
2SK2096

Silicon N-Channel MOS FET

HITACHI

ADE-208-1344 (Z)

1st. Edition

Mar. 2001

Application

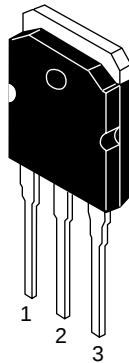
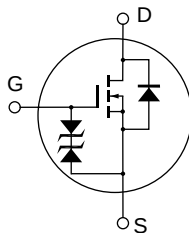
High speed power switching

Features

- Low on-resistance
- High speed switching
- Low drive current
- 4 V gate drive device can be driven from 5 V source
- Suitable for switching regulator, DC-DC converter
- Avalanche ratings

Outline

TO-3P



1. Gate
2. Drain
(Flange)
3. Source

Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	V_{DSS}	60	V
Gate to source voltage	V_{GSS}	± 20	V
Drain current	I_D	45	A
Drain peak current	$I_{D(pulse)}^{*1}$	180	A
Body to drain diode reverse drain current	I_{DR}	45	A
Avalanche current	I_{AP}^{*3}	45	A
Avalanche energy	E_{AR}^{*3}	173	mJ
Channel dissipation	Pch^{*2}	100	W
Channel temperature	Tch	150	°C
Storage temperature	Tstg	-55 to +150	°C

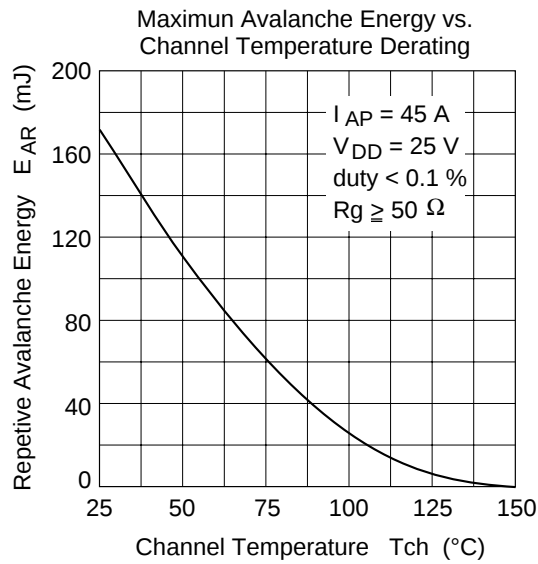
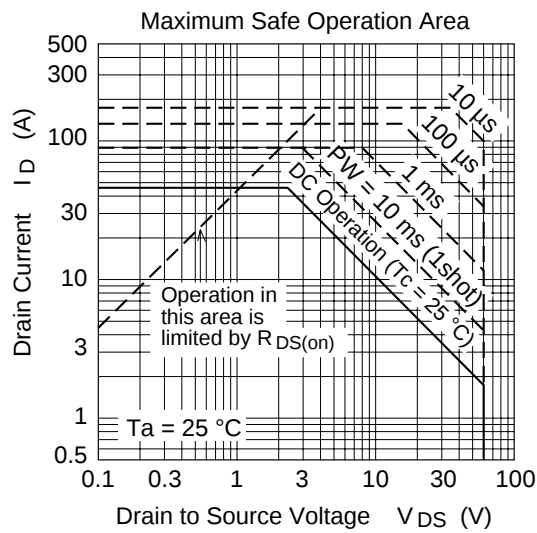
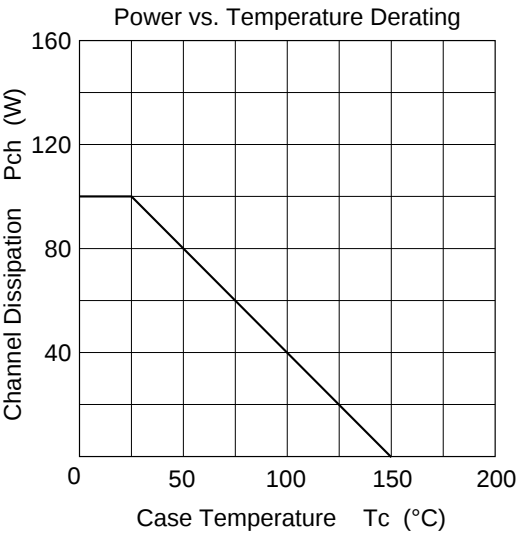
- Notes
- 1. $PW \leq 10 \mu s$, duty cycle $\leq 1 \%$
 - 2. Value at $T_c = 25^\circ C$
 - 3. Value at $Tch = 25^\circ C$, $R_g \geq 50 \Omega$

