

To all our customers

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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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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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# 2SK1540(L)(S), 2SK1541(L)(S)

Silicon N-Channel MOS FET

**RENESAS**

ADE-208-1292 (Z)  
1st. Edition  
Mar. 2001

## Application

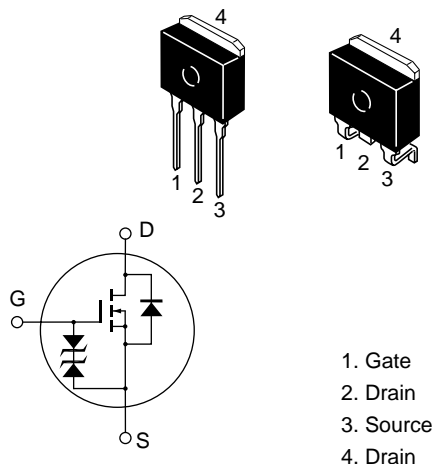
High speed power switching

## Features

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

## Outline

LDBPAK



## 2SK1540(L)(S), 2SK1541(L)(S)

### Absolute Maximum Ratings (Ta = 25°C)

Item		Symbol	Ratings	Unit
Drain to source voltage	2SK1540	$V_{DSS}$	450	V
	2SK1541		500	
Gate to source voltage		$V_{GSS}$	±30	V
Drain current		$I_D$	7	A
Drain peak current		$I_{D(pulse)}^{*1}$	28	A
Body to drain diode reverse drain current		$I_{DR}$	7	A
Channel dissipation		$Pch^{*2}$	60	W
Channel temperature		$T_{ch}$	150	°C
Storage temperature		$T_{stg}$	-55 to +150	°C

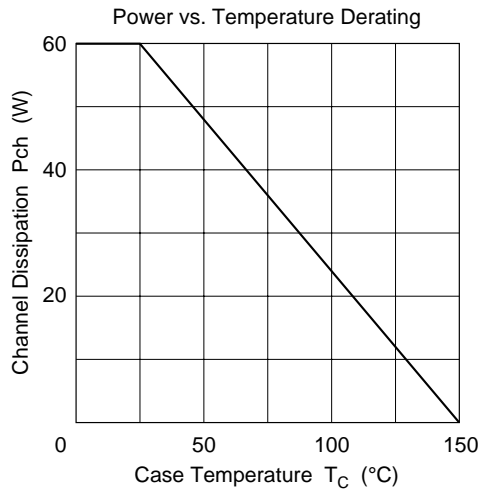
- Note
1.  $PW \leq 10 \mu s$ , duty cycle  $\leq 1\%$
  2. Value at  $T_C = 25^\circ C$

**Electrical Characteristics (Ta = 25°C)**

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	2SK1540 $V_{(BR)DSS}$	450	—	—	V	$I_D = 10 \text{ mA}, V_{GS} = 0$
	2SK1541	500				
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	2SK1540 $I_{DSS}$	—	—	250	μA	$V_{DS} = 360 \text{ V}, V_{GS} = 0$
	2SK1541					$V_{DS} = 400 \text{ V}, V_{GS} = 0$
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	2SK1540 $R_{DS(on)}$	—	0.6	0.8	Ω	$I_D = 4 \text{ A}, V_{GS} = 10 \text{ V}^{*1}$
	2SK1541	—	0.7	0.9		
Forward transfer admittance	yfs	4.0	6.5	—	S	$I_D = 4 \text{ A}, V_{DS} = 10 \text{ V}^{*1}$
Input capacitance	Ciss	—	1050	—	pF	$V_{DS} = 10 \text{ V}, V_{GS} = 0,$
Output capacitance	Coss	—	280	—	pF	$f = 1 \text{ MHz}$
Reverse transfer capacitance	Crss	—	40	—	pF	
Turn-on delay time	$t_{d(on)}$	—	15	—	ns	$I_D = 4 \text{ A}, V_{GS} = 10 \text{ V},$
Rise time	$t_r$	—	55	—	ns	$R_L = 7.5 \Omega$
Turn-off delay time	$t_{d(off)}$	—	95	—	ns	
Fall time	$t_f$	—	40	—	ns	
Body to drain diode forward voltage	$V_{DF}$	—	0.95	—	V	$I_F = 7 \text{ A}, V_{GS} = 0$
Body to drain diode reverse recovery time	$t_{rr}$	—	320	—	ns	$I_F = 7 \text{ A}, V_{GS} = 0,$ $di_F/dt = 100 \text{ A}/\mu\text{s}$

