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Renesas Technology Corp.
Customer Support Dept.
April 1, 2003

Cautions

Keep safety first in your circuit designs!

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2SJ186

Silicon P-Channel MOS FET

RENESAS

ADE-208-1184 (Z)

1st. Edition

Mar. 2001

Application

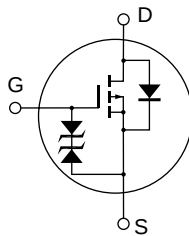
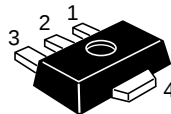
High speed power switching

Features

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

Outline

UPAK



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

Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings	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)} ^{*1}	−1.0	A
Body to drain diode reverse drain current	I _{DR}	−0.5	A
Channel dissipation	Pch ^{*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)

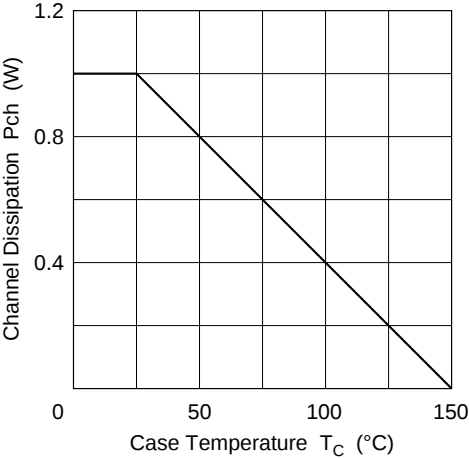
Electrical Characteristics (Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	-200	—	—	V	$I_D = -10 \text{ mA}$, $V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	± 15	—	—	V	$I_G = \pm 100 \text{ }\mu\text{A}$, $V_{DS} = 0$
Gate to source leak current	I_{GSS}	—	—	± 10	μA	$V_{GS} = \pm 12 \text{ V}$, $V_{DS} = 0$
Zero gate voltage drain current	I_{DSS}	—	—	-50	μA	$V_{DS} = -160 \text{ V}$, $V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	-2.0	—	-4.0	V	$I_D = -1 \text{ mA}$, $V_{DS} = -10 \text{ V}$
Static drain to source on state resistance	$R_{DS(on)}$	—	8.0	12.0	Ω	$I_D = -0.25 \text{ A}$, $V_{GS} = -10 \text{ V}^{*1}$
		—	10.0	15.0		$I_D = -1 \text{ A}$, $V_{GS} = -10 \text{ V}^{*1}$
Forward transfer admittance	$ y_{fs} $	0.18	0.3	—	S	$I_D = -0.25 \text{ A}$, $V_{DS} = -10 \text{ V}^{*1}$
Input capacitance	C_{iss}	—	75	—	pF	$V_{DS} = -10 \text{ V}$, $V_{GS} = 0$,
Output capacitance	C_{oss}	—	32	—	pF	$f = 1 \text{ MHz}$
Reverse transfer capacitance	C_{rss}	—	5	—	pF	
Turn-on delay time	$t_{d(on)}$	—	6	—	ns	$I_D = -0.25 \text{ A}$, $V_{GS} = -10 \text{ V}$,
Rise time	t_r	—	6	—	ns	$R_L = 120 \text{ }\Omega$
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	$I_F = -0.5 \text{ A}$, $V_{GS} = 0$
Body to drain diode reverse recovery time	t_{rr}	—	100	—	ns	$I_F = -0.5 \text{ A}$, $V_{GS} = 0$, $di_F/dt = 50 \text{ A}/\mu\text{s}$

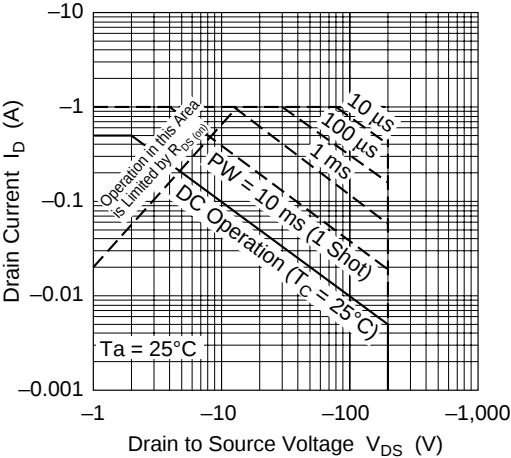
Note: 1. Pulse test

Marking for 2SJ186 is "CY".

