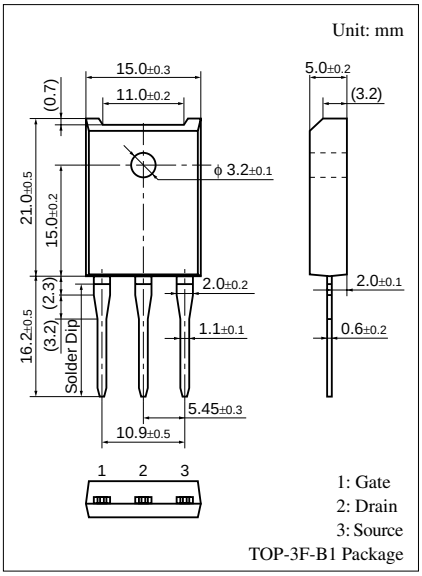
2SK3192

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 $T_C = 25°C$

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	$T_C = 25°C$	P_D	100	W
	$T_a = 25°C$		3	
Channel temperature		T_{ch}	150	°C
Storage temperature		T_{stg}	−55 to +150	°C

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

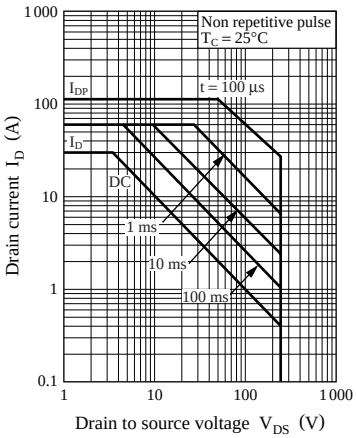
■ Electrical Characteristics $T_C = 25°C \pm 3°C$

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} = ±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	mΩ
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		4 200		pF
Output capacitance	C_{oss}			1 600		pF
Reverse transfer capacitance	C_{rss}			650		pF
Turn-on delay time	$t_{d(ON)}$	V_{DD} = 100 V, I_D = 15 A		45		ns
Rise time	t_r	R_L = 6.7 Ω, V_{GS} = 10 V		115		ns
Turn-off deray time	$t_{d(OFF)}$			330		ns
Fall time	t_f			130		ns

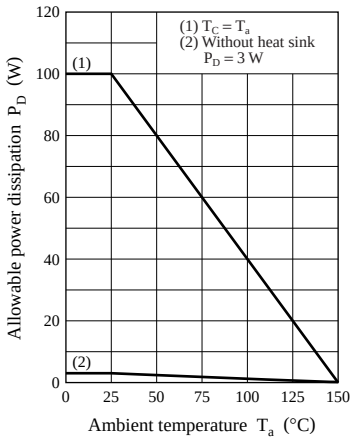
■ Electrical Characteristics (continued) $T_C = 25°C \pm 3°C$

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

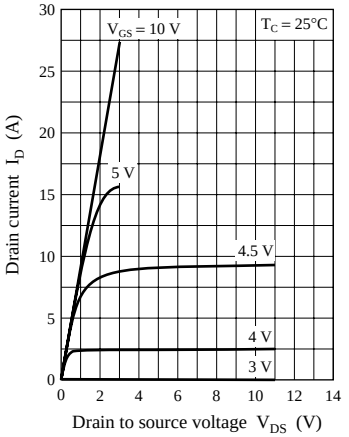
Area of safe operation (ASO)



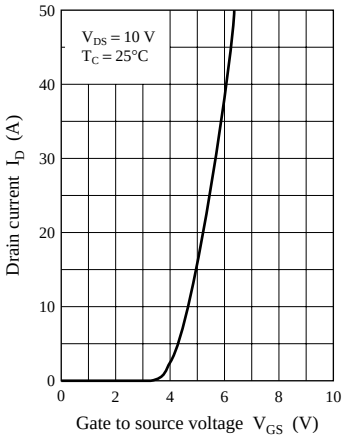
P_D — T_a



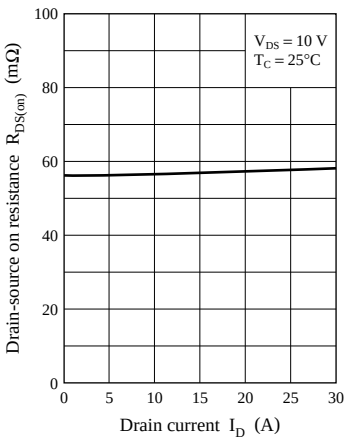
I_D — V_{DS}



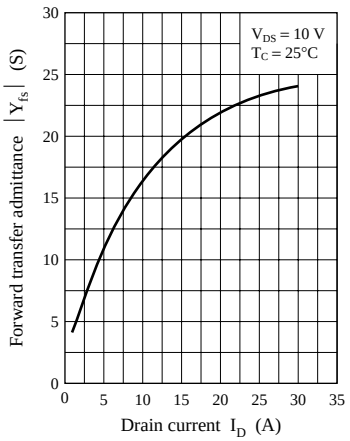
I_D — V_{GS}



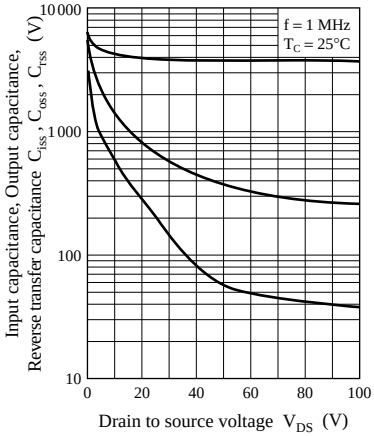
$R_{DS(on)}$ — I_D



$|Y_{fs}|$ — I_D



C_{iss}, C_{oss}, C_{rss} — V_{DS}



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