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Renesas Electronics website: <http://www.renesas.com>

April 1st, 2010
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (<http://www.renesas.com>)

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H7N0602AB

Silicon N Channel MOS FET
High Speed Power Switching

REJ03G0068-0200Z

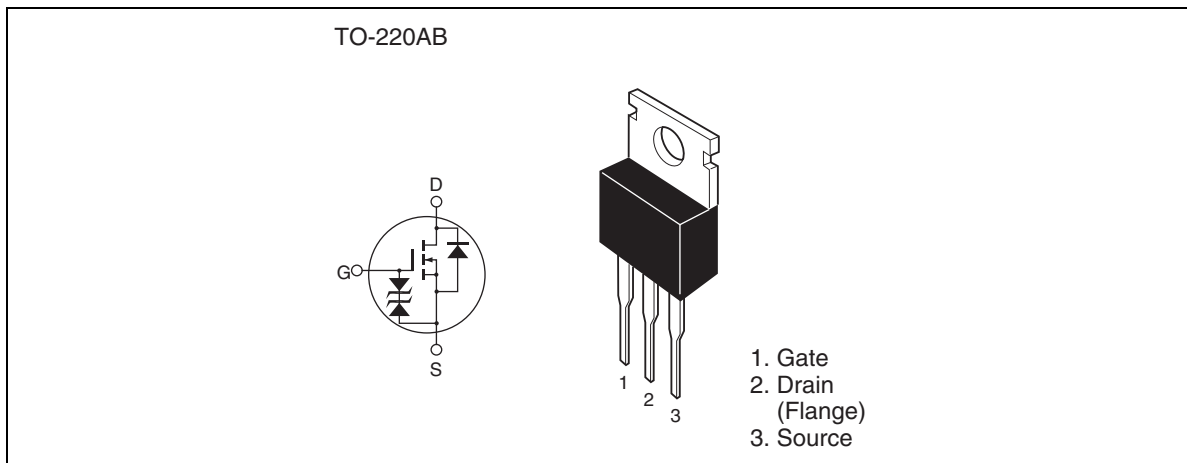
Rev.2.00

Oct.30.2003

Features

- Low on-resistance
 $R_{DS(on)} = 4.1 \text{ m}\Omega$ typ.
- Low drive current
- Available for 4.5 V gate drive

Outline



Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	V _{DSS}	60	V
Gate to source voltage	V _{GSS}	±20	V
Drain current	I _D	85	A
Drain peak current	I _D (pulse) ^{Note1}	340	A
Body-drain diode reverse drain current	I _{DR}	85	A
Avalanche current	I _{AP} ^{Note3}	65	A
Avalanche energy	E _{AR} ^{Note3}	362	mJ
Channel dissipation	P _{ch} ^{Note2}	100	W
Channel temperature	T _{ch}	150	°C
Storage temperature	T _{stg}	-55 to +150	°C

Notes: 1. PW ≤ 10 μs, duty cycle ≤ 1%
2. Value at Tc = 25°C
3. Value at Tch = 25°C, Rg ≥ 50 Ω

