

**RENESAS**

# H7N0608FM

Silicon N Channel MOS FET  
Power Switching

REJ03G0165-0100Z

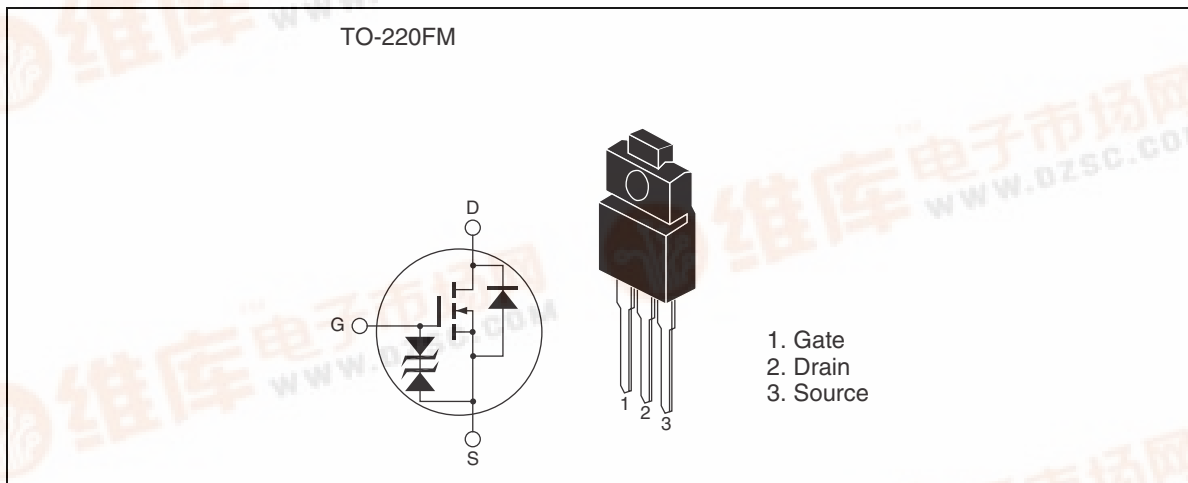
Rev.1.00

Dec.04.2003

## Features

- Low on-resistance  
 $R_{DS(on)} = 6.5 \text{ m}\Omega$  typ.
- Low drive current
- 4.5 V gate drive device can be driven from 5 V source

## Outline



**Absolute Maximum Ratings**

(Ta = 25°C)

<b>Item</b>	<b>Symbol</b>	<b>Ratings</b>	<b>Unit</b>
Drain to source voltage	V <sub>DSS</sub>	60	V
Gate to source voltage	V <sub>GSS</sub>	±20	V
Drain current	I <sub>D</sub>	50	A
Drain peak current	I <sub>D</sub> (pulse) <sup>Note1</sup>	200	A
Body-drain diode reverse drain current	I <sub>DR</sub>	50	A
Avalanche current	I <sub>AP</sub> <sup>Note3</sup>	40	A
Avalanche energy	E <sub>AR</sub> <sup>Note3</sup>	137	mJ
Channel dissipation	P <sub>ch</sub> <sup>Note2</sup>	30	W
Channel temperature	T <sub>ch</sub>	150	°C
Storage temperature	T <sub>stg</sub>	-55 to +150	°C

Notes: 1. PW ≤ 10 μs, duty cycle ≤ 1%  
2. Value at T<sub>c</sub> = 25°C  
3. Value at T<sub>ch</sub> = 25°C, R<sub>g</sub> ≥ 50 Ω

