

# 2SK1626, 2SK1627

Silicon N Channel MOS FET

REJ03G0959-0200  
(Previous: ADE-208-1302)  
Rev.2.00  
Sep 07, 2005

## Application

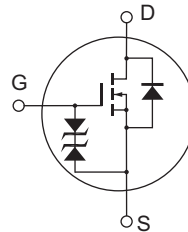
High speed power switching

## Features

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

## Outline

RENESAS Package code: PRSS0003AD-A  
(Package name: TO-220FM)



1. Gate
2. Drain
3. Source

## Absolute Maximum Ratings

(Ta = 25°C)

| Item                                      |         | Symbol              | Ratings     | Unit |
|-------------------------------------------|---------|---------------------|-------------|------|
| Drain to source voltage                   | 2SK1626 | $V_{DSS}$           | 450         | V    |
|                                           | 2SK1627 |                     | 500         |      |
| Gate to source voltage                    |         | $V_{GSS}$           | ±30         | V    |
| Drain current                             |         | $I_D$               | 5           | A    |
| Drain peak current                        |         | $I_{D(pulse)}^{*1}$ | 20          | A    |
| Body to drain diode reverse drain current |         | $I_{DR}$            | 5           | A    |
| Channel dissipation                       |         | $P_{ch}^{*2}$       | 35          | 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

