

To all our customers

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

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Keep safety first in your circuit designs!

1. Renesas Technology Corporation puts the maximum effort into making semiconductor products better and more reliable, but there is always the possibility that trouble may occur with them. Trouble with semiconductors may lead to personal injury, fire or property damage.

Remember to give due consideration to safety when making your circuit designs, with appropriate measures such as (i) placement of substitutive, auxiliary circuits, (ii) use of nonflammable material or (iii) prevention against any malfunction or mishap.

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# 2SJ247

## Silicon P-Channel MOS FET

**RENESAS**

ADE-208-1188 (Z)  
1st. Edition  
Mar. 2001

### Application

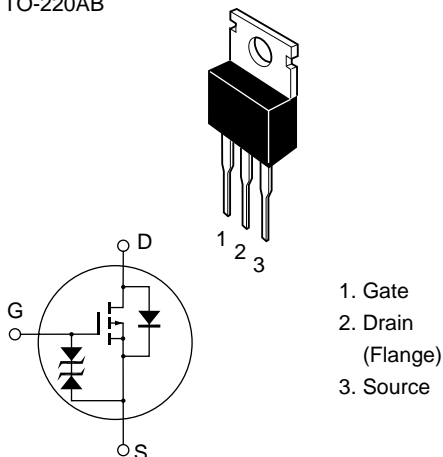
High speed power switching

### Features

- Low on-resistance
- High speed switching
- Low drive current
- 4 V gate drive device can be driven from 5 V source
- Suitable for switching regulator, DC-DC converter

### Outline

TO-220AB



## Absolute Maximum Ratings (Ta = 25°C)

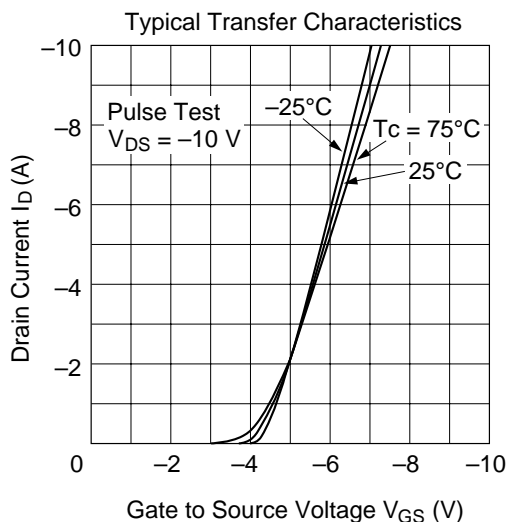
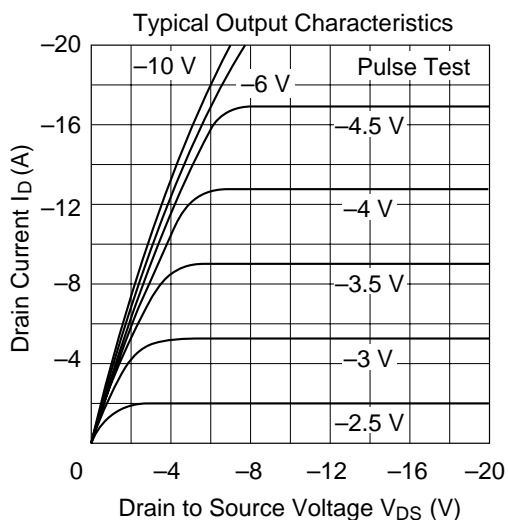
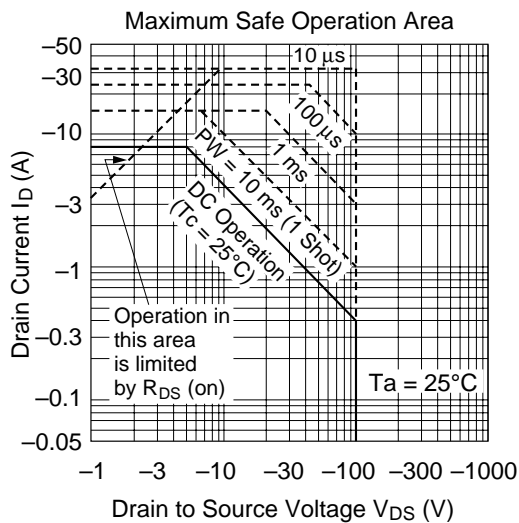
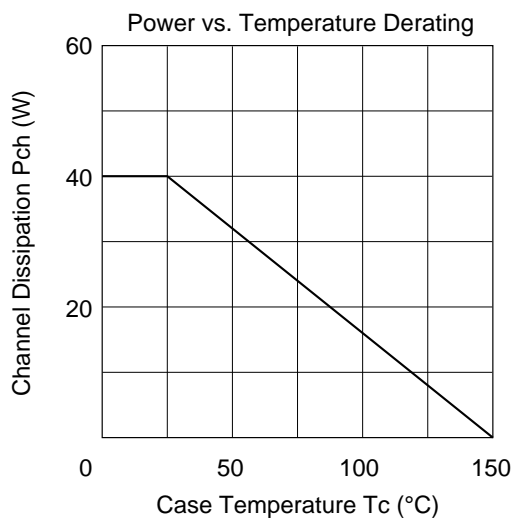
Item	Symbol	Ratings	Unit
Drain to source voltage	V <sub>DSS</sub>	−100	V
Gate to source voltage	V <sub>GSS</sub>	±20	V
Drain current	I <sub>D</sub>	−8	A
Drain peak current	I <sub>D(pulse)</sub> <sup>*1</sup>	−32	A
Body to drain diode reverse drain current	I <sub>DR</sub>	−8	A
Channel dissipation	Pch <sup>*2</sup>	40	W
Channel temperature	Tch	150	°C
Storage temperature	Tstg	−55 to +150	°C

