

2SK1317

Silicon N-Channel MOS FET

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Application

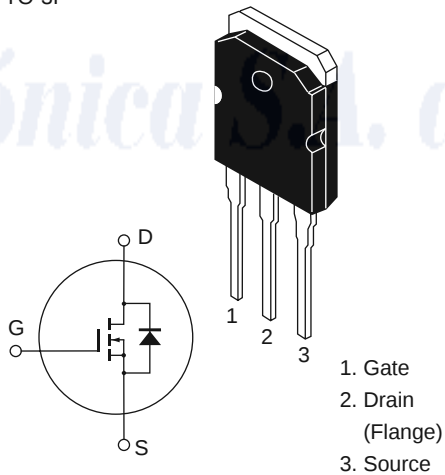
High speed power switching

Features

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

Outline

TO-3P



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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 $T_C = 25^\circ C$

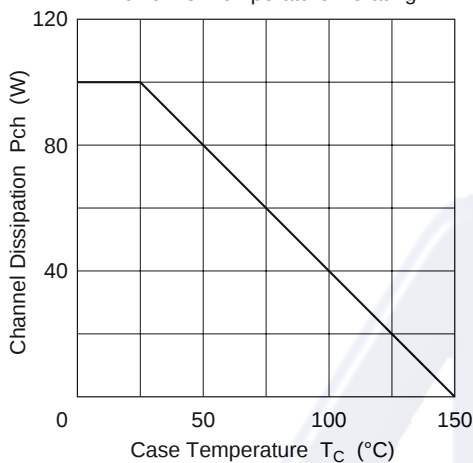
Electrical Characteristics (Ta = 25°C)

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	yfs	0.45	0.75	—	S	$I_D = 1 \text{ A}$, $V_{DS} = 20 \text{ V}^{*1}$
Input capacitance	Ciss	—	990	—	pF	$V_{DS} = 10 \text{ V}$, $V_{GS} = 0$,
Output capacitance	Coss	—	125	—	pF	$f = 1 \text{ MHz}$
Reverse transfer capacitance	Crss	—	60	—	pF	
Turn-on delay time	$t_{d(on)}$	—	17	—	ns	$I_D = 2 \text{ A}$, $V_{GS} = 10 \text{ V}$,
Rise time	t_r	—	70	—	ns	$R_L = 15 \Omega$
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	$I_F = 2 \text{ A}$, $V_{GS} = 0$, $di_F/dt = 100 \text{ A}/\mu s$

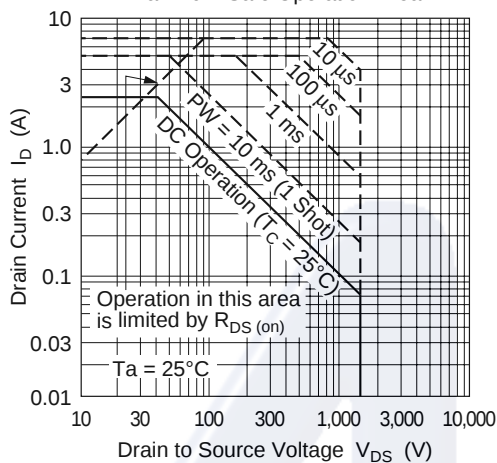
Note: 1. Pulse test

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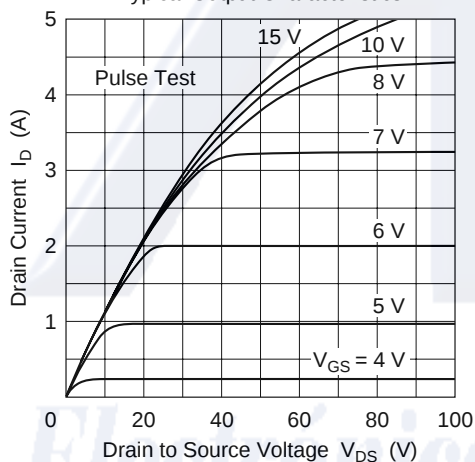
Power vs. Temperature Derating



