# H5N2522FN

## Silicon N Channel MOS FET
## High Speed Power Switching

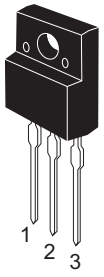
REJ03G1573-0210
Rev.2.10
May 08, 2007

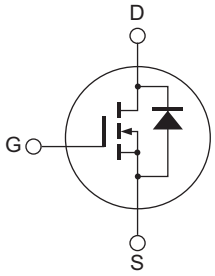
### Features

- Low on-resistance
- Low leakage current
- High speed switching

### Outline

RENESAS Package code: PRSS0003AB-A
(Package name: TO-220FN)




1. Gate
2. Drain
3. Source

### Absolute Maximum Ratings

(Ta = 25°C)

| Item | Symbol | Ratings | Unit |
|---|---|---|---|
| Drain to Source voltage | $V_{DSS}$ | 250 | V |
| Gate to source voltage | $V_{GSS}$ | ±30 | V |
| Drain current | $I_D$ | 12 | A |
| Drain peak current | $I_{D\ (pulse)}$ Note1 | 48 | A |
| Body-Drain diode reverse Drain current | $I_{DR}$ | 12 | A |
| Body-Drain diode reverse Drain peak current | $I_{DR\ (pulse)}$ Note1 | 48 | A |
| Avalanche current | $I_{AP}$ Note3 | 12 | A |
| Avalanche energy | $E_{AR}$ Note3 | 9 | mJ |
| Channel dissipation | Pch Note2 | 35 | W |
| Channel to case thermal impedance | θch-c | 3.57 | °C/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
3. STch = 25°C, Tch ≤ 150°C

## Electrical Characteristics

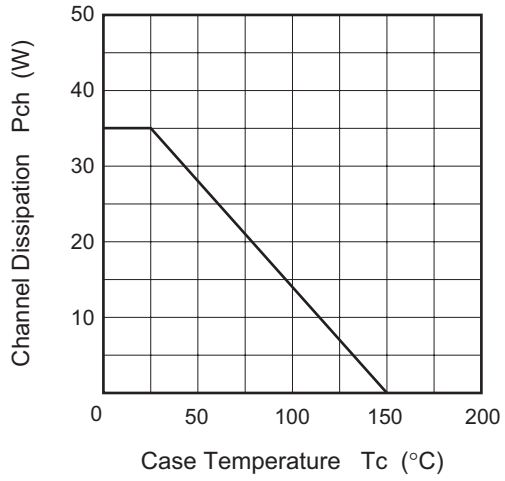
(Ta = 25°C)

| Item | Symbol | Min | Typ | Max | Unit | Test conditions |
|---|---|---|---|---|---|---|
| Drain to Source breakdown voltage | $V_{(BR)DSS}$ | 250 | — | — | V | $I_D$ = 10 mA, $V_{GS}$ = 0 |
| Zero Gate voltage drain current | $I_{DSS}$ | — | — | 10 | µA | $V_{DS}$ = 250 V, $V_{GS}$ = 0 |
| Gate to Source leak current | $I_{GSS}$ | — | — | ±0.1 | µA | $V_{GS}$ = ±30 V, $V_{DS}$ = 0 |
| Gate to Source cutoff voltage | $V_{GS(off)}$ | 1.5 | — | 4.0 | V | $V_{DS}$ = 10 V, $I_D$ = 1 mA |
| Static Drain to Source on state resistance | $R_{DS(on)}$ | — | 0.13 | 0.17 | Ω | $I_D$ = 6 A, $V_{GS}$ = 10 V |
| Input capacitance | Ciss | — | 1300 | — | pF | $V_{DS}$ = 25 V<br>$V_{GS}$ = 0<br>f = 1 MHz |
| Output capacitance | Coss | — | 185 | — | pF | |
| Reverse transfer capacitance | Crss | — | 62 | — | pF | |
| Turn-on delay time | $t_{d(on)}$ | — | 24 | — | ns | $I_D$ = 6 A<br>$V_{GS}$ = 10 V<br>$R_L$ = 20 Ω<br>Rg = 10 Ω |
| Rise time | $t_r$ | — | 57 | — | ns | |
| Turn-off delay time | $t_{d(off)}$ | — | 190 | — | ns | |
| Fall time | $t_f$ | — | 69 | — | ns | |
| Body-Drain diode forward voltage | $V_{DF}$ | — | 0.89 | 1.35 | V | $I_F$ = 12 A, $V_{GS}$ = 0 |
| Body-Drain diode reverse recovery time | $t_{rr}$ | — | 93 | — | ns | $I_F$ = 12 A, $V_{GS}$ = 0<br>$di_F/dt$ = 100 A/µs |

