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Renesas Technology Corp.
Customer Support Dept.
April 1, 2003

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Keep safety first in your circuit designs!

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2SK1317

Silicon N-Channel MOS FET

RENESAS

ADE-208-1268 (Z)
1st. Edition
Mar. 2001

Application

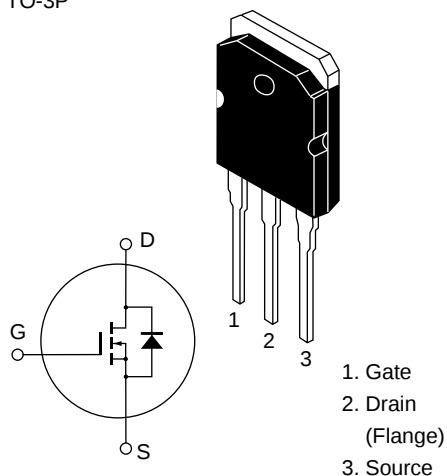
High speed power switching

Features

- High breakdown voltage $V_{DSS} = 1500\text{ V}$
- High speed switching
- Low drive current
- No secondary breakdown
- Suitable for switching regulator, DC-DC converter and motor driver

Outline

TO-3P



Absolute Maximum Ratings (Ta = 25°C)

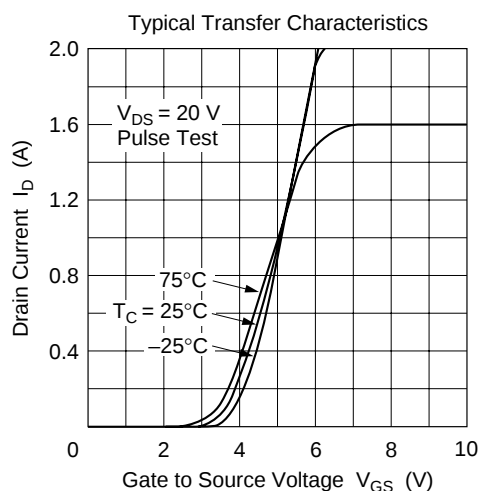
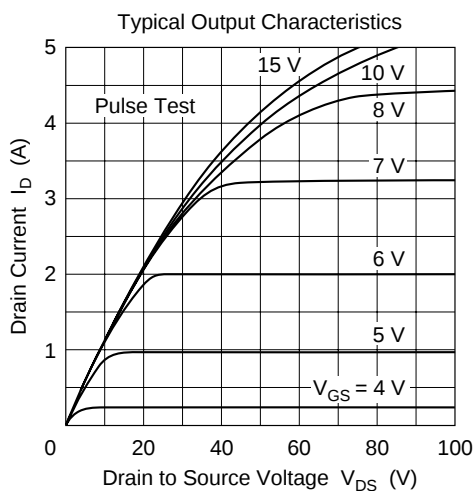
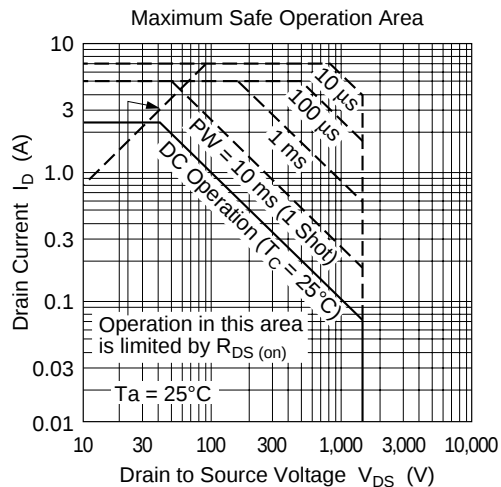
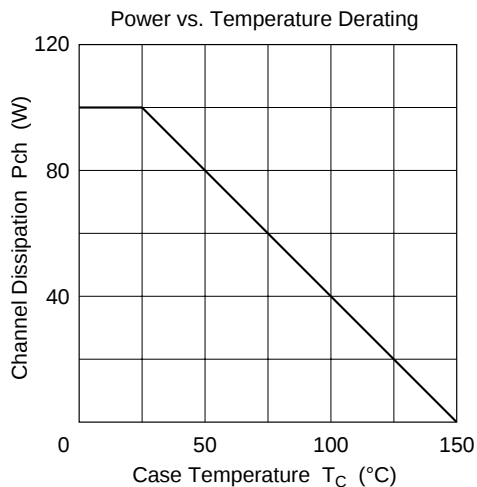
Item	Symbol	Ratings	Unit
Drain to source voltage	V_{DSS}	1500	V
Gate to source voltage	V_{GSS}	± 20	V
Drain current	I_D	2.5	A
Drain peak current	$I_{D(pulse)}^{*1}$	7	A
Body to drain diode reverse drain current	I_{DR}	2.5	A
Channel dissipation	P_{ch}^{*2}	100	W
Channel temperature	Tch	150	°C
Storage temperature	Tstg	-55 to +150	°C