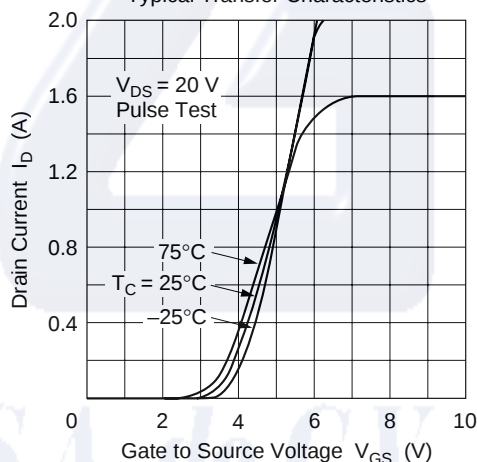
Maximum Safe Operation Area



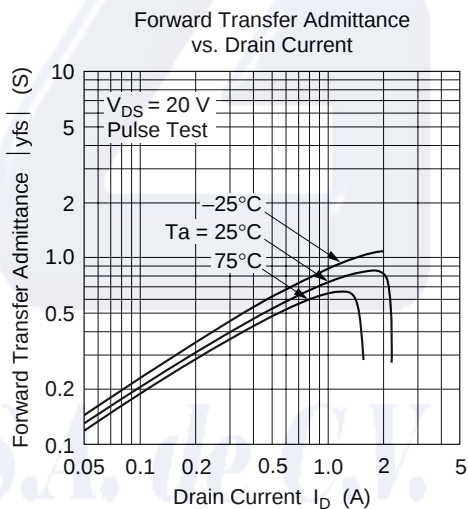
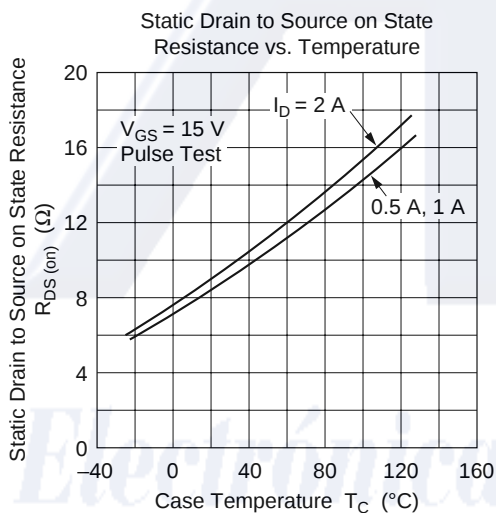
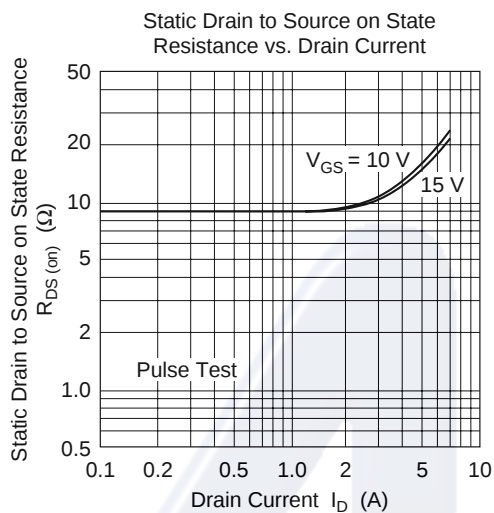
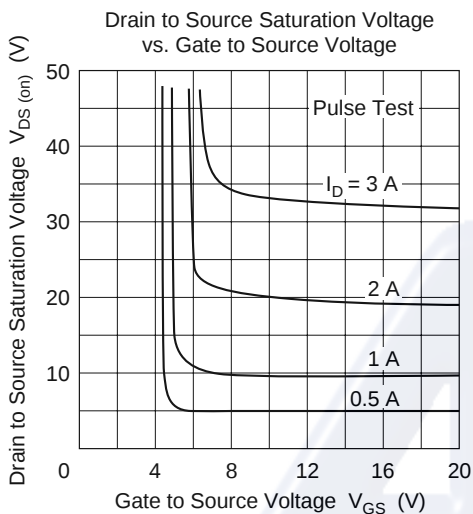
Typical Output Characteristics



