

# 2SK1572

Silicon N-Channel MOS FET

**RENESAS**

ADE-208-1294 (Z)

1st. Edition

Mar. 2001

## Application

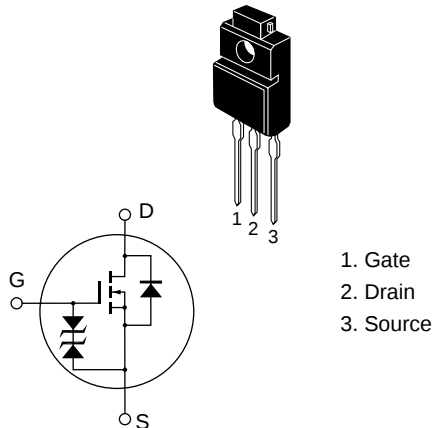
High speed power switching

## Features

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

## Outline

TO-220FM



Absolute Maximum Ratings (Ta = 25°C)

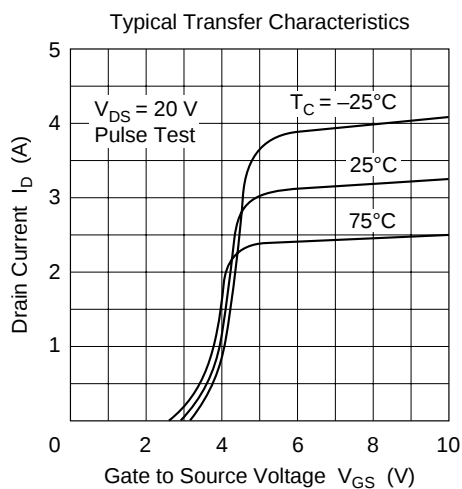
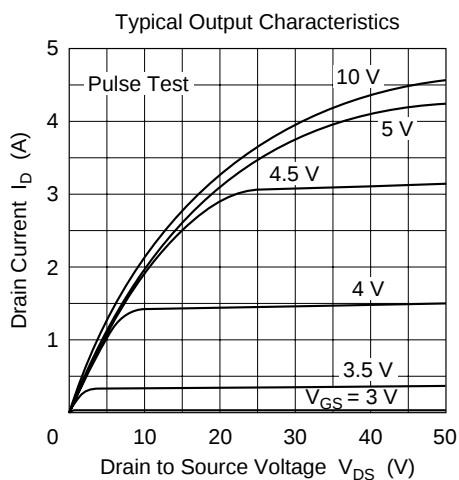
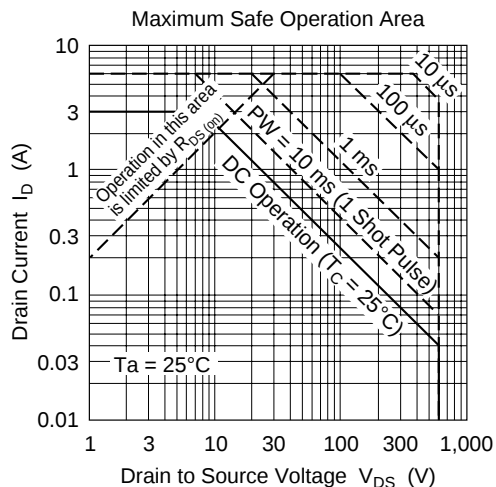
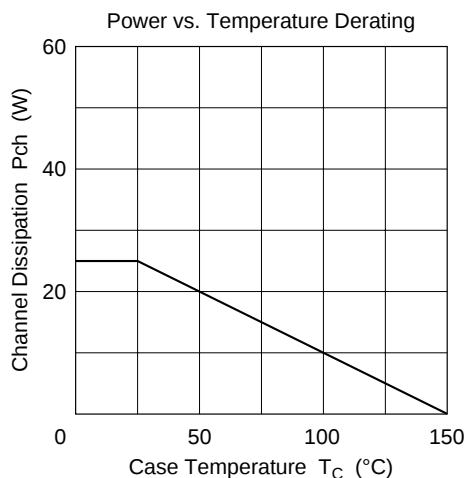
| Item                                      | Symbol                              | Ratings     | Unit |
|-------------------------------------------|-------------------------------------|-------------|------|
| Drain to source voltage                   | V <sub>DSS</sub>                    | 600         | V    |
| Gate to source voltage                    | V <sub>GSS</sub>                    | ±30         | V    |
| Drain current                             | I <sub>D</sub>                      | 3           | A    |
| Drain peak current                        | I <sub>D(pulse)</sub> <sup>*1</sup> | 6           | A    |
| Body to drain diode reverse drain current | I <sub>DR</sub>                     | 3           | A    |
| Channel dissipation                       | Pch <sup>*2</sup>                   | 25          | W    |
| Channel temperature                       | Tch                                 | 150         | °C   |
| Storage temperature                       | Tstg                                | −55 to +150 | °C   |

