

4AK23

Silicon N-Channel Power MOS FET Array

HITACHI

Application

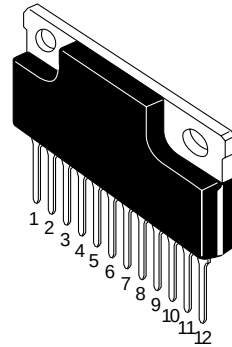
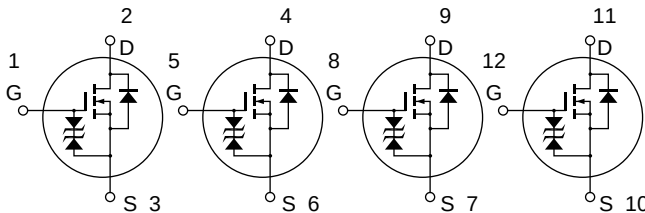
High speed power switching

Features

- Low on-resistance
 $R_{DS(on)} = 0.25 \Omega$, $V_{GS} = 10 \text{ V}$, $I_D = 2.5 \text{ A}$
- Low drive current
- High speed switching
- High density mounting
- Suitable for H-bridged motor driver

Outline

SP-12TA



1, 5, 8, 12. Gate
2, 4, 9, 11. Drain
3, 6, 7, 10. 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	5	A
Drain peak current	I _{D(pulse)} ^{*1}	20	A
Body to drain diode reverse drain current	I _{DR}	5	A
Channel dissipation	Pch (Tc = 25°C) ^{*2}	32	W
Channel dissipation	Pch ^{*2}	4	W
Channel temperature	Tch	150	°C
Storage temperature	Tstg	−55 to +150	°C

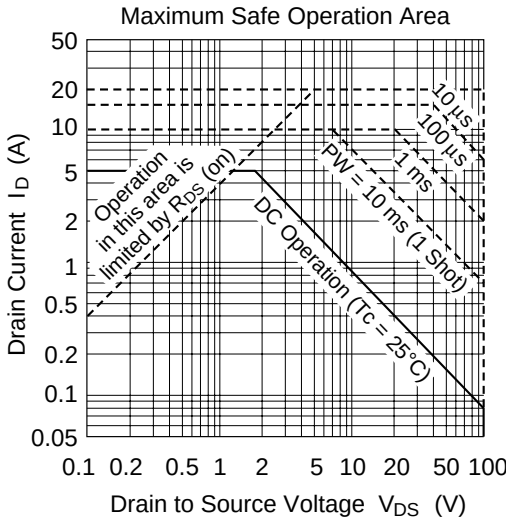
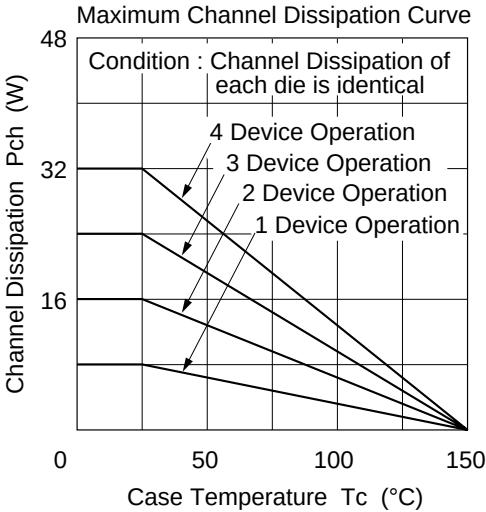
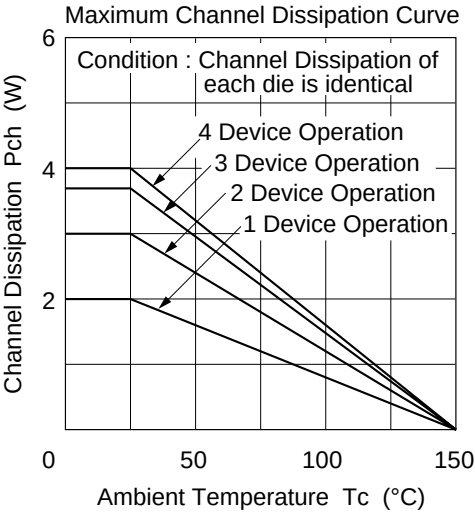
Notes: 1. PW ≤ 10 μs, duty cycle ≤ 1%
2. 4 Devices operation

