# 2SK2225

## 1500V - 2A - MOS FET
## High Speed Power Switching

R07DS1358EJ0400
Rev.4.00
Dec 06, 2017

### Application

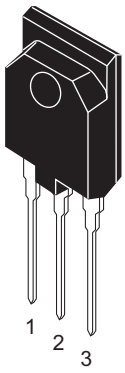
High speed power switching

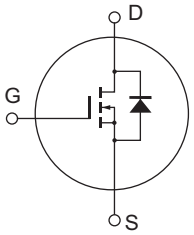
### Features

- High breakdown voltage ($V_{DSS}$ = 1500 V)
- High speed switching
- Low drive current
- No Secondary breakdown
- Suitable for switching regulator, DC-DC converter

### Outline

RENESAS Package code: PRSS0003ZA-A
(Package name: TO-3PFM)




1. Gate
2. Drain
3. Source

### Absolute Maximum Ratings

(Ta = 25°C)

| Item | Symbol | Ratings | Unit |
|---|---|---|---|
| Drain to source voltage | $V_{DSS}$ | 1500 | V |
| Gate to source voltage | $V_{GSS}$ | ±20 | V |
| Drain current | $I_D$ | 2 | A |
| Drain peak current | $I_{D(pulse)}$*1 | 7 | A |
| Body to drain diode reverse drain current | $I_{DR}$ | 2 | A |
| Channel dissipation | Pch*2 | 50 | W |
| Channel temperature | Tch | 150 | °C |
| Storage temperature | Tstg | –55 to +150 | °C |

Notes: 1. PW ≤ 10 μs, duty cycle ≤ 1 %
2. Value at Tc = 25°C



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## Electrical Characteristics

(Ta = 25°C)

| Item | Symbol | Min | Typ | Max | Unit | Test conditions |
|---|---|---|---|---|---|---|
| Drain to source breakdown voltage | $V_{(BR)DSS}$ | 1500 | — | — | V | $I_D$ = 10 mA, $V_{GS}$ = 0 |
| Gate to source leak current | $I_{GSS}$ | — | — | ±1 | μA | $V_{GS}$ = ±20 V, $V_{DS}$ = 0 |
| Zero gate voltage drain current | $I_{DSS}$ | — | — | 500 | μA | $V_{DS}$ =1200 V, $V_{GS}$ = 0 |
| Gate to source cutoff voltage | $V_{GS(off)}$ | 2.0 | — | 4.0 | V | $I_D$ = 1 mA, $V_{DS}$ = 10 V |
| Static drain to source on state resistance | $R_{DS(on)}$ | — | 9 | 12 | Ω | $I_D$ = 1 A, $V_{GS}$ = 15 V*[3] |
| Forward transfer admittance | $\|y_{fs}\|$ | 0.45 | 0.75 | — | S | $I_D$ = 1 A, $V_{DS}$ = 20 V*[3] |
| Input capacitance | Ciss | — | 990 | — | pF | $V_{DS}$ = 10 V, $V_{GS}$ = 0, f = 1 MHz |
| Output capacitance | Coss | — | 125 | — | pF | |
| Reverse transfer capacitance | Crss | — | 60 | — | pF | |
| Turn-on delay time | $t_{d(on)}$ | — | 17 | — | ns | $I_D$ = 1 A, $V_{GS}$ = 10 V, $R_L$ = 30 Ω |
| Rise time | $t_r$ | — | 50 | — | ns | |
| Turn-off delay time | $t_{d(off)}$ | — | 150 | — | ns | |
| Fall time | $t_f$ | — | 50 | — | ns | |
| Body to drain diode forward voltage | $V_{DF}$ | — | 0.9 | — | V | $I_F$ = 2 A, $V_{GS}$ = 0 |
| Body to drain diode reverse recovery time | $t_{rr}$ | — | 1750 | — | ns | $I_F$ = 2 A, $V_{GS}$ = 0, $di_F$ / dt = 100 A / μs |