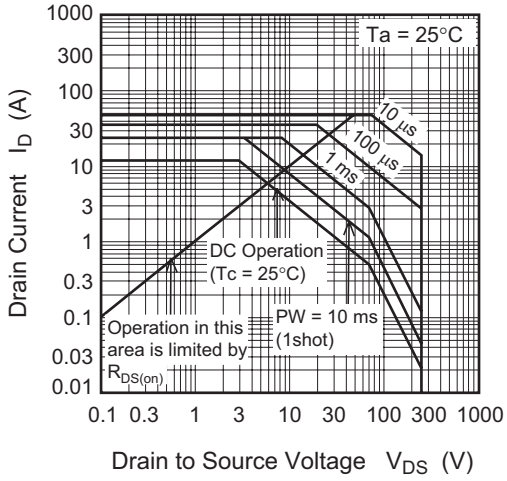
Notes: 4. Pulse test

## Main Characteristics

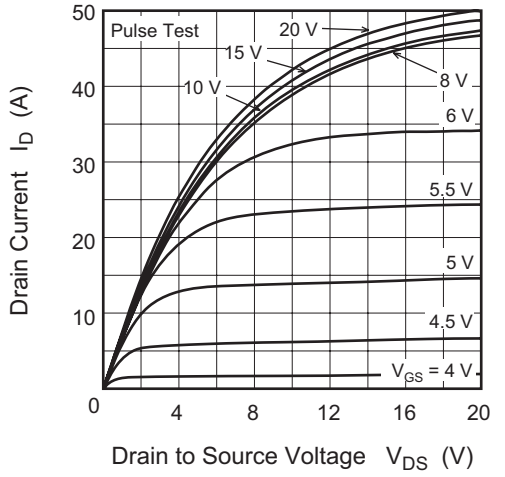
Power vs. Temperature Derating



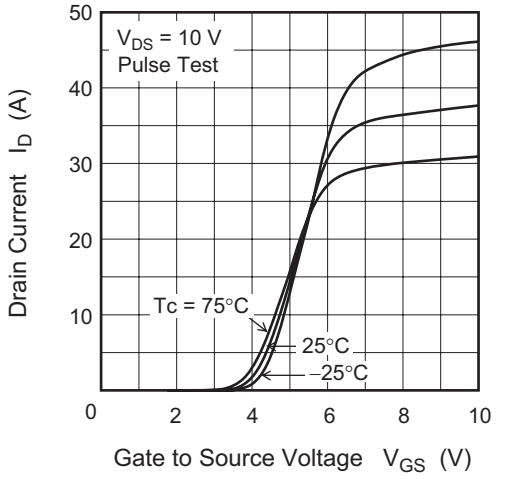

Maximum Safe Operation Area



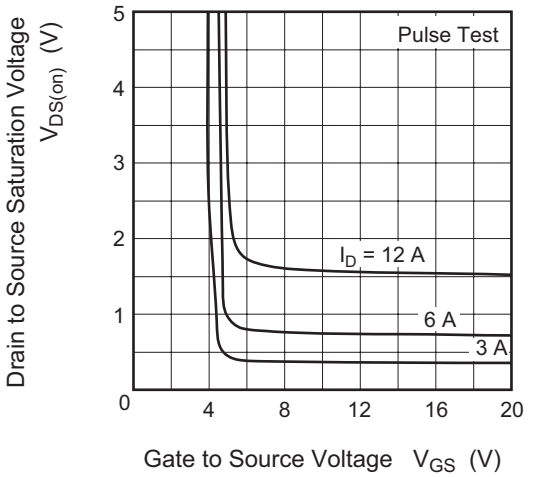

Typical Output Characteristics



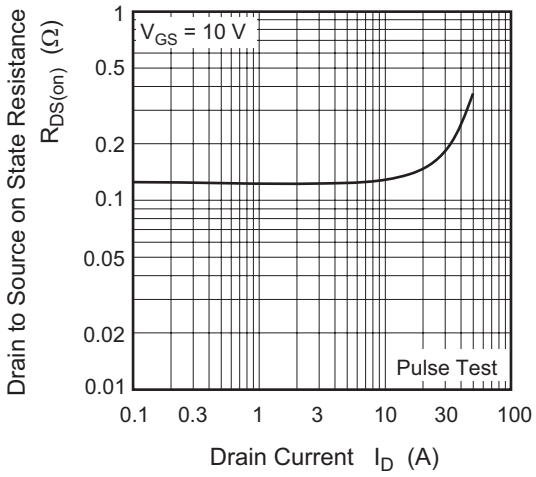

