

# 2SK3082(L),2SK3082(S)

Silicon N Channel MOS FET  
High Speed Power Switching

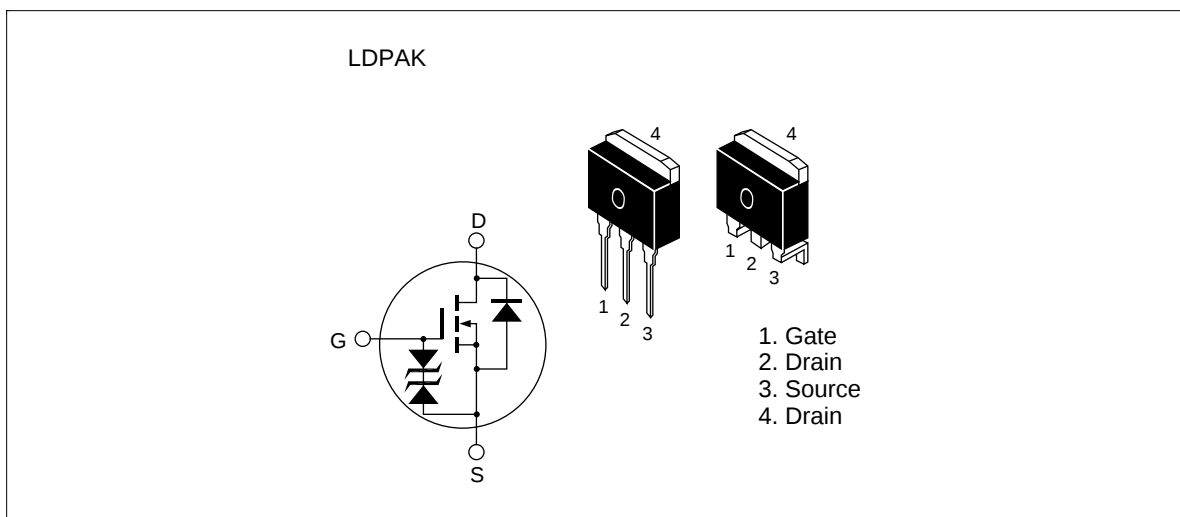
# HITACHI

ADE-208-637 (Z)  
2nd. Edition  
May 1998

## Features

- Low on-resistance  
 $R_{DS(on)} = 0.055 \Omega$  typ.
- High speed switching
- 4V gate drive device can be driven from 5V source

## Outline



## 2SK3082(L),2SK3082(S)

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

| Item                                   | Symbol                          | Ratings     | Unit |
|----------------------------------------|---------------------------------|-------------|------|
| Drain to source voltage                | $V_{DSS}$                       | 60          | V    |
| Gate to source voltage                 | $V_{GSS}$                       | ±20         | V    |
| Drain current                          | $I_D$                           | 10          | A    |
| Drain peak current                     | $I_{D(pulse)}$ <sup>Note1</sup> | 40          | A    |
| Body-drain diode reverse drain current | $I_{DR}$                        | 10          | A    |
| Avalanche current                      | $I_{AP}$ <sup>Note3</sup>       | 10          | A    |
| Avalanche energy                       | $E_{AR}$ <sup>Note3</sup>       | 8.5         | mJ   |
| Channel dissipation                    | $P_{ch}$ <sup>Note2</sup>       | 30          | 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  $T_c = 25^\circ C$   
 3. Value at  $T_{ch} = 25^\circ C$ ,  $R_g \geq 50\Omega$