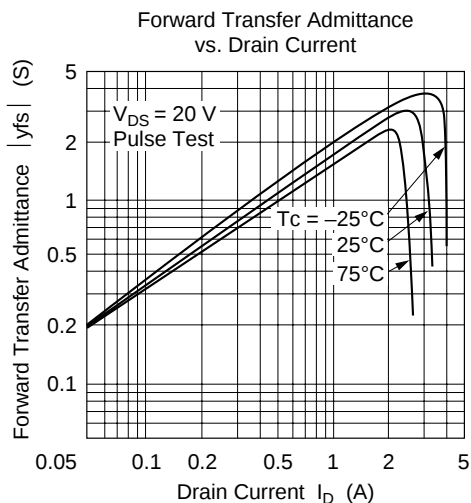
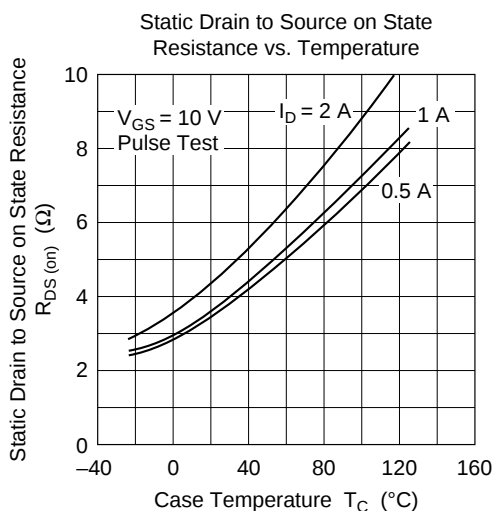
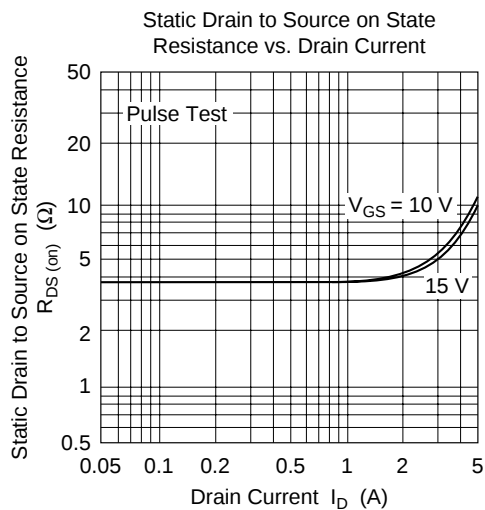
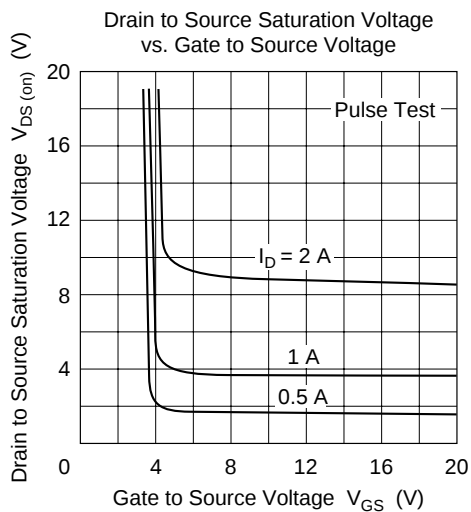
Notes 1. PW ≤ 10 μs, duty cycle ≤ 1%  
2. Value at T<sub>c</sub> = 25°C