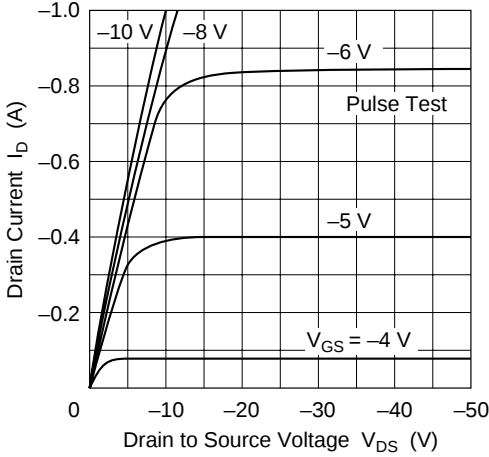
Power vs. Temperature Derating



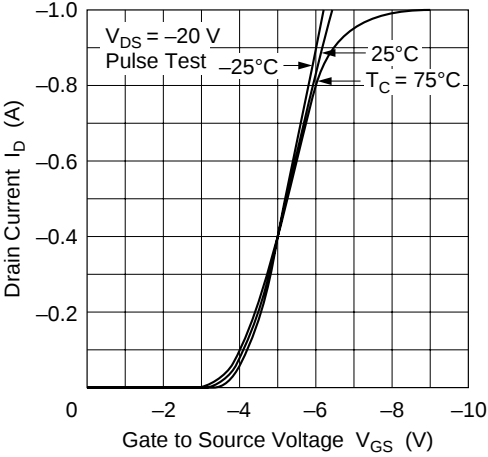
Maximum Safe Operation Area

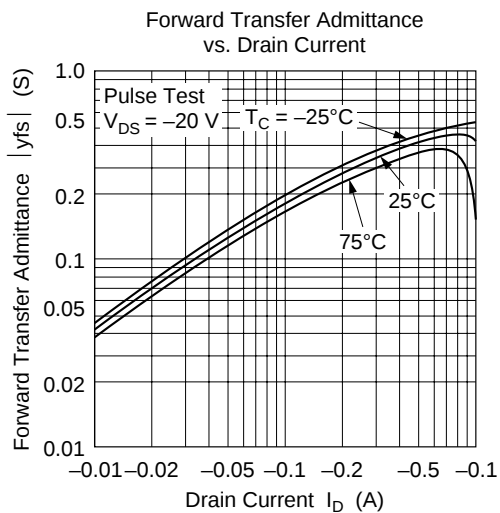
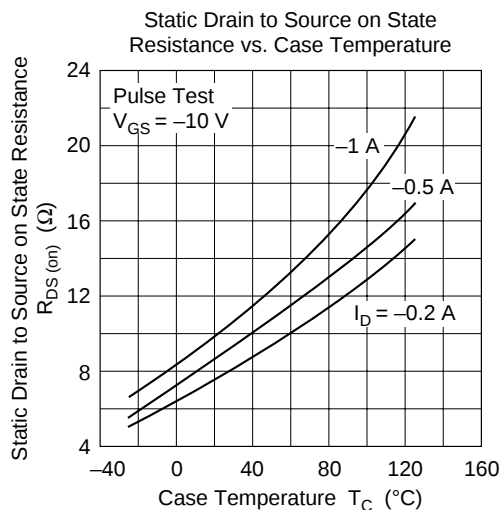
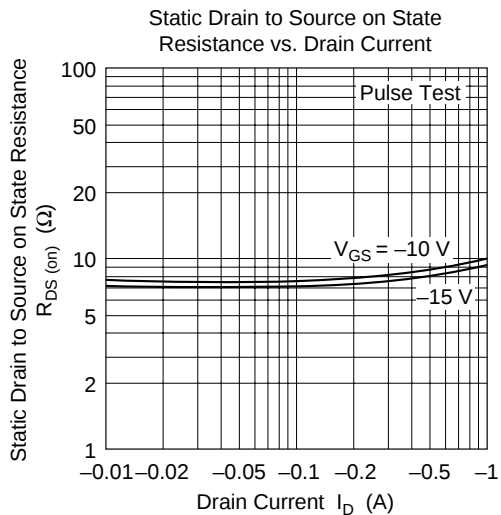
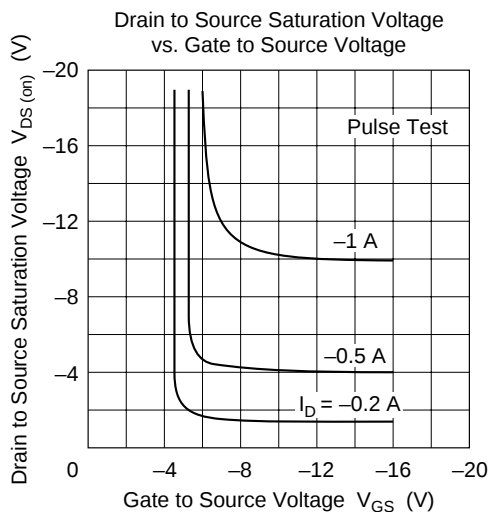