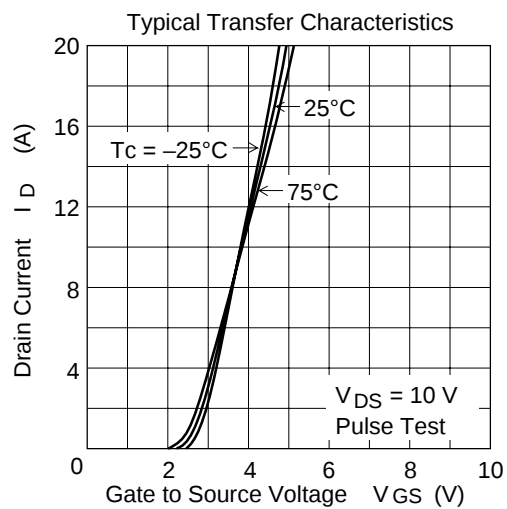
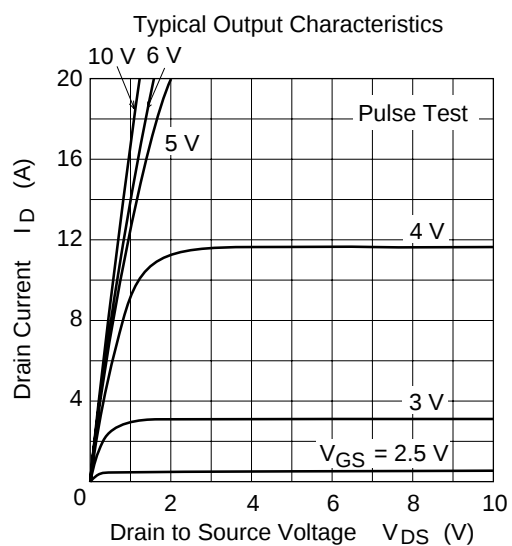
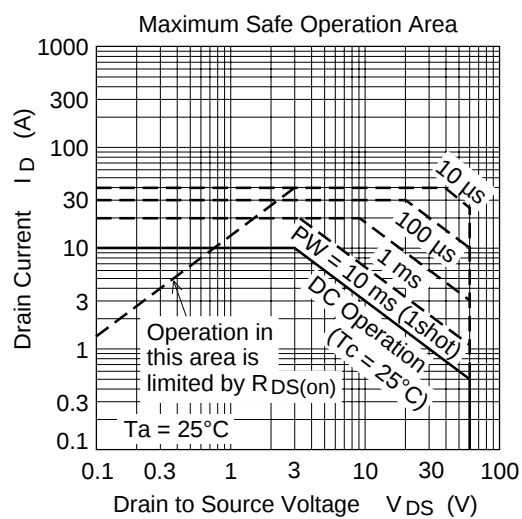
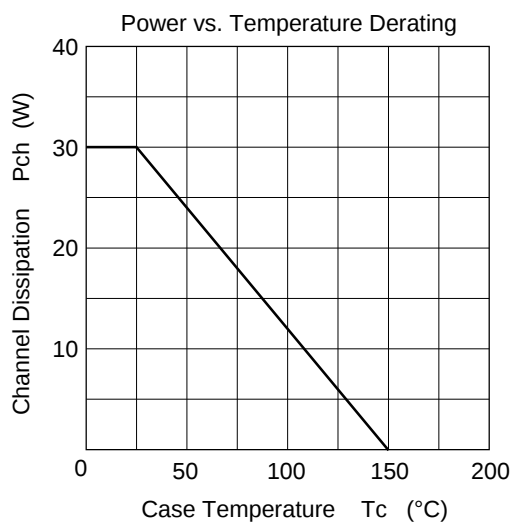
### Electrical Characteristics (Ta = 25°C)