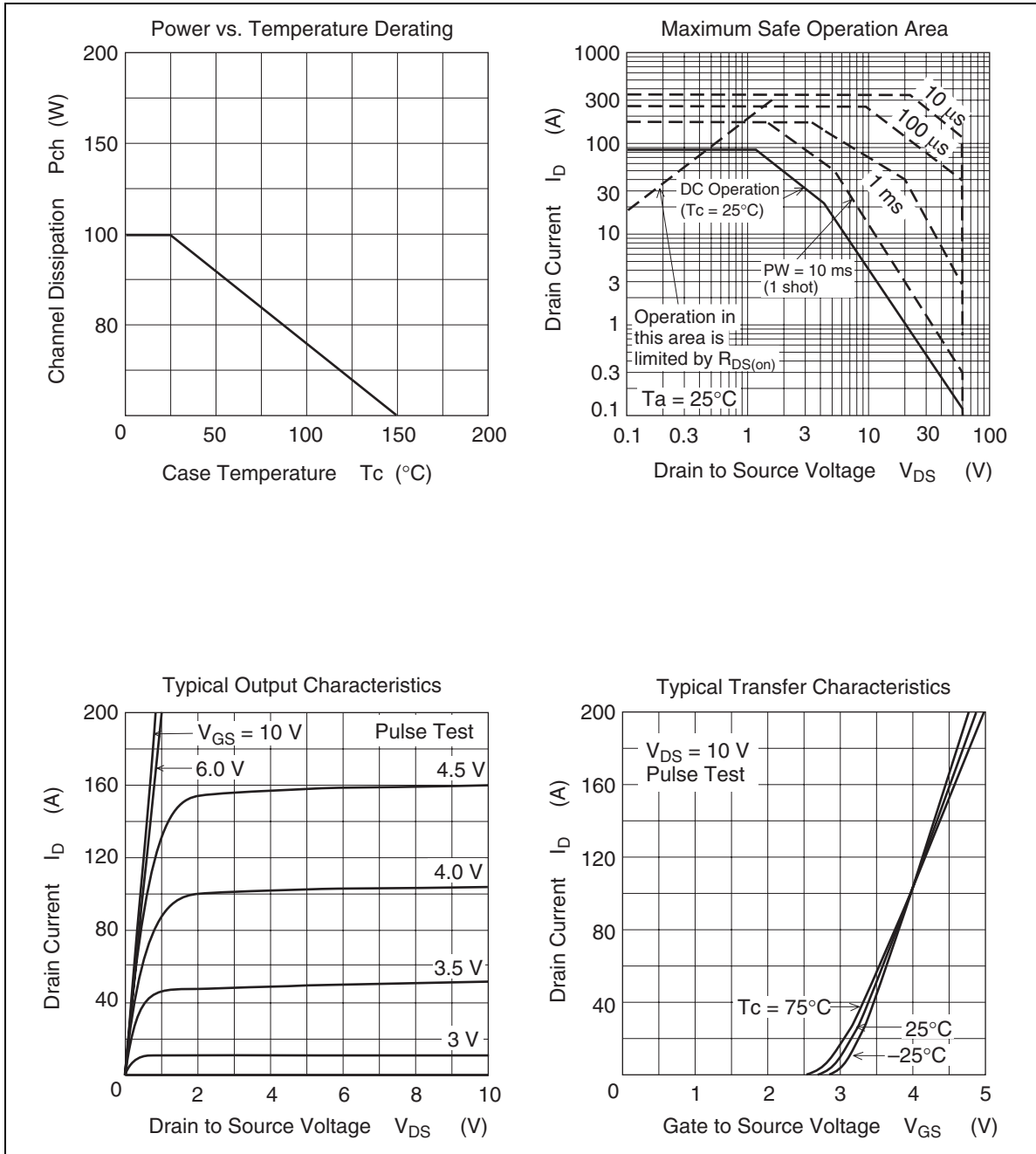
Electrical Characteristics

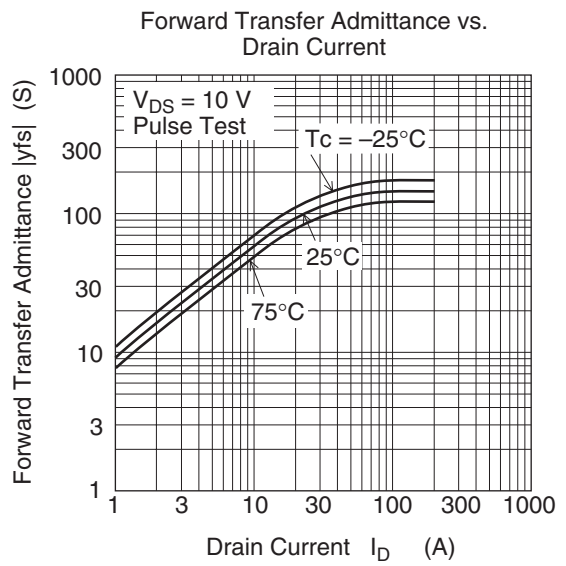
