

# HAT2054M

Silicon N Channel Power MOS FET  
Power Switching

## HITACHI

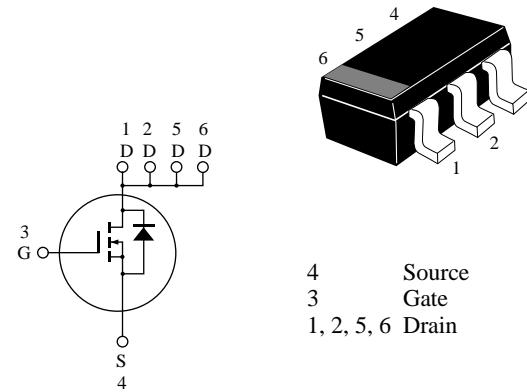
ADE-208-756B (Z)  
Preliminary 3rd. Edition  
Dec. 1998

### Features

- Low on-resistance
- Low drive current
- High density mounting
- 4.5V gate drive device can be driven from 5V source

### Outline

TSOP-6



## Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	V <sub>DSS</sub>	30	V
Gate to source voltage	V <sub>GSS</sub>	±20	V
Drain current	I <sub>D</sub> <sup>*2</sup>	6.3	A
Drain peak current	I <sub>D(pulse)</sub> <sup>*1</sup>	25.2	A
Body-drain diode reverse drain current	I <sub>DR</sub> <sup>*2</sup>	6.3	A
Channel dissipation	P <sub>ch(pulse)</sub> <sup>*2</sup>	2.0	W
	P <sub>ch(continuous)</sub> <sup>*3</sup>	1.05	W
Channel temperature	T <sub>ch</sub>	150	°C
Storage temperature	T <sub>stg</sub>	−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

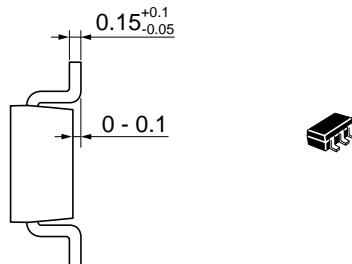
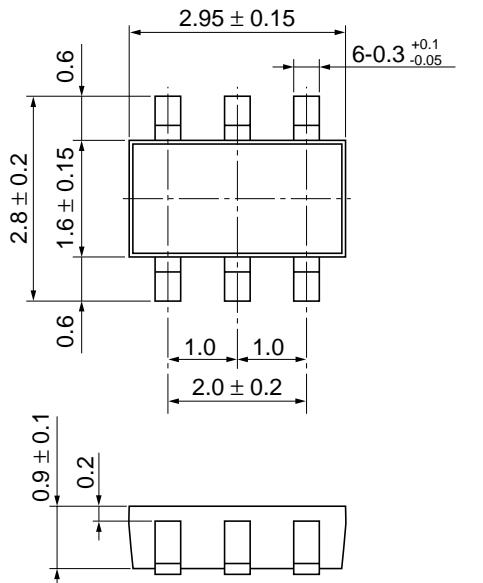
## Electrical Characteristics (Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	V <sub>(BR)DSS</sub>	30	—	—	V	I <sub>D</sub> = 10mA, V <sub>GS</sub> = 0
Gate to source leak current	I <sub>GSS</sub>	—	—	±0.1	μA	V <sub>GS</sub> = ±20V, V <sub>DS</sub> = 0
Zero gate voltage drain current	I <sub>DSS</sub>	—	—	1	μA	V <sub>DS</sub> = 30 V, V <sub>GS</sub> = 0
Gate to source cutoff voltage	V <sub>GS(off)</sub>	1.0	—	2.5	V	V <sub>DS</sub> = 10V, I <sub>D</sub> = 1mA
Static drain to source on state resistance	R <sub>DS(on)</sub>	—	26	31	mΩ	I <sub>D</sub> = 3A, V <sub>GS</sub> = 10V <sup>*1</sup>
Forward transfer admittance	y <sub>fs</sub>	4	7	—	S	I <sub>D</sub> = 3A, V <sub>DS</sub> = 10V <sup>*1</sup>
Input capacitance	C <sub>iss</sub>	—	620	—	pF	V <sub>DS</sub> = 10V
Output capacitance	C <sub>oss</sub>	—	170	—	pF	V <sub>GS</sub> = 0
Reverse transfer capacitance	C <sub>rss</sub>	—	110	—	pF	f = 1MHz
Turn-on delay time	t <sub>d(on)</sub>	—	13	—	ns	V <sub>GS</sub> = 10V, I <sub>D</sub> = 3A
Rise time	t <sub>r</sub>	—	90	—	ns	R <sub>L</sub> = 3.3Ω
Turn-off delay time	t <sub>d(off)</sub>	—	50	—	ns	
Fall time	t <sub>f</sub>	—	40	—	ns	
Body-drain diode forward voltage	V <sub>DF</sub>	—	0.95	—	V	IF = 6.3A, V <sub>GS</sub> = 0 <sup>*1</sup>
Body-drain diode reverse recovery time	t <sub>rr</sub>	—	(50)	—	ns	IF = 6.3A, V <sub>GS</sub> = 0 dI/dt = 20A/μs

Note: 1. Pulse test

**Package Dimensions**

As of January, 2001  
Unit: mm



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

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