± 120 A
Avalanche energy capacity *	EAS	925	mJ
Allowable power dissipation	$T_C = 25^\circ\text{C}$	P_D	100 W
	$T_a = 25^\circ\text{C}$		3
Channel temperature	T_{ch}	150	$^\circ\text{C}$
Storage temperature	T_{stg}	-55 to +150	$^\circ\text{C}$

Note) *: $L = 1.74$ mH, $I_L = 30$ A, $V_{DD} = 50$ V, 1 pulse, $T_a = 25^\circ\text{C}$

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

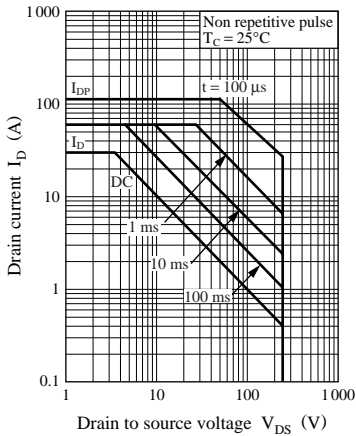
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Drain cutoff current	I_{DSS}	$V_{DS} = 200$ V, $V_{GS} = 0$			10	μA
Gate-source leakage current	I_{GSS}	$V_{GS} = \pm 30$ V, $V_{DS} = 0$			± 1	μA
Drain-source breakdown voltage	V_{DSS}	$I_D = 1$ mA, $V_{GS} = 0$	250			V
Gate threshold voltage	V_{th}	$V_{DS} = 10$ V, $I_D = 1$ mA	2		4	V
Drain-source on resistance	$R_{DS(ON)}$	$V_{GS} = 10$ V, $I_D = 15$ A		50	68	m Ω
Forward transfer admittance	$ Y_{fs} $	$V_{DS} = 10$ V, $I_D = 15$ A	8	15		S
Input capacitance	C_{iss}	$V_{DS} = 10$ V, $V_{GS} = 0$, $f = 1$ MHz		4200		pF
Output capacitance	C_{oss}			1600		pF
Reverse transfer capacitance	C_{rss}			650		pF
Turn-on delay time	$t_{d(ON)}$	$V_{DD} = 100$ V, $I_D = 15$ A $R_L = 6.7$ Ω , $V_{GS} = 10$ V		45		ns
Rise time	t_r			115		ns
Turn-off delay time	$t_{d(OFF)}$			330		ns
Fall time	t_f			130		ns



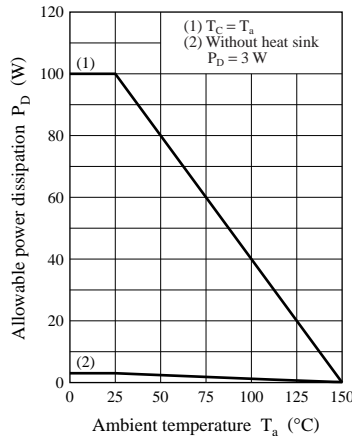
■ Electrical Characteristics (continued) $T_C = 25^\circ\text{C} \pm 3^\circ\text{C}$

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Diode forward voltage	V_{DSF}	$I_{DR} = 30\text{ A}, V_{GS} = 0$			-1.5	V
Reverse recovery time	t_{rr}	$L = 230\ \mu\text{H}, V_{DD} = 100\text{ V}$		260		ns
Reverse recovery charge	Q_{rr}	$I_{DR} = 15\text{ A}, di/dt = 100\text{ A}/\mu\text{s}$		1.6		μC
Total gate charge	Q_g	$V_{DD} = 100\text{ V}, I_D = 15\text{ A}$		95		nC
Gate-source charge	Q_{gs}	$V_{GS} = 10\text{ V}$		34		nC
Gate-drain charge	Q_{gd}			12		nC
Thermal resistance (channel to case)	$R_{th(ch-c)}$				1.25	$^\circ\text{C}/\text{W}$
Thermal resistance (channel to ambient)	$R_{th(ch-a)}$				41.7	$^\circ\text{C}/\text{W}$

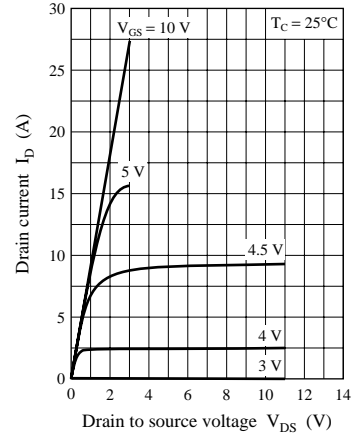
Area of safe operation (ASO)



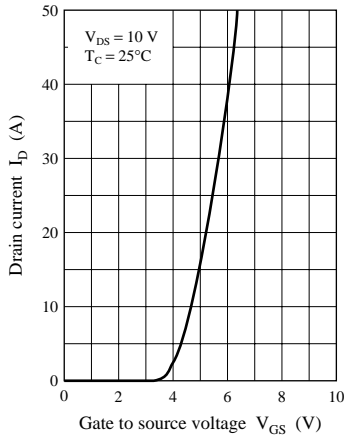
$P_D - T_a$



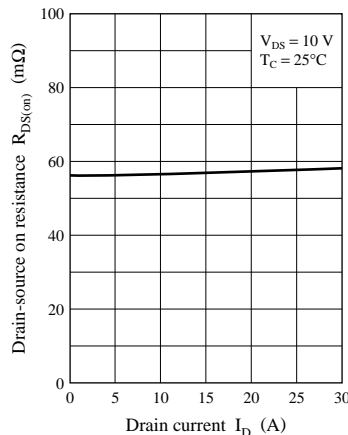
$I_D - V_{DS}$



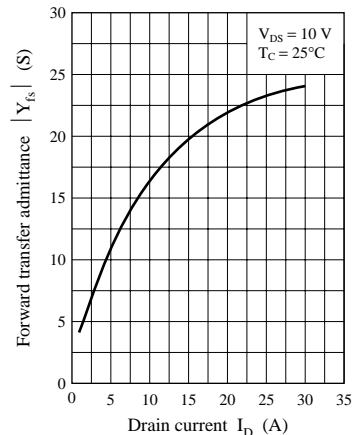
$I_D - V_{GS}$

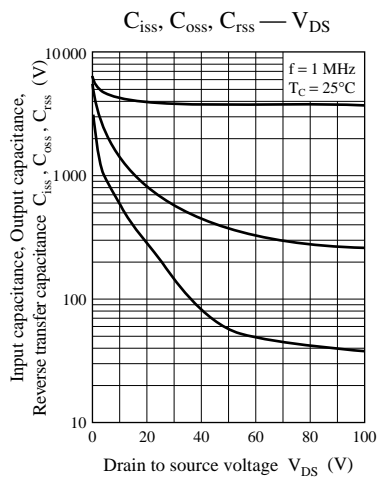


$R_{DS(on)} - I_D$



$|Y_{fs}| - I_D$





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