| Item                                       | Symbol        | Min | Typ   | Max   | Unit | Test Conditions                                    |
|--------------------------------------------|---------------|-----|-------|-------|------|----------------------------------------------------|
| Drain to source breakdown voltage          | $V_{(BR)DSS}$ | 60  | —     | —     | V    | $I_D = 10mA$ , $V_{GS} = 0$                        |
| Gate to source breakdown voltage           | $V_{(BR)GSS}$ | ±20 | —     | —     | V    | $I_G = \pm 100\mu A$ , $V_{DS} = 0$                |
| Gate to source leak current                | $I_{GSS}$     | —   | —     | ±10   | μA   | $V_{GS} = \pm 16V$ , $V_{DS} = 0$                  |
| Zero gate voltage drain current            | $I_{DSS}$     | —   | —     | 10    | μA   | $V_{DS} = 60V$ , $V_{GS} = 0$                      |
| Gate to source cutoff voltage              | $V_{GS(off)}$ | 1.5 | —     | 2.5   | V    | $I_D = 1mA$ , $V_{DS} = 10V$                       |
| Static drain to source on state resistance | $R_{DS(on)}$  | —   | 0.055 | 0.075 | Ω    | $I_D = 5A$ , $V_{GS} = 10V$ <sup>Note4</sup>       |
|                                            | $R_{DS(on)}$  | —   | 0.090 | 0.150 | Ω    | $I_D = 5A$ , $V_{GS} = 4V$ <sup>Note4</sup>        |
| Forward transfer admittance                | $ y_{fs} $    | 5   | 8     | —     | S    | $I_D = 5A$ , $V_{DS} = 10V$ <sup>Note4</sup>       |
| Input capacitance                          | $C_{iss}$     | —   | 350   | —     | pF   | $V_{DS} = 10V$                                     |
| Output capacitance                         | $C_{oss}$     | —   | 190   | —     | pF   | $V_{GS} = 0$                                       |
| Reverse transfer capacitance               | $C_{rss}$     | —   | 70    | —     | pF   | $f = 1MHz$                                         |
| Turn-on delay time                         | $t_{d(on)}$   | —   | 10    | —     | ns   | $I_D = 5A$ , $V_{GS} = 10V$                        |
| Rise time                                  | $t_r$         | —   | 55    | —     | ns   | $R_L = 6\Omega$                                    |
| Turn-off delay time                        | $t_{d(off)}$  | —   | 60    | —     | ns   |                                                    |
| Fall time                                  | $t_f$         | —   | 70    | —     | ns   |                                                    |
| Body-drain diode forward voltage           | $V_{DF}$      | —   | 0.9   | —     | V    | $I_F = 10A$ , $V_{GS} = 0$                         |
| Body-drain diode reverse recovery time     | $t_{rr}$      | —   | 50    | —     | ns   | $I_F = 10A$ , $V_{GS} = 0$<br>$diF/dt = 50A/\mu s$ |

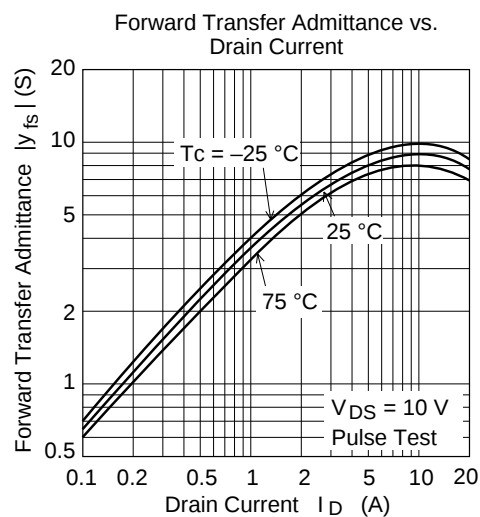
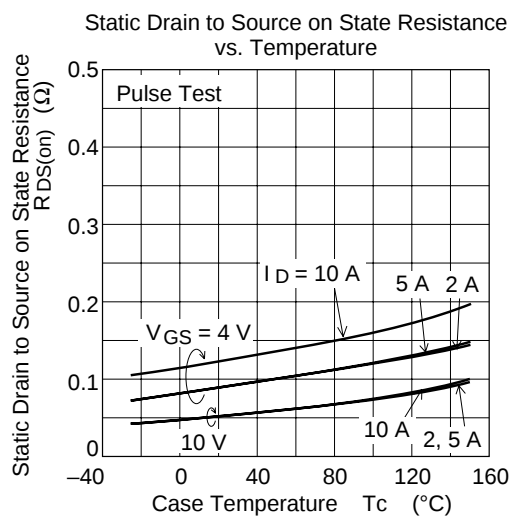
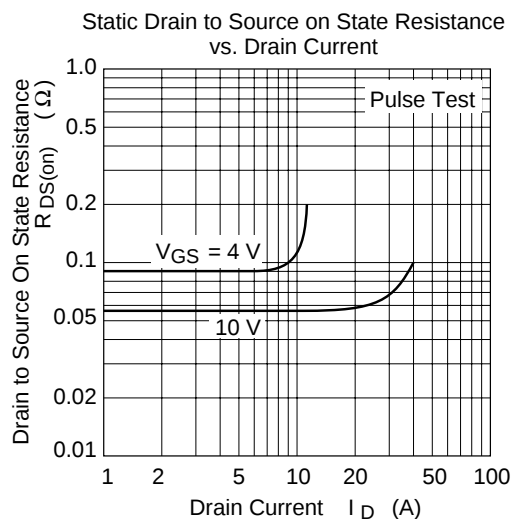
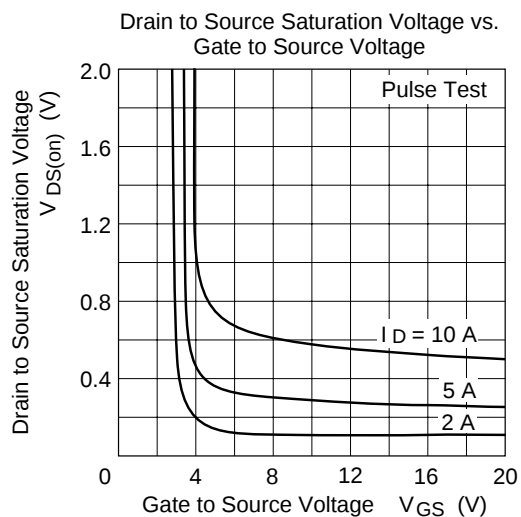
Note: 4. Pulse test

