# 2SJ186

## Silicon P Channel MOS FET

REJ03G0849-0200
(Previous: ADE-208-1184)
Rev.2.00
Sep 07, 2005

## Description

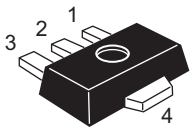
High speed power switching

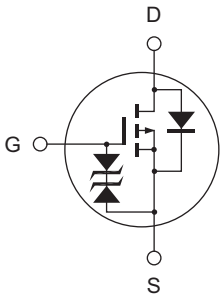
## Features

- Low on-resistance
- High speed switching
- Low drive current
- Suitable for motor drive, DC-DC converter, power switch and solenoid drive

## Outline

RENESAS Package code: PLZZ0004CA-A
(Package name: UPAK®)




1. Gate
2. Drain
3. Source
4. Drain

Note: Marking is “CY”.

*UPAK is a trademark of Renesas Technology Corp.

## Absolute Maximum Ratings

(Ta = 25°C)

| Item | Symbol | Value | Unit |
|---|---|---|---|
| Drain to source voltage | $V_{DSS}$ | –200 | V |
| Gate to source voltage | $V_{GSS}$ | ±15 | V |
| Drain current | $I_D$ | –0.5 | A |
| Drain peak current | $I_{D\ (pulse)}$ Note 1 | –1.0 | A |
| Body to drain diode reverse drain current | $I_{DR}$ | –0.5 | A |
| Channel dissipation | Pch Note 2 | 1 | W |
| Channel temperature | Tch | 150 | °C |
| Storage temperature | Tstg | –55 to +150 | °C |

Notes: 1. PW ≤ 10 µs, duty cycle ≤ 1%
2. When using the alumina ceramic board (12.5 × 20 × 0.7 mm)

## Electrical Characteristics

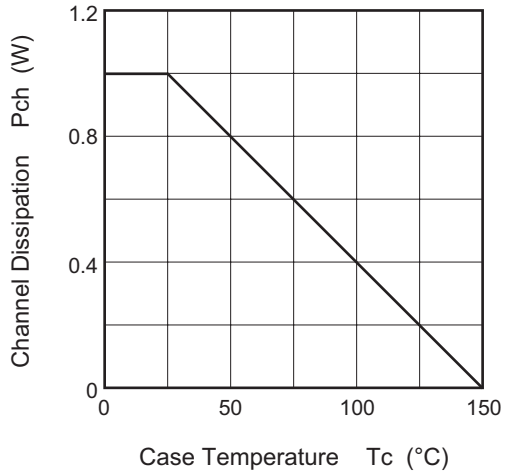
(Ta = 25°C)

| Item | Symbol | Min | Typ | Max | Unit | Test Conditions |
|---|---|---|---|---|---|---|
| Drain to source breakdown voltage | $V_{(BR)\ DSS}$ | –200 | — | — | V | $I_D$ = –10 mA, $V_{GS}$ = 0 |
| Gate to source breakdown voltage | $V_{(BR)\ GSS}$ | ±15 | — | — | V | $I_G$ = ±100 µA, $V_{DS}$ = 0 |
| Gate to source leak current | $I_{GSS}$ | — | — | ±10 | µA | $V_{GS}$ = ±12 V, $V_{DS}$ = 0 |
| Zero gate voltage drain current | $I_{DSS}$ | — | — | –50 | µA | $V_{DS}$ = –160 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 | $R_{DS\ (on)}$ | — | 8.0 | 12.0 | Ω | $I_D$ = –0.25 A, $V_{GS}$ = –10 V Note 3 |
| | $R_{DS\ (on)}$ | — | 10.0 | 15.0 | Ω | $I_D$ = –1 A, $V_{GS}$ = –10 V Note 3 |
| Forward transfer admittance | $\|y_{fs}\|$ | 0.18 | 0.3 | — | S | $I_D$ = –0.25 A, $V_{DS}$ = –10 V Note 3 |
| Input capacitance | Ciss | — | 75 | — | pF | $V_{DS}$ = –10 V |
| Output capacitance | Coss | — | 32 | — | pF | $V_{GS}$ = 0 |
| Reverse transfer capacitance | Crss | — | 5 | — | pF | f = 1 MHz |
| Turn-on delay time | $t_{d\ (on)}$ | — | 6 | — | ns | $I_D$ = –0.25 A |
| Rise time | $t_r$ | — | 6 | — | ns | $V_{GS}$ = –10 V |
| Turn-off delay time | $t_{d\ (off)}$ | — | 17 | — | ns | $R_L$ = 120 Ω |
| Fall time | $t_f$ | — | 15 | — | ns | |
| Body to drain diode forward voltage | $V_{DF}$ | — | 0.95 | — | V | $I_F$ = –0.5 A, $V_{GS}$ = 0 |
| Body to drain diode reverse recovery time | $t_{rr}$ | — | 100 | — | ns | $I_F$ = –0.5 A, $V_{GS}$ = 0<br>$di_F/dt$ = 50 A/µs |