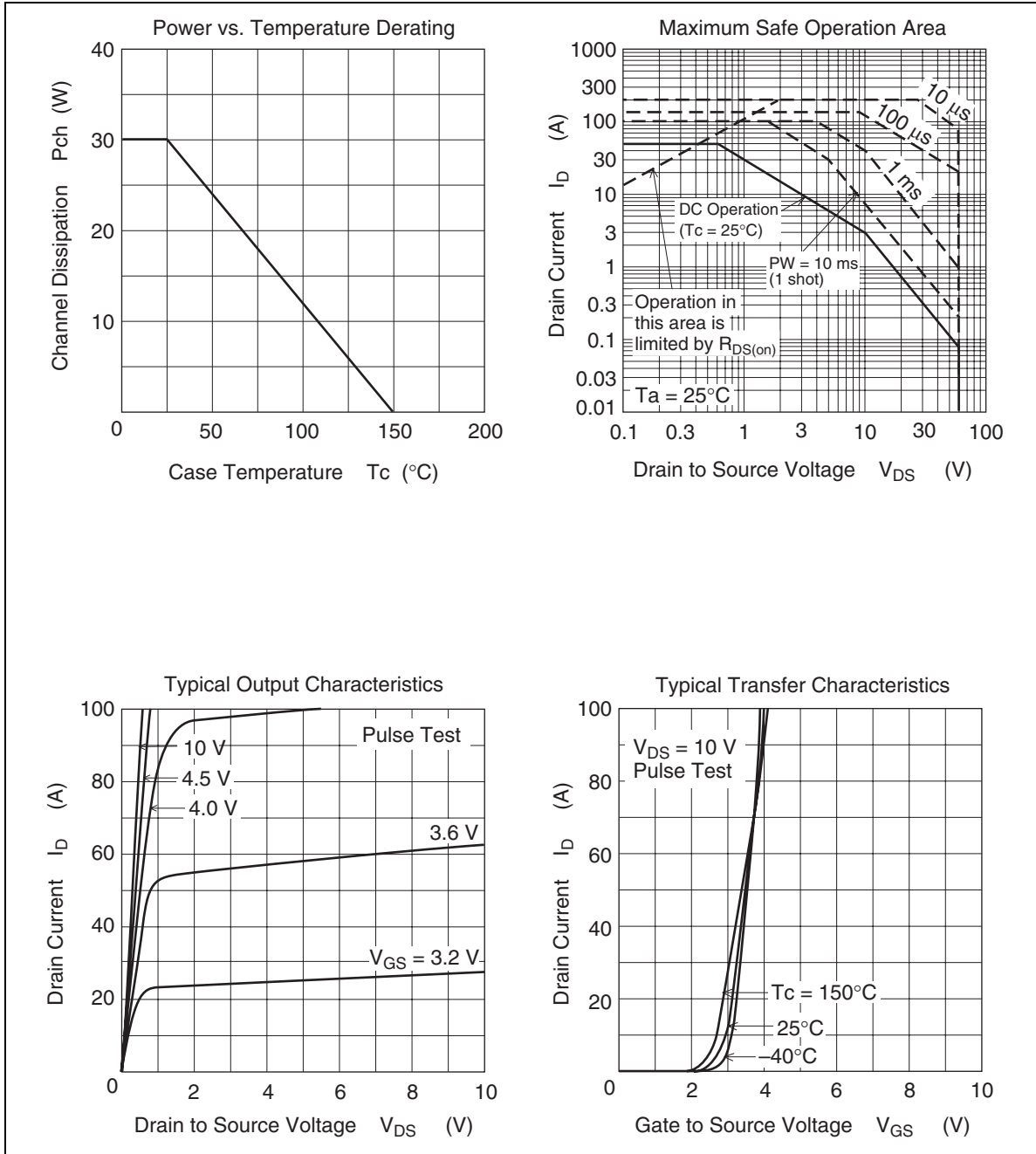
**Electrical Characteristics**

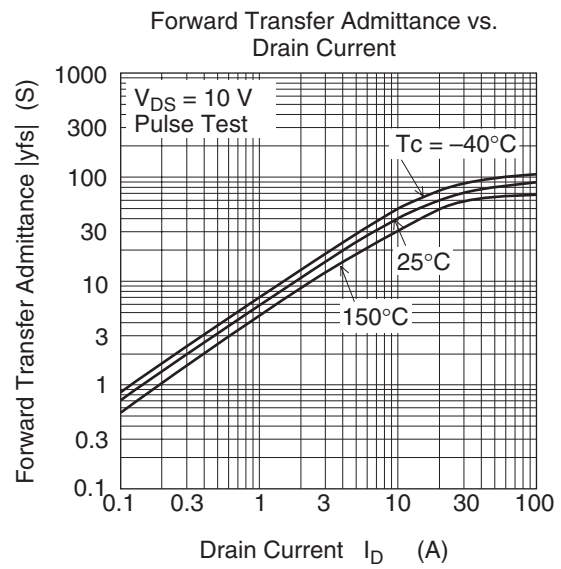
