

# 2SJ186

## Silicon P Channel MOS FET

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

### Description

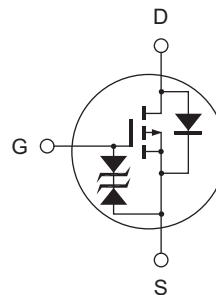
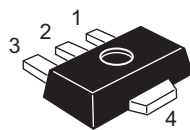
High speed power switching

### 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<sup>®</sup>)



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	$V_{DS}$	-200	V
Gate to source voltage	$V_{GS}$	±15	V
Drain current	$I_D$	-0.5	A
Drain peak current	$I_{D(pulse)}$ <sup>Note 1</sup>	-1.0	A
Body to drain diode reverse drain current	$I_{DR}$	-0.5	A
Channel dissipation	$P_{ch}$ <sup>Note 2</sup>	1	W
Channel temperature	$T_{ch}$	150	°C
Storage temperature	$T_{stg}$	-55 to +150	°C

Notes: 1.  $PW \leq 10 \mu s$ , duty cycle  $\leq 1\%$ 2. When using the alumina ceramic board ( $12.5 \times 20 \times 0.7$  mm)

## Electrical Characteristics

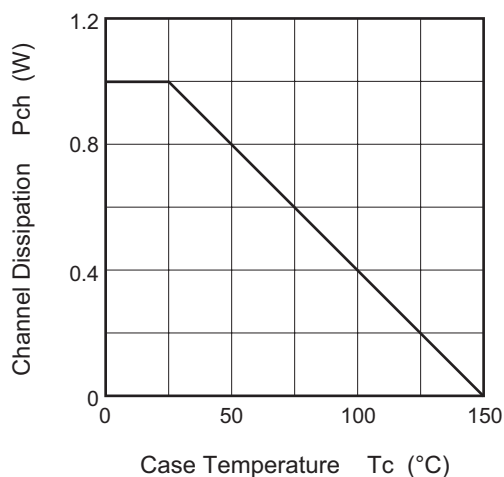
(Ta = 25°C)

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	$I_G = \pm 100 \mu A$ , $V_{DS} = 0$
Gate to source leak current	$I_{GSS}$	—	—	±10	μA	$V_{GS} = \pm 12$ 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 <sup>Note 3</sup>
	$R_{DS(on)}$	—	10.0	15.0	Ω	$I_D = -1$ A, $V_{GS} = -10$ V <sup>Note 3</sup>
Forward transfer admittance	$ y_{fs} $	0.18	0.3	—	S	$I_D = -0.25$ A, $V_{DS} = -10$ V <sup>Note 3</sup>
Input capacitance	$C_{iss}$	—	75	—	pF	$V_{DS} = -10$ V $V_{GS} = 0$ $f = 1$ MHz
Output capacitance	$C_{oss}$	—	32	—	pF	
Reverse transfer capacitance	$C_{rss}$	—	5	—	pF	
Turn-on delay time	$t_{d(on)}$	—	6	—	ns	$I_D = -0.25$ A $V_{GS} = -10$ V $R_L = 120 \Omega$
Rise time	$t_r$	—	6	—	ns	
Turn-off delay time	$t_{d(off)}$	—	17	—	ns	
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, $V_{GS} = 0$ $di_F/dt = 50$ A/μs

