HAT2053M

Silicon N Channel Power MOS FET
Power Switching

HITACHI

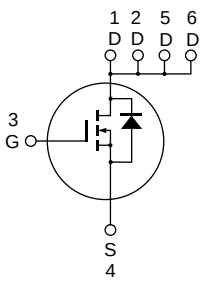
ADE-208-755B(Z)
Preliminary
3rd. Edition
December 1998

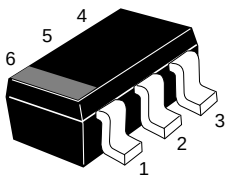
Features

- Low on-resistance
- Low drive current
- High density mounting
- 2.5V gate drive device can be driven from 3V source

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 *2	6.1	A
Drain peak current	$I_{D(pulse)}$ *1	24.4	A
Body-drain diode reverse drain current	I_{DR} *2	6.1	A
Channel dissipation	$Pch_{(pulse)}$ *2	2.0	W
	$Pch_{(continuous)}$ *3	1.05	W
Channel temperature	Tch	150	°C
Storage temperature	Tstg	–55 to +150	°C

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

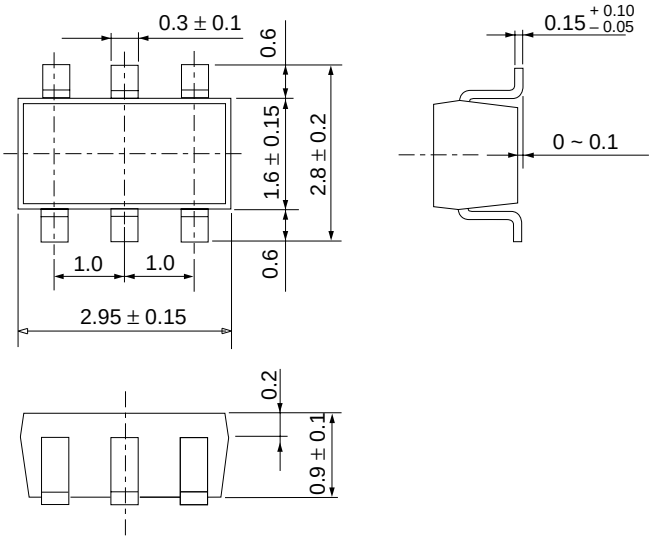
Electrical Characteristics (Ta = 25°C)

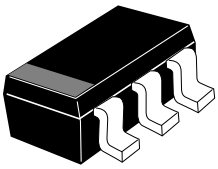
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	20	—	—	V	I_D = 10mA, V_{GS} = 0
Gate to source leak current	I_{GSS}	—	—	±0.1	µA	V_{GS} = ±12V, V_{DS} = 0
Zero gate voltege drain current	I_{DSS}	—	—	1	µA	V_{DS} = 20 V, V_{GS} = 0
Gate to source cutoff voltage	$V_{GS(off)}$	0.4	—	1.4	V	V_{DS} = 10V, I_D = 1mA
Static drain to source on state resistance	$R_{DS(on)}$	—	28	33	mΩ	I_D = 3A, V_{GS} = 4.5V *1
	$R_{DS(on)}$	—	37	48	mΩ	I_D = 3A, V_{GS} = 2.5V *1
Forward transfer admittance	$\|y_{fs}\|$	6.5	11	—	S	I_D = 3A, V_{DS} = 10V *1
Input capacitance	Ciss	—	570	—	pF	V_{DS} = 10V
Output capacitance	Coss	—	220	—	pF	V_{GS} = 0
Reverse transfer capacitance	Crss	—	160	—	pF	f = 1MHz
Turn-on delay time	$t_{d(on)}$	—	15	—	ns	V_{GS} = 4.5V, I_D = 3A
Rise time	t_r	—	100	—	ns	R_L = 3.3Ω
Turn-off delay time	$t_{d(off)}$	—	90	—	ns	
Fall time	t_f	—	105	—	ns	
Body–drain diode forward voltage	V_{DF}	—	0.95	—	V	IF = 6.1A, V_{GS} = 0 *1
Body–drain diode reverse recovery time	t_{rr}	—	(50)	—	ns	IF = 6.1A, V_{GS} = 0 diF/ dt =20A/µs

Note: 1. Pulse test

Package Dimensions

Unit: mm





Hitachi Code	TSOP-6
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