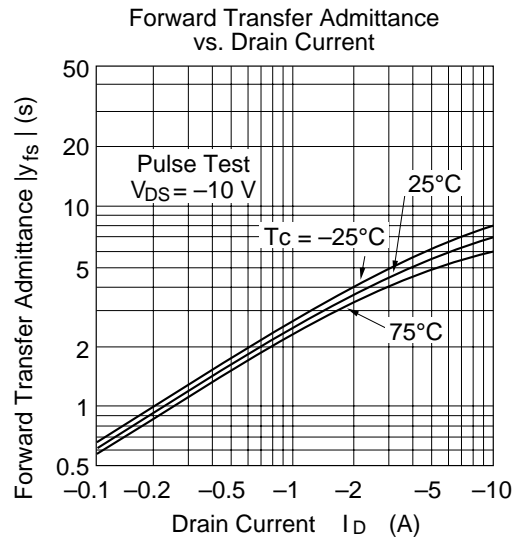
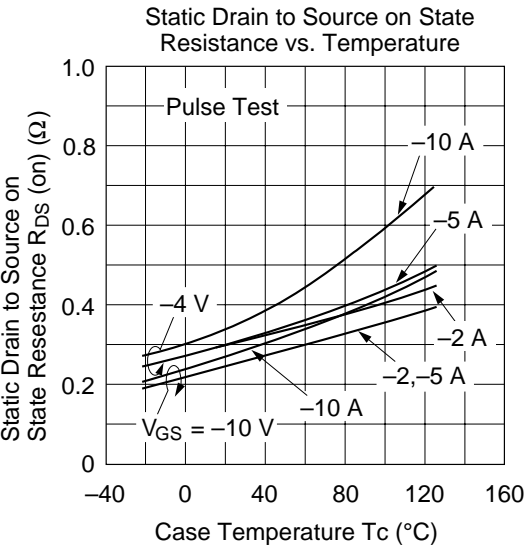
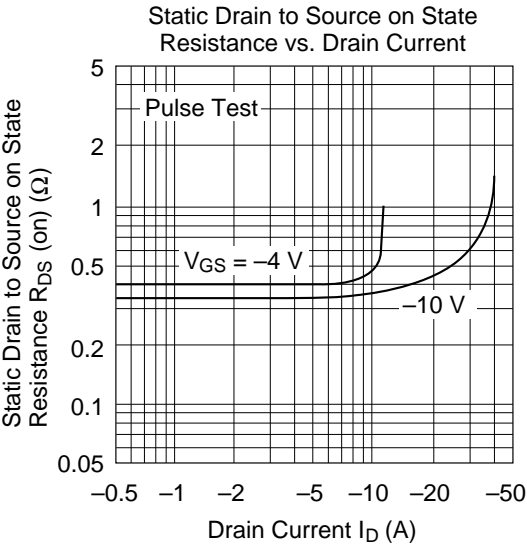
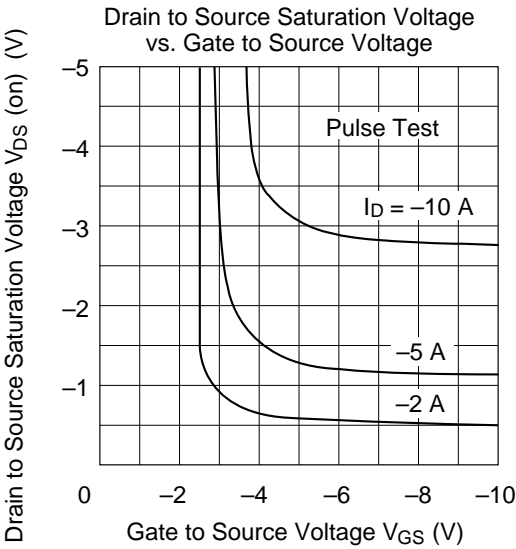
Notes: 1. PW ≤ 10 μs, duty cycle ≤ 1%

