2SJ222

Silicon P-Channel MOS FET

HITACHI

Application

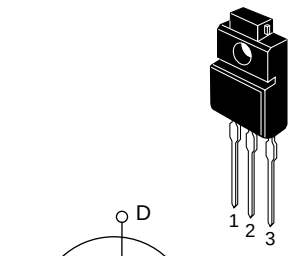
High speed power switching

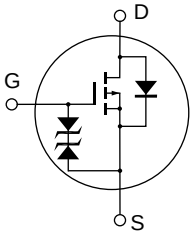
Features

- 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

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Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	V_{DSS}	–100	V
Gate to source voltage	V_{GSS}	±20	V
Drain current	I_D	–20	A
Drain peak current	$I_{D(pulse)}$*[1]	–80	A
Body to drain diode reverse drain current	I_{DR}	–20	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 T_C = 25°C

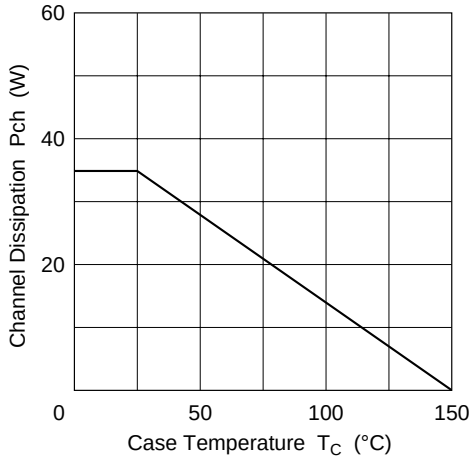
Electrical Characteristics (Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	–100	—	—	V	I_D = –10 mA, V_{GS} = 0
Gate to source breakdown voltage	$V_{(BR)GSS}$	±20	—	—	V	I_G = ±100 µA, V_{DS} = 0
Gate to source leak current	I_{GSS}	—	—	±10	µA	V_{GS} = ±16 V, V_{DS} = 0
Zero gate voltage drain current	I_{DSS}	—	—	–250	µA	V_{DS} = –80 V, V_{GS} = 0
Gate to source cutoff voltage	$V_{GS(off)}$	–1.0	—	–2.0	V	I_D = –1 mA, V_{DS} = –10 V
Static drain to source on state resistance	$R_{DS(on)}$	—	0.12	0.16	Ω	I_D = –10 A, V_{GS} = –10 V*[1]
		—	0.16	0.22		I_D = –10 A, V_{GS} = –4 V*[1]
Forward transfer admittance	$\|y_{fs}\|$	7.5	12	—	S	I_D = –10 A, V_{DS} = –10 V*[1]
Input capacitance	Ciss	—	1800	—	pF	V_{DS} = –10 V, V_{GS} = 0, f = 1 MHz
Output capacitance	Coss	—	680	—	pF	
Reverse transfer capacitance	Crss	—	145	—	pF	
Turn-on delay time	$t_{d(on)}$	—	15	—	ns	I_D = –10 A, V_{GS} = –10 V, R_L = 3 Ω
Rise time	t_r	—	115	—	ns	
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 A, V_{GS} = 0
Body to drain diode reverse recovery time	t_{rr}	—	280	—	ns	I_F = –20 A, V_{GS} = 0, di_F/dt = 50 A/µs