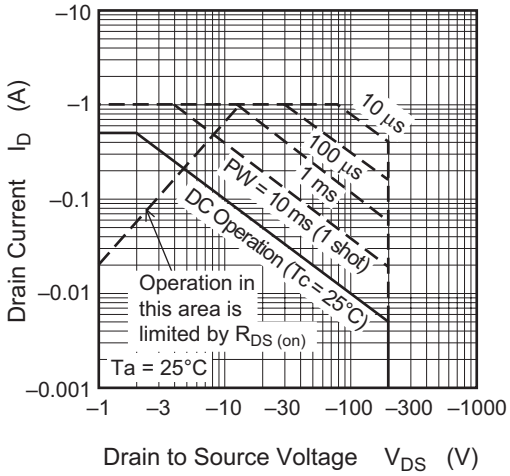
Note: 3. Pulse test

## Main Characteristics

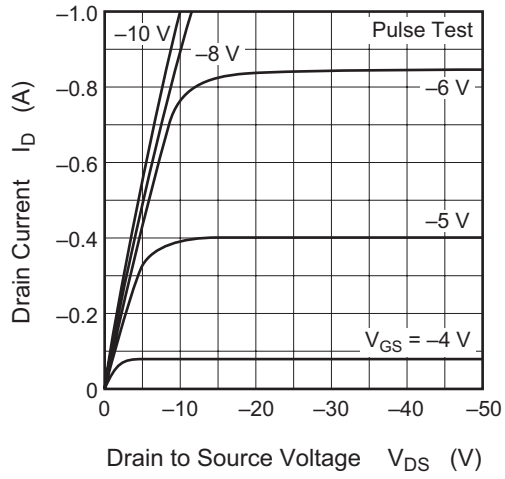
Power vs. Temperature Derating



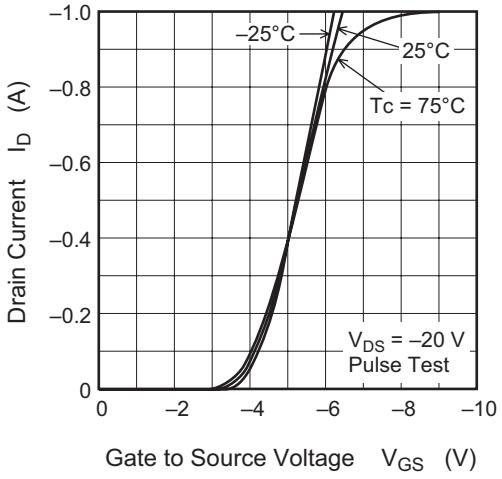

Maximum Safe Operation Area



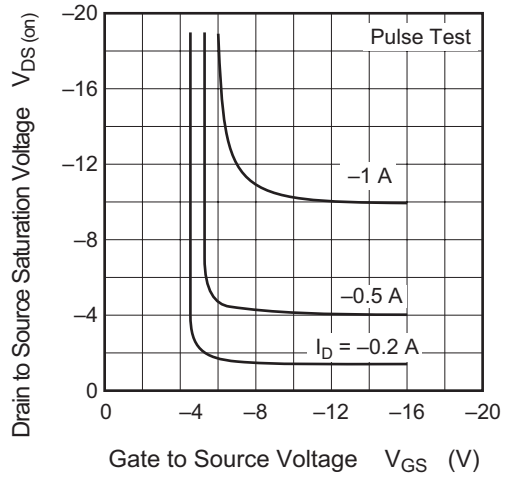

Typical Output Characteristics



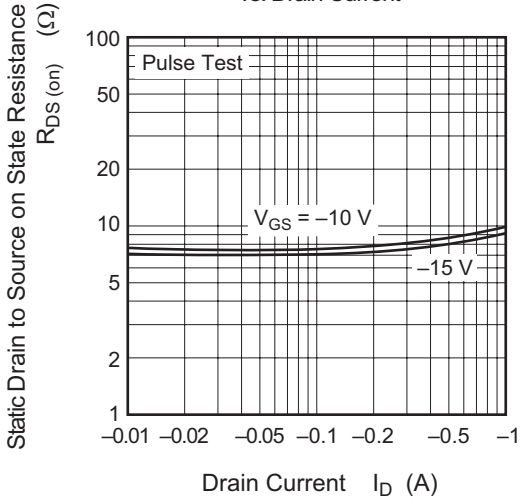