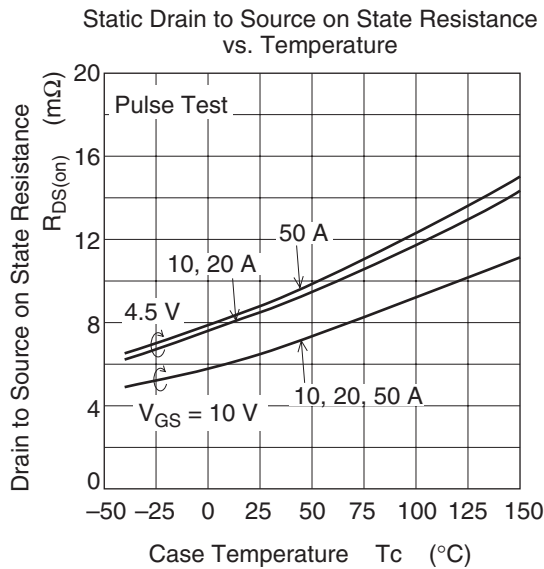
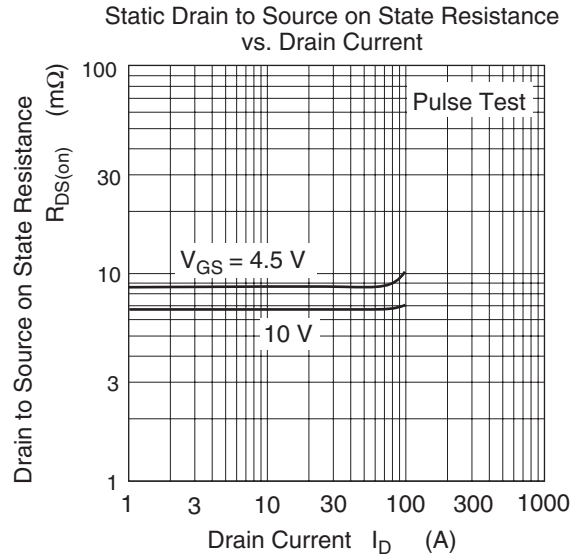
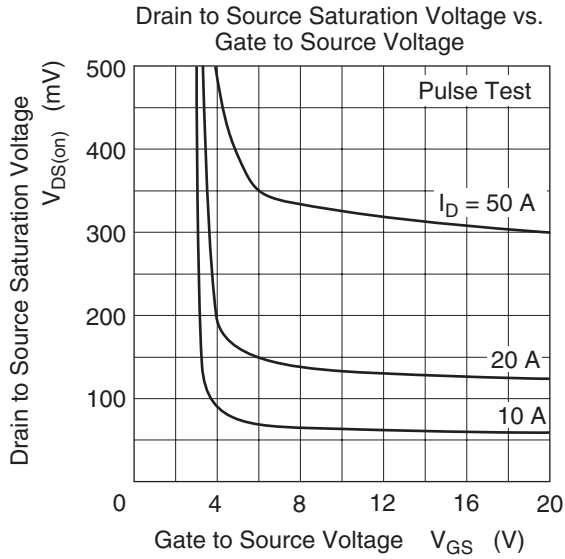
(Ta = 25°C)