## 2SK3082(L),2SK3082(S)

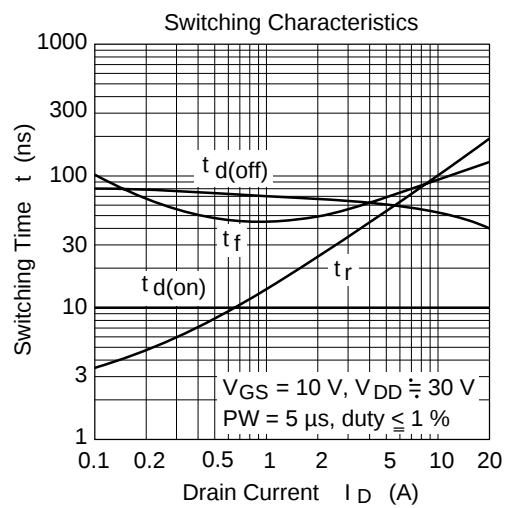
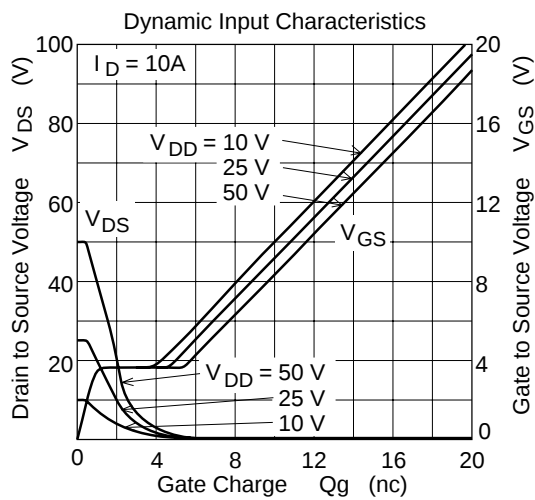
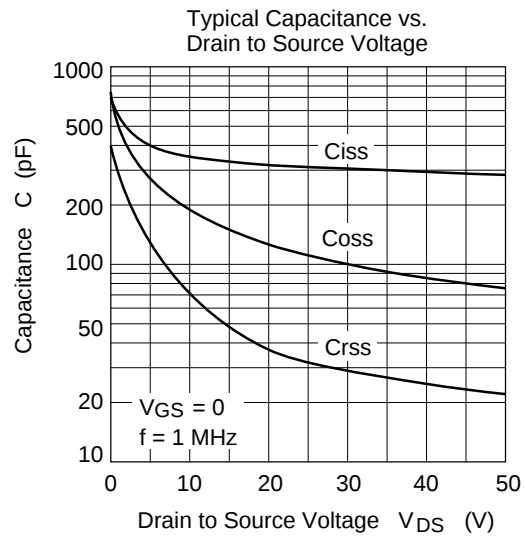
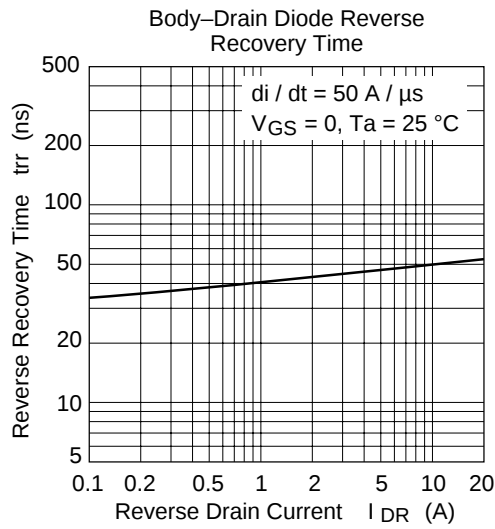
### Main Characteristics



