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# 2SJ182(L), 2SJ182(S)

Silicon P-Channel MOS FET

## HITACHI

November 1996

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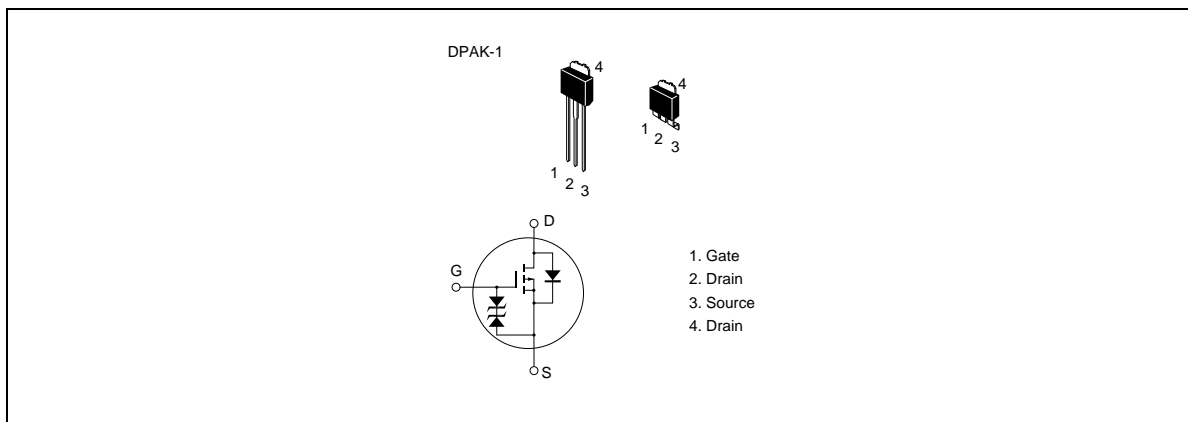
### Application

High speed power switching

### Features

- Low on-resistance
- High speed switching
- Low drive current
- 4 V gate drive device
  - Can be driven from 5 V source
- Suitable for motor drive, DC-DC converter, power switch and solenoid drive

### Outline



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

| Item                                      | Symbol              | Ratings     | Unit |
|---|---------------------|-------------|------|
| Drain to source voltage                   | $V_{DS}$            | −60         | V    |
| Gate to source voltage                    | $V_{GS}$            | ±20         | V    |
| Drain current                             | $I_D$               | −3          | A    |
| Drain peak current                        | $I_{D(pulse)}^{*1}$ | −12         | A    |
| Body to drain diode reverse drain current | $I_{DR}$            | −3          | A    |
| Channel dissipation                       | $Pch^{*2}$          | 20          | 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  $T_c = 25^\circ C$