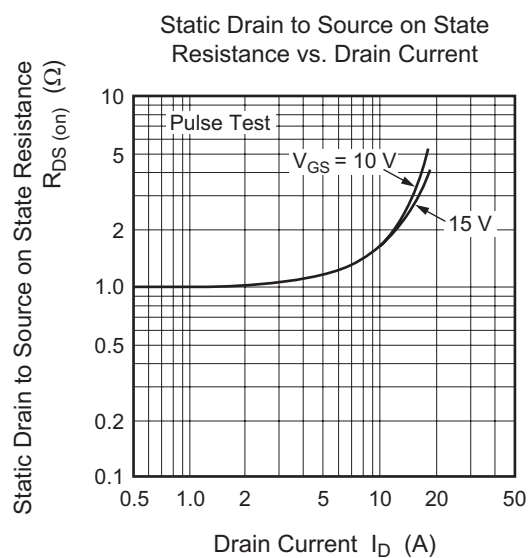
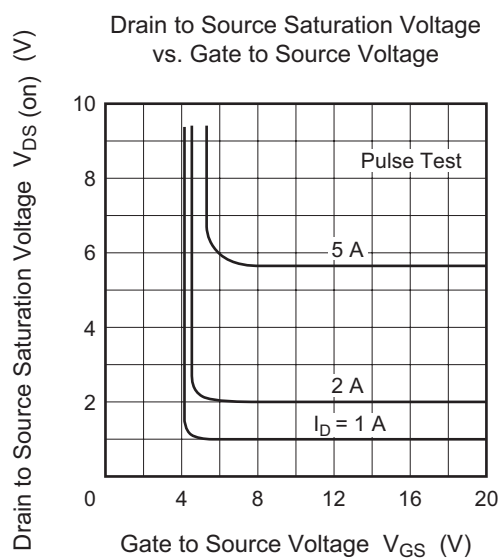
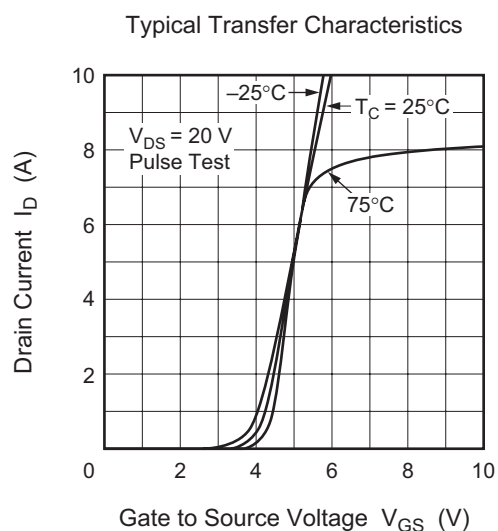
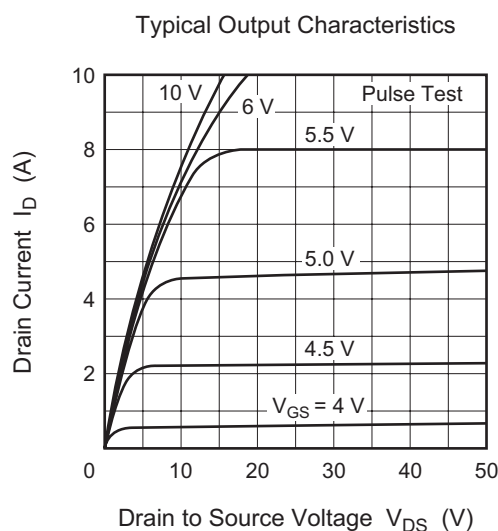
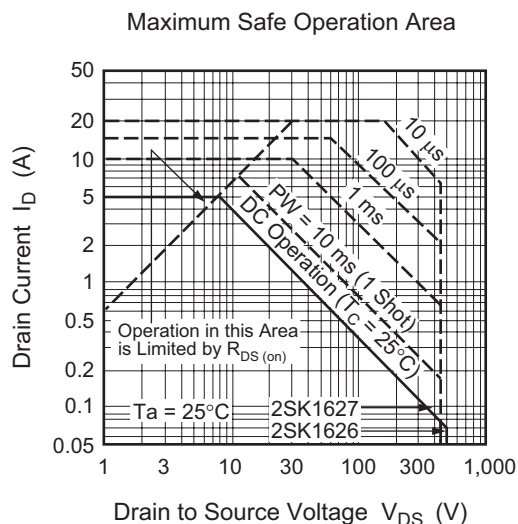
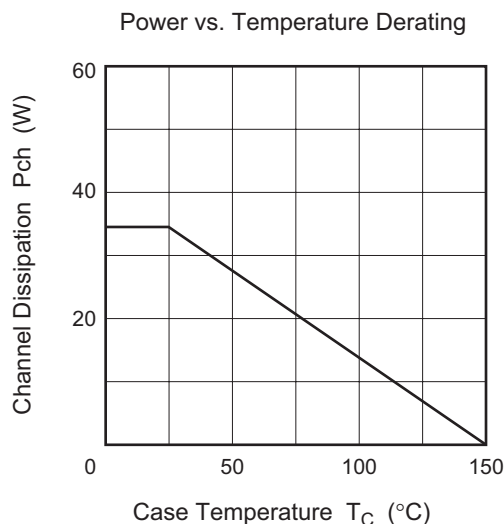
## Electrical Characteristics