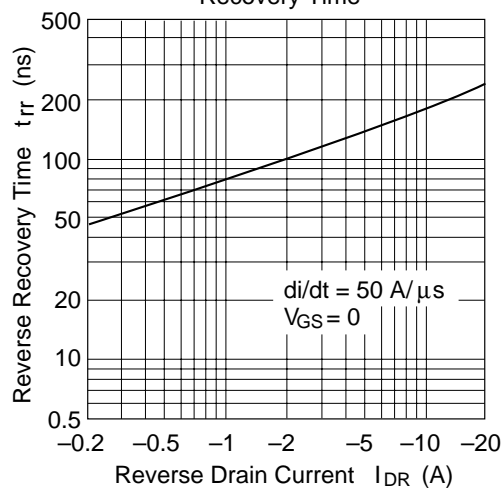
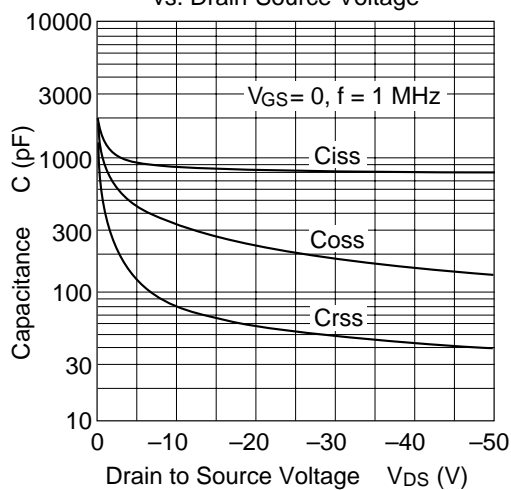
2. Value at T<sub>c</sub> = 25°C

