

HAT2053M

Silicon N Channel Power MOS FET
Power Switching

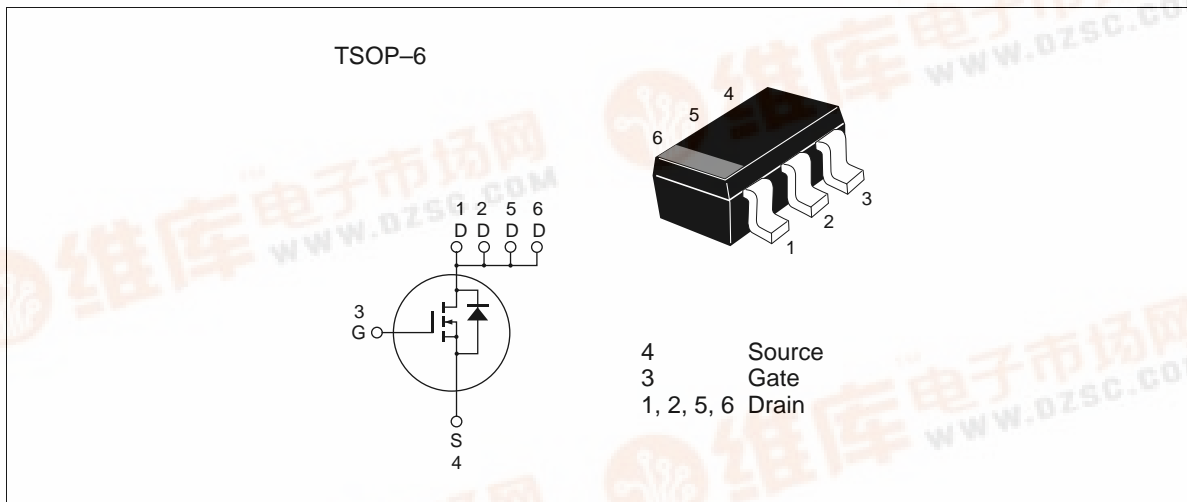
HITACHI

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



HAT2053M

Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Rated	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. $PW \leq 10\mu s$, duty cycle $\leq 1\%$

2. When using the alumina ceramic board (50 x 50 x 0.7 mm), $PW \leq 5s, Ta=25^\circ C$

3. When using the alumina ceramic board (50 x 50 x 0.7 mm), $Ta=25^\circ C$

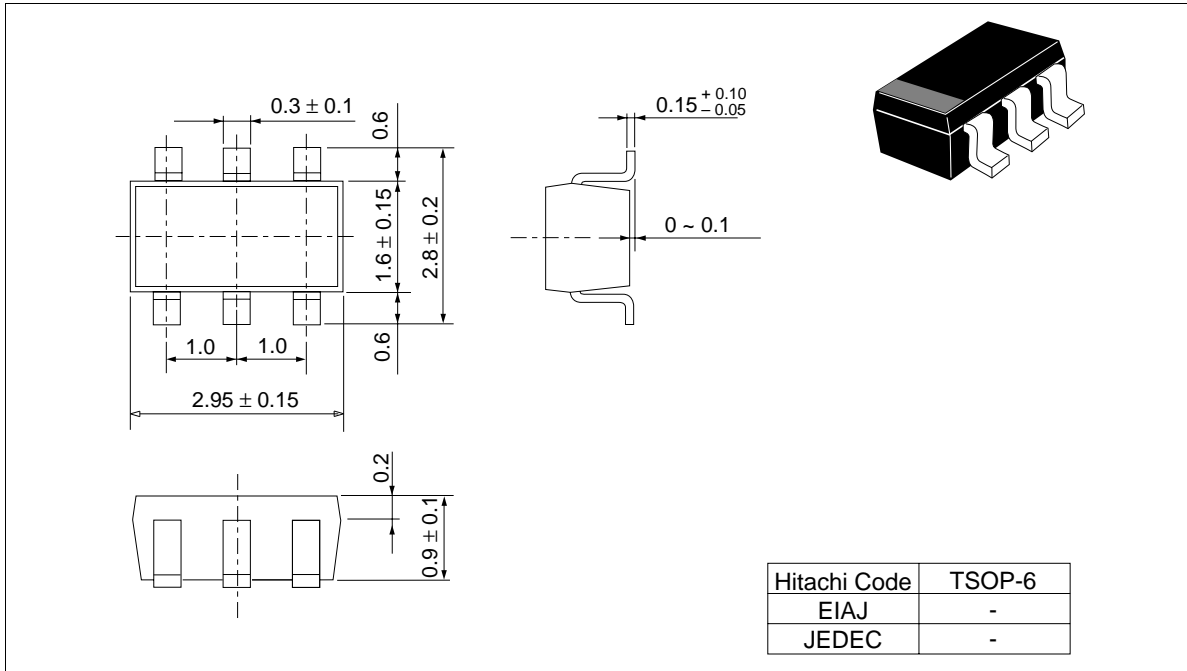
Electrical Characteristics (Ta = 25°C)

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	$V_{GS} = \pm 12V, V_{DS} = 0$
Zero gate voltage drain current	I_{DSS}	—	—	1	μA	$V_{DS} = 20V, V_{GS} = 0$
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	C_{iss}	—	570	—	pF	$V_{DS} = 10V$
Output capacitance	C_{oss}	—	220	—	pF	$V_{GS} = 0$
Reverse transfer capacitance	C_{rss}	—	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	$R_L = 3.3\Omega$
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	$IF = 6.1A, V_{GS} = 0$ $diF/dt = 20A/\mu s$

Note: 1. Pulse test

Package Dimensions

Unit: mm



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