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

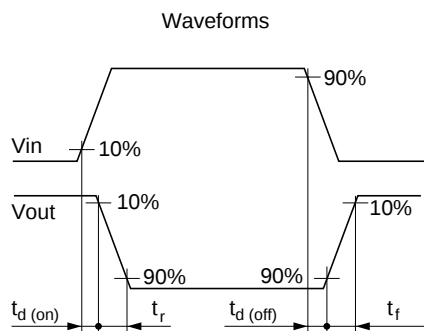
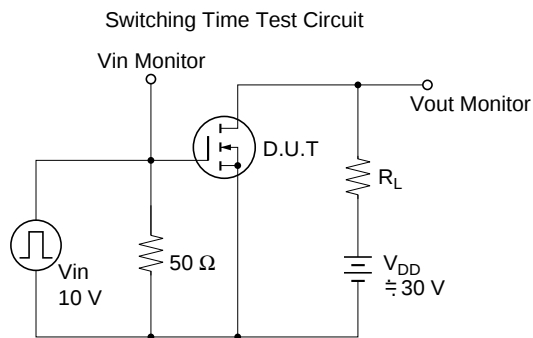
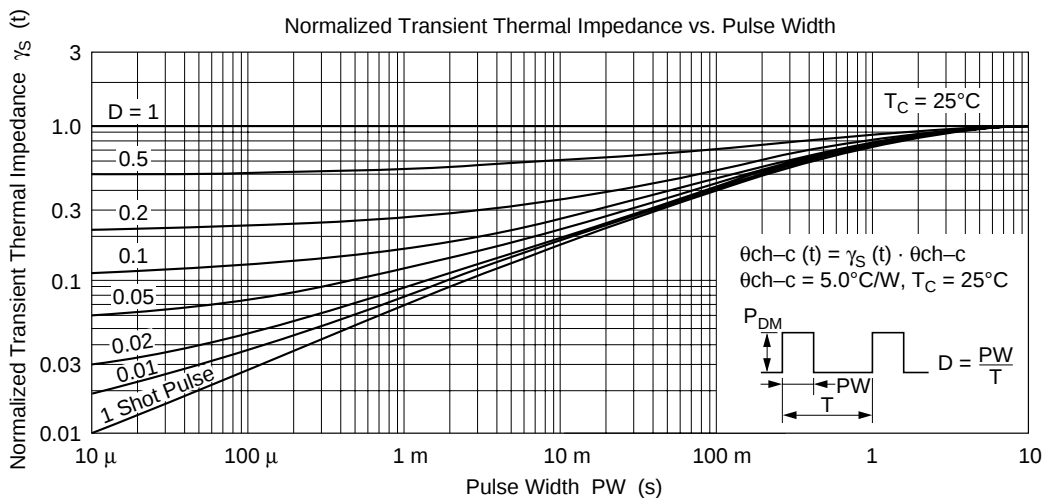
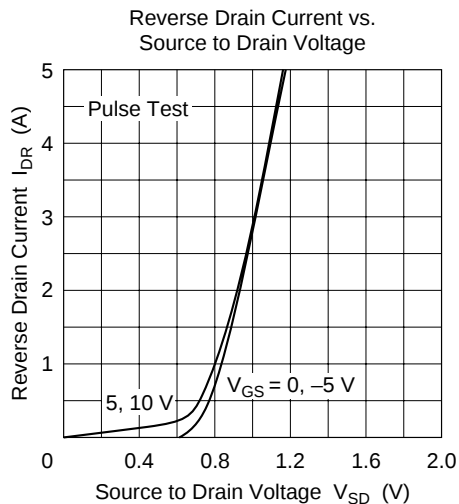
| Item                                       | Symbol        | Min      | Typ | Max      | Unit          | Test conditions                                                               |
|--------------------------------------------|---------------|----------|-----|----------|---------------|-------------------------------------------------------------------------------|
| Drain to source breakdown voltage          | $V_{(BR)DSS}$ | 600      | —   | —        | V             | $I_D = 10 \text{ mA}$ , $V_{GS} = 0$                                          |
| Gate to source breakdown voltage           | $V_{(BR)GSS}$ | $\pm 30$ | —   | —        | V             | $I_G = \pm 100 \text{ }\mu\text{A}$ , $V_{DS} = 0$                            |
| Gate to source leak current                | $I_{GSS}$     | —        | —   | $\pm 10$ | $\mu\text{A}$ | $V_{GS} = \pm 25 \text{ V}$ , $V_{DS} = 0$                                    |
| Zero gate voltage drain current            | $I_{DSS}$     | —        | —   | 250      | $\mu\text{A}$ | $V_{DS} = 500 \text{ V}$ , $V_{GS} = 0$                                       |
| 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 | $R_{DS(on)}$  | —        | 3.8 | 5.0      | $\Omega$      | $I_D = 1 \text{ A}$ , $V_{GS} = 10 \text{ V}^{*1}$                            |
| Forward transfer admittance                | $ y_{fs} $    | 1.2      | 2.0 | —        | S             | $I_D = 1 \text{ A}$ , $V_{DS} = 10 \text{ V}^{*1}$                            |
| Input capacitance                          | $C_{iss}$     | —        | 295 | —        | pF            | $V_{DS} = 10 \text{ V}$ , $V_{GS} = 0$ ,<br>$f = 1 \text{ MHz}$               |
| Output capacitance                         | $C_{oss}$     | —        | 70  | —        | pF            |                                                                               |
| Reverse transfer capacitance               | $C_{rss}$     | —        | 12  | —        | pF            |                                                                               |
| Turn-on delay time                         | $t_{d(on)}$   | —        | 8   | —        | ns            | $I_D = 1 \text{ A}$ , $V_{GS} = 10 \text{ V}$ ,<br>$R_L = 30 \text{ }\Omega$  |
| Rise time                                  | $t_r$         | —        | 25  | —        | ns            |                                                                               |
| Turn-off delay time                        | $t_{d(off)}$  | —        | 65  | —        | ns            |                                                                               |
| Fall time                                  | $t_f$         | —        | 30  | —        | 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  | $t_{rr}$      | —        | 220 | —        | ns            | $I_F = 2 \text{ A}$ , $V_{GS} = 0$ ,<br>$di_F/dt = 100 \text{ A}/\mu\text{s}$ |