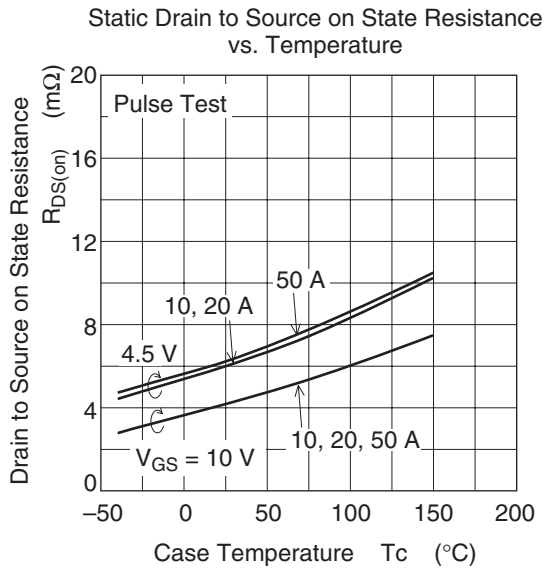
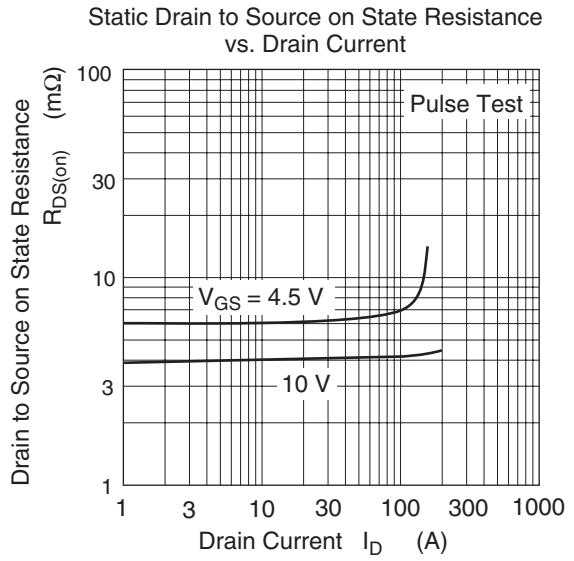
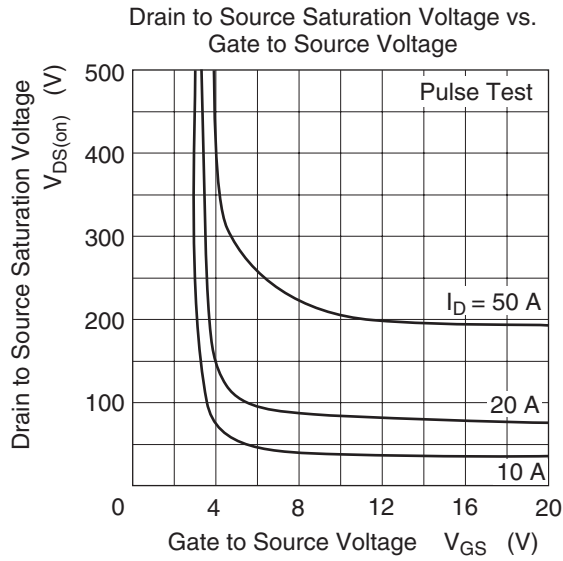
(Ta = 25°C)