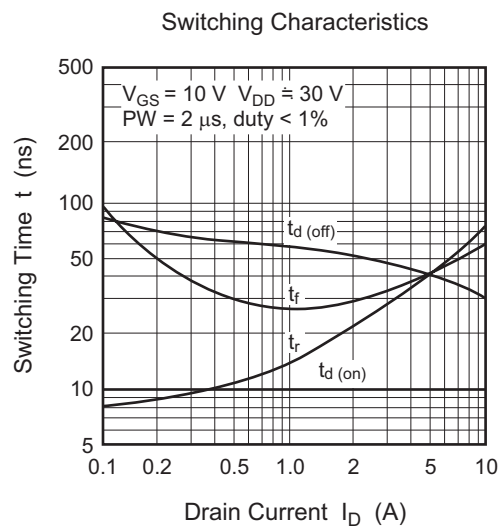
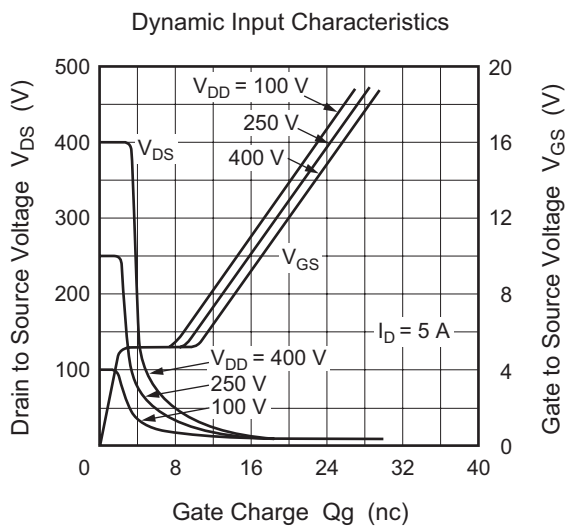
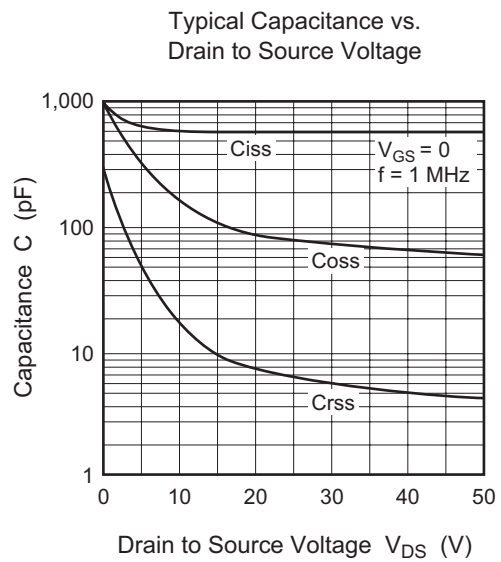
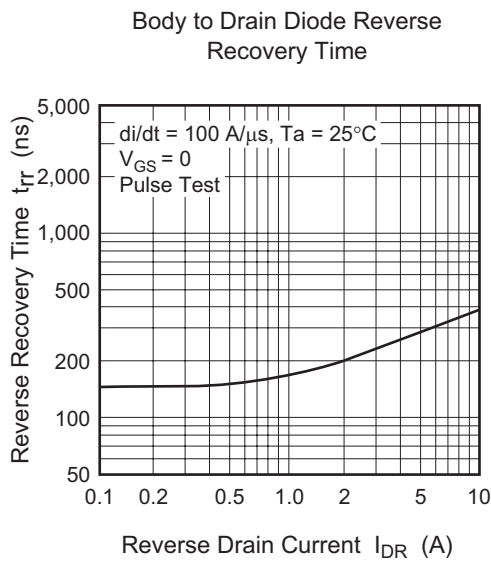
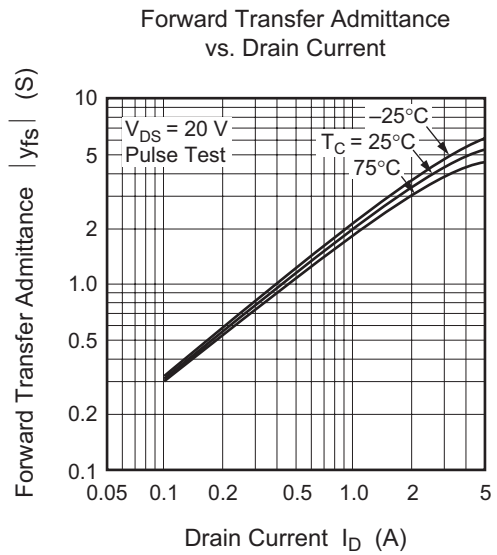
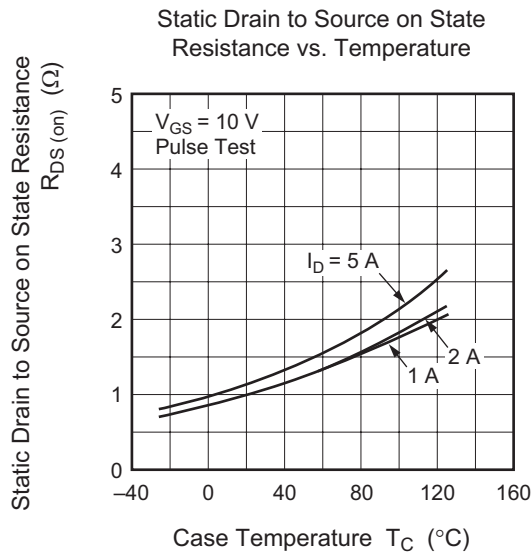
(Ta = 25°C)