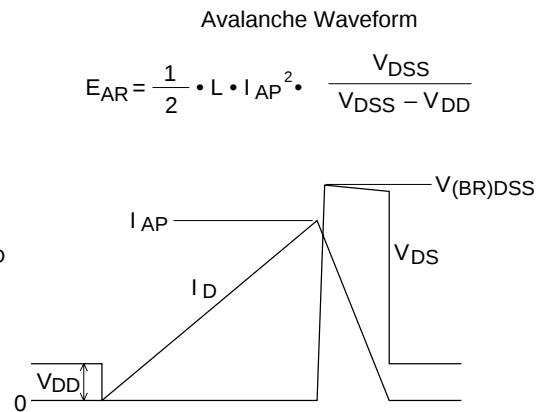
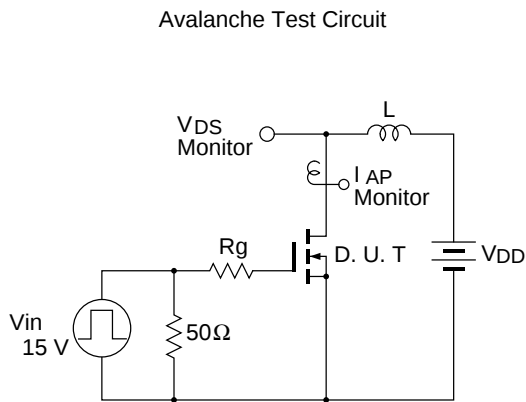
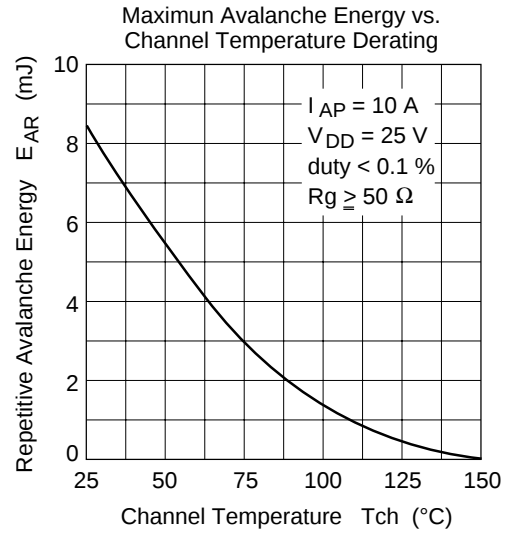
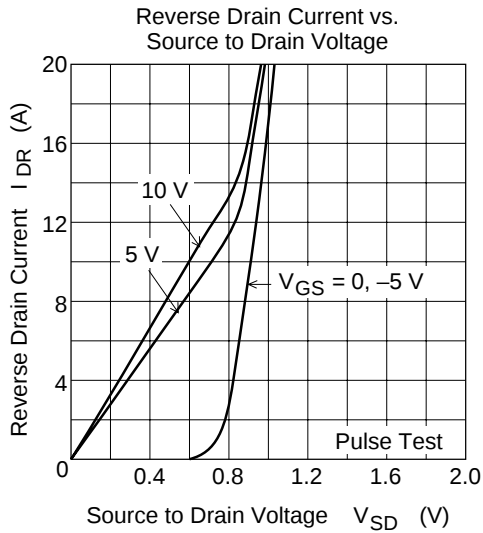
## 2SK3082(L),2SK3082(S)



