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

Cautions

Keep safety first in your circuit designs!

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Remember to give due consideration to safety when making your circuit designs, with appropriate measures such as (i) placement of substitutive, auxiliary circuits, (ii) use of nonflammable material or (iii) prevention against any malfunction or mishap.

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2SK1315(L)(S), 2SK1316(L)(S)

Silicon N-Channel MOS FET

RENESAS

ADE-208-1267 (Z)
1st. Edition
Mar. 2001

Application

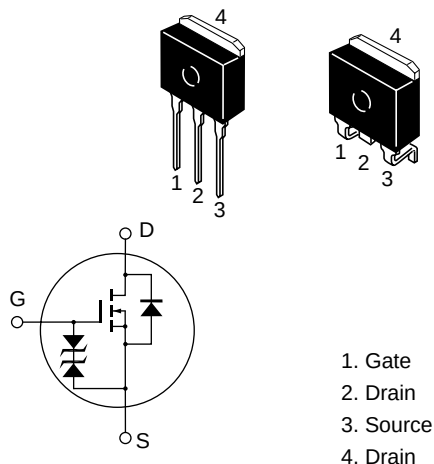
High speed power switching

Features

- Low on-resistance
- High speed switching
- Low drive current
- No secondary breakdown
- Suitable for switching regulator, DC-DC converter and motor driver

Outline

LDPAK



2SK1315(L)(S), 2SK1316(L)(S)

Absolute Maximum Ratings (Ta = 25°C)

Item		Symbol	Ratings	Unit
Drain to source voltage	2SK1315	V_{DSS}	450	V
	2SK1316		500	
Gate to source voltage		V_{GSS}	±30	V
Drain current		I_D	8	A
Drain peak current		$I_{D(pulse)}^{*1}$	32	A
Body to drain diode reverse drain current		I_{DR}	8	A
Channel dissipation		Pch^{*2}	60	W
Channel temperature		Tch	150	°C
Storage temperature		Tstg	–55 to +150	°C

Notes: 1. $PW \leq 10 \mu s$, duty cycle $\leq 1\%$

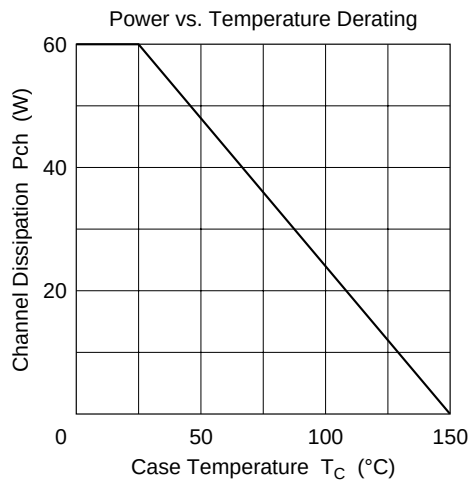
2. Value at $T_C = 25^\circ C$

Electrical Characteristics (Ta = 25°C)

Item		Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	2SK1315 2SK1316	$V_{(BR)DSS}$	450 500	—	—	V	$I_D = 10 \text{ mA}$, $V_{GS} = 0$
Gate to source breakdown voltage		$V_{(BR)GSS}$	± 30	—	—	V	$I_G = \pm 100 \text{ }\mu\text{A}$, $V_{DS} = 0$
Gate to source leak current		I_{GSS}	—	—	± 10	μA	$V_{GS} = \pm 25 \text{ V}$, $V_{DS} = 0$
Zero gate voltage drain current	2SK1315 2SK1316	I_{DSS}	—	—	250	μA	$V_{DS} = 360 \text{ V}$, $V_{GS} = 0$ $V_{DS} = 400 \text{ V}$, $V_{GS} = 0$
Gate to source cutoff voltage		$V_{GS(off)}$	2.0	—	3.0	V	$I_D = 1 \text{ mA}$, $V_{DS} = 10 \text{ V}$
Static Drain to source on state resistance	2SK1315 2SK1316	$R_{DS(on)}$	— —	0.55 0.60	0.7 0.8	Ω	$I_D = 4 \text{ A}$, $V_{GS} = 10 \text{ V}^{*1}$
Forward transfer admittance		$ y_{fs} $	4.5	7.5	—	S	$I_D = 4 \text{ A}$, $V_{DS} = 10 \text{ V}^{*1}$
Input capacitance		C_{iss}	—	1150	—	pF	$V_{DS} = 10 \text{ V}$, $V_{GS} = 0$,
Output capacitance		C_{oss}	—	340	—	pF	$f = 1 \text{ MHz}$
Reverse transfer capacitance		C_{rss}	—	55	—	pF	
Turn-on delay time		$t_{d(on)}$	—	17	—	ns	$I_D = 4 \text{ A}$, $V_{GS} = 10 \text{ V}$,
Rise time		t_r	—	55	—	ns	$R_L = 7.5 \text{ }\Omega$
Turn-off delay time		$t_{d(off)}$	—	100	—	ns	
Fall time		t_f	—	45	—	ns	
Body to drain diode forward voltage		V_{DF}	—	0.9	—	V	$I_F = 8 \text{ A}$, $V_{GS} = 0$
Body to drain diode reverse recovery time		t_{rr}	—	350	—	ns	$I_F = 8 \text{ A}$, $V_{GS} = 0$, $di_F/dt = 100 \text{ A}/\mu\text{s}$