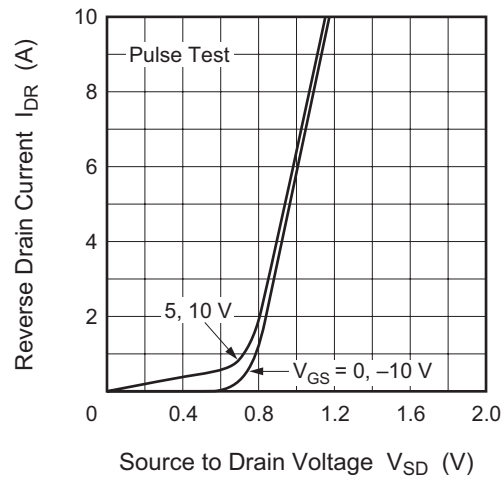
| Item                                       |         | Symbol              | Min | Typ  | Max | Unit | Test conditions                                                            |
|--------------------------------------------|---------|---------------------|-----|------|-----|------|----------------------------------------------------------------------------|
| Drain to source breakdown voltage          | 2SK1626 | $V_{(BR)DSS}$       | 450 | —    | —   | V    | $I_D = 10 \text{ mA}$ , $V_{GS} = 0$                                       |
|                                            | 2SK1627 |                     | 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            | 2SK1626 | $I_{DSS}$           | —   | —    | 250 | μA   | $V_{DS} = 360 \text{ V}$ , $V_{GS} = 0$                                    |
|                                            | 2SK1627 |                     |     |      |     |      | $V_{DS} = 400 \text{ V}$ , $V_{GS} = 0$                                    |
| 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 | 2SK1626 | $R_{DS(on)}$        | —   | 1.0  | 1.4 | Ω    | $I_D = 2.5 \text{ A}$ , $V_{GS} = 10 \text{ V}^{*3}$                       |
|                                            | 2SK1627 |                     | —   | 1.2  | 1.5 |      |                                                                            |
| Forward transfer admittance                |         | y <sub>fs</sub>     | 2.5 | 4.0  | —   | S    | $I_D = 2.5 \text{ A}$ , $V_{DS} = 10 \text{ V}^{*3}$                       |
| Input capacitance                          |         | Ciss                | —   | 640  | —   | pF   | $V_{DS} = 10 \text{ V}$ , $V_{GS} = 0$ ,<br>f = 1 MHz                      |
| Output capacitance                         |         | Coss                | —   | 160  | —   | pF   |                                                                            |
| Reverse transfer capacitance               |         | Crss                | —   | 20   | —   | pF   |                                                                            |
| Turn-on delay time                         |         | t <sub>d(on)</sub>  | —   | 10   | —   | ns   | $I_D = 2.5 \text{ A}$ , $V_{GS} = 10 \text{ V}$ ,<br>R <sub>L</sub> = 12 Ω |
| Rise time                                  |         | t <sub>r</sub>      | —   | 25   | —   | ns   |                                                                            |
| Turn-off delay time                        |         | t <sub>d(off)</sub> | —   | 50   | —   | ns   |                                                                            |
| Fall time                                  |         | t <sub>f</sub>      | —   | 30   | —   | ns   |                                                                            |
| Body to drain diode forward voltage        |         | $V_{DF}$            | —   | 0.95 | —   | V    | $I_F = 5 \text{ A}$ , $V_{GS} = 0$                                         |
| Body to drain diode reverse recovery time  |         | t <sub>rr</sub>     | —   | 300  | —   | ns   | $I_F = 5 \text{ A}$ , $V_{GS} = 0$ ,<br>di <sub>F</sub> /dt = 100 A/μs     |