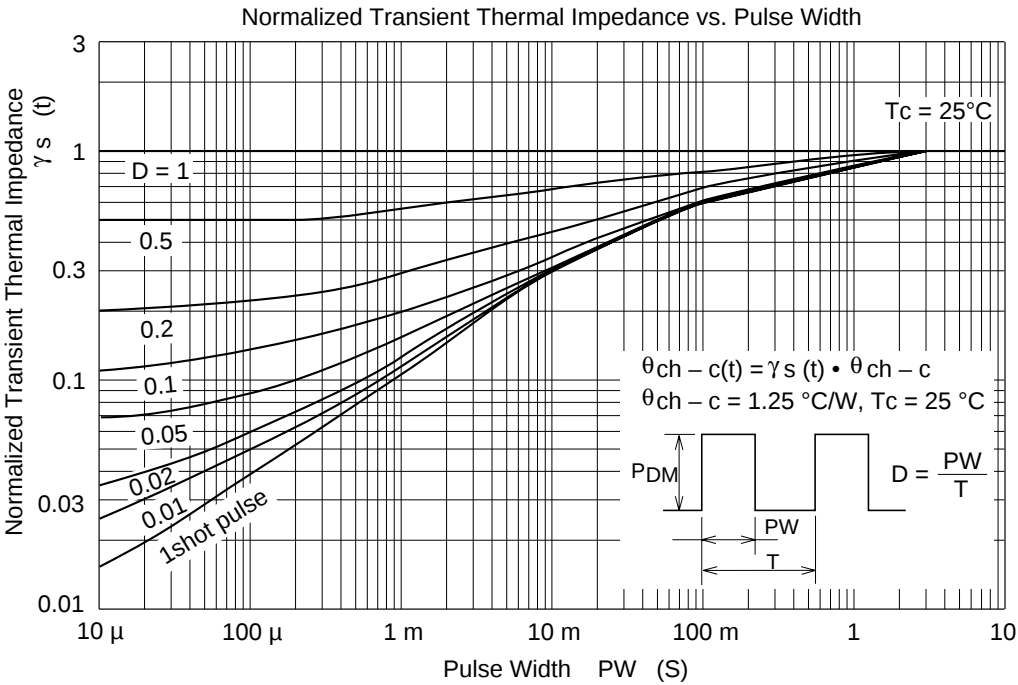
Electrical Characteristics (Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	60	—	—	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	$V_{DS} = 50 \text{ V}$, $V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	1.0	—	2.25	V	$I_D = 1 \text{ mA}$, $V_{DS} = 10 \text{ V}$
Static drain to source on state resistance	$R_{DS(on)}$	—	0.018	0.022	Ω	$I_D = 25 \text{ A}$ $V_{GS} = 10 \text{ V}^{*1}$
		—	0.023	0.028	Ω	$I_D = 25 \text{ A}$ $V_{GS} = 4 \text{ V}^{*1}$
Forward transfer admittance	$ y_{fs} $	25	37	—	S	$I_D = 25 \text{ A}$ $V_{DS} = 10 \text{ V}^{*1}$
Input capacitance	C_{iss}	—	3530	—	pF	$V_{DS} = 10 \text{ V}$
Output capacitance	C_{oss}	—	1480	—	pF	$V_{GS} = 0$
Reverse transfer capacitance	C_{rss}	—	300	—	pF	$f = 1 \text{ MHz}$
Turn-on delay time	$t_{d(on)}$	—	33	—	ns	$I_D = 25 \text{ A}$
Rise time	t_r	—	160	—	ns	$V_{GS} = 10 \text{ V}$
Turn-off delay time	$t_{d(off)}$	—	450	—	ns	$R_L = 1.5 \text{ }\Omega$
Fall time	t_f	—	230	—	ns	
Body to drain diode forward voltage	V_{DF}	—	1.3	—	V	$I_F = 45 \text{ A}$, $V_{GS} = 0$
Body to drain diode reverse recovery time	t_{rr}	—	130	—	ns	$I_F = 45 \text{ A}$, $V_{GS} = 0$, $di_F / dt = 50 \text{ A} / \mu\text{s}$

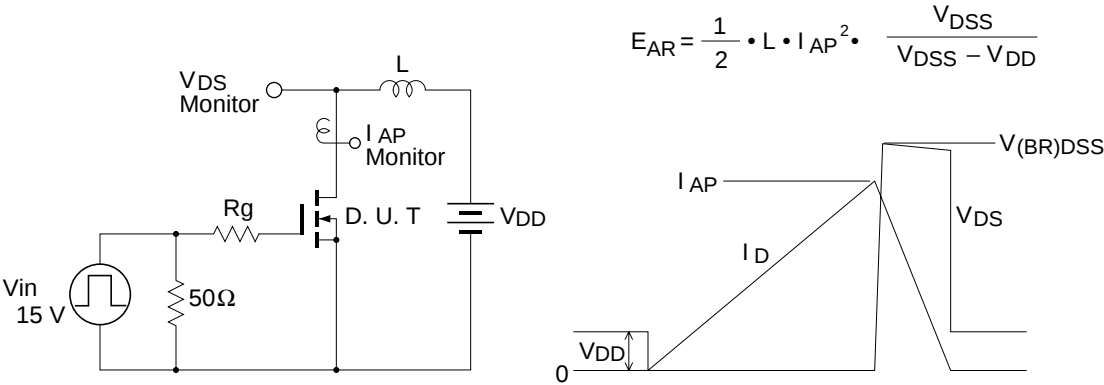
Note 1. Pulse Test

See characteristic curve of 2SK1911.

