2SJ176

Silicon P-Channel MOS FET

HITACHI

November 1996

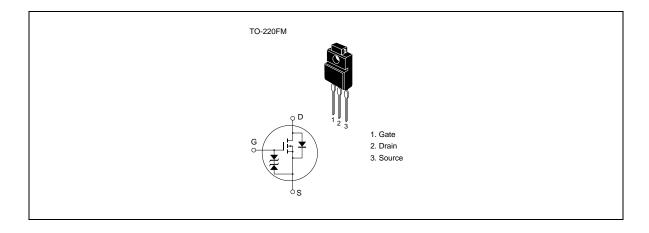
Application

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



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Absolute Maximum Ratings ($Ta = 25^{\circ}C$)

Item	Symbol	Ratings	Unit
Drain to source voltage	V _{DSS}	-60	V
Gate to source voltage	V _{gss}	±20	V
Drain current	I _D	-15	A
Drain peak current	I _{D(pulse)} *1	-60	A
Body to drain diode reverse drain current	I _{DR}	-15	A
Channel dissipation	Pch*2	30	W
Channel temperature	Tch	150	°C
Storage temperature	Tstg	-55 to +150	°C

Notes 1. $PW \le 10 \mu s$, duty cycle $\le 1\%$

2. Value at $T_c = 25$ °C

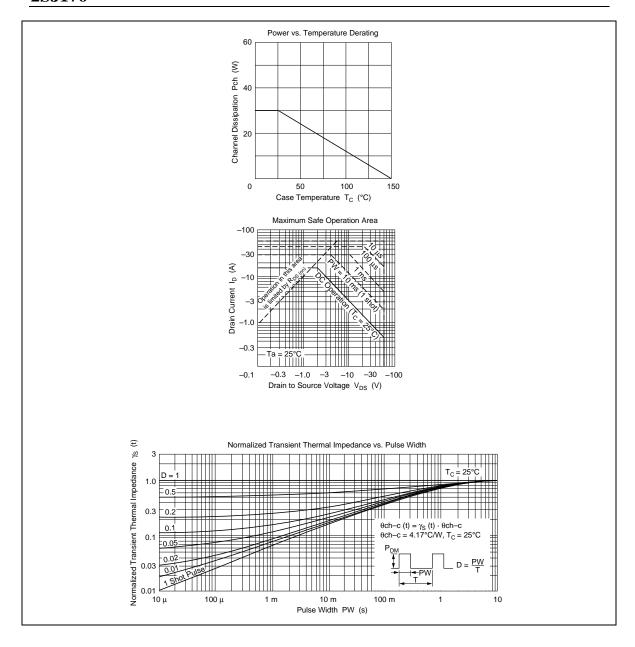
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Electrical Characteristics ($Ta = 25^{\circ}C$)

Item	Symbol	Min	Тур	Max	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	-60	_	_	V	$I_{D} = -10 \text{ mA}, V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	±20	_	_	V	$I_{G} = \pm 100 \ \mu A, \ V_{DS} = 0$
Gate to source leak current	I _{GSS}	_	_	±10	μA	$V_{GS} = \pm 16 \text{ V}, V_{DS} = 0$
Zero gate voltage drain current	I _{DSS}	_	_	-250	μA	$V_{DS} = -50 \text{ V}, V_{GS} = 0$
Gate to source cutoff voltage	$V_{\text{GS(off)}}$	-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)}	_	0.09	0.11	Ω	$I_D = -8 \text{ A}, V_{GS} = -10 \text{ V}^{*1}$
		_	0.13	0.17	_	$I_D = -8 \text{ A}, V_{GS} = -4 \text{ V}^{*1}$
Forward transfer admittance	y _{fs}	6.0	9.5	_	S	$I_D = -8 \text{ A}, V_{DS} = -10 \text{ V}^{*1}$
Input capacitance	Ciss	_	1400	_	pF	$V_{DS} = -10 \text{ V}, V_{GS} = 0,$ f = 1 MHz
Output capacitance	Coss	_	720	_	pF	_
Reverse transfer capacitance	Crss	_	220	_	pF	_
Turn-on delay time	t _{d(on)}	_	15	_	ns	$I_{D} = -8 \text{ A}, V_{GS} = -10 \text{ V},$ $R_{L} = 3.75 \Omega$
Rise time	t,	_	120	_	ns	_
Turn-off delay time	t _{d(off)}	_	220	_	ns	
Fall time	t _f	_	160	_	ns	_
Body to drain diode forward voltage	V_{DF}	_	-1.2	_	V	$I_{F} = -15 \text{ A}, V_{GS} = 0$
Body to drain diode reverse recovery time	t _{rr}	_	230	_	ns	$I_{F} = -15 \text{ A}, V_{GS} = 0,$ $di_{F}/dt = 50 \text{ A}/\mu\text{s}$
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Note 1. Pulse test

See characteristic curves of 2SJ173



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