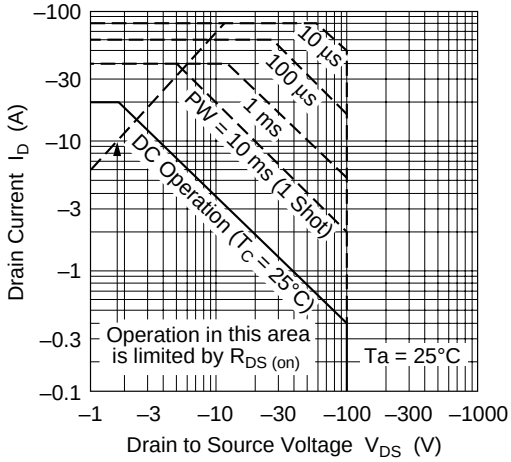
Note: 1. Pulse test

See characteristic curves of 2SJ221

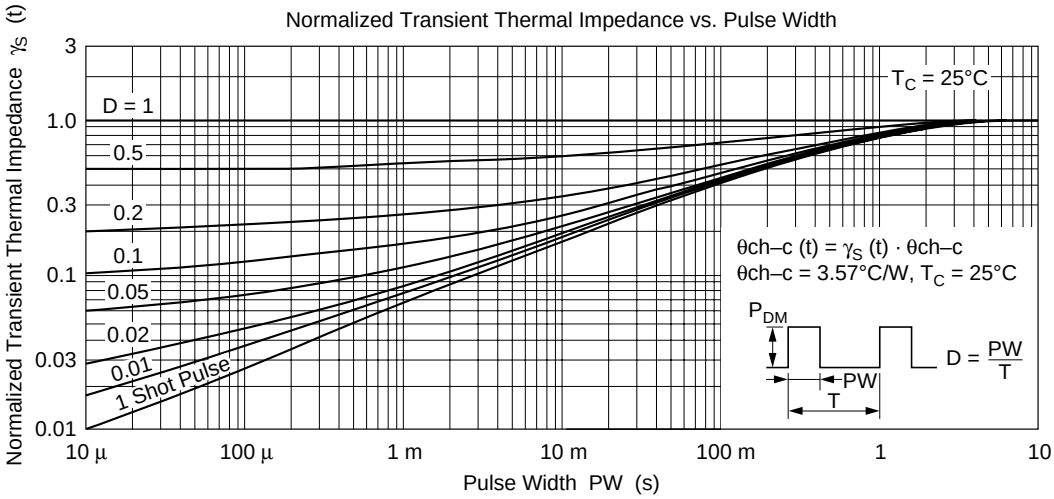
Power vs. Temperature Derating



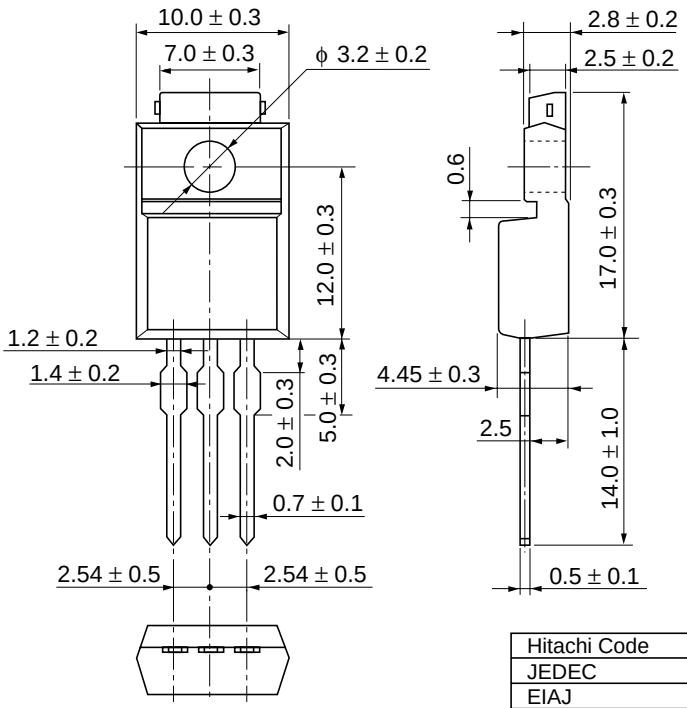
Maximum Safe Operation Area

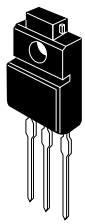


Normalized Transient Thermal Impedance vs. Pulse Width



Unit: mm





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

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