
2SK2120

Silicon N-Channel MOS FET

HITACHI

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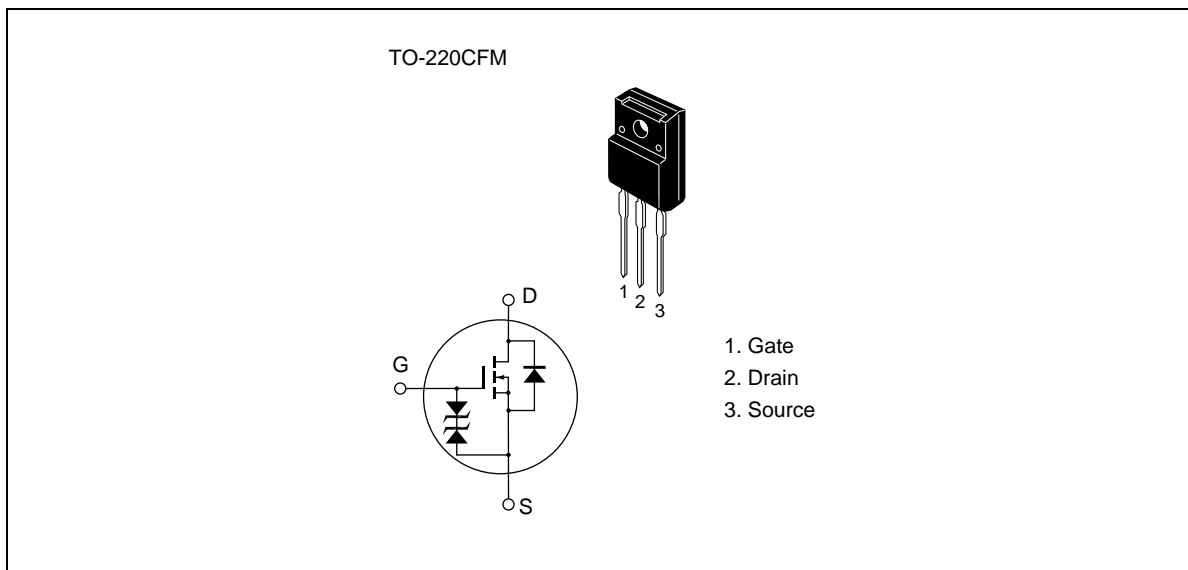
Application

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

Outline



2SK2120

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	$I_{D(pulse)}^{*1}$	160	A
Body to drain diode reverse drain current	I_{DR}	40	A
Avalanche current	I_{AP}^{*3}	40	A
Avalanche energy	E_{AR}^{*3}	137	mJ
Channel dissipation	Pch^{*2}	35	W
Channel temperature	Tch	150	°C
Storage temperature	Tstg	-55 to +150	°C