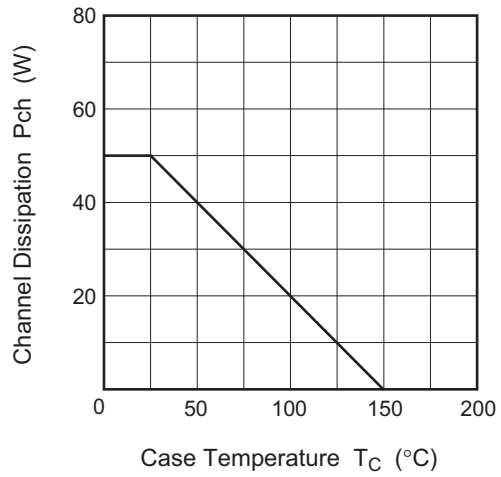
Note: 3. Pulse Test



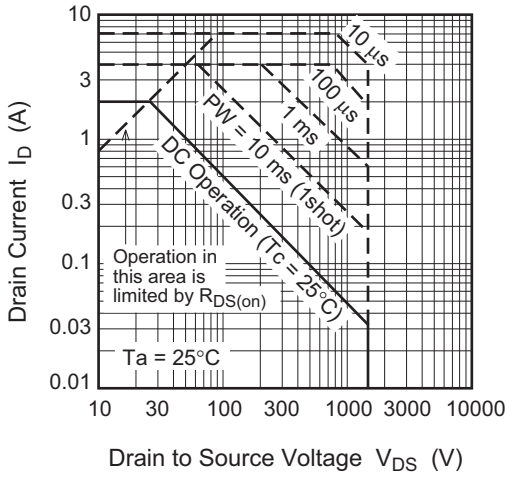
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## Main Characteristics

