

2SK2828

Silicon N Channel MOS FET
High Speed Power Switching

HITACHI

ADE-208-514 C (Z)
4th. Edition
Feb 1999

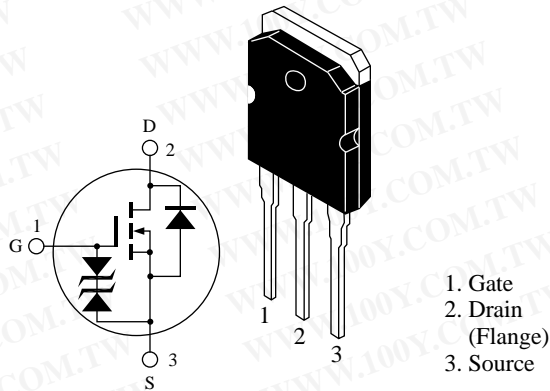
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Features

- Low on-resistance
- High speed switching
- Low drive current
- No secondary breakdown
- Suitable for switching regulator and DC-DC converter
- Avalanche ratings

Outline

TO-3P



Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	V_{DSS}	700	V
Gate to source voltage	V_{GSS}	±30	V
Drain current	I_D	12	A
Drain peak current	$I_{D(pulse)}^{*1}$	48	A
Body-drain diode reverse drain current	I_{DR}	12	A
Channel dissipation	Pch^{*2}	175	W
Channel temperature	Tch	150	°C
Storage temperature	Tstg	-55 to +150	°C

Note: 1. $PW \leq 10\mu s$, duty cycle $\leq 1\%$
2. Value at $T_c = 25^\circ C$

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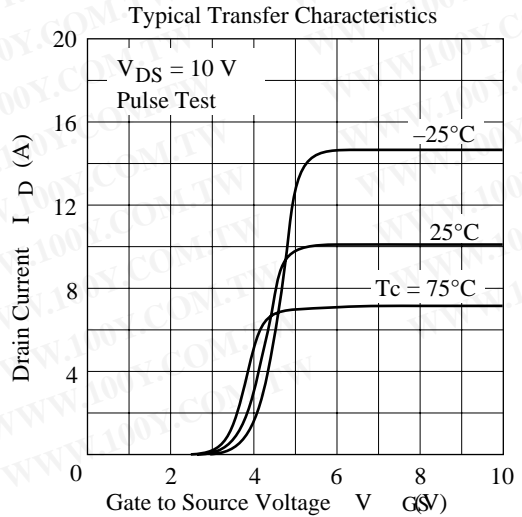
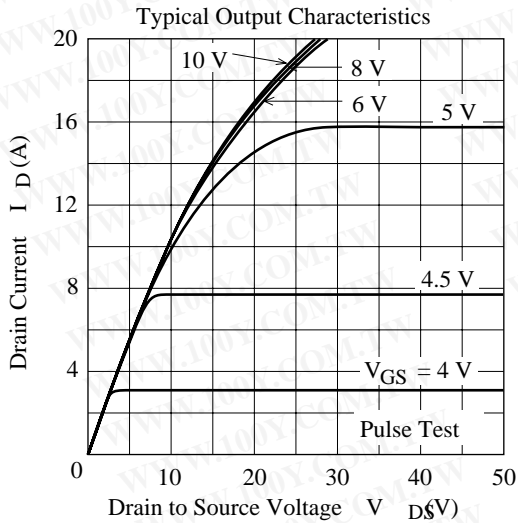
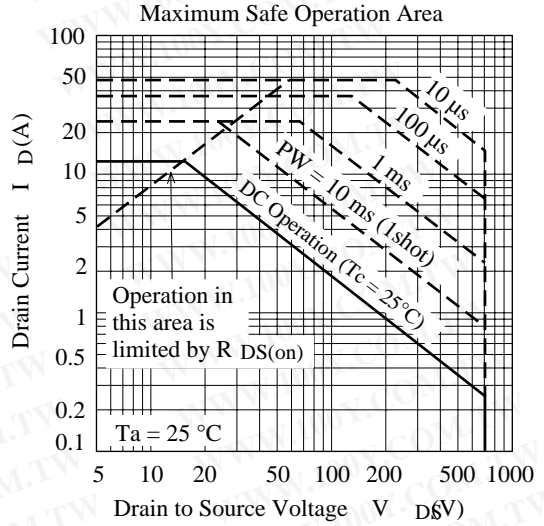
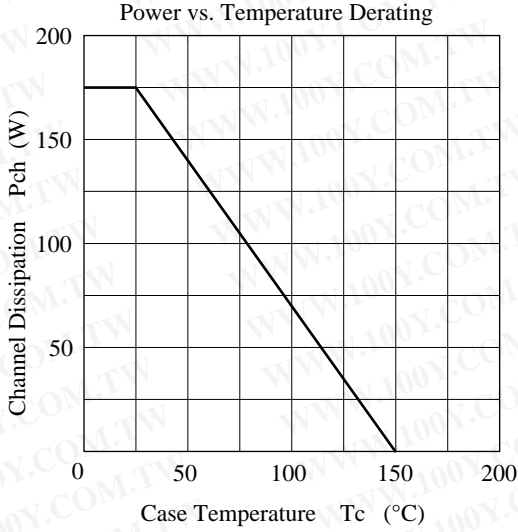
Electrical Characteristics (Ta = 25°C)