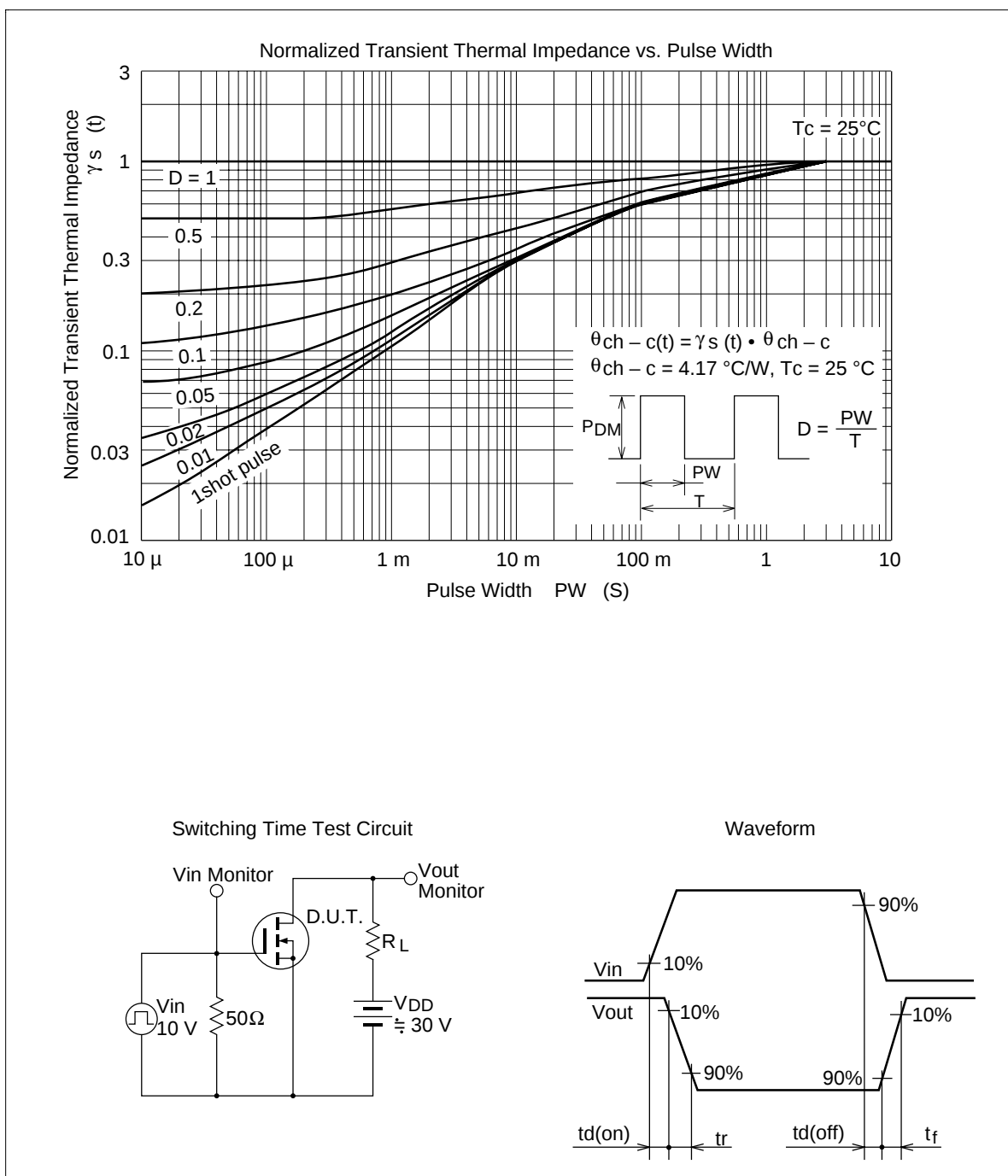
## 2SK3082(L),2SK3082(S)



