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# 2SK1668

Silicon N-Channel MOS FET

# HITACHI

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## Application

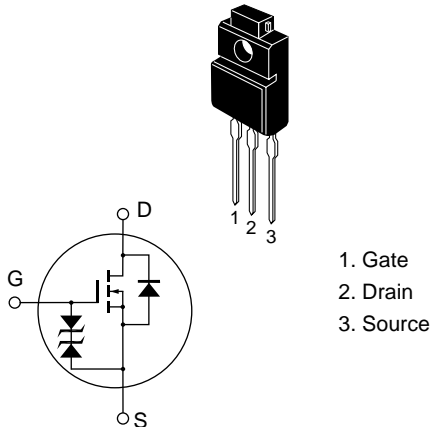
High speed power switching

## Features

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

## Outline

TO-220FM



Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	V <sub>DSS</sub>	250	V
Gate to source voltage	V <sub>GSS</sub>	±30	V
Drain current	I <sub>D</sub>	7	A
Drain peak current	I <sub>D(pulse)</sub> <sup>*1</sup>	28	A
Body to drain diode reverse drain current	I <sub>DR</sub>	7	A
Channel dissipation	Pch <sup>*2</sup>	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<sub>C</sub> = 25°C

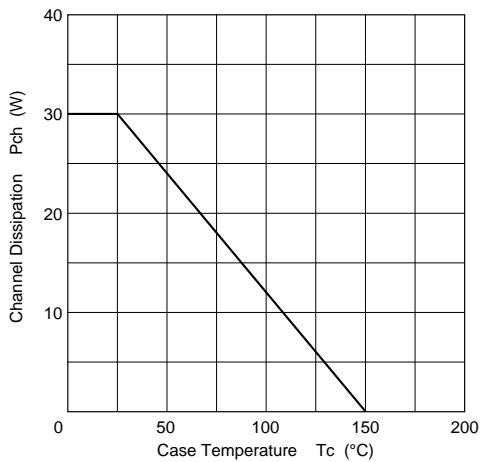
**Electrical Characteristics** (Ta = 25°C)

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	$V_{(BR)GSS}$	$\pm 30$	—	—	V	$I_G = \pm 100 \text{ }\mu\text{A}$ , $V_{DS} = 0$
Gate to source leak current	$I_{GSS}$	—	—	$\pm 10$	$\mu\text{A}$	$V_{GS} = \pm 25 \text{ V}$ , $V_{DS} = 0$
Zero gate voltage drain current	$I_{DSS}$	—	—	250	$\mu\text{A}$	$V_{DS} = 200 \text{ V}$ , $V_{GS} = 0$
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	$\Omega$	$I_D = 4 \text{ A}$ , $V_{GS} = 10 \text{ V}^{*1}$
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	$V_{DS} = 10 \text{ V}$ , $V_{GS} = 0$ , $f = 1 \text{ MHz}$
Output capacitance	$C_{oss}$	—	265	—	pF	
Reverse transfer capacitance	$C_{rss}$	—	45	—	pF	
Turn-on delay time	$t_{d(on)}$	—	13	—	ns	$I_D = 4 \text{ A}$ , $V_{GS} = 10 \text{ V}$ , $R_L = 7.5 \text{ }\Omega$
Rise time	$t_r$	—	55	—	ns	
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	$I_F = 7 \text{ A}$ , $V_{GS} = 0$ , $di_F/dt = 100 \text{ A}/\mu\text{s}$

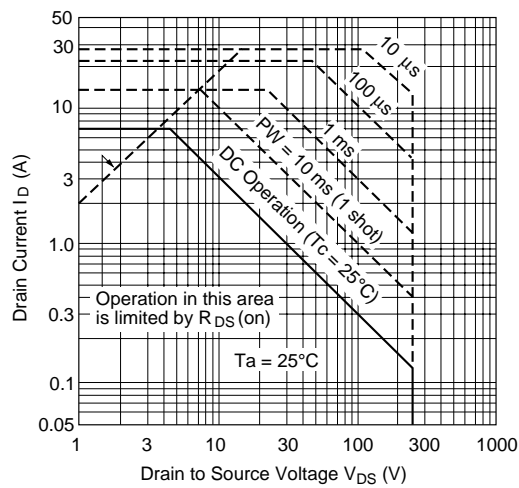
Note 1. Pulse test

See characteristic curves of 2SK1667.