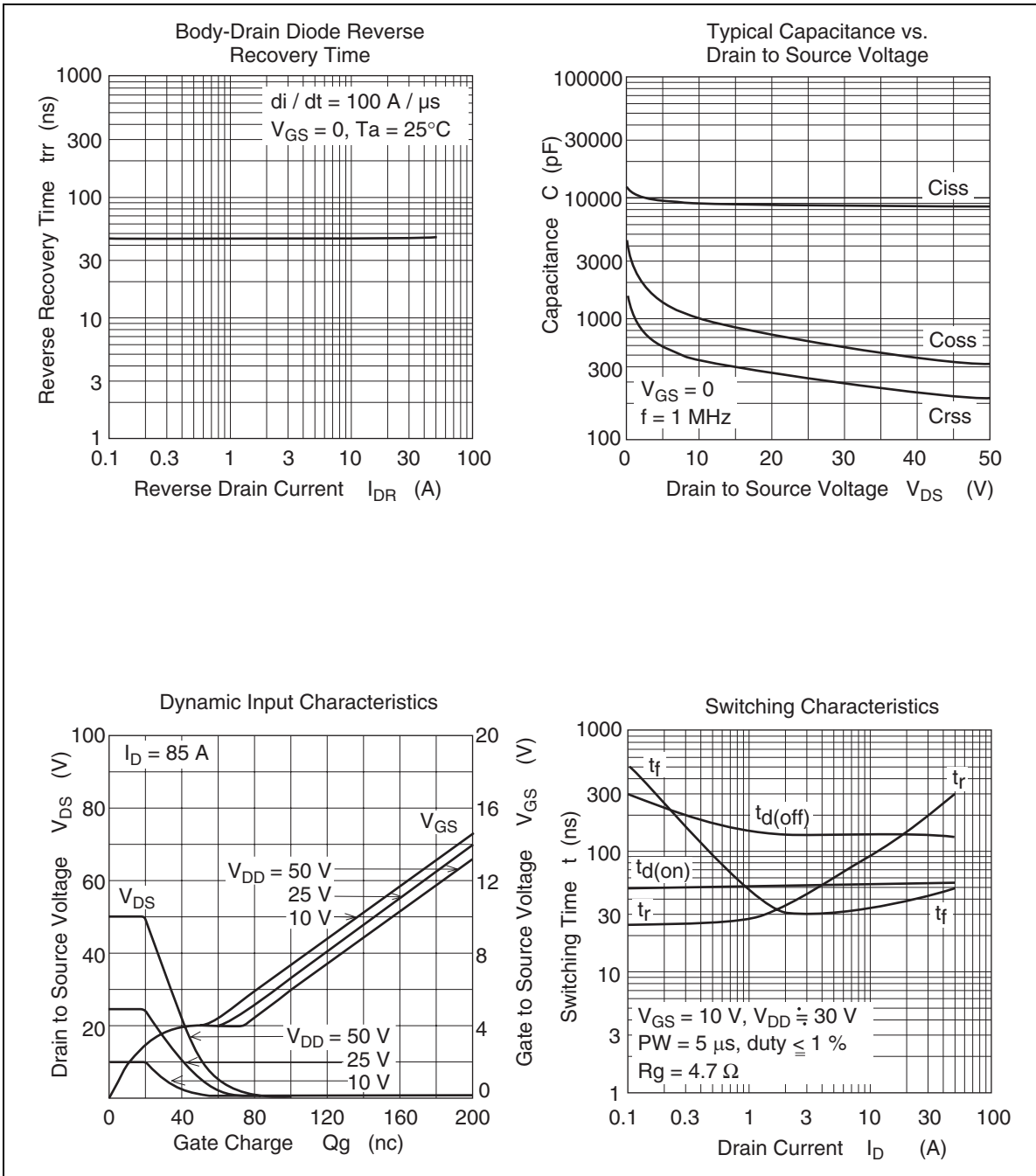
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	60	—	—	V	$I_D = 10 \text{ mA}, V_{GS} = 0$
Gate to source breakdown Voltage	$V_{(BR)GSS}$	± 20	—	—	V	$I_G = \pm 100 \text{ }\mu\text{A}, V_{DS} = 0$
Gate to source leak current	I_{GSS}	—	—	± 10	μA	$V_{GS} = \pm 16 \text{ V}, V_{DS} = 0$
Zero gate voltage drain current	I_{DSS}	—	—	10	μA	$V_{DS} = 60 \text{ V}, V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	1.5	—	2.5	V	$I_D = 1 \text{ mA}, V_{DS} = 10 \text{ V}^{\text{Note1}}$
Static drain to source on state resistance	$R_{DS(on)}$	—	4.1	5.2	$\text{m}\Omega$	$I_D = 45 \text{ A}, V_{GS} = 10 \text{ V}^{\text{Note1}}$
		—	6.2	9.0	$\text{m}\Omega$	$I_D = 45 \text{ A}, V_{GS} = 4.5 \text{ V}^{\text{Note1}}$
Forward transfer admittance	$ y_{fs} $	70	120	—	S	$I_D = 45 \text{ A}, V_{GS} = 10 \text{ V}^{\text{Note1}}$
Input capacitance	C_{iss}	—	9000	—	pF	$V_{DS} = 10 \text{ V}$
Output capacitance	C_{oss}	—	1000	—	pF	$V_{GS} = 0$
Reverse transfer capacitance	C_{rss}	—	470	—	pF	$f = 1 \text{ MHz}$
Total gate charge	Q_g	—	140	—	nC	$V_{DD} = 25 \text{ V}$
Gate to source charge	Q_{gs}	—	30	—	nC	$V_{GS} = 10 \text{ V}$
Gate to drain charge	Q_{gd}	—	30	—	nC	$I_D = 85 \text{ A}$
Turn-on delay time	$t_{d(on)}$	—	55	—	ns	$V_{GS} = 10 \text{ V}, I_D = 45 \text{ A}$
Rise time	t_r	—	290	—	ns	$R_L = 0.67 \text{ }\Omega$
Turn-off delay time	$t_{d(off)}$	—	140	—	ns	$R_g = 4.7 \text{ }\Omega$
Fall time	t_f	—	50	—	ns	
Body-drain diode forward voltage	V_{DF}	—	0.95	—	V	$I_F = 85 \text{ A}, V_{GS} = 0$
Body-drain diode reverse recovery time	t_{rr}	—	45	—	ns	$I_F = 85 \text{ A}, V_{GS} = 0$ $di_F/dt = 100 \text{ A}/\mu\text{s}$