Typical Transfer Characteristics



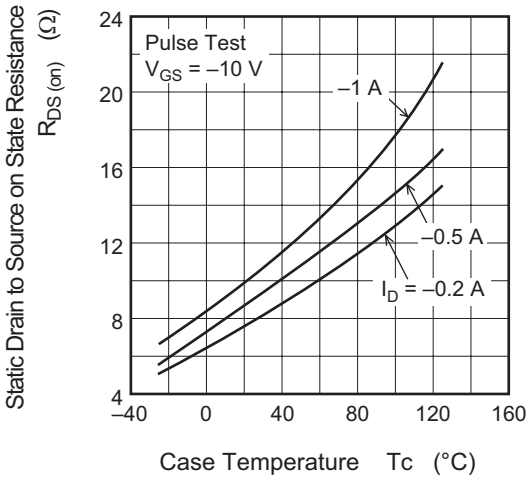

Drain to Source Saturation Voltage vs. Gate to Source Voltage



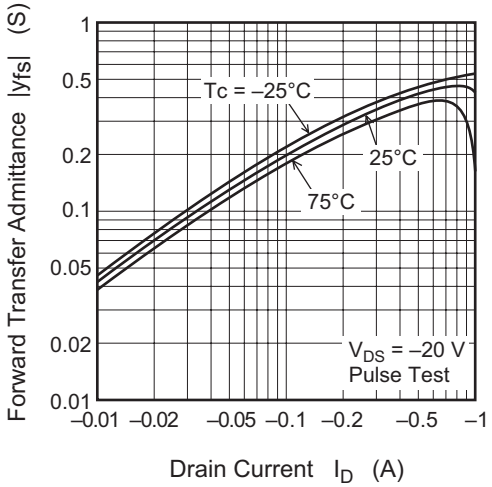

Static Drain to Source on State Resistance vs. Drain Current



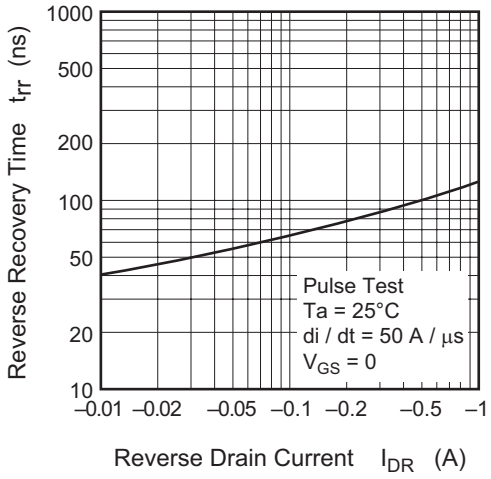
Static Drain to Source on State Resistance vs. Temperature