Typical Transfer Characteristics

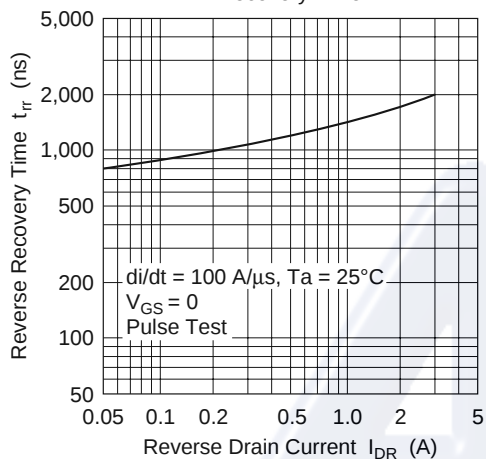


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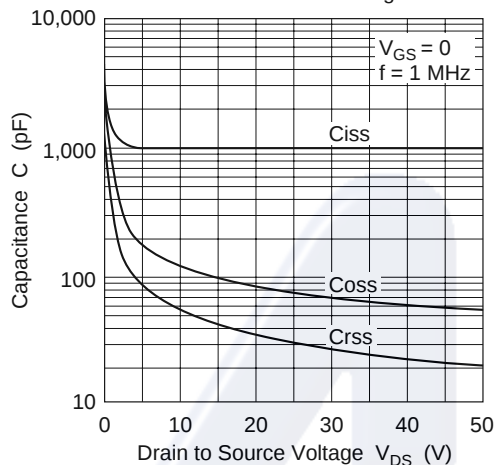


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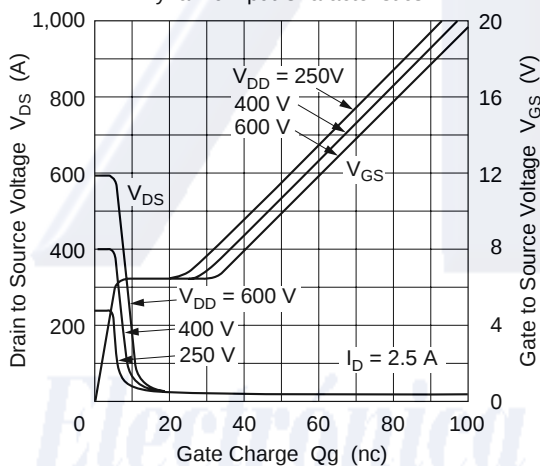
Body to Drain Diode Reverse Recovery Time



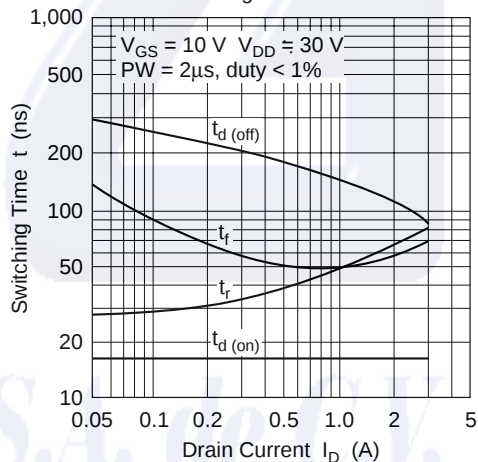
Typical Capacitance vs. Drain to Source Voltage



