2SK2591

Silicon N-Channel MOS FET

HITACHI

Preliminary
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Application

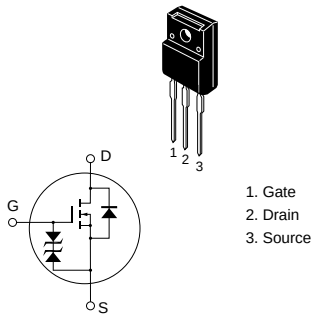
High speed power switching

Features

- Low on-resistance
- High speed switching
- Low drive current
- No secondary breakdown
- Suitable for switching regulator, DC-DC converter

Outline

TO-220CFM



1. Gate
2. Drain
3. Source

Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	V_{DSS}	500	V
Gate to source voltage	V_{GSS}	±30	V
Drain current	I_D	8	A
Drain peak current	$I_{D(pulse)}$*[1]	32	A
Body to drain diode reverse drain current	I_{DR}	8	A
Channel dissipation	Pch*[2]	35	W
Channel temperature	Tch	150	°C
Storage temperature	Tstg	–55 to +150	°C

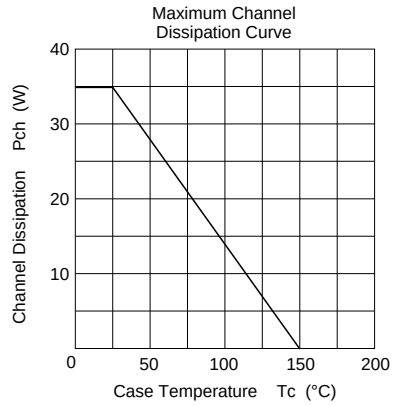
Notes 1. PW ≤ 10 µs, duty cycle ≤ 1 %
2. Value at Tc = 25 °C

Electrical Characteristics (Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	500	—	—	V	I_D = 10 mA, V_{GS} = 0
Gate to source breakdown voltage	$V_{(BR)GSS}$	±30	—	—	V	I_G = ±100 µA, V_{DS} = 0
Gate to source leak current	I_{GSS}	—	—	±10	µA	V_{GS} = ±25 V, V_{DS} = 0
Zero gate voltage drain current	I_{DSS}	—	—	–250	µA	V_{DS} = 500 V, V_{GS} = 0
Gate to source cutoff voltage	$V_{GS(off)}$	2.0	—	–3.0	V	I_D = 1 mA, V_{DS} = 10 V
Static drain to source on state resistance	$R_{DS(on)}$	—	0.45	0.60	Ω	I_D = 4 A V_{GS} = 10 V*[1]
Forward transfer admittance	$\|y_{fs}\|$	5.0	7.5	—	S	I_D = 4 A V_{DS} = 10 V*[1]
Input capacitance	Ciss	—	1450	—	pF	V_{DS} = 10 V V_{GS} = 0 f = 1 MHz
Output capacitance	Coss	—	410	—	pF	
Reverse transfer capacitance	Crss	—	55	—	pF	
Turn-on delay time	$t_{d(on)}$	—	20	—	ns	I_D = 4 A V_{GS} = 10 V R_L = 5Ω
Rise time	t_r	—	55	—	ns	
Turn-off delay time	$t_{d(off)}$	—	130	—	ns	
Fall time	t_f	—	50	—	ns	
Body to drain diode forward voltage	V_{DF}	—	0.9	—	V	I_F = 8 A, V_{GS} = 0
Body to drain diode reverse recovery time	t_{rr}	—	380	—	ns	I_F = 8 A, V_{GS} = 0, diF / dt = 100 A / µs

Note 1. Pulse Test

See characteristics curves of 2SK1166.


Maximum Channel
Dissipation Curve
Channel Dissipation Pch (W)
40
30
20
10
0
50
100
150
200
Case Temperature Tc (°C)

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