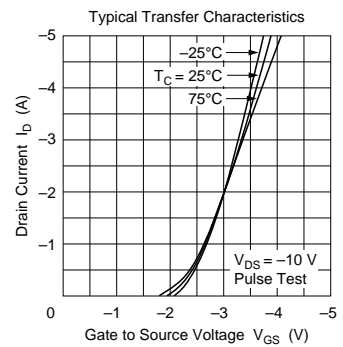
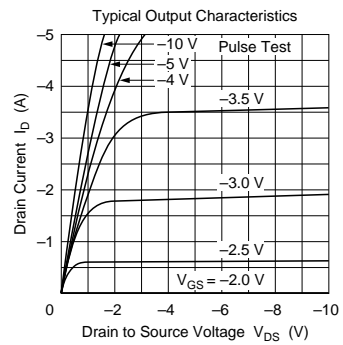
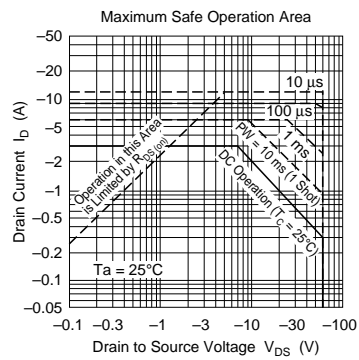
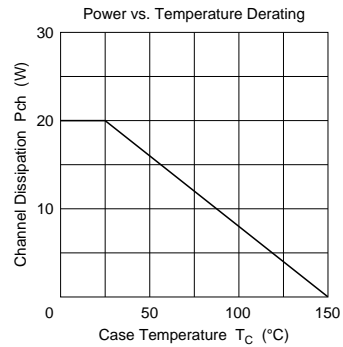
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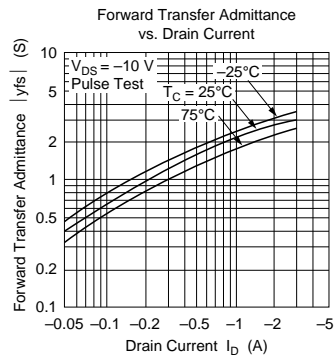
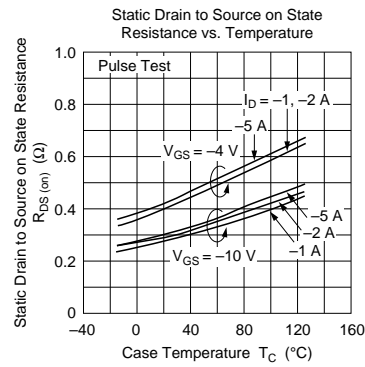
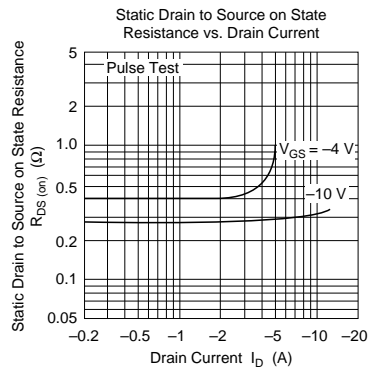
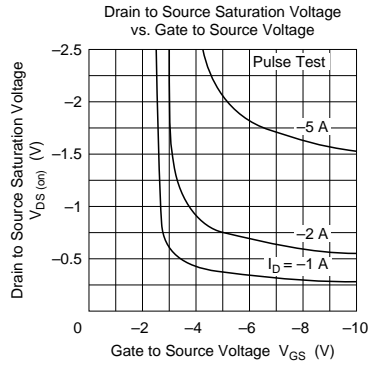
### Electrical Characteristics (Ta = 25°C)

| Item                                       | Symbol        | Min  | Typ   | Max  | Unit | Test conditions   |
|--|---------------|------|-------|------|------|---|
| Drain to source breakdown voltage          | $V_{(BR)DSS}$ | -60  | —     | —    | V    | $I_D = -10 \text{ mA}$ , $V_{GS} = 0$   |
| Gate to source breakdown voltage           | $V_{(BR)GSS}$ | ±20  | —     | —    | V    | $I_G = \pm 100 \text{ } \mu\text{A}$ , $V_{DS} = 0$                             |
| Gate to source leak current                | $I_{GSS}$     | —    | —     | ±10  | μA   | $V_{GS} = \pm 16 \text{ V}$ , $V_{DS} = 0$                                      |
| Zero gate voltage drain current            | $I_{DSS}$     | —    | —     | -100 | μA   | $V_{DS} = -50 \text{ V}$ , $V_{GS} = 0$   |
| Gate to source cutoff voltage              | $V_{GS(off)}$ | -1.0 | —     | -2.0 | V    | $I_D = -1 \text{ mA}$ , $V_{DS} = -10 \text{ V}$                                |
| Static drain to source on state resistance | $R_{DS(on)}$  | —    | 0.28  | 0.40 | Ω    | $I_D = -2 \text{ A}$ , $V_{GS} = -10 \text{ V}^{*1}$                            |
|  |               | —    | 0.40  | 0.55 |      | $I_D = -2 \text{ A}$ , $V_{GS} = -4 \text{ V}^{*1}$                             |
| Forward transfer admittance                | $ y_{fs} $    | 1.6  | 2.7   | —    | S    | $I_D = -2 \text{ A}$ , $V_{DS} = -10 \text{ V}^{*1}$                            |
| Input capacitance                          | $C_{iss}$     | —    | 425   | —    | pF   | $V_{DS} = -10 \text{ V}$ , $V_{GS} = 0$ ,<br>$f = 1 \text{ MHz}$                |
| Output capacitance                         | $C_{oss}$     | —    | 225   | —    | pF   |   |
| Reverse transfer capacitance               | $C_{rss}$     | —    | 60    | —    | pF   |   |
| Turn-on delay time                         | $t_{d(on)}$   | —    | 5     | —    | ns   | $I_D = -2 \text{ A}$ , $V_{GS} = -10 \text{ V}$ ,<br>$R_L = 15 \text{ } \Omega$ |
| Rise time                                  | $t_r$         | —    | 30    | —    | ns   |   |
| Turn-off delay time                        | $t_{d(off)}$  | —    | 160   | —    | ns   |   |
| Fall time                                  | $t_f$         | —    | 85    | —    | ns   |   |
| Body to drain diode forward voltage        | $V_{DF}$      | —    | -1.05 | —    | V    | $I_F = -3 \text{ A}$ , $V_{GS} = 0$   |
| Body to drain diode reverse recovery time  | $t_{rr}$      | —    | 140   | —    | ns   | $I_F = -3 \text{ A}$ , $V_{GS} = 0$ ,<br>$di_F/dt = 50 \text{ A}/\mu\text{s}$   |