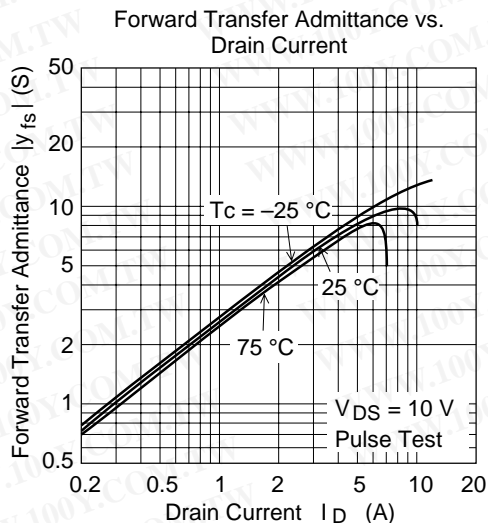
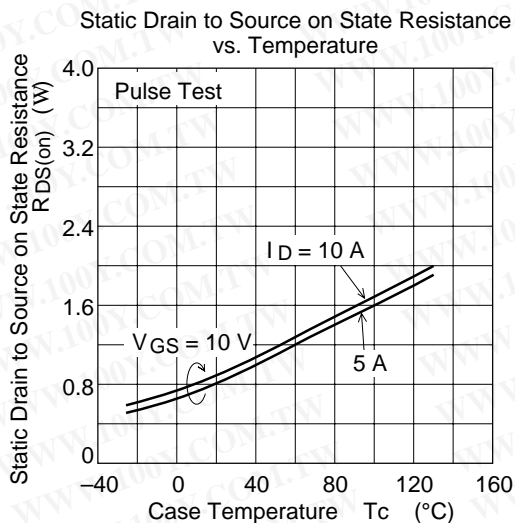
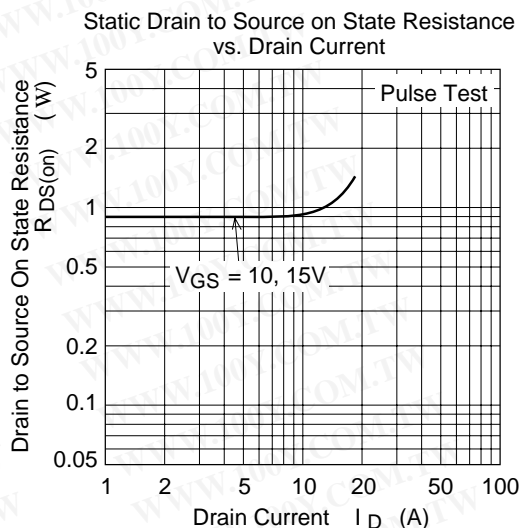
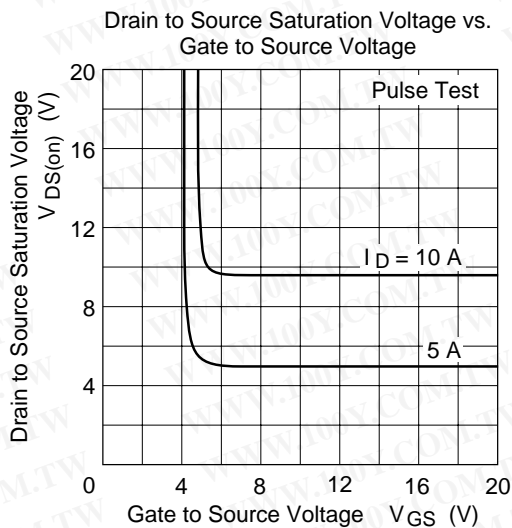
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	700	—	—	V	$I_D = 10\text{mA}$, $V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	± 30	—	—	V	$I_G = \pm 100\mu\text{A}$, $V_{DS} = 0$
Gate to source leak current	I_{GSS}	—	—	± 10	μA	$V_{GS} = \pm 25\text{V}$, $V_{DS} = 0$
Zero gate voltage drain current	I_{DSS}	—	—	100	μA	$V_{DS} = 560\text{V}$, $V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	2.0	—	3.0	V	$I_D = 1\text{mA}$, $V_{DS} = 10\text{V}^{*3}$
Static drain to source on state resistance	$R_{DS(on)}$	—	0.9	1.2	Ω	$I_D = 6\text{A}$, $V_{GS} = 10\text{V}^{*3}$
Forward transfer admittance	$ y_{fs} $	5.5	9.0	—	S	$I_D = 6\text{A}$, $V_{DS} = 10\text{V}^{*3}$
Input capacitance	C_{iss}	—	1850	—	pF	$V_{DS} = 10\text{V}$
Output capacitance	C_{oss}	—	400	—	pF	$V_{GS} = 0$
Reverse transfer capacitance	C_{rss}	—	45	—	pF	$f = 1\text{MHz}$
Total gate charge	Q_g	—	35	—	nc	$V_{DD} = 400\text{V}$
Gate to source charge	Q_{gs}	—	8	—	nc	$V_{GS} = 10\text{V}$
Gate to drain charge	Q_{gd}	—	10	—	nc	$I_D = 12\text{A}$
Turn-on delay time	$t_{d(on)}$	—	25	—	ns	$I_D = 6\text{A}$, $R_L = 5\Omega$
Rise time	t_r	—	65	—	ns	$V_{GS} = 10\text{V}$
Turn-off delay time	$t_{d(off)}$	—	140	—	ns	
Fall time	t_f	—	55	—	ns	
Body-drain diode forward voltage	V_{DF}	—	0.95	—	V	$I_F = 12\text{A}$, $V_{GS} = 0$
Body-drain diode reverse recovery time	t_{rr}	—	2.5	—	μs	$I_F = 12\text{A}$, $V_{GS} = 0$ $di_F/dt = 100\text{A}/\mu\text{s}$

