
2SK1668

Silicon N-Channel MOS FET

HITACHI

Application

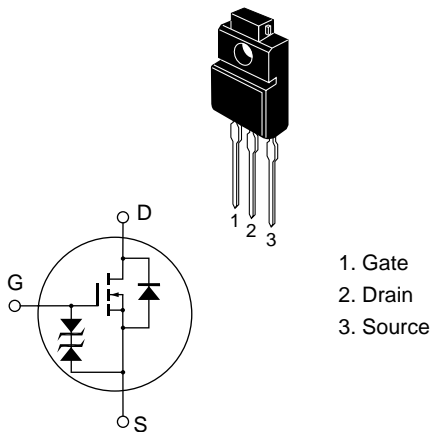
High speed power switching

Features

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

Outline

TO-220FM



2SK1668

Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	V_{DSS}	250	V
Gate to source voltage	V_{GSS}	±30	V
Drain current	I_D	7	A
Drain peak current	$I_{D(pulse)}^{*1}$	28	A
Body to drain diode reverse drain current	I_{DR}	7	A
Channel dissipation	Pch^{*2}	30	W
Channel temperature	Tch	150	°C
Storage temperature	Tstg	-55 to +150	°C

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

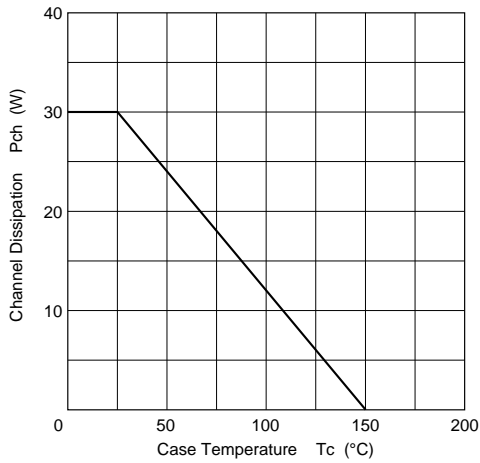
Electrical Characteristics (Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	250	—	—	V	$I_D = 10 \text{ mA}, V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	± 30	—	—	V	$I_G = \pm 100 \text{ }\mu\text{A}, V_{DS} = 0$
Gate to source leak current	I_{GSS}	—	—	± 10	μA	$V_{GS} = \pm 25 \text{ V}, V_{DS} = 0$
Zero gate voltage drain current	I_{DSS}	—	—	250	μA	$V_{DS} = 200 \text{ V}, V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	2.0	—	3.0	V	$I_D = 1 \text{ mA}, V_{DS} = 10 \text{ V}$
Static drain to source on state resistance	$R_{DS(on)}$	—	0.4	0.55		$I_D = 4 \text{ A}, V_{GS} = 10 \text{ V}^{*1}$
Forward transfer admittance	$ y_{fs} $	3.0	5.0	—	S	$I_D = 4 \text{ A}, V_{DS} = 10 \text{ V}^{*1}$
Input capacitance	C_{iss}	—	690	—	pF	$V_{DS} = 10 \text{ V}, V_{GS} = 0,$
Output capacitance	C_{oss}	—	265	—	pF	$f = 1 \text{ MHz}$
Reverse transfer capacitance	C_{rss}	—	45	—	pF	
Turn-on delay time	$t_{d(on)}$	—	13	—	ns	$I_D = 4 \text{ A}, V_{GS} = 10 \text{ V},$
Rise time	t_r	—	55	—	ns	$R_L = 7.5$
Turn-off delay time	$t_{d(off)}$	—	65	—	ns	
Fall time	t_f	—	37	—	ns	
Body to drain diode forward voltage	V_{DF}	—	1.0	—	V	$I_F = 7 \text{ A}, V_{GS} = 0$
Body to drain diode reverse recovery time	t_{rr}	—	180	—	ns	$I_F = 7 \text{ A}, V_{GS} = 0,$ $di_F/dt = 100 \text{ A}/\mu\text{s}$

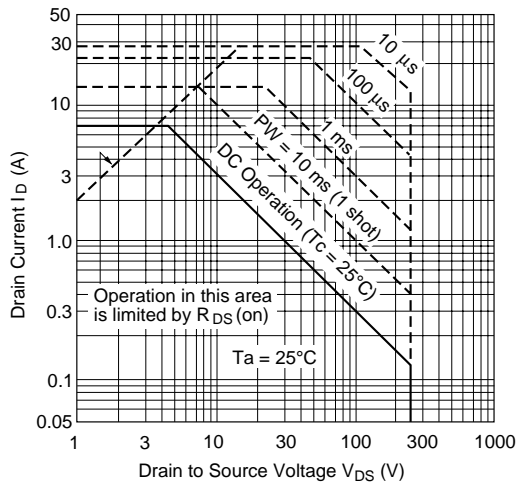
Note 1. Pulse test

See characteristic curves of 2SK1667.

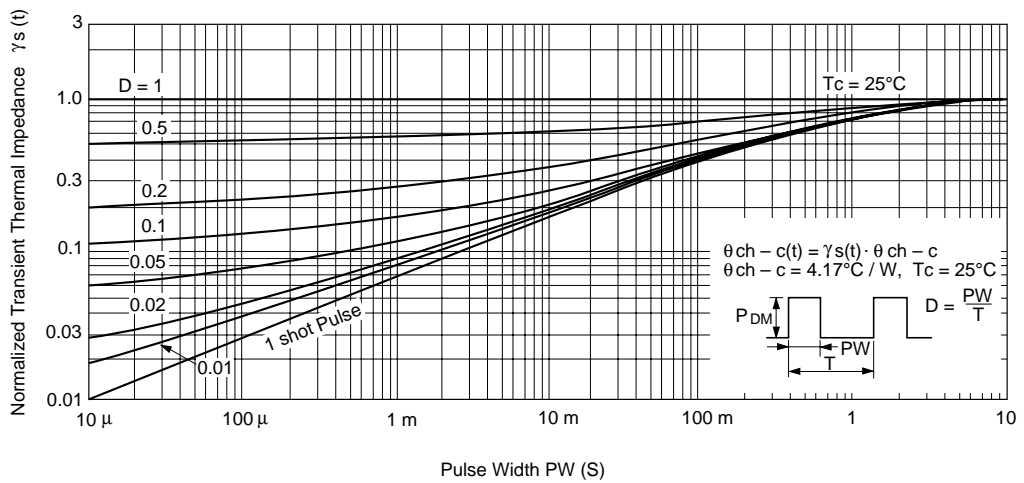
Power vs. Temperature Derating



Maximum Safe Operation Area



Normalized Transient Thermal Impedance vs. Pulse Width



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