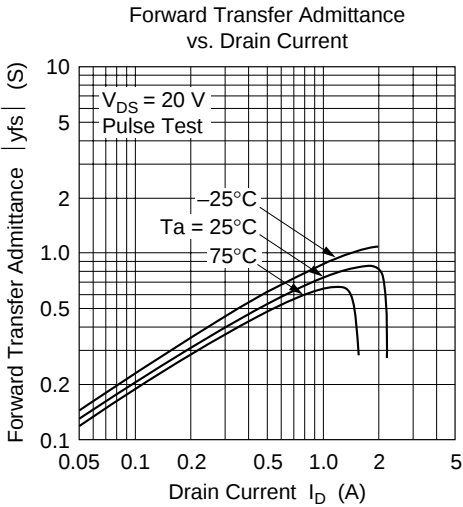
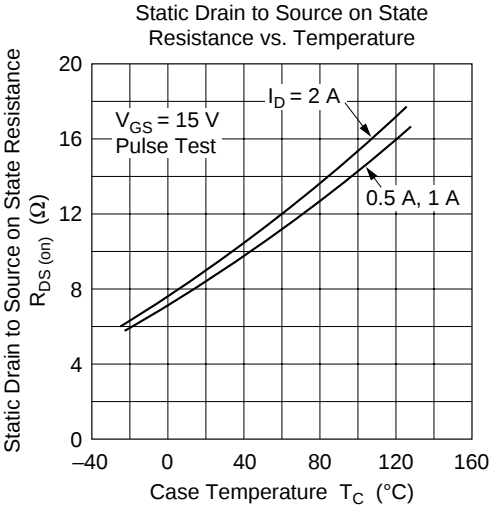
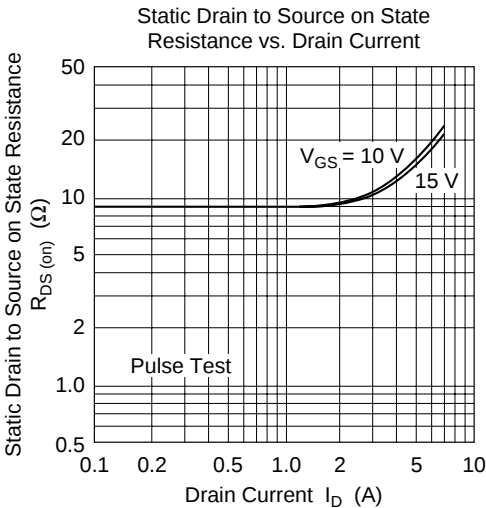
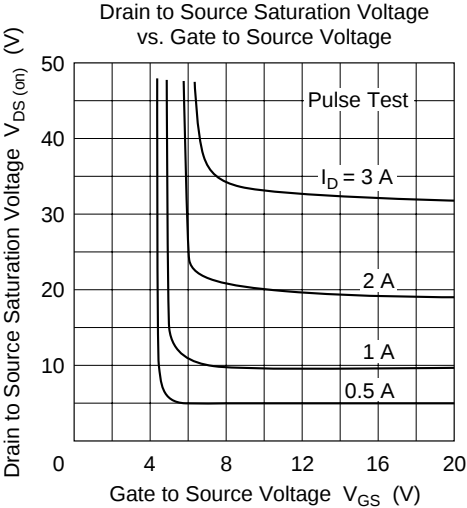
Notes: 1. $PW \leq 10 \mu s$, duty cycle $\leq 1\%$ 2. Value at $T_c = 25^\circ C$