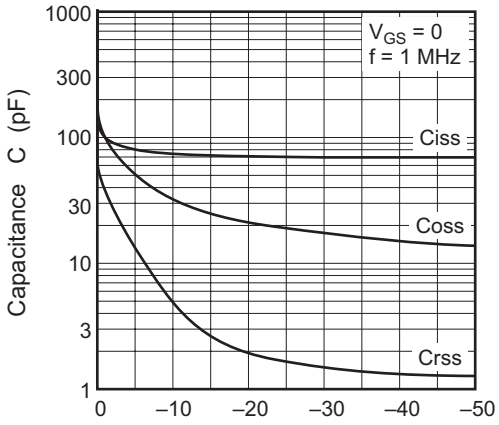

Forward Transfer Admittance vs. Drain Current



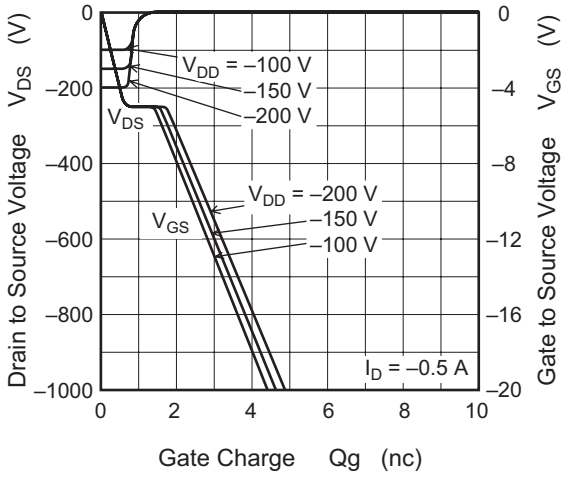

Body-Drain Diode Reverse Recovery Time



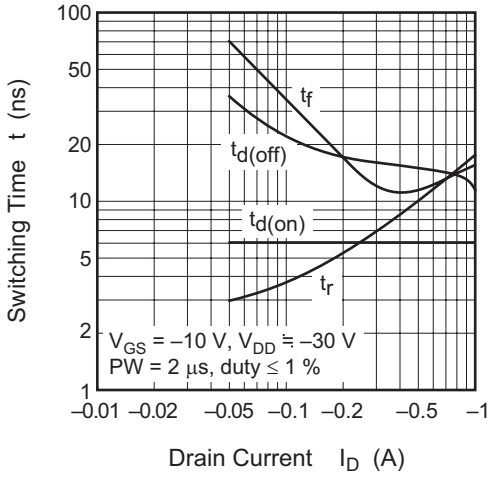

Capacitance vs. Drain to Source Voltage



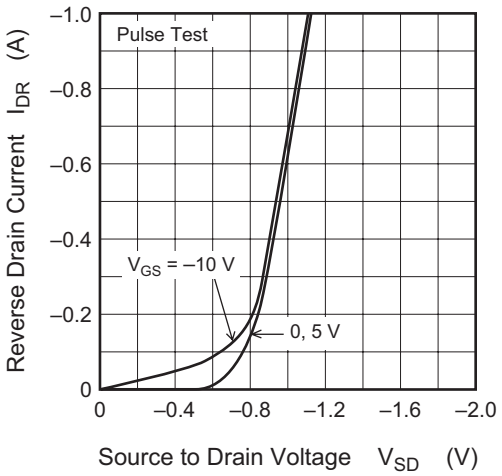

Dynamic Input Characteristics




Switching Characteristics



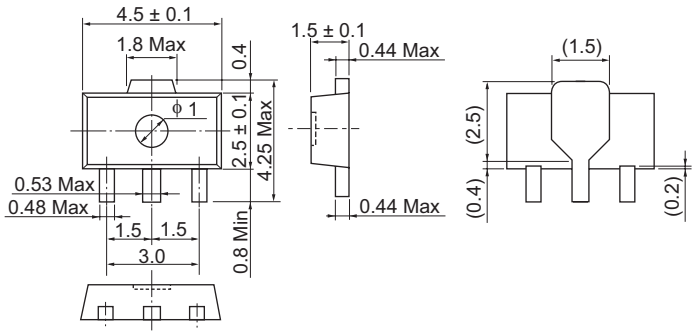
Reverse Drain Current vs.
Source to Drain Voltage



## Package Dimensions

| JEITA Package Code | RENESAS Code | Package Name | MASS[Typ.] |
|---|---|---|---|
| SC-62 | PLZZ0004CA-A | UPAK / UPAKV | 0.050g |

Unit: mm




## Ordering Information

| Part Name | Quantity | Shipping Container |
|---|---|---|
| 2SJ186CYEL-E | 1000 pcs | φ178 mm Reel, 12 mm Emboss Taping |

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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http://www.renesas.com

Refer to "**http://www.renesas.com/en/network**" for the latest and detailed information.

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