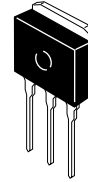
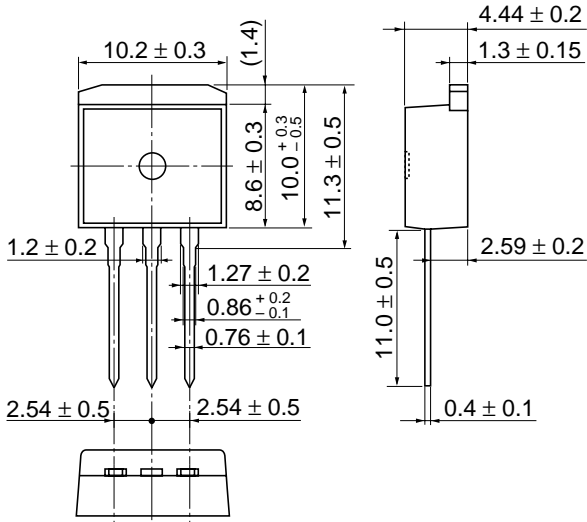
Note 1. Pulse test

See characteristic curves of 2SK1157, 2SK1158.



Package Dimensions

As of January, 2001  
Unit: mm

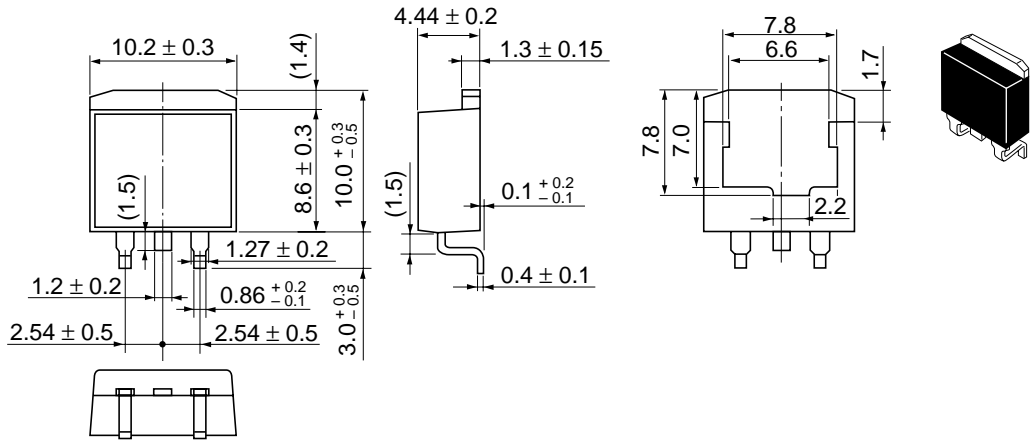


Hitachi Code	LDPAK (L)
JEDEC	—
EIAJ	—
Mass (reference value)	1.4 g

# 2SK1540(L)(S), 2SK1541(L)(S)

As of January, 2001

Unit: mm



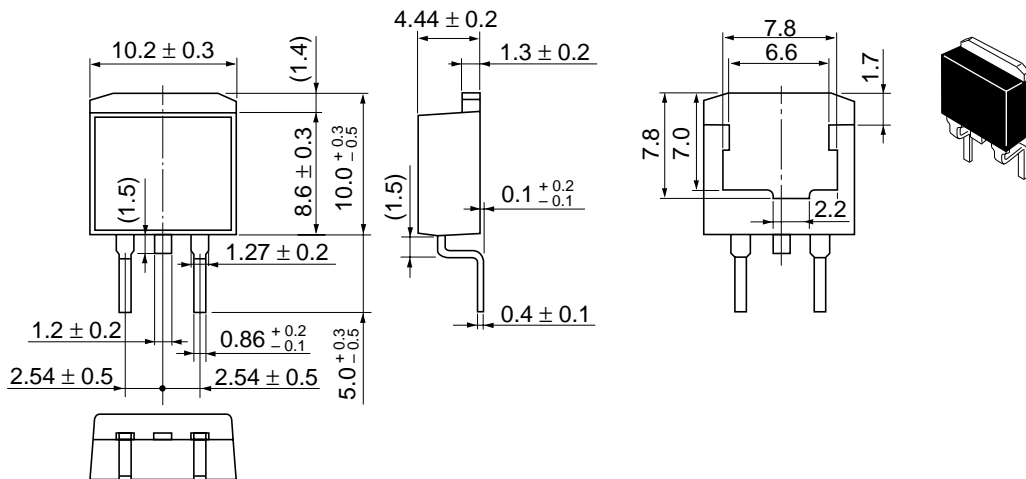
Hitachi Code	LDPAK (S)-(1)
JEDEC	—
EIAJ	—
Mass (reference value)	1.3 g



# 2SK1540(L)(S), 2SK1541(L)(S)

As of January, 2001

Unit: mm



Hitachi Code	LDPAK (S)-(2)
JEDEC	—
EIAJ	—
Mass (reference value)	1.35 g

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