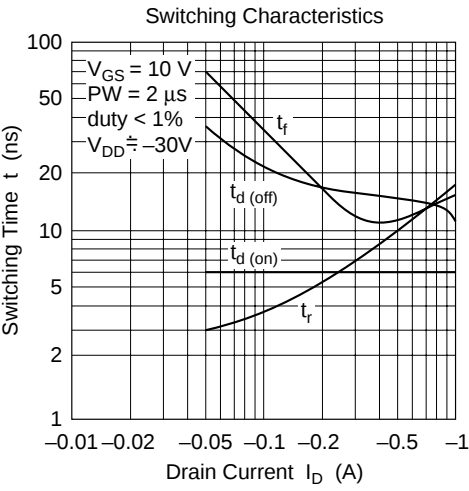
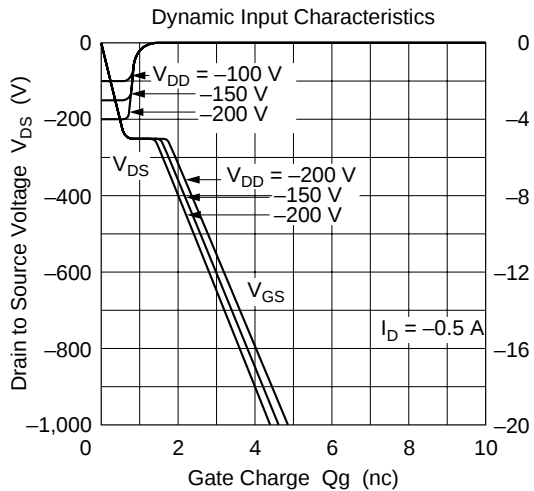
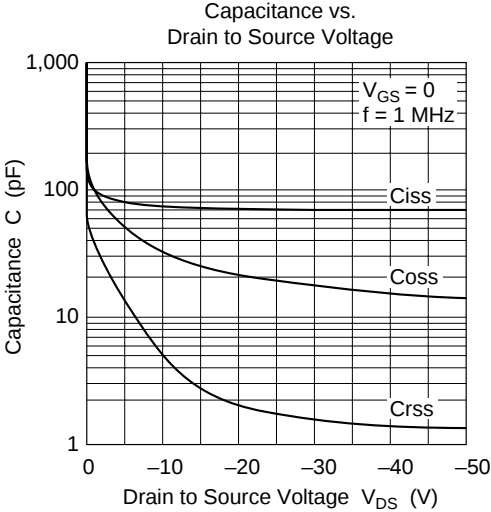
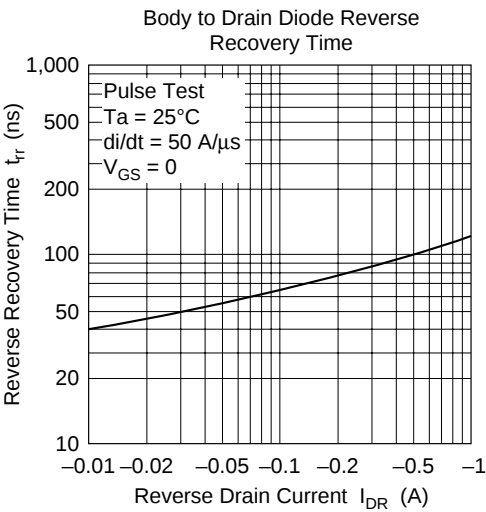
Typical Output Characteristics

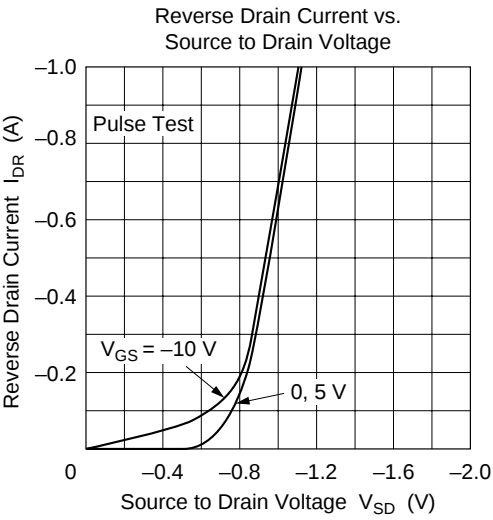


Typical Transfer Characteristics



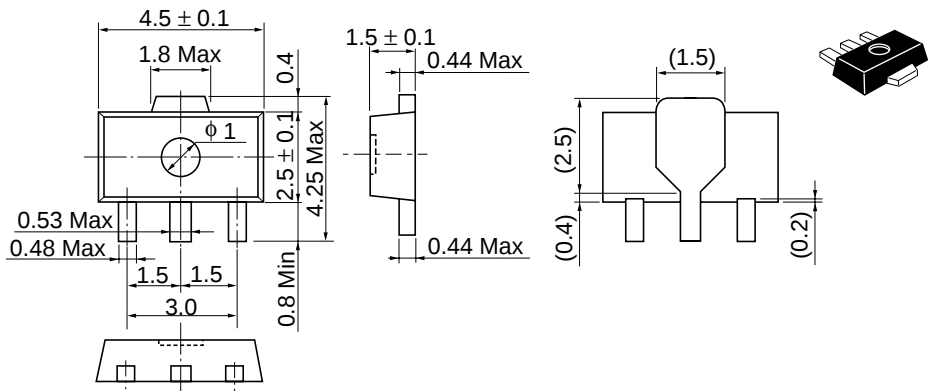






Package Dimensions

As of January, 2001
Unit: mm



Hitachi Code	UPAK
JEDEC	—
EIAJ	Conforms
Mass (reference value)	0.050 g

Cautions

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