Note: 3. Pulse test

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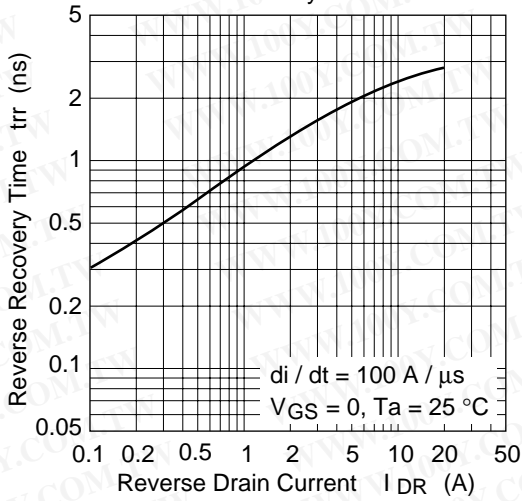
Main Characteristics



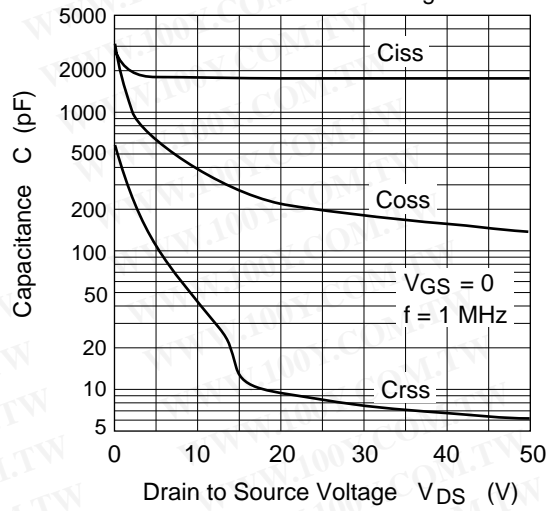


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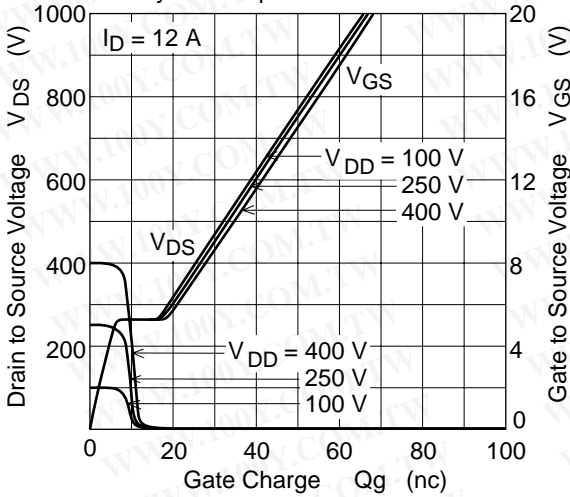
Body-Drain Diode Reverse Recovery Time