Note: 3. Pulse test

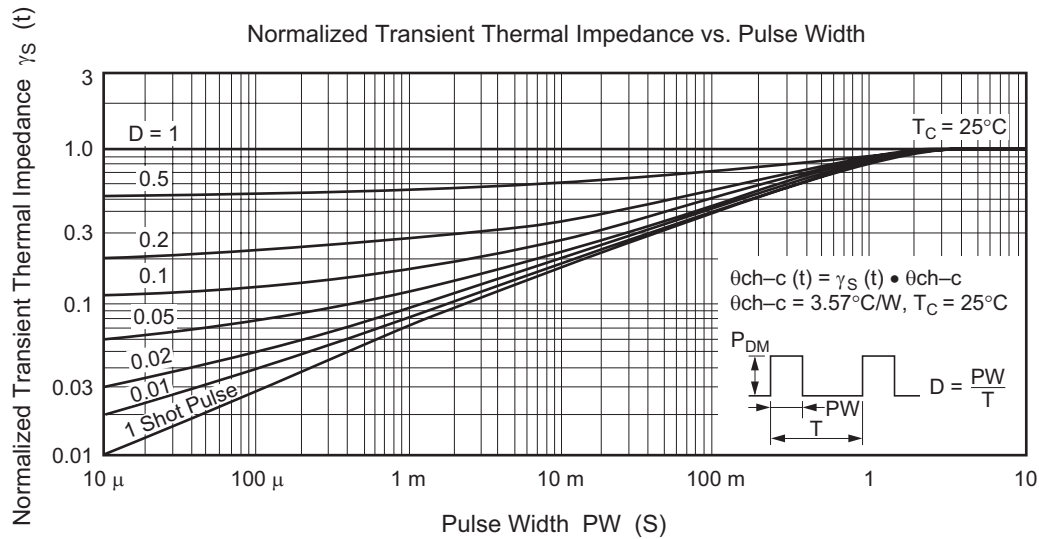
## Main Characteristics



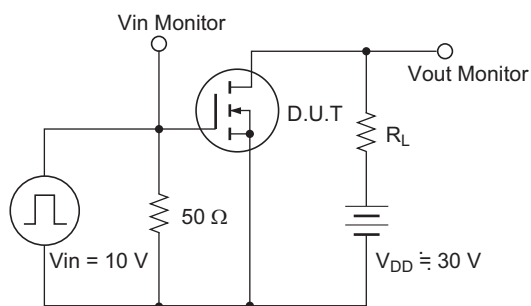


Reverse Drain Current vs.  
Source to Drain Voltage

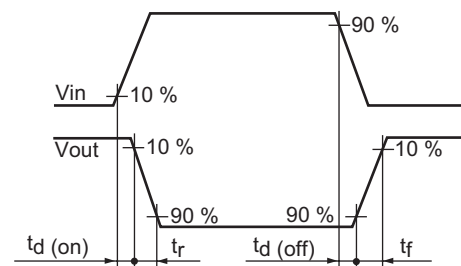
Normalized Transient Thermal Impedance vs. Pulse Width