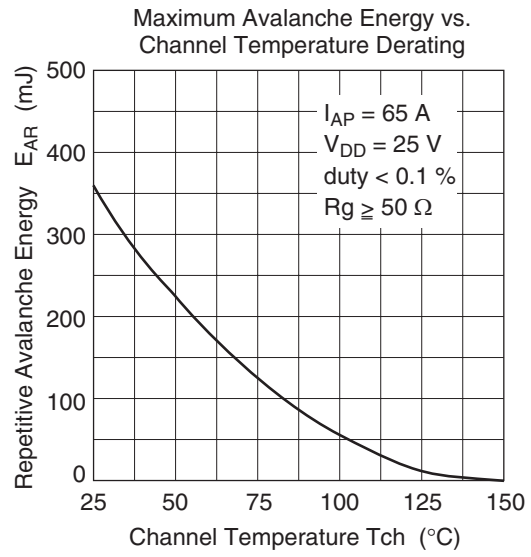
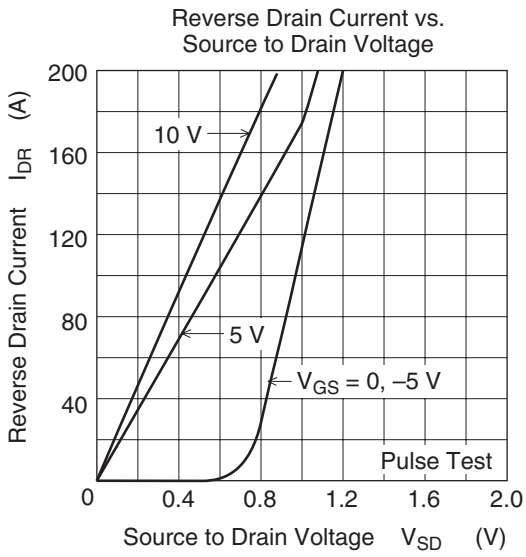
Notes: 1. Pulse test