Electrical Characteristics (Ta = 25°C)

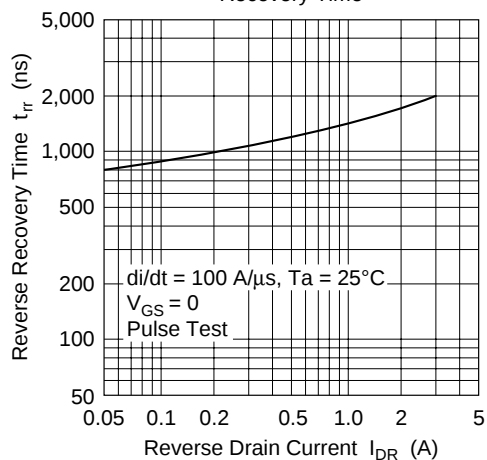
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	1500	—	—	V	$I_D = 10 \text{ mA}$, $V_{GS} = 0$
Gate to source leak current	I_{GSS}	—	—	± 1	μA	$V_{GS} = \pm 20 \text{ V}$, $V_{DS} = 0$
Zero gate voltage drain current	I_{DSS}	—	—	500	μA	$V_{DS} = 1200 \text{ V}$, $V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	2.0	—	4.0	V	$I_D = 1 \text{ mA}$, $V_{DS} = 10 \text{ V}$
Static drain to source on state resistance	$R_{DS(on)}$	—	9	12	Ω	$I_D = 2 \text{ A}$, $V_{GS} = 15 \text{ V}^{*1}$
Forward transfer admittance	$ y_{fs} $	0.45	0.75	—	S	$I_D = 1 \text{ A}$, $V_{DS} = 20 \text{ V}^{*1}$
Input capacitance	C_{iss}	—	990	—	pF	$V_{DS} = 10 \text{ V}$, $V_{GS} = 0$, $f = 1 \text{ MHz}$
Output capacitance	C_{oss}	—	125	—	pF	
Reverse transfer capacitance	C_{rss}	—	60	—	pF	
Turn-on delay time	$t_{d(on)}$	—	17	—	ns	$I_D = 2 \text{ A}$, $V_{GS} = 10 \text{ V}$, $R_L = 15 \Omega$
Rise time	t_r	—	70	—	ns	
Turn-off delay time	$t_{d(off)}$	—	110	—	ns	
Fall time	t_f	—	60	—	ns	
Body to drain diode forward voltage	V_{DF}	—	0.9	—	V	$I_F = 2 \text{ A}$, $V_{GS} = 0$
Body to drain diode reverse recovery time	t_{rr}	—	1750	—	ns	$I_F = 2 \text{ A}$, $V_{GS} = 0$, $di_F/dt = 100 \text{ A}/\mu s$