## Electrical Characteristics (Ta = 25°C)

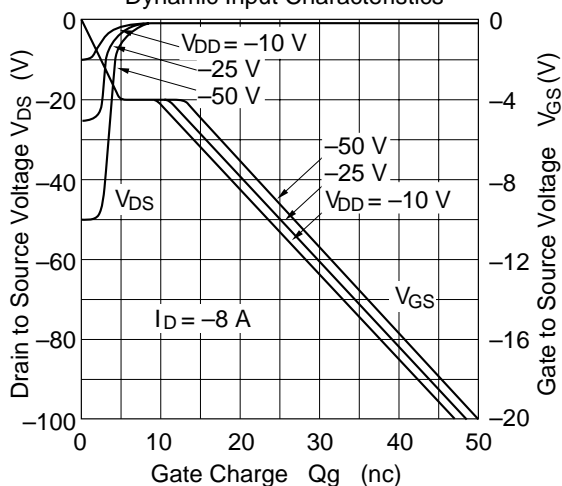
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	V <sub>(BR)DSS</sub>	−100	—	—	V	I <sub>D</sub> = −10 mA, V <sub>GS</sub> = 0
Gate to source breakdown voltage	V <sub>(BR)GSS</sub>	±20	—	—	V	I <sub>G</sub> = ±100 μA, V <sub>DS</sub> = 0
Gate to source leak current	I <sub>GSS</sub>	—	—	±10	μA	V <sub>GS</sub> = ±16 V, V <sub>DS</sub> = 0
Zero gate voltage drain current	I <sub>DSS</sub>	—	—	−250	μA	V <sub>DS</sub> = −80 V, V <sub>GS</sub> = 0
Gate to source cutoff voltage	V <sub>GS(off)</sub>	−1.0	—	−2.0	V	I <sub>D</sub> = −1 mA, V <sub>DS</sub> = −10 V
Static drain to source on state resistance	R <sub>DS(on)</sub>	—	0.25	0.3	Ω	I <sub>D</sub> = −4 A, V <sub>GS</sub> = −10 V <sup>*1</sup>
		—	0.3	0.45	Ω	I <sub>D</sub> = −4 A, V <sub>GS</sub> = −4 V <sup>*1</sup>
Forward transfer admittance	y <sub>fs</sub>	3.0	5.5	—	S	I <sub>D</sub> = −4 A, V <sub>DS</sub> = −10 V <sup>*1</sup>
Input capacitance	Ciss	—	880	—	pF	V <sub>DS</sub> = −10 V, V <sub>GS</sub> = 0, f = 1 MHz
Output capacitance	Coss	—	325	—	pF	
Reverse transfer capacitance	Crss	—	80	—	pF	
Turn-on delay time	t <sub>d(on)</sub>	—	12	—	ns	I <sub>D</sub> = −4 A, V <sub>GS</sub> = −10 V, R <sub>L</sub> = 7.5 Ω
Rise time	t <sub>r</sub>	—	47	—	ns	
Turn-off delay time	t <sub>d(off)</sub>	—	150	—	ns	
Fall time	t <sub>f</sub>	—	75	—	ns	
Body to drain diode forward voltage	V <sub>DF</sub>	—	−1.0	—	V	I <sub>F</sub> = −8 A, V <sub>GS</sub> = 0
Body to drain diode reverse recovery time	t <sub>rr</sub>	—	170	—	ns	I <sub>F</sub> = −8 A, V <sub>GS</sub> = 0, di <sub>F</sub> /dt = 50 A/μs