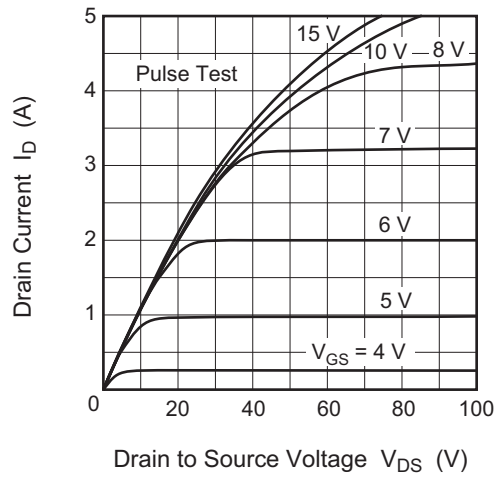
Power vs. Temperature Derating



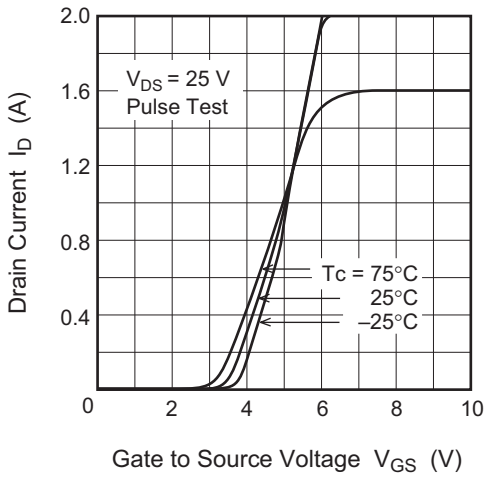

Maximum Safe Operation Area



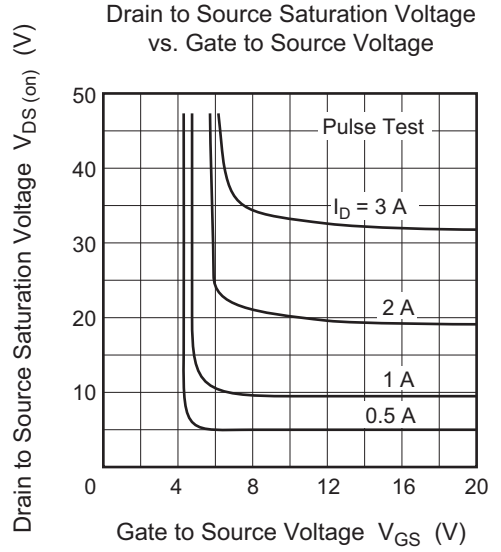

Typical Output Characteristics



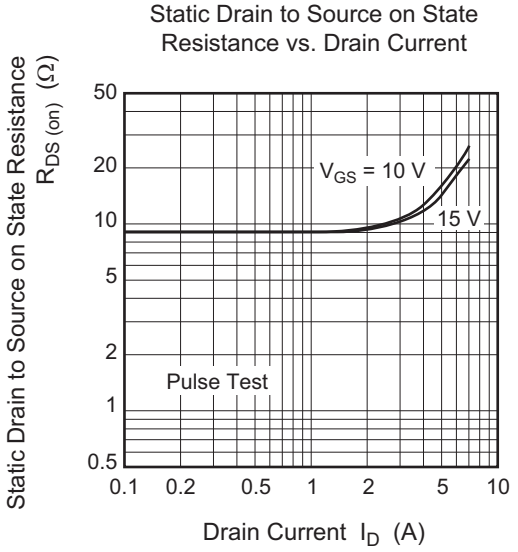

Typical Transfer Characteristics




Drain to Source Saturation Voltage vs. Gate to Source Voltage



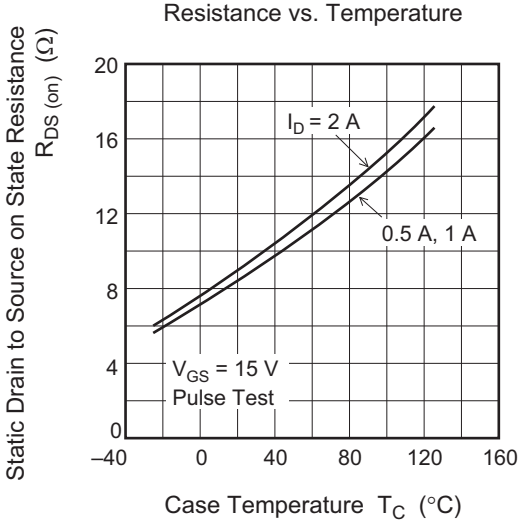

Static Drain to Source on State Resistance vs. Drain Current



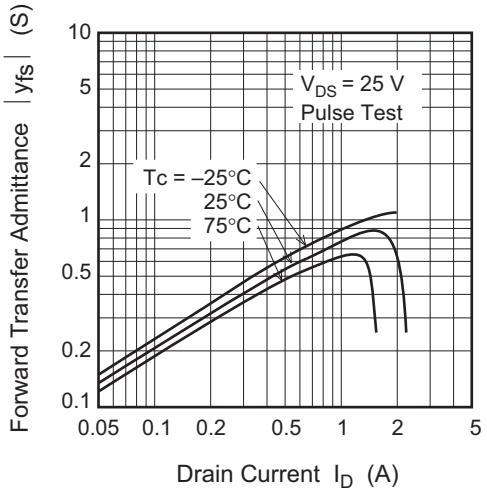



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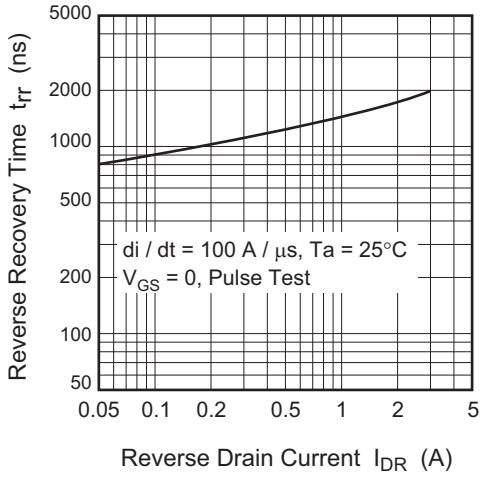
Static Drain to Source on State Resistance vs. Temperature