Note: 1. Pulse test

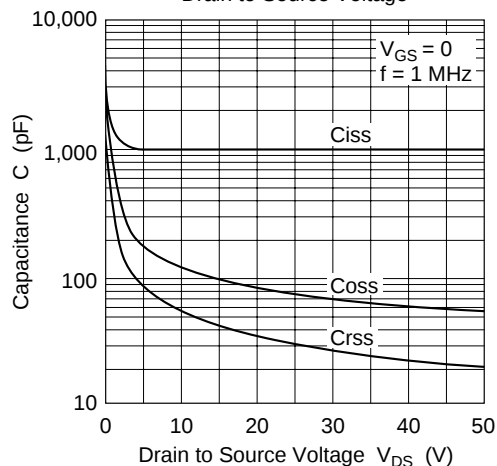




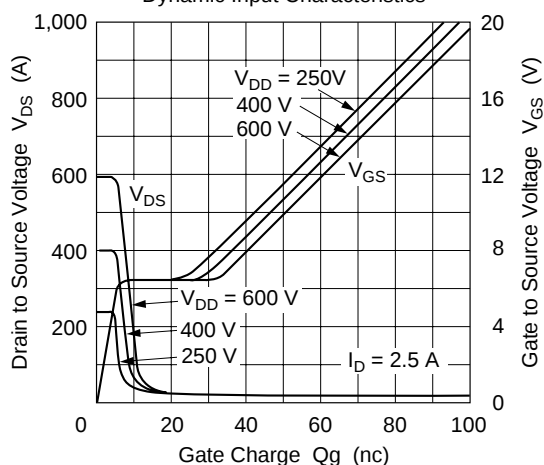
Body to Drain Diode Reverse Recovery Time



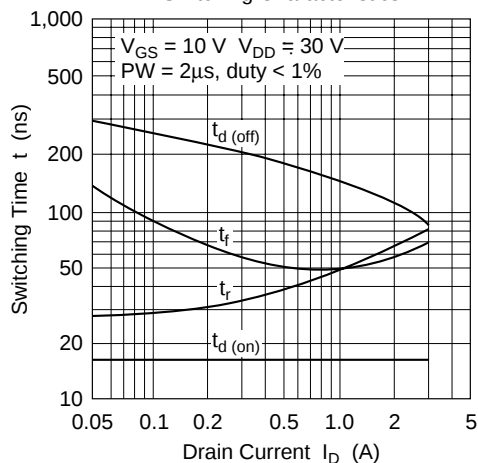
Typical Capacitance vs. Drain to Source Voltage

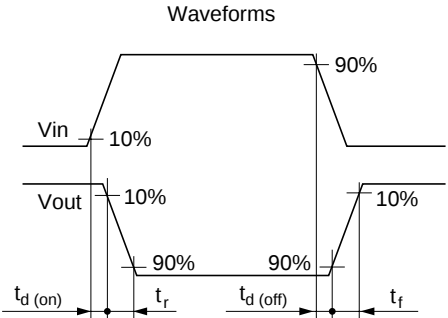
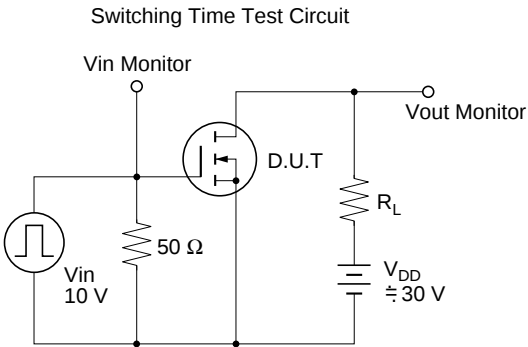
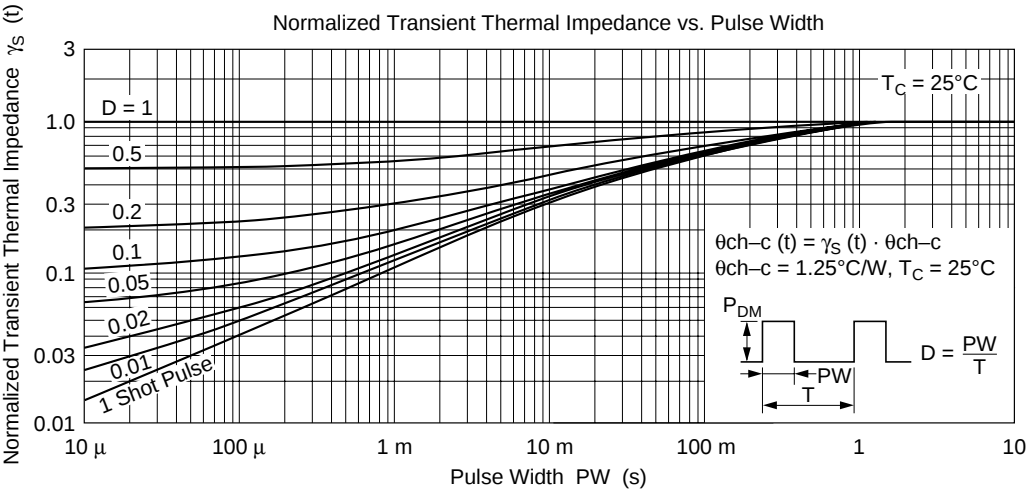
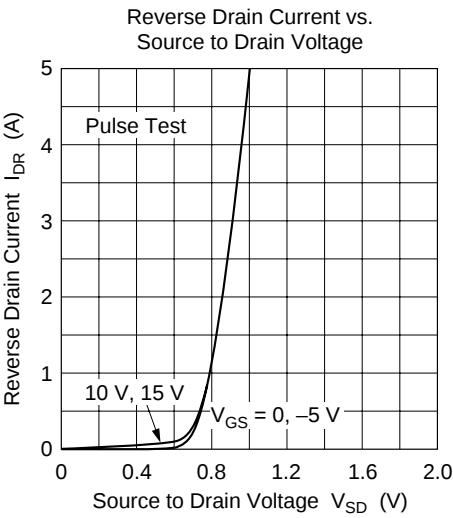