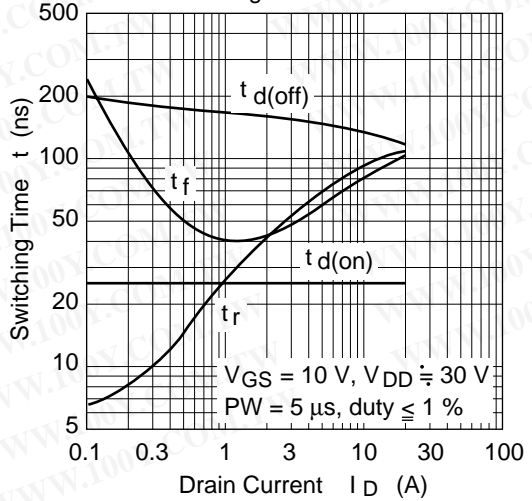
Typical Capacitance vs. Drain to Source Voltage



Dynamic Input Characteristics

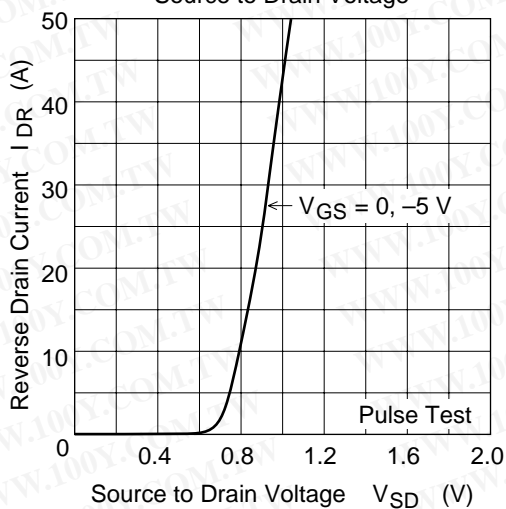


Switching Characteristics

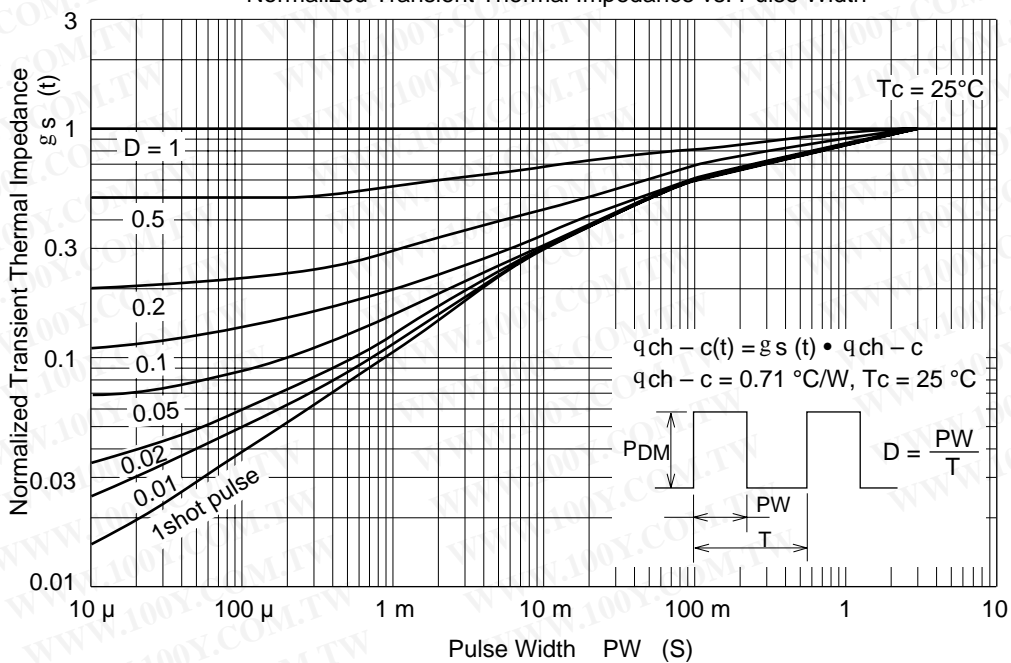


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Reverse Drain Current vs. Source to Drain Voltage