Main Characteristics

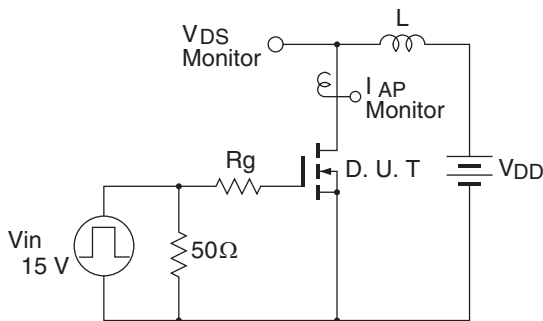






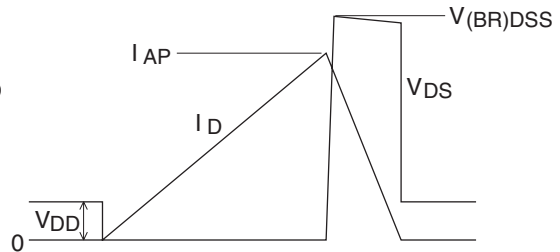


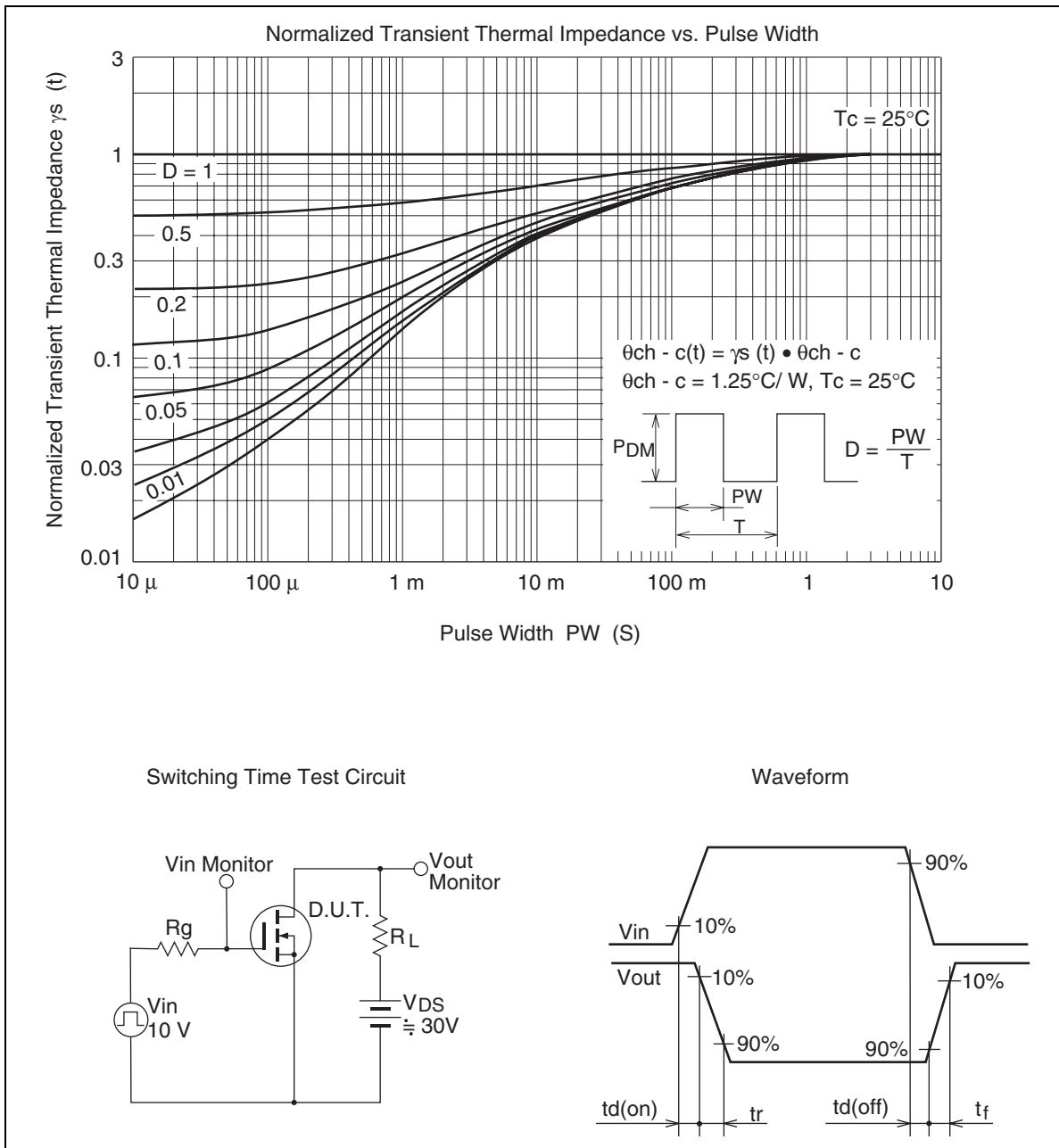
Avalanche Test Circuit



Avalanche Waveform

$$E_{AR} = \frac{1}{2} \cdot L \cdot I_{AP}^2 \cdot \frac{V_{DSS}}{V_{DSS} - V_{DD}}$$