## 2SK3082(L),2SK3082(S)



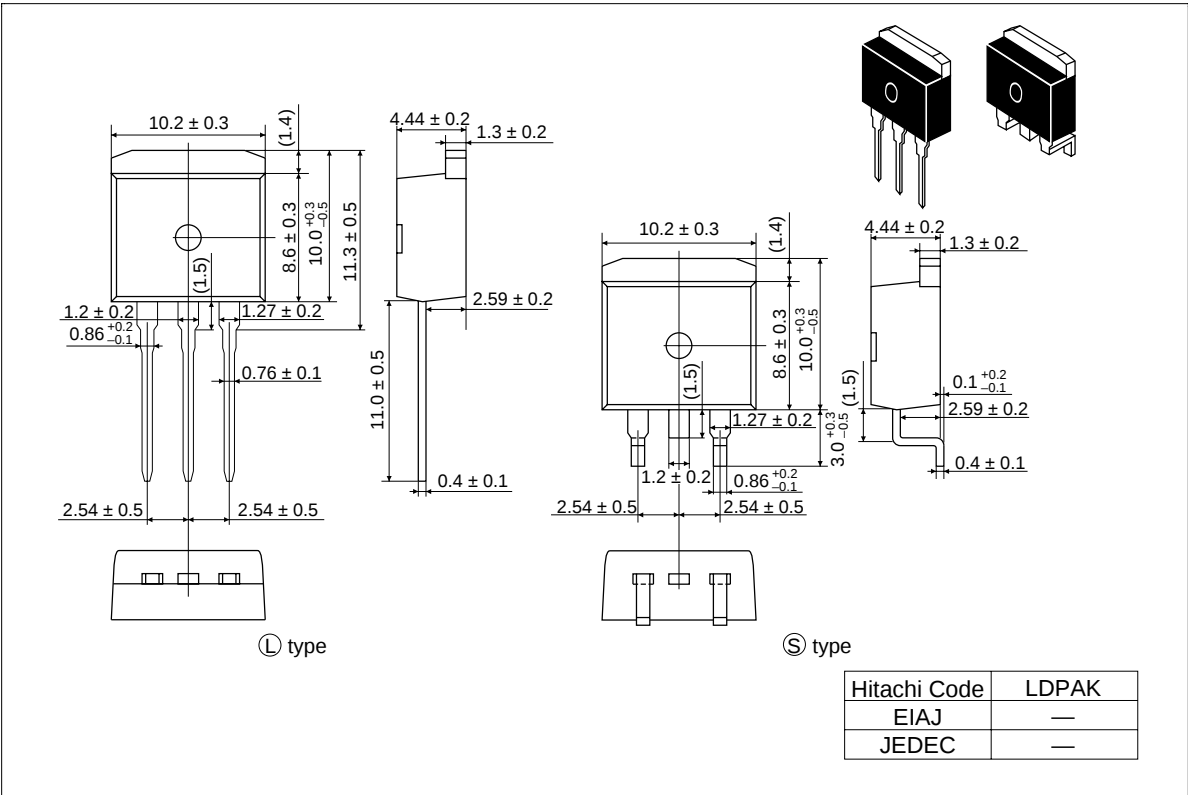
## 2SK3082(L),2SK3082(S)



2SK3082(L),2SK3082(S)

Package Dimensions

Unit: mm



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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      North America      : <http://semiconductor.hitachi.com/>  
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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 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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