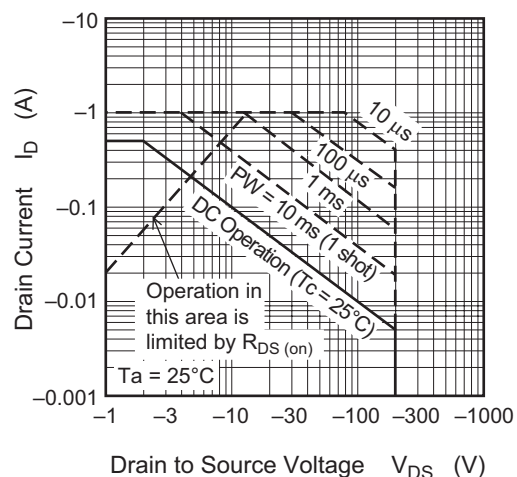
Note: 3. Pulse test

## Main Characteristics

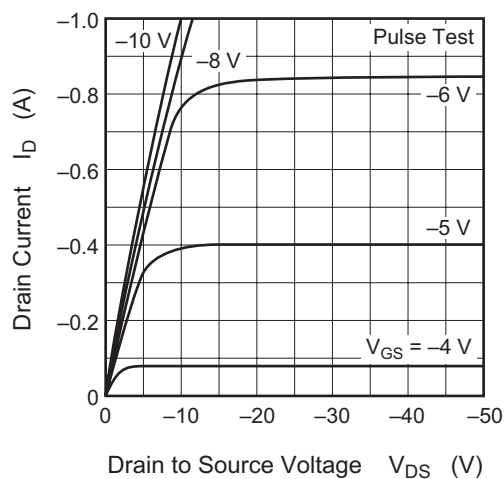
Power vs. Temperature Derating



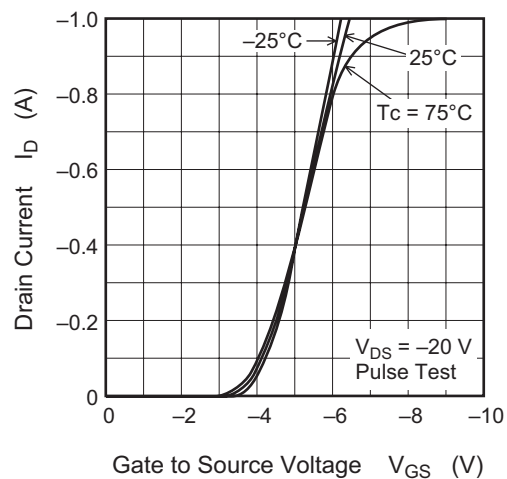
Maximum Safe Operation Area



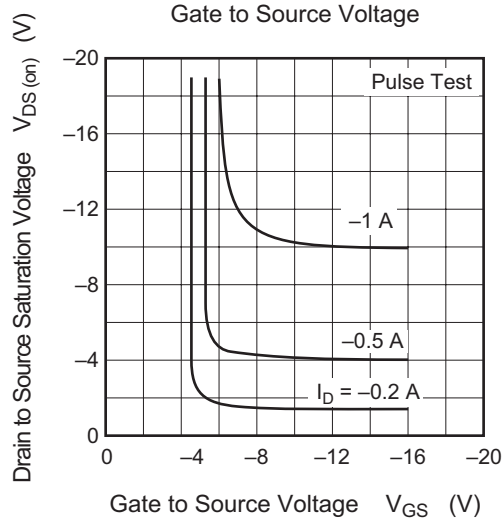
Typical Output Characteristics



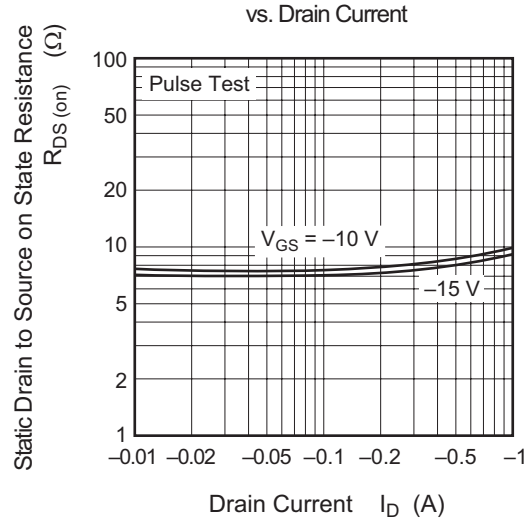
Typical Transfer Characteristics

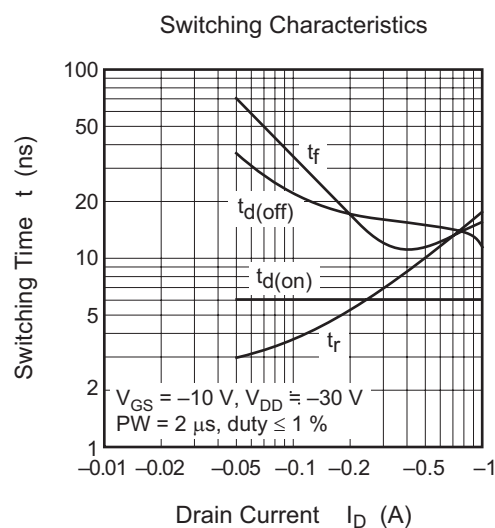
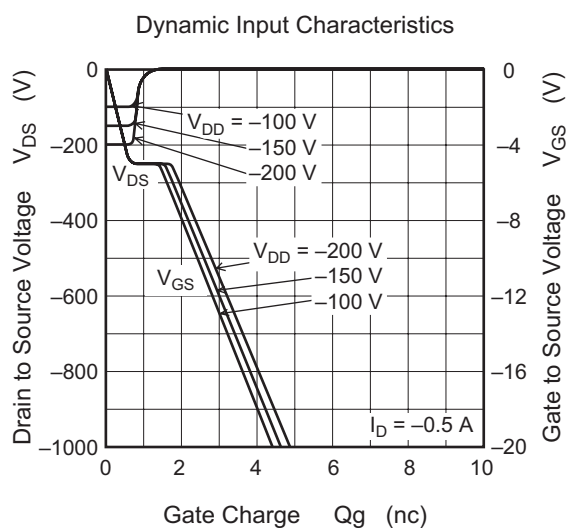
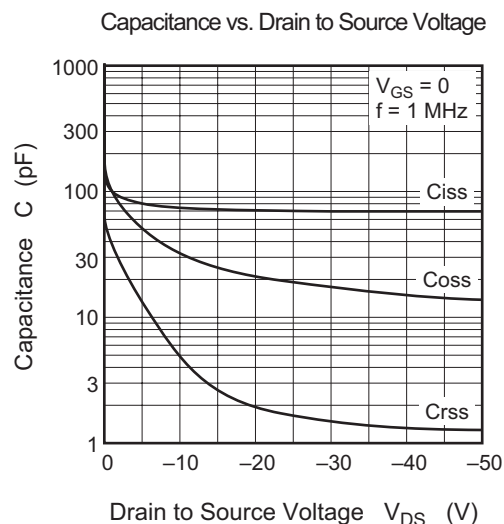
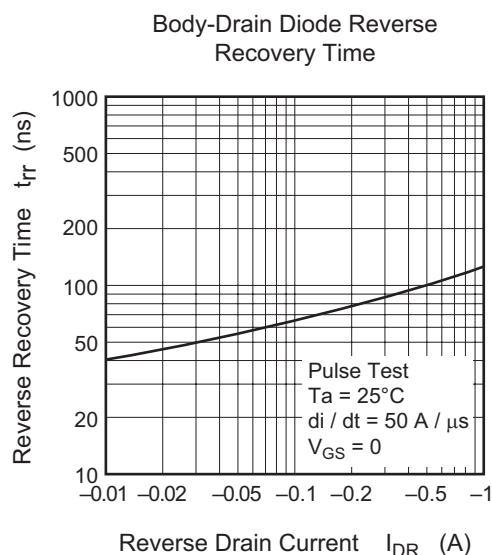
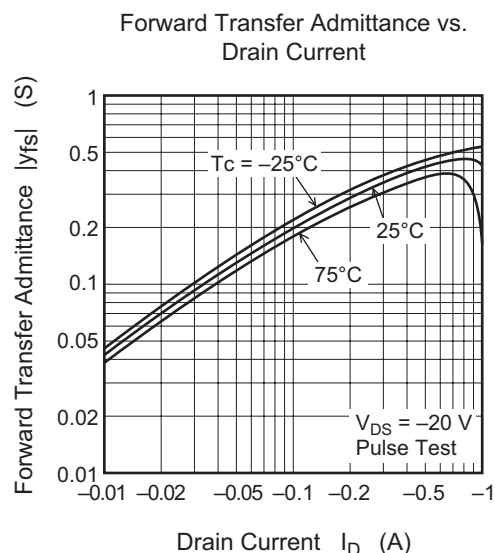
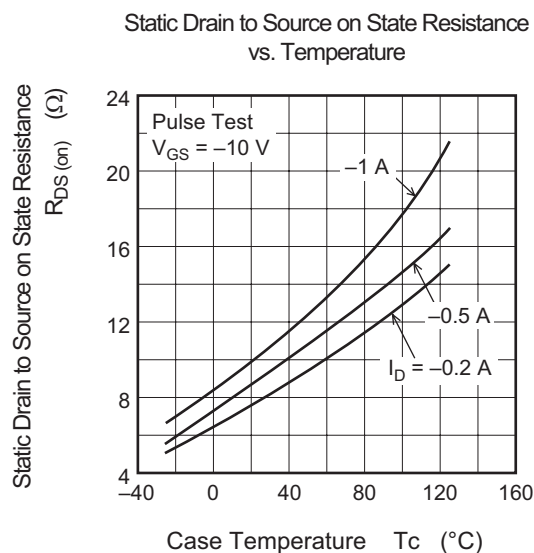


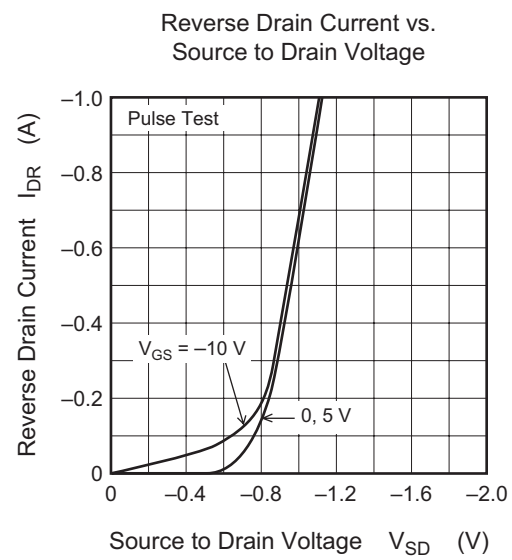
Drain to Source Saturation Voltage vs. Gate to Source Voltage



Static Drain to Source on State Resistance vs. Drain Current







## Package Dimensions

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

The drawing shows three views of the package:

- Top View:** Overall width is  $4.5 \pm 0.1$  mm. The central pin diameter is  $\phi 1$  mm. The distance from the center to the side pins is  $1.5 \pm 0.1$  mm. The distance between the side pins is  $3.0$  mm. The pin height is  $0.53$  Max mm and  $0.48$  Max mm. The package thickness is  $0.8$  Min mm.
- Side View:** The package height is  $1.5 \pm 0.1$  mm. The distance from the top surface to the base of the pins is  $0.44$  Max mm. The pin height is  $0.44$  Max mm.
- Front View:** The package width is  $1.5$  mm. The distance from the center to the side pins is  $(2.5)$  mm. The pin height is  $(0.4)$  mm and  $(0.2)$  mm.

## Ordering Information

Part Name	Quantity	Shipping Container
2SJ186CYEL-E	1000 pcs	$\phi 178$ 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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