Note: 1. Pulse test

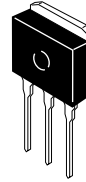
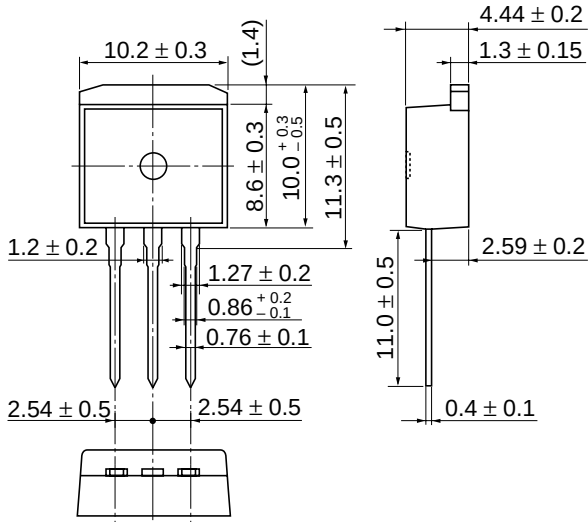
See characteristic curves of 2SK1159, 2SK1160.



Package Dimensions

As of January, 2001

Unit: mm

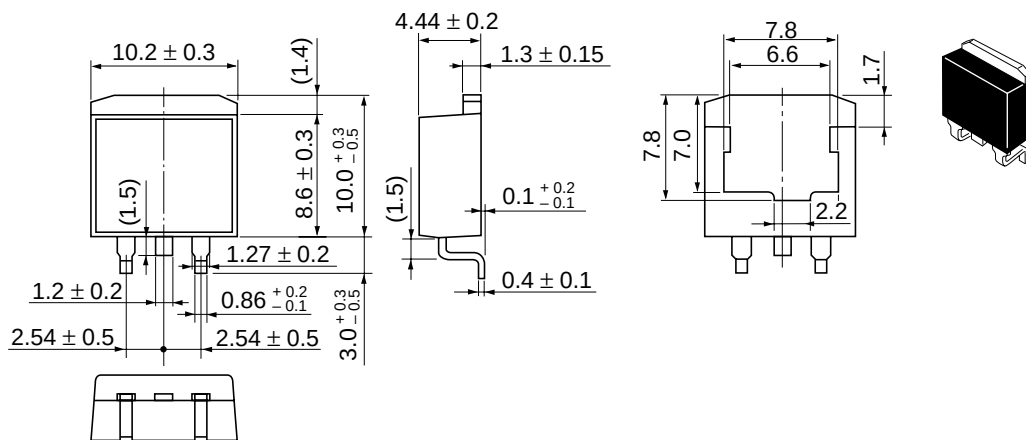


Hitachi Code	LDBPAK (L)
JEDEC	—
EIAJ	—
Mass (reference value)	1.4 g

2SK1315(L)(S), 2SK1316(L)(S)

As of January, 2001

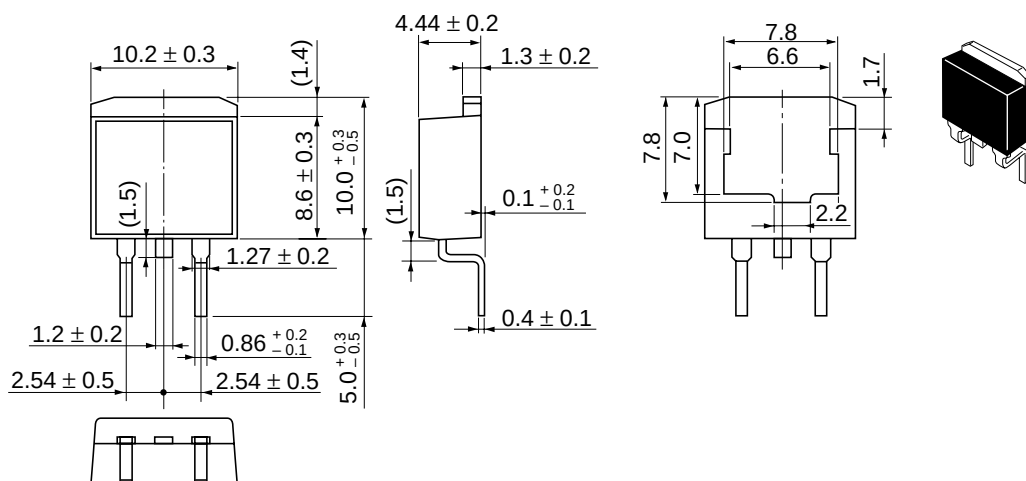
Unit: mm



Hitachi Code	LDBAK (S)-(1)
JEDEC	—
EIAJ	—
Mass (reference value)	1.3 g

As of January, 2001

Unit: mm



Hitachi Code	LDBAK (S)-(2)
JEDEC	—
EIAJ	—
Mass (reference value)	1.35 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>