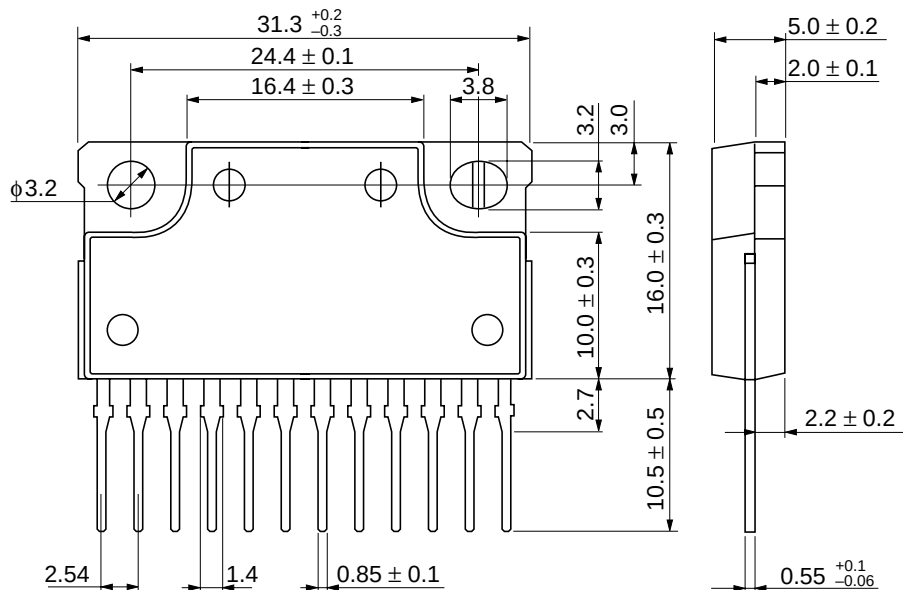
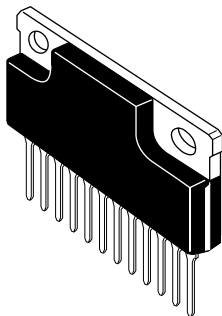
Electrical Characteristics (Ta = 25°C)

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	$R_{DS(on)}$	—	0.2	0.25	Ω	$I_D = 2.5 \text{ A}$ $V_{GS} = 10 \text{ V}^{*1}$
		—	0.25	0.35	Ω	$I_D = 2.5 \text{ A}$ $V_{GS} = 4 \text{ V}^{*1}$
Forward transfer admittance	$ y_{fs} $	3	5	—	S	$I_D = 2.5 \text{ A}$ $V_{DS} = 10 \text{ V}^{*1}$
Input capacitance	C_{iss}	—	525	—	pF	$V_{DS} = 10 \text{ V}$
Output capacitance	C_{oss}	—	205	—	pF	$V_{GS} = 0$
Reverse transfer capacitance	C_{rss}	—	60	—	pF	$f = 1 \text{ MHz}$
Turn-on delay time	$t_{d(on)}$	—	5	—	ns	$I_D = 2.5 \text{ A}$
Rise time	t_r	—	30	—	ns	$V_{GS} = 10 \text{ V}$
Turn-off delay time	$t_{d(off)}$	—	180	—	ns	$R_L = 12 \text{ }\Omega$
Fall time	t_f	—	65	—	ns	
Body to drain diode forward voltage	V_{DF}	—	1.0	—	V	$I_F = 5 \text{ A}$, $V_{GS} = 0$
Body to drain diode reverse recovery time	t_{rr}	—	170	—	μs	$I_F = 5 \text{ A}$, $V_{GS} = 0$, $dI_F/dt = 50 \text{ A}/\mu\text{s}$

Note: 1. Pulse Test

See characteristic curves of 2SK1300





Hitachi Code	SP-12TA
JEDEC	—
EIAJ	—
Weight (reference value)	6.1 g

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Hitachi, Ltd.

Semiconductor & Integrated Circuits.
Nippon Bldg., 2-6-2, Ohte-machi, Chiyoda-ku, Tokyo 100-0004, Japan
Tel: Tokyo (03) 3270-2111 Fax: (03) 3270-5109

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For further information write to:

Hitachi Semiconductor (America) Inc. 179 East Tasman Drive, San Jose, CA 95134 Tel: <1> (408) 433-1990 Fax: <1> (408) 433-0223	Hitachi Europe GmbH Electronic components Group Dornacher Straße 3 D-85622 Feldkirchen, Munich Germany Tel: <49> (89) 9 9180-0 Fax: <49> (89) 9 29 30 00 Hitachi Europe Ltd. Electronic Components Group. Whitebrook Park Lower Cookham Road Maidenhead Berkshire SL6 8YA, United Kingdom Tel: <44> (1628) 585000 Fax: <44> (1628) 778322
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Hitachi Asia Pte. Ltd. 16 Collyer Quay #20-00 Hitachi Tower Singapore 049318 Tel: 535-2100 Fax: 535-1533 Hitachi Asia Ltd. Taipei Branch Office 3F, Hung Kuo Building. No.167, Tun-Hwa North Road, Taipei (105) Tel: <886> (2) 2718-3666 Fax: <886> (2) 2718-8180
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Hitachi Asia (Hong Kong) Ltd.
Group III (Electronic Components)
7/F., North Tower, World Finance Centre,
Harbour City, Canton Road, Tsim Sha Tsui,
Kowloon, Hong Kong
Tel: <852> (2) 735 9218
Fax: <852> (2) 730 0281
Telex: 40815 HITEC HX

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