Note 1. Pulse test

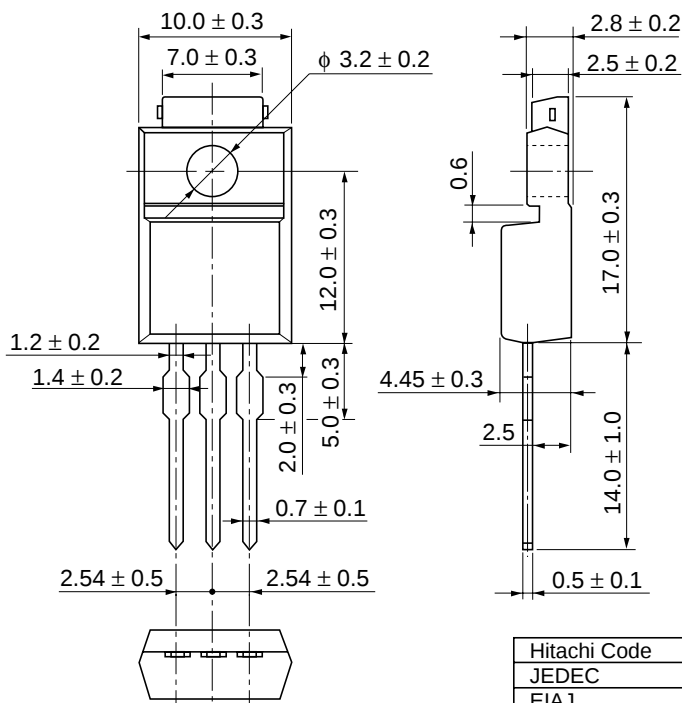




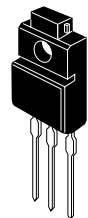




Package Dimensions



As of January, 2001  
Unit: mm



|                        |          |
|------------------------|----------|
| Hitachi Code           | TO-220FM |
| JEDEC                  | —        |
| EIAJ                   | Conforms |
| Mass (reference value) | 1.8 g    |