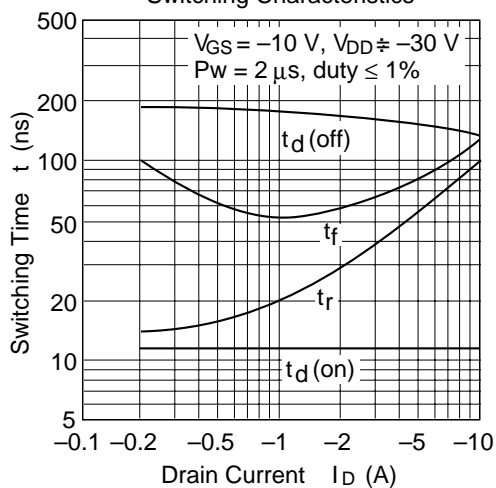


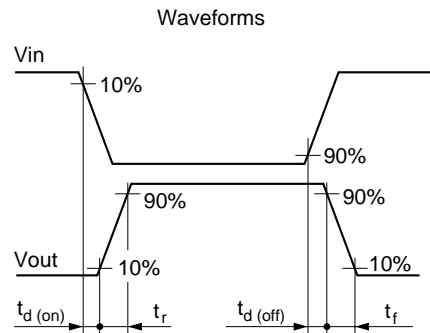
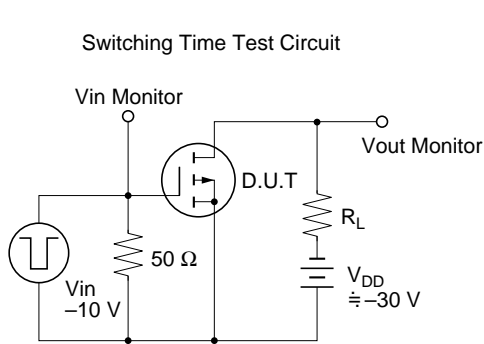
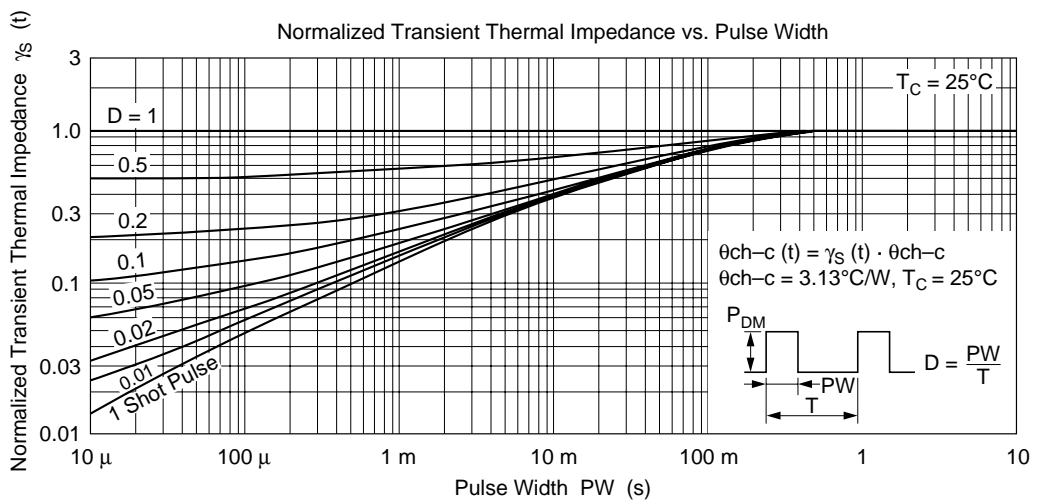
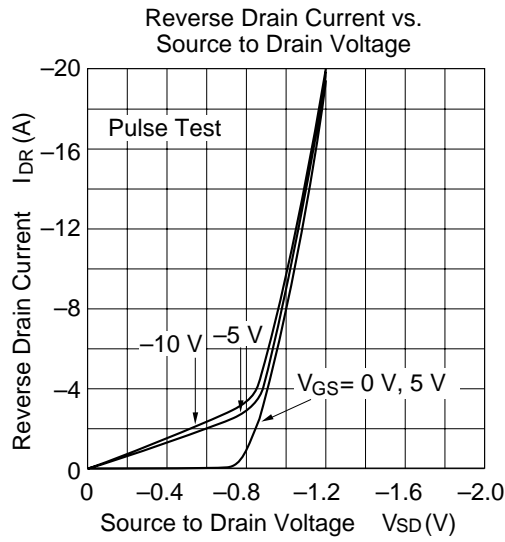
Body-Drain Diode Reverse  
Recovery TimeTypical Capacitance  
vs. Drain-Source Voltage

Dynamic Input Characteristics



Switching Characteristics



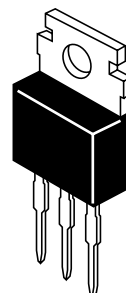
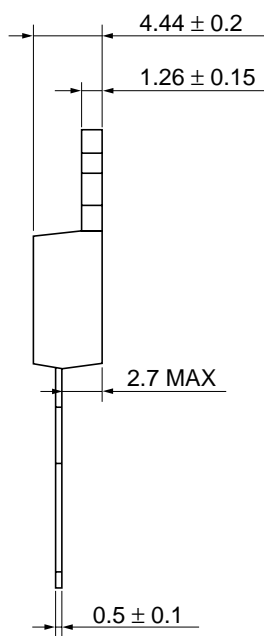
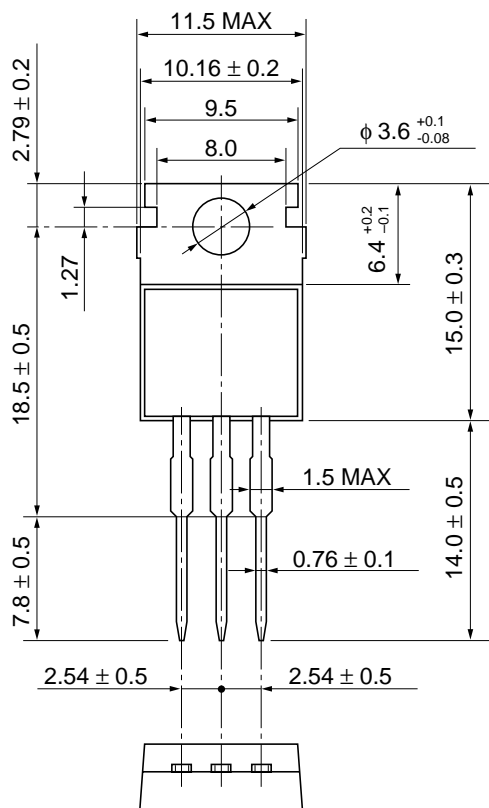




# Package Dimensions

As of January, 2001

Unit: mm



Hitachi Code	TO-220AB
JEDEC	Conforms
EIAJ	Conforms
Mass (reference value)	1.8 g

## Cautions

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