Typical Transfer Characteristics



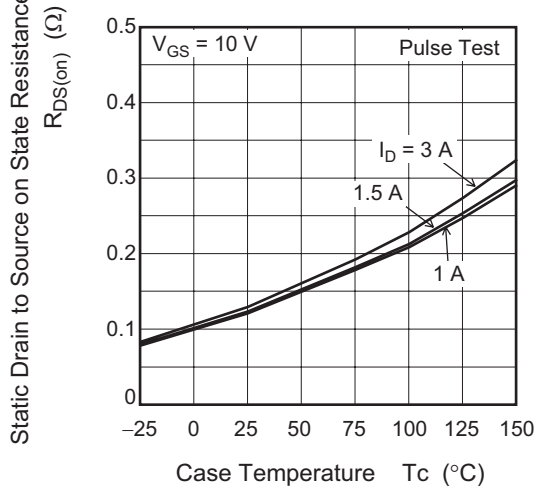

Drain to Source Saturation Voltage vs. Gate to Source Voltage



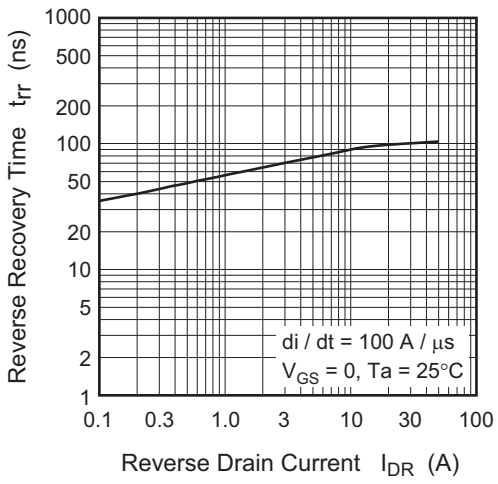

Static Drain to Source on State Resistance vs. Drain Current



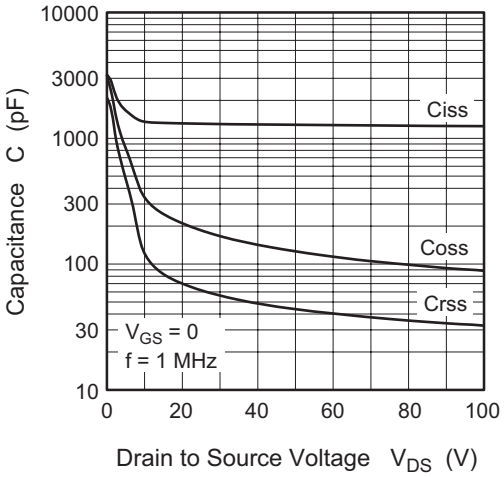
Static Drain to Source on State Resistance vs. Temperature