Dynamic Input Characteristics



Switching Characteristics

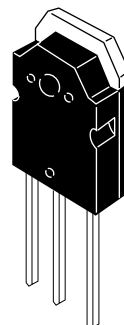
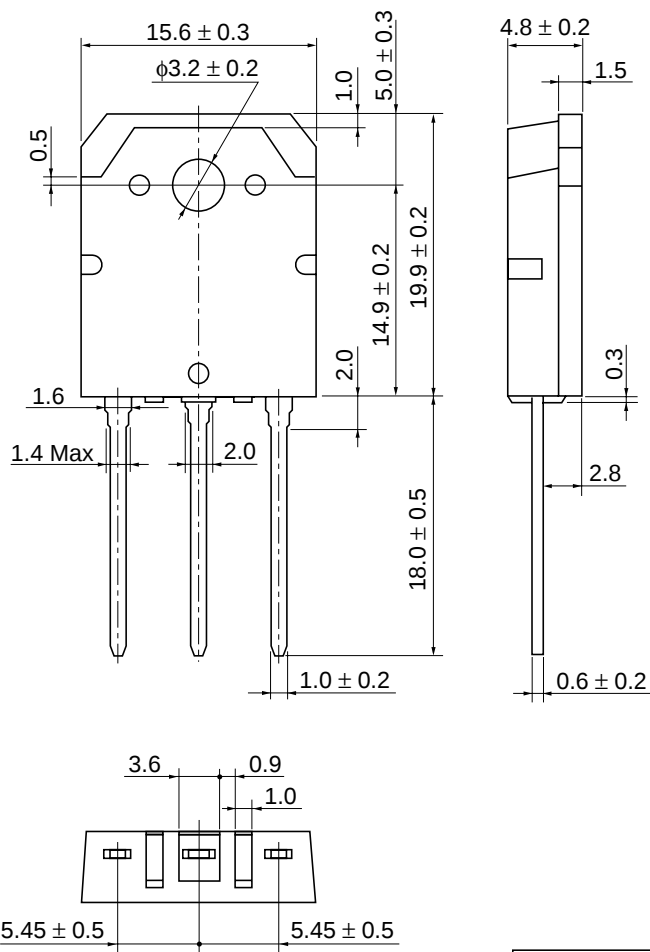




Package Dimensions

As of January, 2001

Unit: mm



Hitachi Code	TO-3P
JEDEC	—
EIAJ	Conforms
Mass (reference value)	5.0 g

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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>