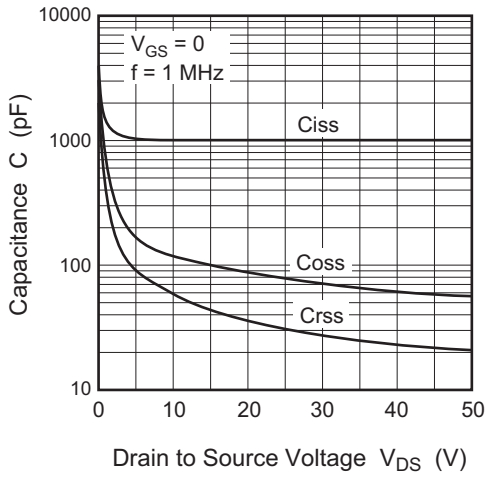

Forward Transfer Admittance vs. Drain Current



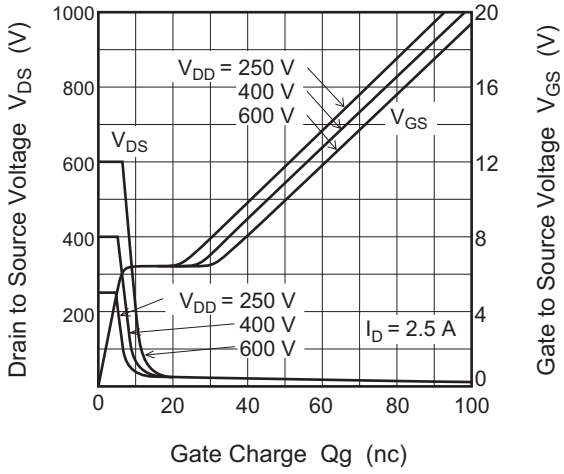

Body to Drain Diode Reverse Recovery Time



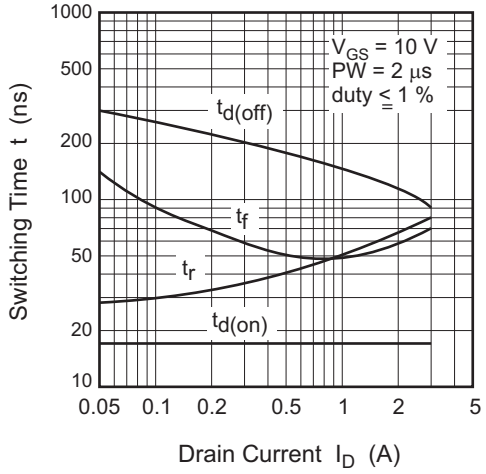

Typical Capacitance vs. Drain to Source Voltage




Dynamic Input Characteristics



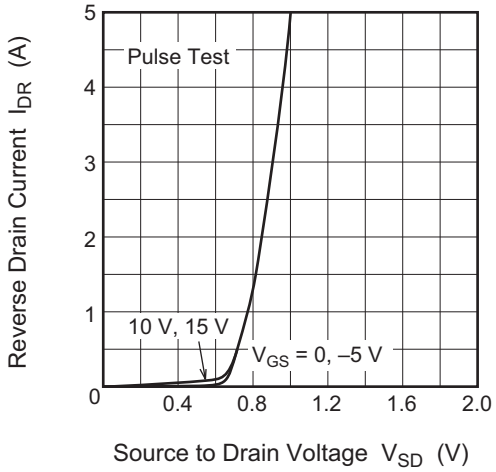

Switching Characteristics



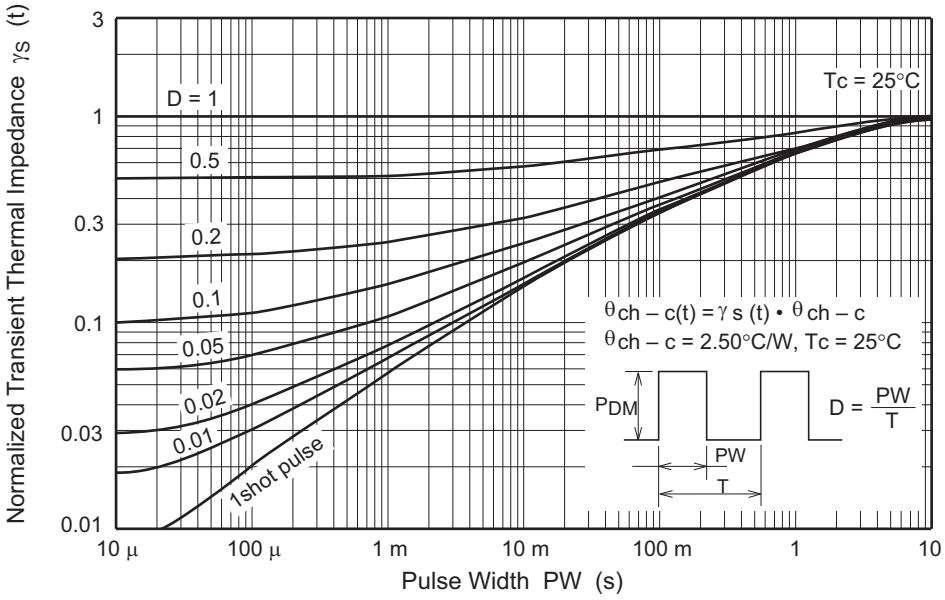



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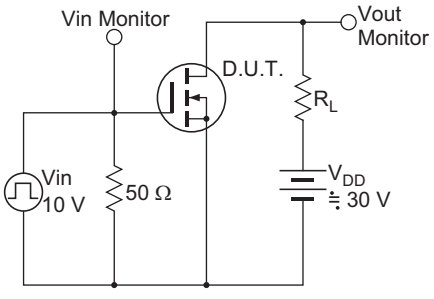
Reverse Drain Current vs.
Source to Drain Voltage