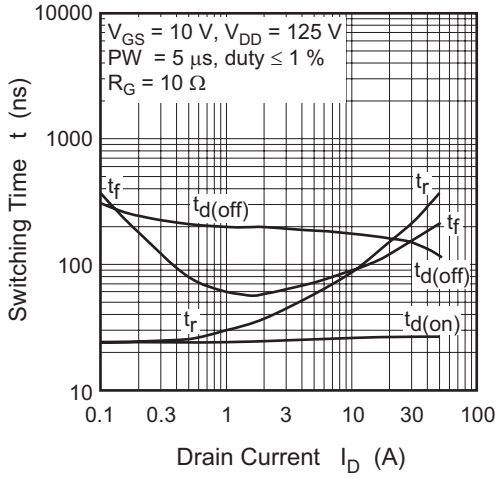

Body-Drain Diode Reverse Recovery Time



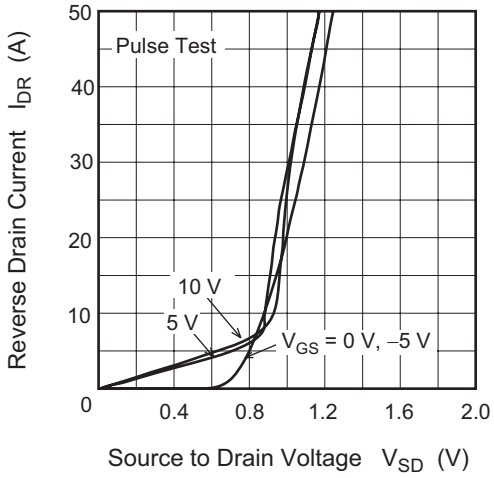

Typical Capacitance vs. Drain to Source Voltage



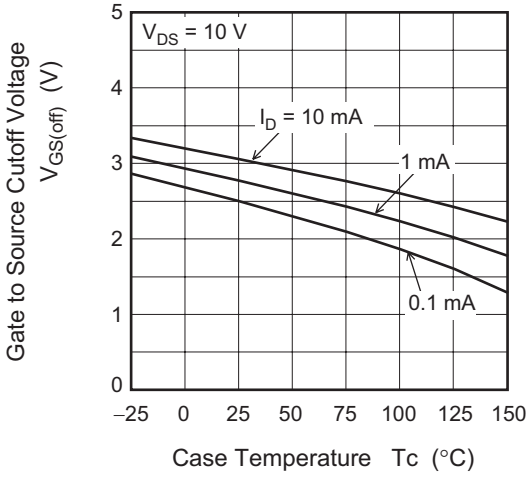

Switching Characteristics



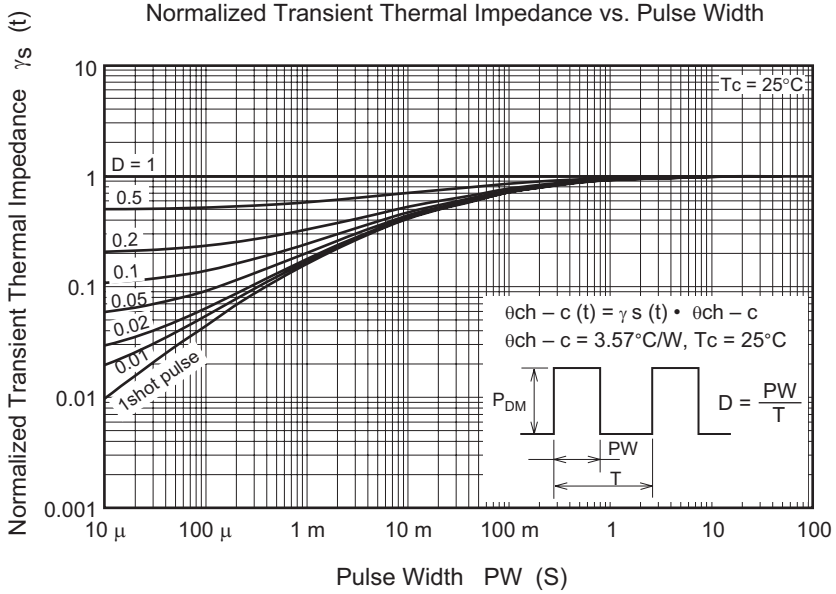

Reverse Drain Current vs. Source to Drain Voltage



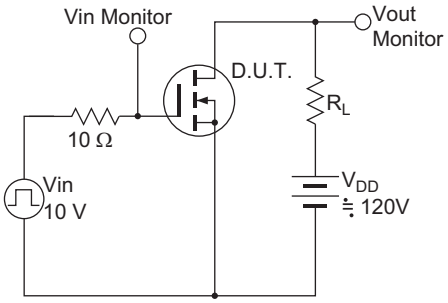

Gate to Source Cutoff Voltage vs. Case Temperature



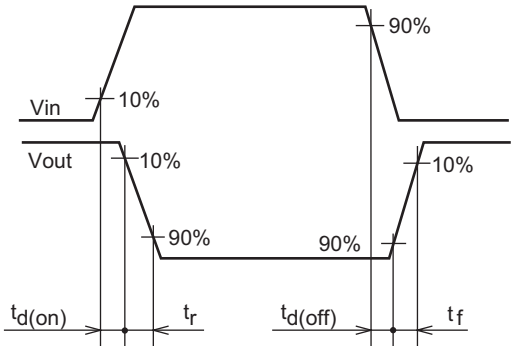
Normalized Transient Thermal Impedance vs. Pulse Width




Switching Time Test Circuit



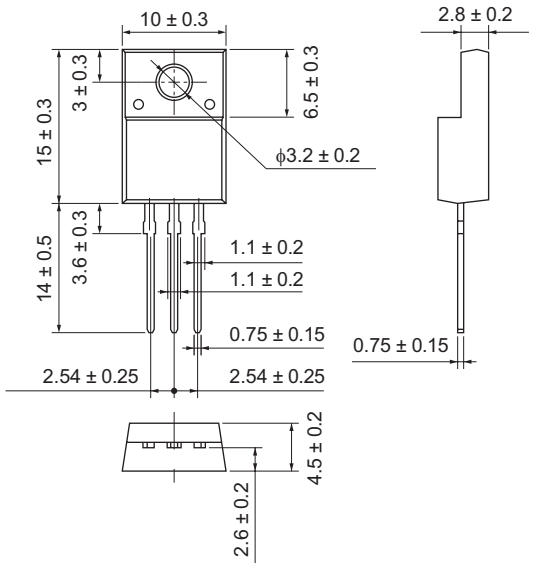

Waveform



## Package Dimensions

| Package Name | JEITA Package Code | RENESAS Code | Previous Code | MASS[Typ.] |
|---|---|---|---|---|
| TO-220FN | — | PRSS0003AB-A | — | 2.0g |

Unit: mm




## Ordering Information

| Part No. | Quantity | Shipping Container |
|---|---|---|
| H5N2522FN-E-T2 | 50 pcs | Plastic magazine |

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