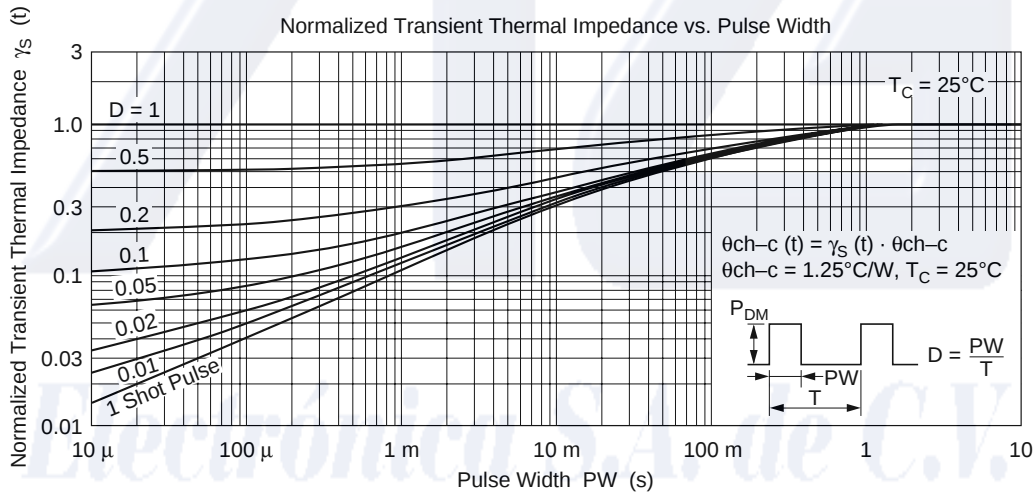
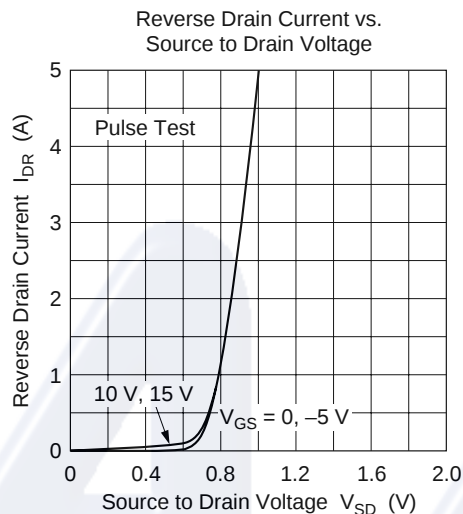
Dynamic Input Characteristics



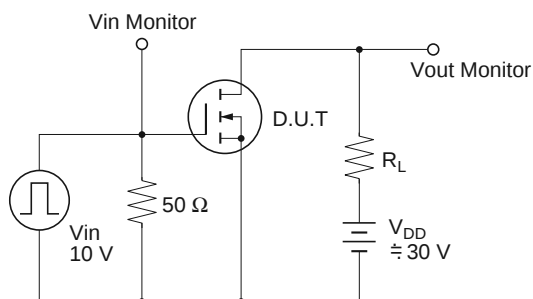
Switching Characteristics



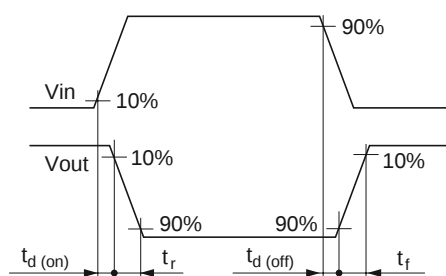
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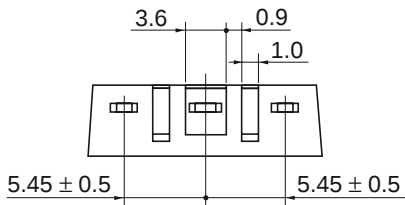
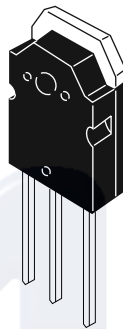
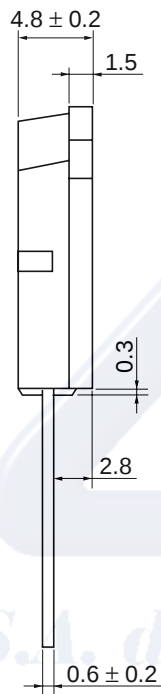
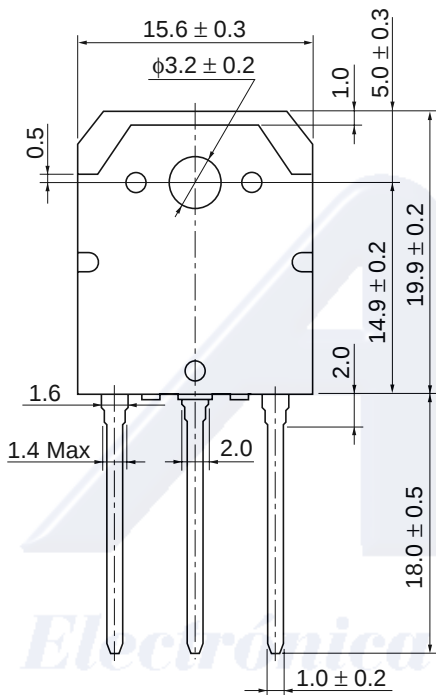
Switching Time Test Circuit



Waveforms



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

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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