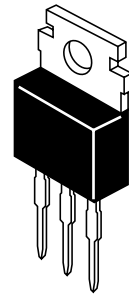
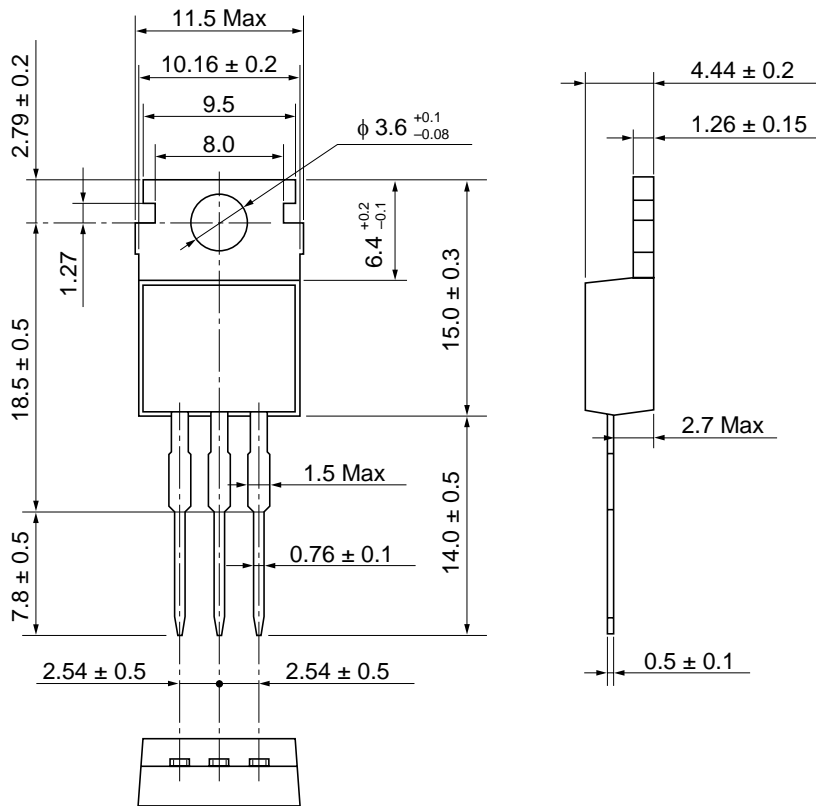




Package Dimensions

As of January, 2003

Unit: mm



Package Code	TO-220AB
JEDEC	Conforms
JEITA	Conforms
Mass (reference value)	1.8 g

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Renesas Technology America, Inc.
450 Holger Way, San Jose, CA 95134-1368, U.S.A
Tel: <1> (408) 382-7500 Fax: <1> (408) 382-7501

Renesas Technology Europe Limited.
Dukes Meadow, Millboard Road, Bourne End, Buckinghamshire, SL8 5FH, United Kingdom
Tel: <44> (1628) 585 100, Fax: <44> (1628) 585 900

Renesas Technology Europe GmbH
Dornacher Str. 3, D-85622 Feldkirchen, Germany
Tel: <49> (89) 380 70 0, Fax: <49> (89) 929 30 11

Renesas Technology Hong Kong Ltd.
7/F., North Tower, World Finance Centre, Harbour City, Canton Road, Hong Kong
Tel: <852> 2265-6688, Fax: <852> 2375-6836

Renesas Technology Taiwan Co., Ltd.
FL 10, #99, Fu-Hsing N. Rd., Taipei, Taiwan
Tel: <886> (2) 2715-2888, Fax: <886> (2) 2713-2999

Renesas Technology (Shanghai) Co., Ltd.
26/F., Ruijin Building, No.205 Maoming Road (S), Shanghai 200020, China
Tel: <86> (21) 6472-1001, Fax: <86> (21) 6415-2952

Renesas Technology Singapore Pte. Ltd.
1, Harbour Front Avenue, #06-10, Keppel Bay Tower, Singapore 098632
Tel: <65> 6213-0200, Fax: <65> 6278-8001