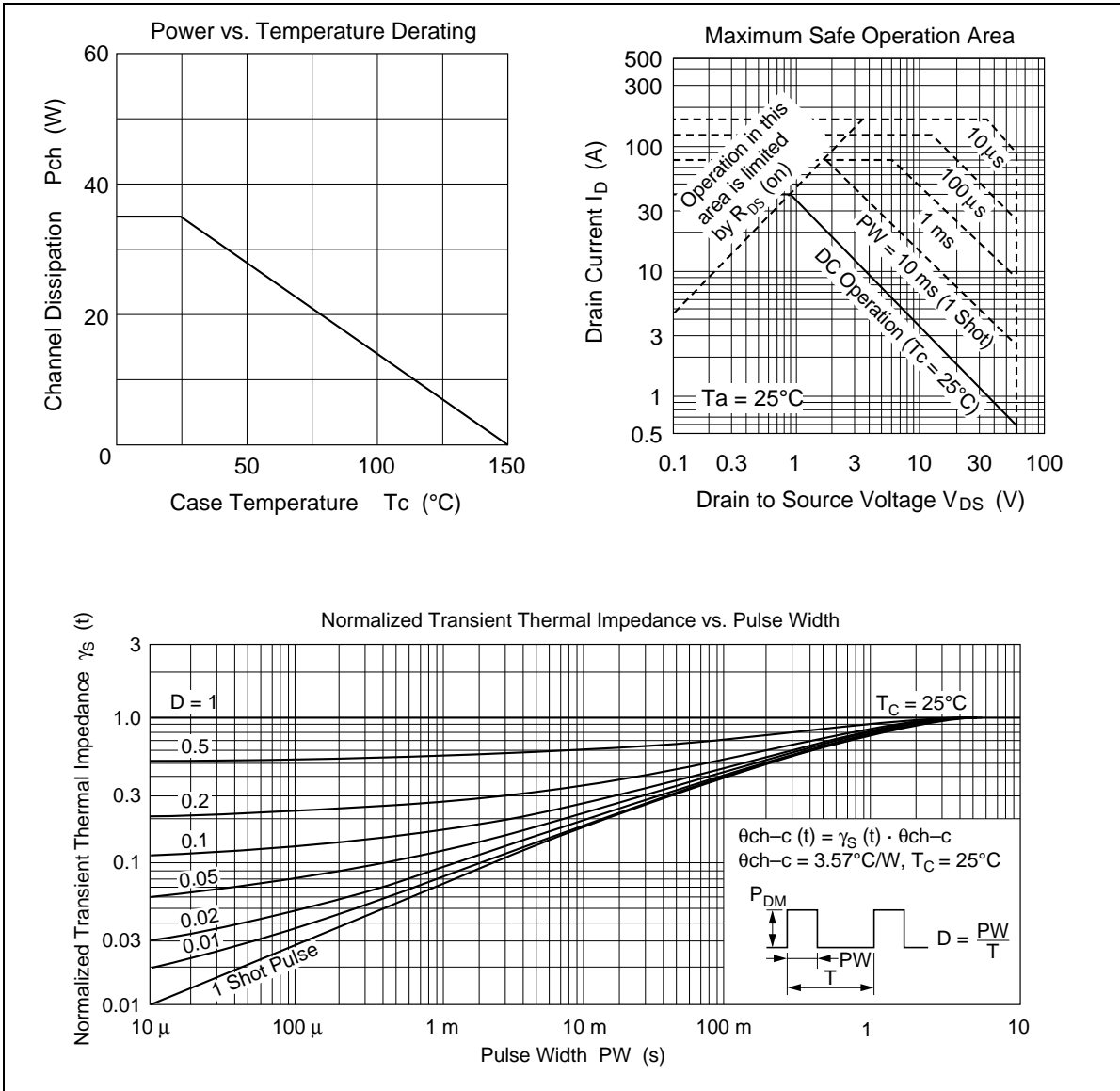
- Notes
1. $PW \leq 10 \mu s$, duty cycle $\leq 1 \%$
 2. Value at Tc = 25 °C
 3. Value at Tch = 25 °C, Rg $\geq 50 \Omega$

Electrical Characteristics (Ta = 25°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	$I_D = 20 \text{ A}$ $V_{GS} = 10 \text{ V}^{*1}$
		—	0.023	0.028	Ω	$I_D = 20 \text{ A}$ $V_{GS} = 4 \text{ V}^{*1}$
Forward transfer admittance	$ y_{fs} $	22	35	—	S	$I_D = 20 \text{ A}$ $V_{DS} = 10 \text{ V}^{*1}$
Input capacitance	Ciss	—	3530	—	pF	$V_{DS} = 10 \text{ V}$ $V_{GS} = 0$ $f = 1 \text{ MHz}$
Output capacitance	Coss	—	1480	—	pF	
Reverse transfer capacitance	Crss	—	300	—	pF	
Turn-on delay time	$t_{d(on)}$	—	33	—	ns	$I_D = 20 \text{ A}$ $V_{GS} = 10 \text{ V}$ $R_L = 1.5 \text{ }\Omega$
Rise time	t_r	—	155	—	ns	
Turn-off delay time	$t_{d(off)}$	—	450	—	ns	
Fall time	t_f	—	220	—	ns	
Body to drain diode forward voltage	V_{DF}	—	1.2	—	V	$I_F = 40 \text{ A}, V_{GS} = 0$
Body to drain diode reverse recovery time	t_{rr}	—	120	—	ns	$I_F = 40 \text{ A}, V_{GS} = 0,$ $diF / dt = 50 \text{ A} / \mu\text{s}$

Note 1. Pulse Test

See characteristic curve of 2SK1911.



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