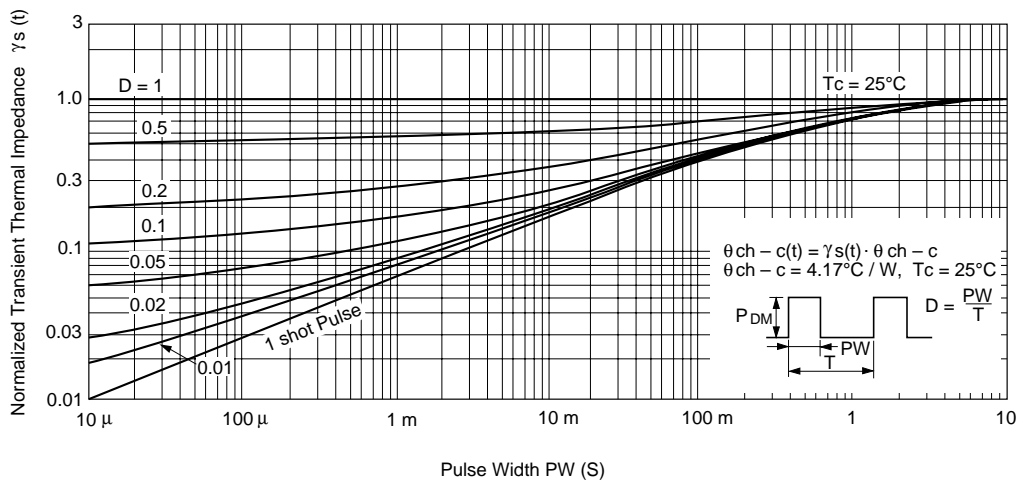
Power vs. Temperature Derating



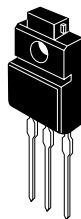
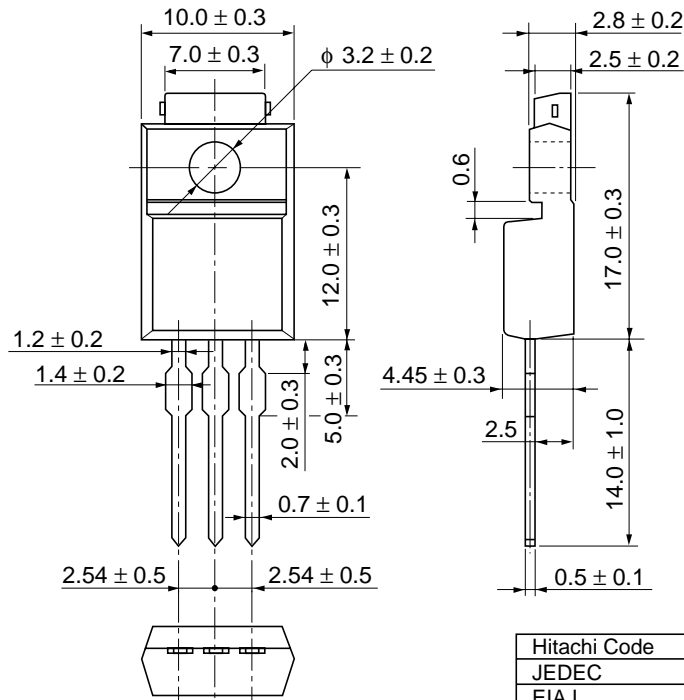
Maximum Safe Operation Area



Normalized Transient Thermal Impedance vs. Pulse Width



Unit: mm



Hitachi Code	TO-220FM
JEDEC	—
EIAJ	Conforms
Weight (reference value)	1.8 g

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