

# 2SJ222

Silicon P-Channel MOS FET

# HITACHI

## Application

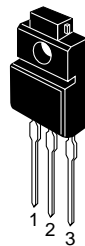
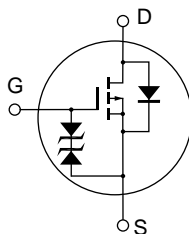
High speed power switching

## Features

- Low on-resistance
- High speed switching
- Low drive current
- 4 V gate drive device
  - Can be driven from 5 V source
- Suitable for motor drive, DC-DC converter, power switch and solenoid drive

## Outline

TO-220FM



1. Gate
2. Drain
3. Source

**Absolute Maximum Ratings** ( $T_a = 25^\circ\text{C}$ )

<b>Item</b>	<b>Symbol</b>	<b>Ratings</b>	<b>Unit</b>
Drain to source voltage	$V_{\text{DSS}}$	-100	V
Gate to source voltage	$V_{\text{GSS}}$	$\pm 20$	V
Drain current	$I_{\text{D}}$	-20	A
Drain peak current	$I_{\text{D(pulse)}}^{*1}$	-80	A
Body to drain diode reverse drain current	$I_{\text{DR}}$	-20	A
Channel dissipation	$\text{Pch}^{*2}$	35	W
Channel temperature	$T_{\text{ch}}$	150	$^\circ\text{C}$
Storage temperature	$T_{\text{stg}}$	-55 to +150	$^\circ\text{C}$

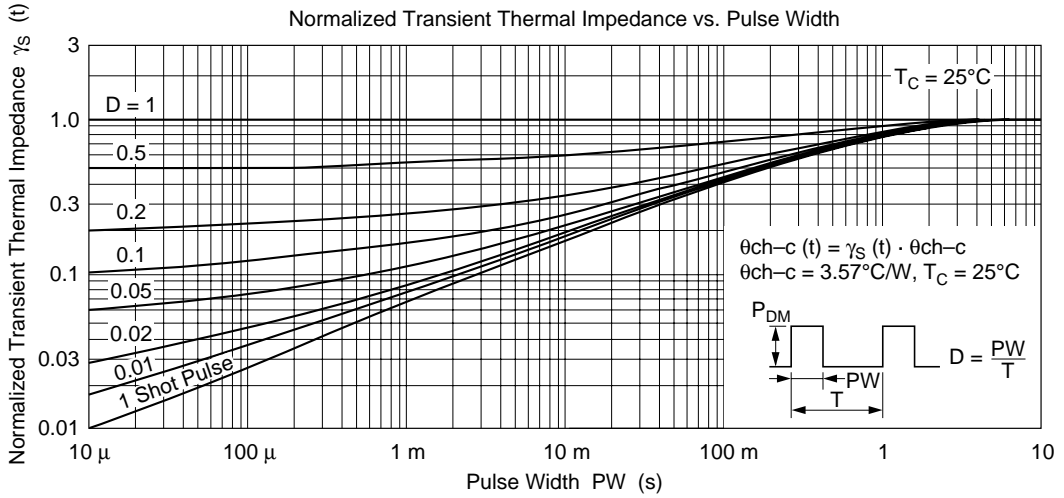
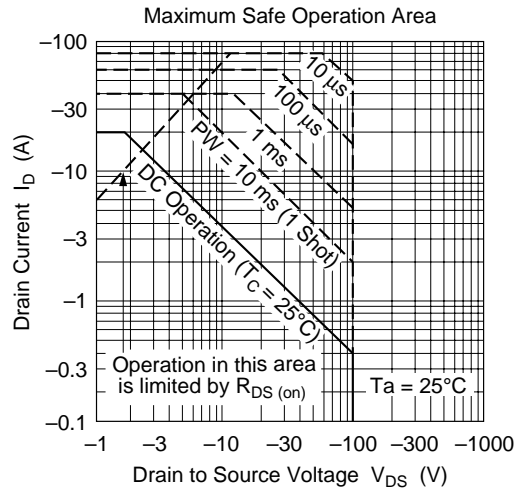
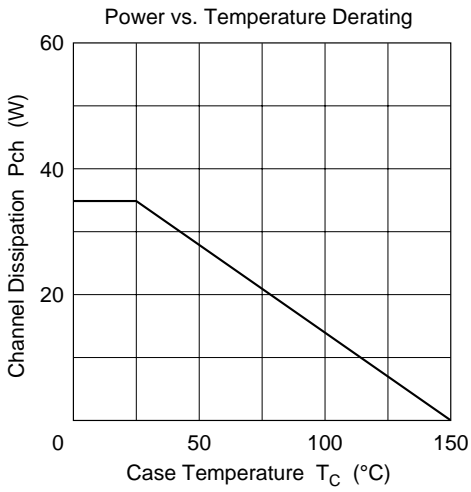
Notes: 1.  $PW \leq 10 \mu\text{s}$ , duty cycle  $\leq 1\%$   
2. Value at  $T_c = 25^\circ\text{C}$

## Electrical Characteristics (Ta = 25°C)

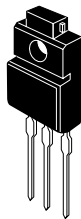
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	-100	—	—	V	$I_D = -10 \text{ mA}, V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	$\pm 20$	—	—	V	$I_G = \pm 100 \text{ }\mu\text{A}, V_{DS} = 0$
Gate to source leak current	$I_{GSS}$	—	—	$\pm 10$	$\mu\text{A}$	$V_{GS} = \pm 16 \text{ V}, V_{DS} = 0$
Zero gate voltage drain current	$I_{DSS}$	—	—	-250	$\mu\text{A}$	$V_{DS} = -80 \text{ V}, V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	-1.0	—	-2.0	V	$I_D = -1 \text{ mA}, V_{DS} = -10 \text{ V}$
Static drain to source on state resistance	$R_{DS(on)}$	—	0.12	0.16	$\Omega$	$I_D = -10 \text{ A}, V_{GS} = -10 \text{ V}^{*1}$
		—	0.16	0.22		$I_D = -10 \text{ A}, V_{GS} = -4 \text{ V}^{*1}$
Forward transfer admittance	$ y_{fs} $	7.5	12	—	S	$I_D = -10 \text{ A}, V_{DS} = -10 \text{ V}^{*1}$
Input capacitance	$C_{iss}$	—	1800	—	pF	$V_{DS} = -10 \text{ V}, V_{GS} = 0,$
Output capacitance	$C_{oss}$	—	680	—	pF	$f = 1 \text{ MHz}$
Reverse transfer capacitance	$C_{rss}$	—	145	—	pF	
Turn-on delay time	$t_{d(on)}$	—	15	—	ns	$I_D = -10 \text{ A}, V_{GS} = -10 \text{ V},$
Rise time	$t_r$	—	115	—	ns	$R_L = 3 \text{ }\Omega$
Turn-off delay time	$t_{d(off)}$	—	320	—	ns	
Fall time	$t_f$	—	170	—	ns	
Body to drain diode forward voltage	$V_{DF}$	—	-1.05	—	V	$I_F = -20 \text{ A}, V_{GS} = 0$
Body to drain diode reverse recovery time	$t_{rr}$	—	280	—	ns	$I_F = -20 \text{ A}, V_{GS} = 0,$ $di_F/dt = 50 \text{ A}/\mu\text{s}$

Note: 1. Pulse test

See characteristic curves of 2SJ221



Unit: mm



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

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