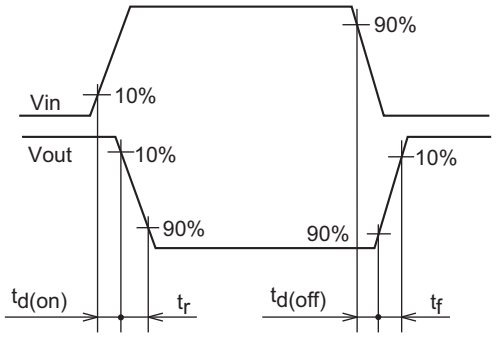

Normalized Transient Thermal Impedance vs. Pulse Width




Switching Time Test Circuit




Waveforms



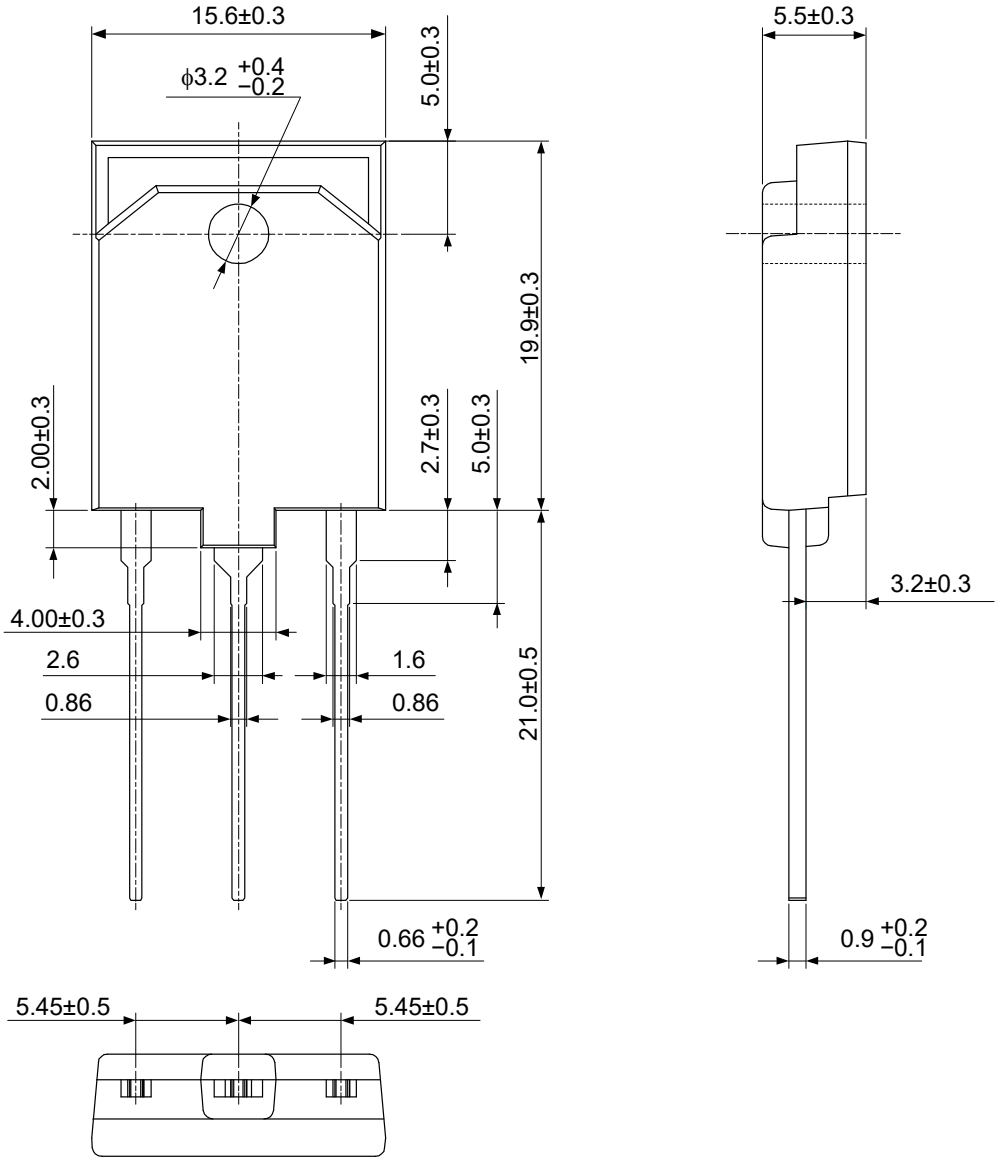



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## Package Dimensions

| Package Name | JEITA Package Code | RENESAS Code | Previous Code | MASS (Typ) [g] |
|---|---|---|---|---|
| TO-3PFM | SC-93 | PRSS0003ZA-A | TO-3PFM / TO-3PFMV | 5.2 |

Unit: mm




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## Ordering Information

| Orderable Part No. | Quantity | Shipping Container |
|---|---|---|
| 2SK2225-E | 360 pcs | Box (Tube) |



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