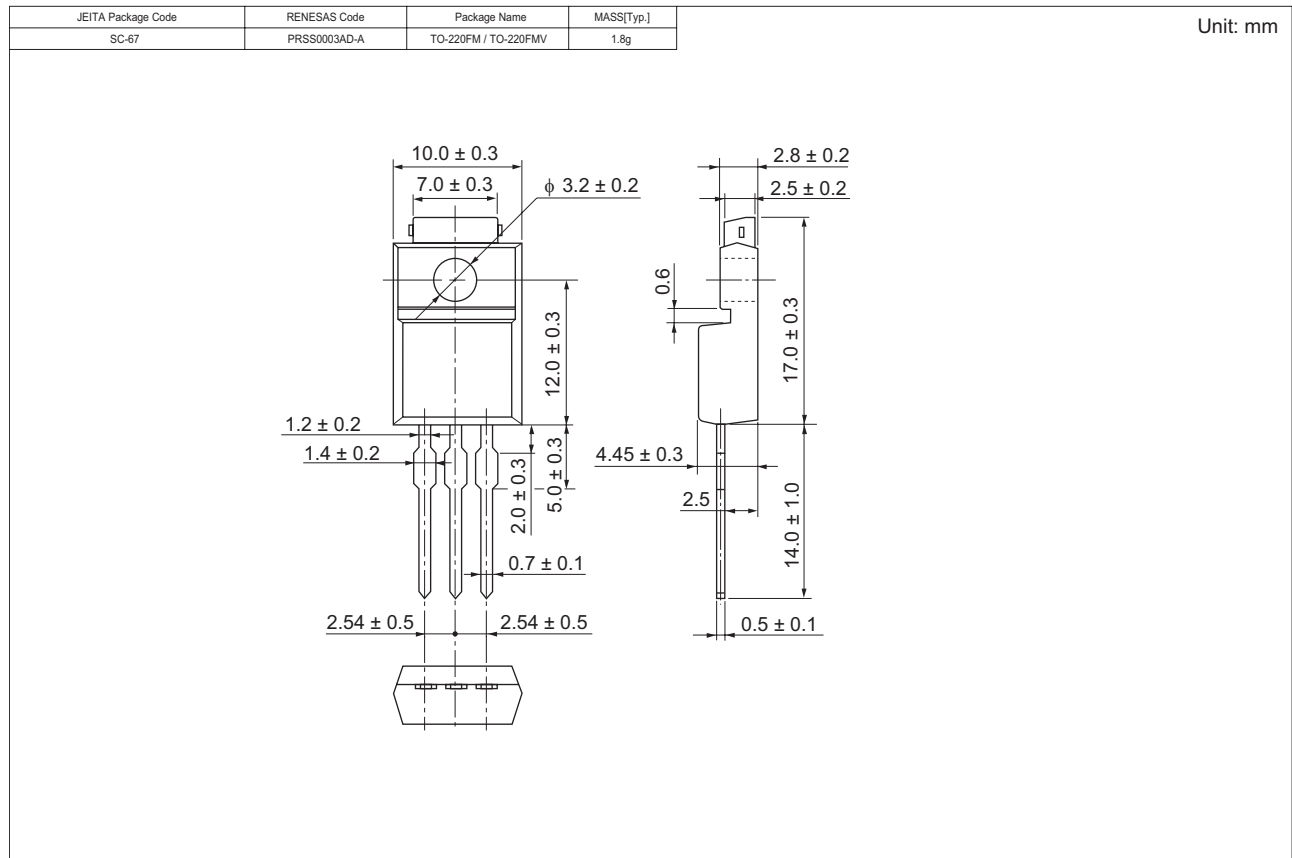
Switching Time Test Circuit



Waveforms



## Package Dimensions



## Ordering Information

| Part Name | Quantity | Shipping Container |
|-----------|----------|--------------------|
| 2SK1626-E | 500 pcs  | Box (Sack)         |
| 2SK1627-E | 500 pcs  | Box (Sack)         |

Note: For some grades, production may be terminated. Please contact the Renesas sales office to check the state of production before ordering the product.

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