
2SK1306

Silicon N-Channel MOS FET

HITACHI

ADE-208-1264 (Z)

1st. Edition

Mar. 2001

Application

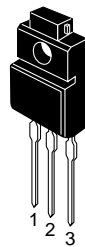
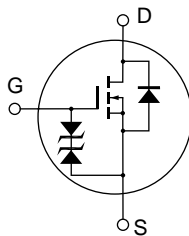
High speed power switching

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 (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	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 10 μs, duty cycle 1%
2. Value at T_C = 25°C

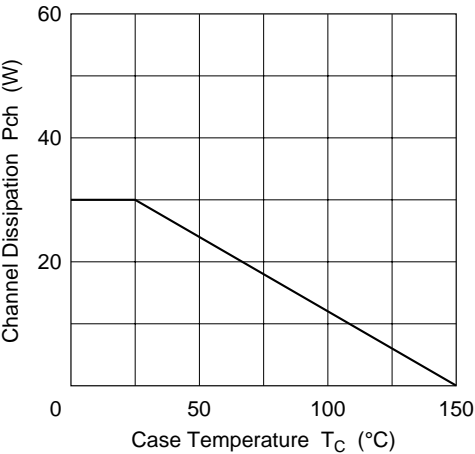
Electrical Characteristics (Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	100	—	—	V	$I_D = 10 \text{ mA}$, $V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	±20	—	—	V	$I_G = \pm 100 \text{ } \mu\text{A}$, $V_{DS} = 0$
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	$V_{DS} = 80 \text{ V}$, $V_{GS} = 0$
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	$R_{DS(on)}$	—	0.10	0.13		$I_D = 8 \text{ A}$, $V_{GS} = 10 \text{ V}^{*1}$
		—	0.13	0.18		$I_D = 8 \text{ A}$, $V_{GS} = 4 \text{ V}^{*1}$
Forward transfer admittance	$ y_{fs} $	7	11	—	S	$I_D = 8 \text{ A}$, $V_{DS} = 10 \text{ V}^{*1}$
Input capacitance	C_{iss}	—	860	—	pF	$V_{DS} = 10 \text{ V}$, $V_{GS} = 0$, $f = 1 \text{ MHz}$
Output capacitance	C_{oss}	—	340	—	pF	
Reverse transfer capacitance	C_{rss}	—	100	—	pF	
Turn-on delay time	$t_{d(on)}$	—	10	—	ns	$I_D = 8 \text{ A}$, $V_{GS} = 10 \text{ V}$, $R_L = 3.75$
Rise time	t_r	—	70	—	ns	
Turn-off delay time	$t_{d(off)}$	—	180	—	ns	
Fall time	t_f	—	100	—	ns	
Body to drain diode forward voltage	V_{DF}	—	1.3	—	V	$I_F = 15 \text{ A}$, $V_{GS} = 0$
Body to drain diode reverse recovery time	t_{rr}	—	250	—	ns	$I_F = 15 \text{ A}$, $V_{GS} = 0$, $di_F/dt = 50 \text{ A}/\mu\text{s}$

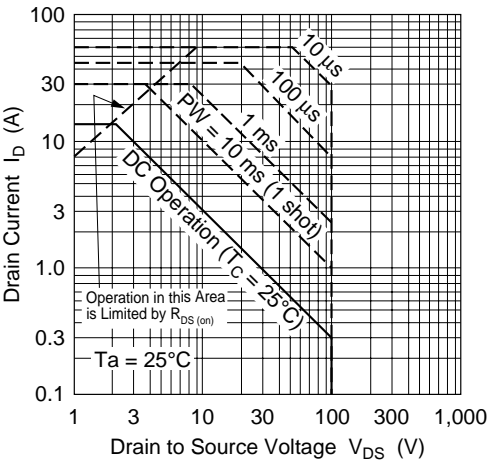
Note: 1. Pulse test

See characteristic curves of 2SK1301.

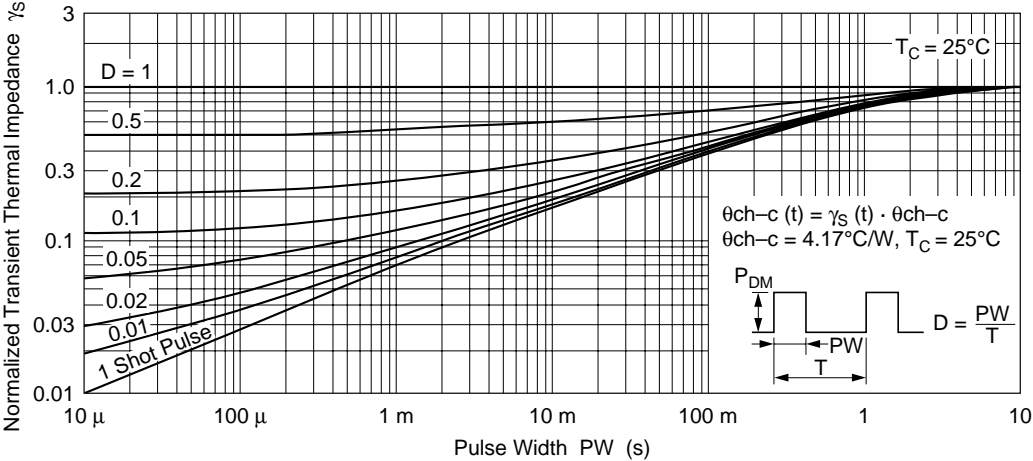
Power vs. Temperature Derating



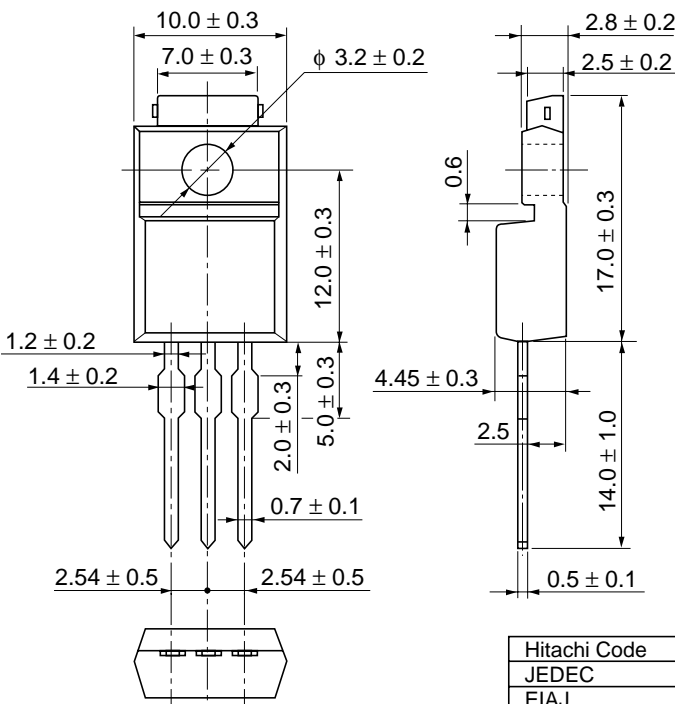
Maximum Safe Operation Area



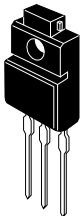
Normalized Transient Thermal Impedance vs. Pulse Width



Package Dimensions



As of January, 2001
Unit: mm



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

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