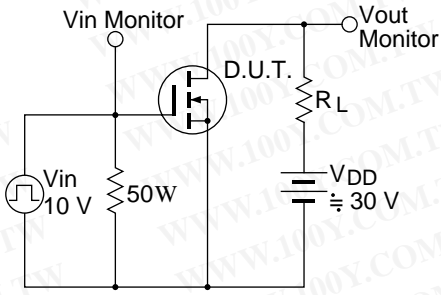


Normalized Transient Thermal Impedance vs. Pulse Width

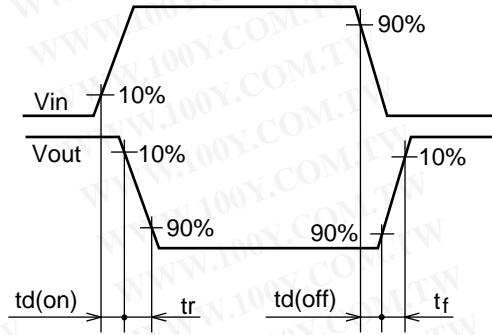


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Switching Time Test Circuit



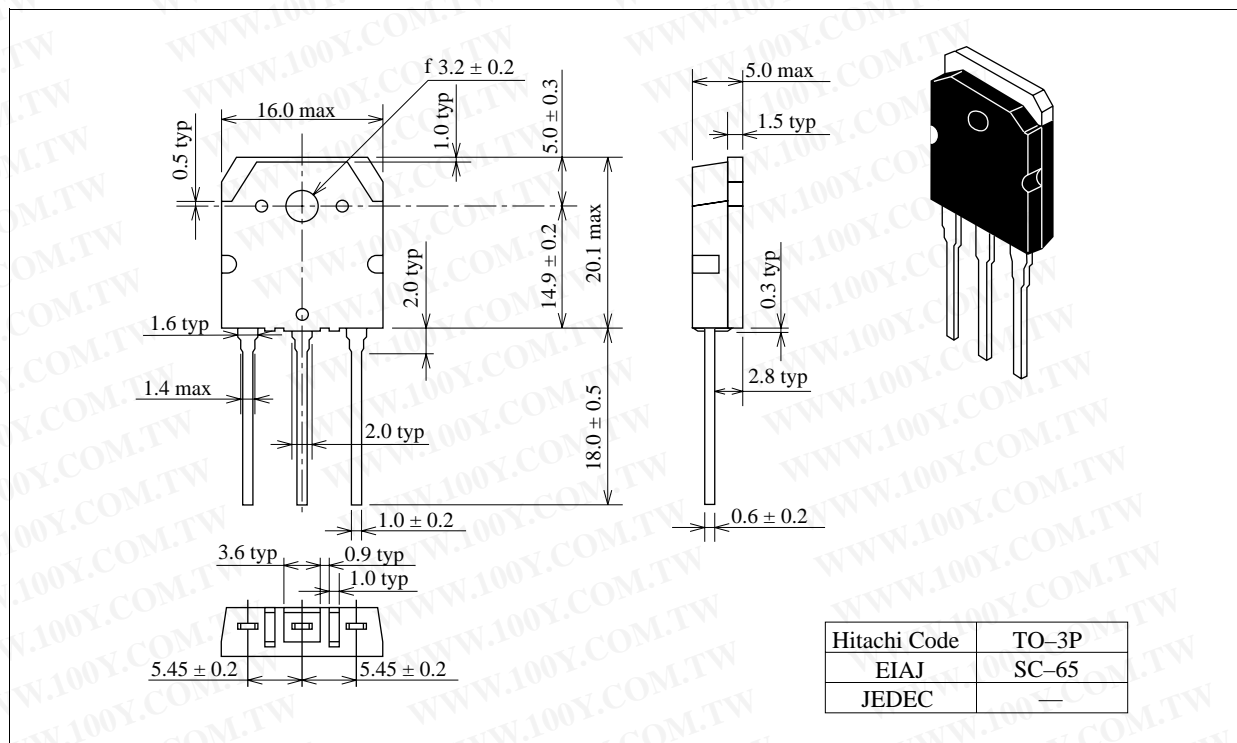
Switching Time Waveform



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Package Dimensions

Unit: mm



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Hitachi, Ltd.

Semiconductor & IC Div.
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.
2000 Sierra Point Parkway
Brisbane, CA 94005-1897
Tel: <1> (800) 285-1601
Fax: <1> (303) 297-0447

Hitachi Europe GmbH
Electronic components Group
Dornacher StraÙe 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

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

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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