

2SK2120

Silicon N Channel MOS FET

Application

High speed power switching

Features

- Low on-resistance
- High speed switching
- Low drive current
- 4 V gate drive device can be driven from 5 V source
- Suitable for Switching regulator, DC – DC converter
- Avalanche ratings

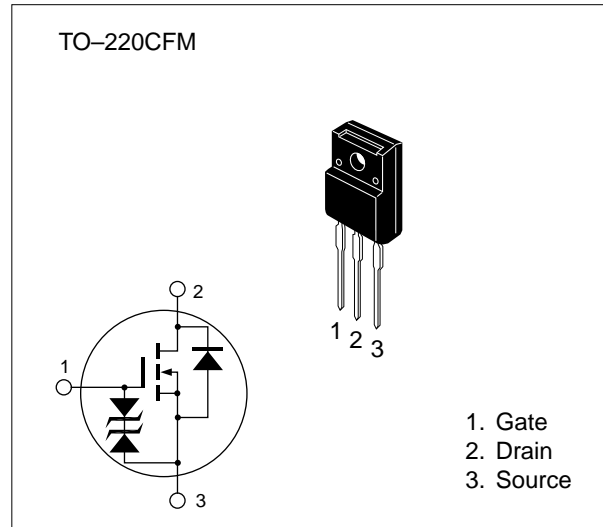


Table 1 Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	V _{DSS}	60	V
Gate to source voltage	V _{GSS}	±20	V
Drain current	I _D	40	A
Drain peak current	I _{D(pulse)} *	160	A
Body-drain diode reverse drain current	I _{DR}	40	A
Avalanche current	I _{AP} ***	40	A
Avalanche energy	E _{AR} ***	137	mJ
Channel dissipation	P _{ch} **	35	W
Channel temperature	T _{ch}	150	°C
Storage temperature	T _{stg}	-55 to +150	°C

* PW ≤ 10 μs, duty cycle ≤ 1 %

** Value at T_c = 25 °C

*** Value at T_{ch} = 25 °C, R_g ≥ 50 Ω

Table 2 Electrical Characteristics ($T_a = 25^\circ\text{C}$)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	60	—	—	V	$I_D = 10\text{ mA}$, $V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	± 20	—	—	V	$I_G = \pm 200\text{ }\mu\text{A}$, $V_{DS} = 0$
Gate to source leak current	I_{GSS}	—	—	± 10	μA	$V_{GS} = \pm 16\text{ V}$, $V_{DS} = 0$
Zero gate voltage drain current	I_{DSS}	—	—	250	μA	$V_{DS} = 50\text{ V}$, $V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	1.0	—	2.25	V	$I_D = 1\text{ mA}$, $V_{DS} = 10\text{ V}$
Static drain to source on state resistance	$R_{DS(on)}$	—	0.018	0.022	Ω	$I_D = 20\text{ A}$ $V_{GS} = 10\text{ V}^*$
		—	0.023	0.028	Ω	$I_D = 20\text{ A}$ $V_{GS} = 4\text{ V}^*$
Forward transfer admittance	$ y_{fs} $	22	35	—	S	$I_D = 20\text{ A}$ $V_{DS} = 10\text{ V}^*$
Input capacitance	C_{iss}	—	3530	—	pF	$V_{DS} = 10\text{ V}$
Output capacitance	C_{oss}	—	1480	—	pF	$V_{GS} = 0$
Reverse transfer capacitance	C_{rss}	—	300	—	pF	$f = 1\text{ MHz}$
Turn-on delay time	$t_{d(on)}$	—	33	—	ns	$I_D = 20\text{ A}$
Rise time	t_r	—	155	—	ns	$V_{GS} = 10\text{ V}$
Turn-off delay time	$t_{d(off)}$	—	450	—	ns	$R_L = 1.5\text{ }\Omega$
Fall time	t_f	—	220	—	ns	
Body-drain diode forward voltage	V_{DF}	—	1.2	—	V	$I_F = 40\text{ A}$, $V_{GS} = 0$
Body-drain diode reverse recovery time	t_{rr}	—	120	—	ns	$I_F = 40\text{ A}$, $V_{GS} = 0$, $di_F / dt = 50\text{ A} / \mu\text{s}$

* Pulse Test

■ See characteristic curve of 2SK1911.