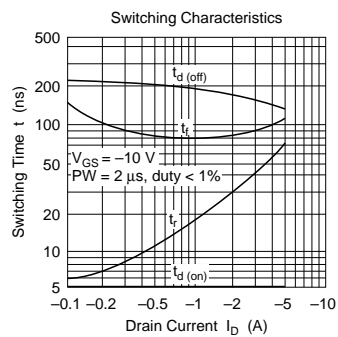
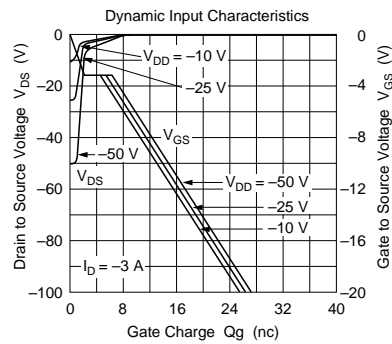
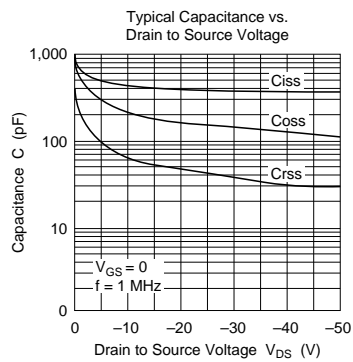
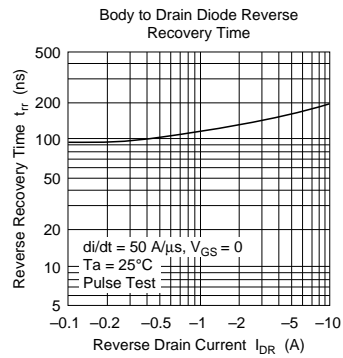
Note 1. Pulse test

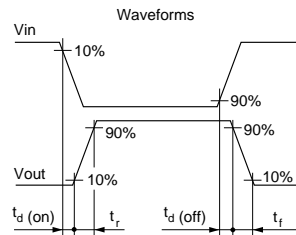
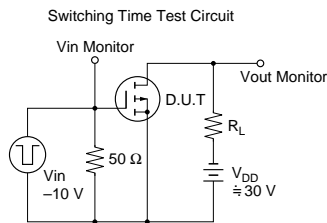
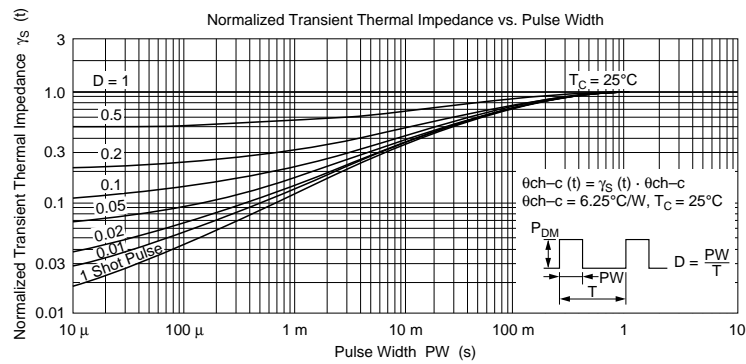
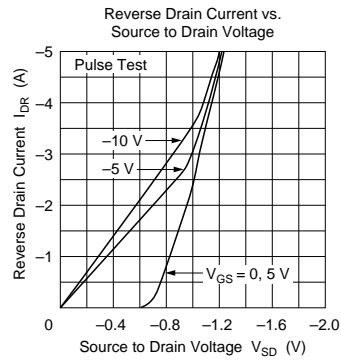
## 2SJ182(L), 2SJ182(S)





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