HAT1053M

Silicon P Channel Power MOS FET
Power Switching

HITACHI

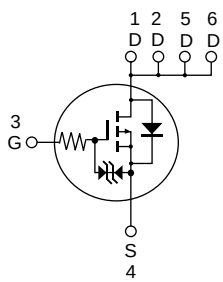
ADE-208-1220 (Z)
Preliminary 1st. Edition
Dec. 2000

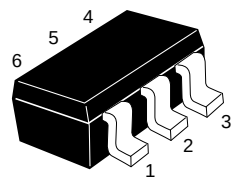
Features

- Low on-resistance
- Low drive current
- High density mounting
- 2.5 V gate drive device

Outline

TSOP-6





4	Source
3	Gate
1, 2, 5, 6	Drain

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Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	V_{DSS}	–20	V
Gate to source voltage	V_{GSS}	±12	V
Drain current	I_D	–5.5	A
Drain peak current	$I_{D(pulse)}$ Note 1	–22	A
Body-drain diode reverse drain current	I_{DR} Note 2	–5.5	A
Channel dissipation	$Pch_{(pulse)}$ Note 2	2.0	W
	$Pch_{(continuous)}$ Note 3	1.05	W
Channel temperature	Tch	150	°C
Storage temperature	Tstg	–55 to +150	°C

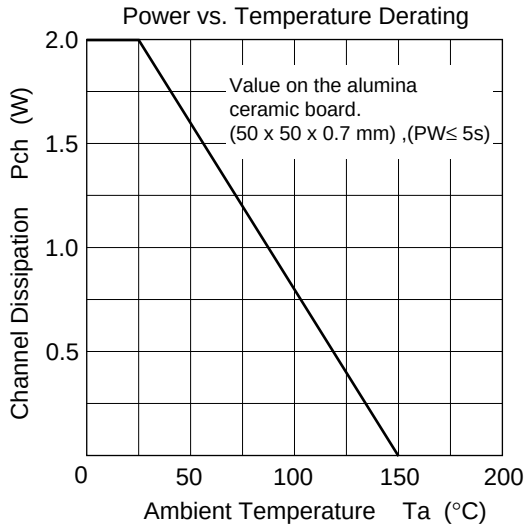
Note: 1. PW ≤ 10 µs, duty cycle ≤ 1%
2. Value on the alumina ceramic board (50 x 50 x 0.7 mm), PW ≤ 5 s, Ta = 25°C
3. Value on the alumina ceramic board (50 x 50 x 0.7 mm), Ta = 25°C

Electrical Characteristics (Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	–20	—	—	V	I_D = –10 mA, V_{GS} = 0
Gate to source leak current	I_{GSS}	—	—	±10	µA	V_{GS} = ±12 V, V_{DS} = 0
Zero gate voltege drain current	I_{DSS}	—	—	–1	µA	V_{DS} = –20 V, V_{GS} = 0
Gate to source cutoff voltage	$V_{GS(off)}$	–0.4	—	–1.4	V	I_D = –1 mA, V_{DS} = –10 V
Static drain to source on state resistance	$R_{DS(on)}$	—	34	41	mΩ	I_D = –3 A, V_{GS} = –4.5 V Note 1
		—	53	64	mΩ	I_D = –3 A, V_{GS} = –2.5 V Note 1
Forward transfer admittance	$\|y_{fs}\|$	6	8.5	—	S	I_D = –3 A, V_{DS} = –10 V Note 1
Input capacitance	Ciss	—	1240	—	pF	V_{DS} = –10 V
Output capacitance	Coss	—	285	—	pF	V_{GS} = 0
Reverse transfer capacitance	Crss	—	110	—	pF	f = 1 MHz
Turn-on delay time	$t_{d(on)}$	—	60	—	ns	V_{GS} = –4.5 V, I_D = –3 A
Rise time	t_r	—	310	—	ns	R_L = 3.3 Ω
Turn-off delay time	$t_{d(off)}$	—	660	—	ns	
Fall time	t_f	—	570	—	ns	
Body–drain diode forward voltage	V_{DF}	—	–0.85	–1.1	V	I_F = –5.5 A, V_{GS} = 0

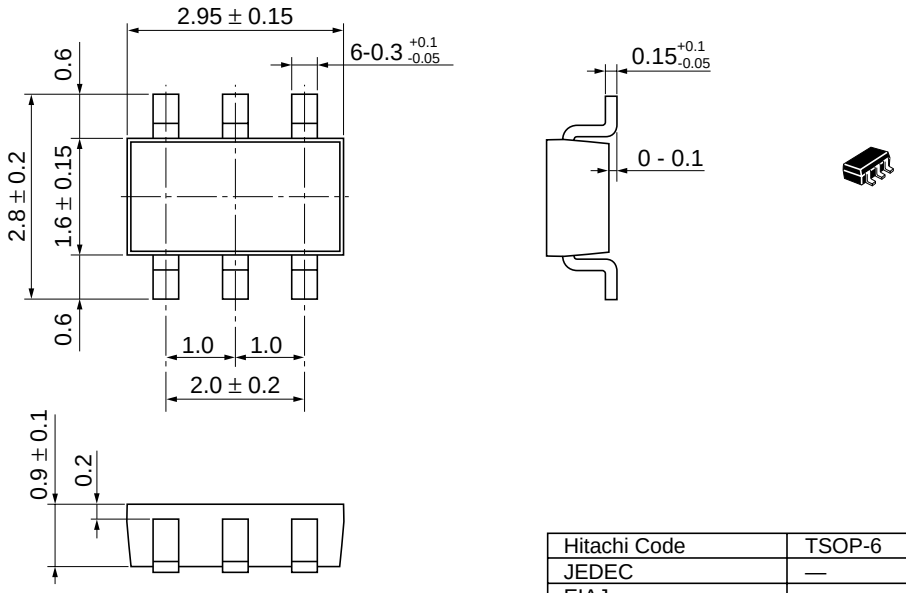
Note: 1. Pulse test

Main Characteristics



Package Dimensions

As of January, 2001
Unit: mm



Hitachi Code	TSOP-6
JEDEC	—
EIAJ	—
Mass (reference value)	0.012 g

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