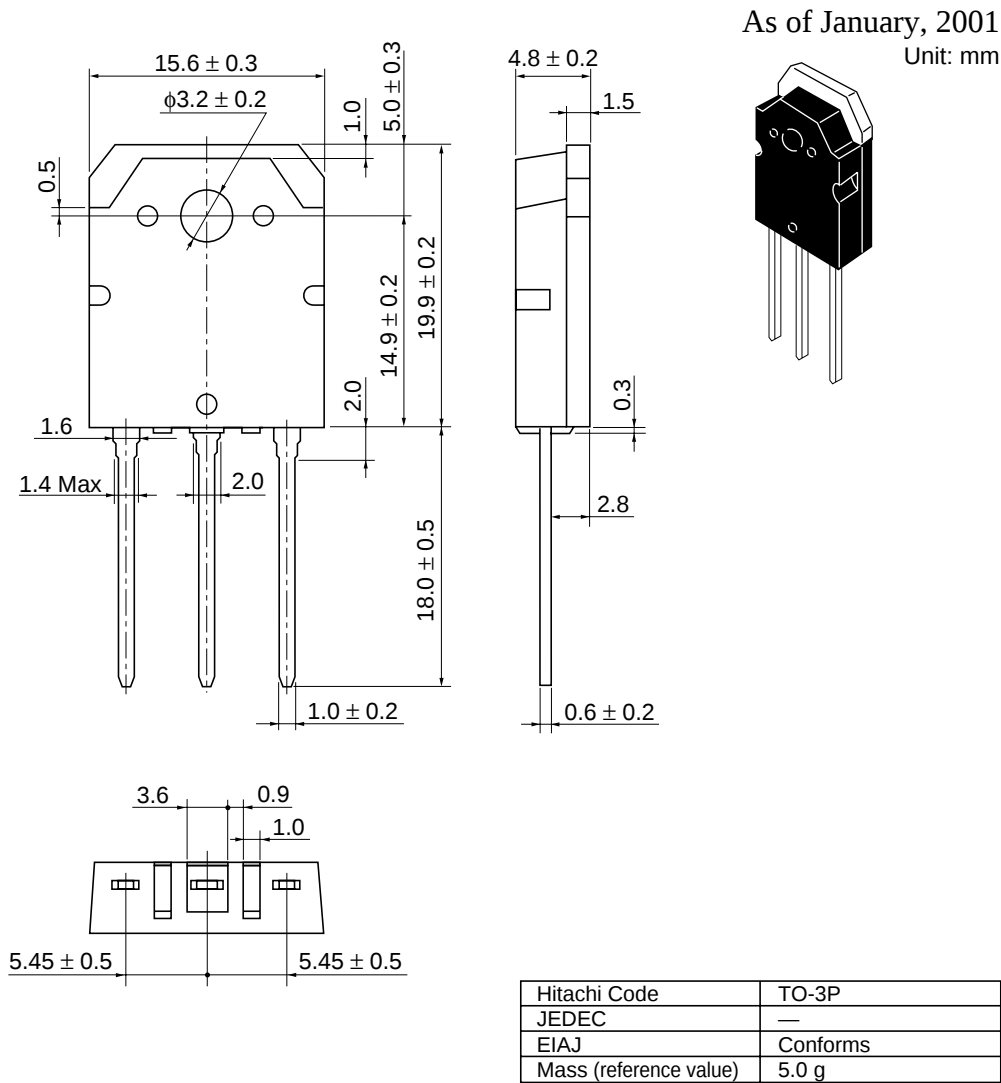




Avalanche Test Circuit and Waveform



Package Dimensions



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HITACHI

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

URL	NorthAmerica	:	http://semiconductor.hitachi.com/
	Europe	:	http://www.hitachi-eu.com/hel/ecg
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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) 585160

Hitachi Asia Ltd.
Hitachi Tower
16 Collyer Quay #20-00,
Singapore 049318
Tel: <65>-538-6533/538-8577
Fax: <65>-538-6933/538-3877
URL: <http://www.hitachi.com.sg>

Hitachi Asia Ltd.
(Taipei Branch Office)
4/F, No. 167, Tun Hwa North Road,
Hung-Kuo Building,
Taipei (105), Taiwan
Tel: <886>-(2)-2718-3666
Fax: <886>-(2)-2718-8180
Telex: 23222 HAS-TP
URL: <http://www.hitachi.com.tw>

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
URL: <http://www.hitachi.com.hk>

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