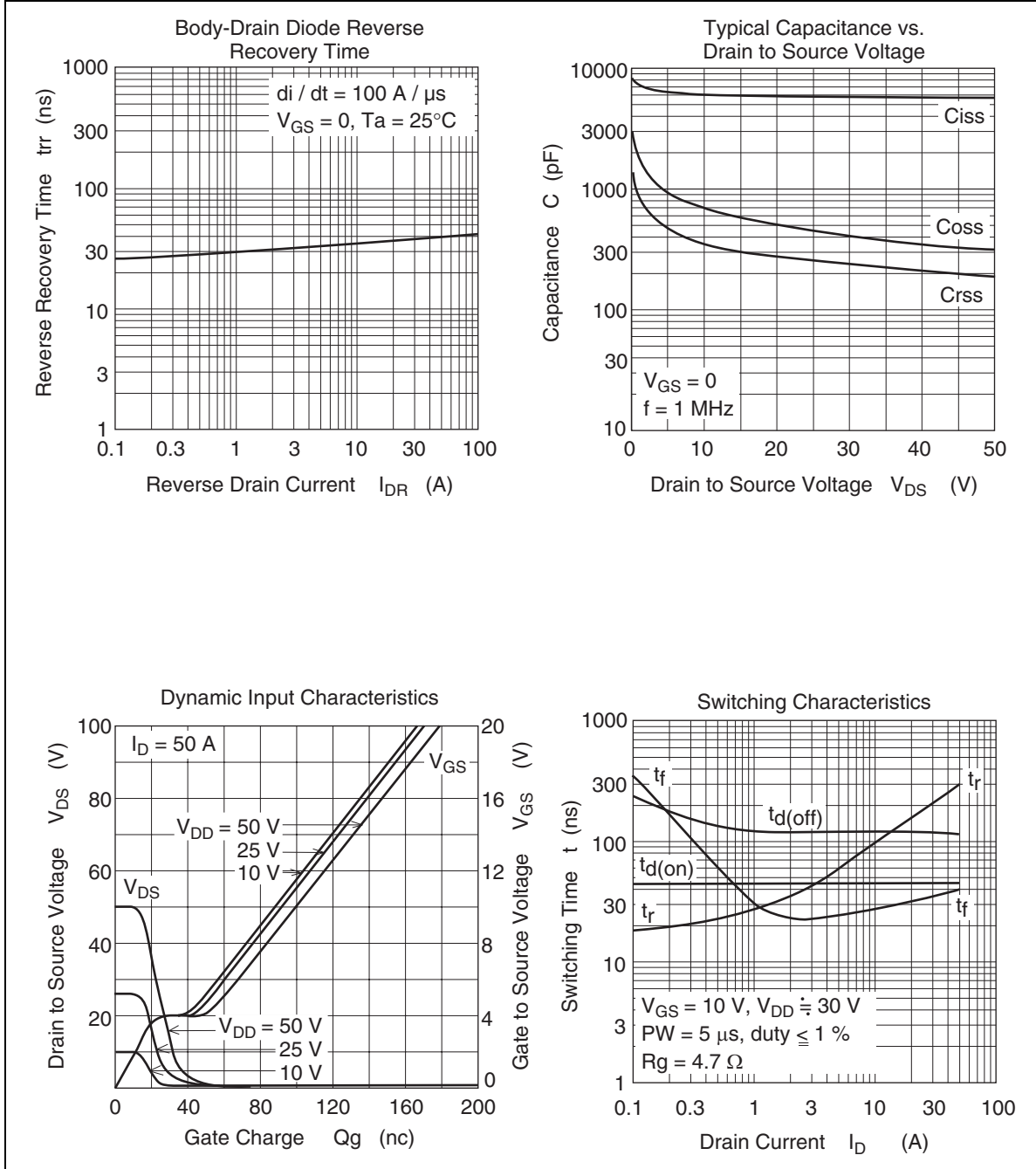
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	60	—	—	V	$I_D = 10 \text{ mA}, V_{GS} = 0$
Gate to source breakdown Voltage	$V_{(BR)GSS}$	$\pm 20$	—	—	V	$I_G = \pm 100 \text{ }\mu\text{A}, V_{DS} = 0$
Gate to source leak current	$I_{GSS}$	—	—	$\pm 10$	$\mu\text{A}$	$V_{GS} = \pm 16 \text{ V}, V_{DS} = 0$
Zero gate voltage drain current	$I_{DSS}$	—	—	10	$\mu\text{A}$	$V_{DS} = 60 \text{ V}, V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	1.5	—	2.5	V	$I_D = 1 \text{ mA}, V_{DS} = 10 \text{ V}^{\text{Note4}}$
Static drain to source on state resistance	$R_{DS(on)}$	—	6.5	8.5	$\text{m}\Omega$	$I_D = 20 \text{ A}, V_{GS} = 10 \text{ V}^{\text{Note4}}$
		—	8.5	13	$\text{m}\Omega$	$I_D = 20 \text{ A}, V_{GS} = 4.5 \text{ V}^{\text{Note4}}$
Forward transfer admittance	$ y_{fs} $	40	60	—	S	$I_D = 20 \text{ A}, V_{GS} = 10 \text{ V}^{\text{Note4}}$
Input capacitance	$C_{iss}$	—	6200	—	pF	$V_{DS} = 10 \text{ V}$
Output capacitance	$C_{oss}$	—	680	—	pF	$V_{GS} = 0$
Reverse transfer capacitance	$C_{rss}$	—	350	—	pF	$f = 1 \text{ MHz}$
Total gate charge	$Q_g$	—	100	—	nC	$V_{DD} = 25 \text{ V}$
Gate to source charge	$Q_{gs}$	—	20	—	nC	$V_{GS} = 10 \text{ V}$
Gate to drain charge	$Q_{gd}$	—	20	—	nC	$I_D = 50 \text{ A}$
Turn-on delay time	$t_{d(on)}$	—	45	—	ns	$V_{GS} = 10 \text{ V}, I_D = 20 \text{ A}$
Rise time	$t_r$	—	160	—	ns	$V_{DD} \cong 30 \text{ V}$
Turn-off delay time	$t_{d(off)}$	—	125	—	ns	$R_L = 1.5 \text{ }\Omega$
Fall time	$t_f$	—	32	—	ns	$R_g = 4.7 \text{ }\Omega$
Body–drain diode forward voltage	$V_{DF}$	—	0.92	—	V	$I_F = 50 \text{ A}, V_{GS} = 0$
Body–drain diode reverse recovery time	$t_{rr}$	—	40	—	ns	$I_F = 50 \text{ A}, V_{GS} = 0$ $diF/dt = 100 \text{ A}/\mu\text{s}$

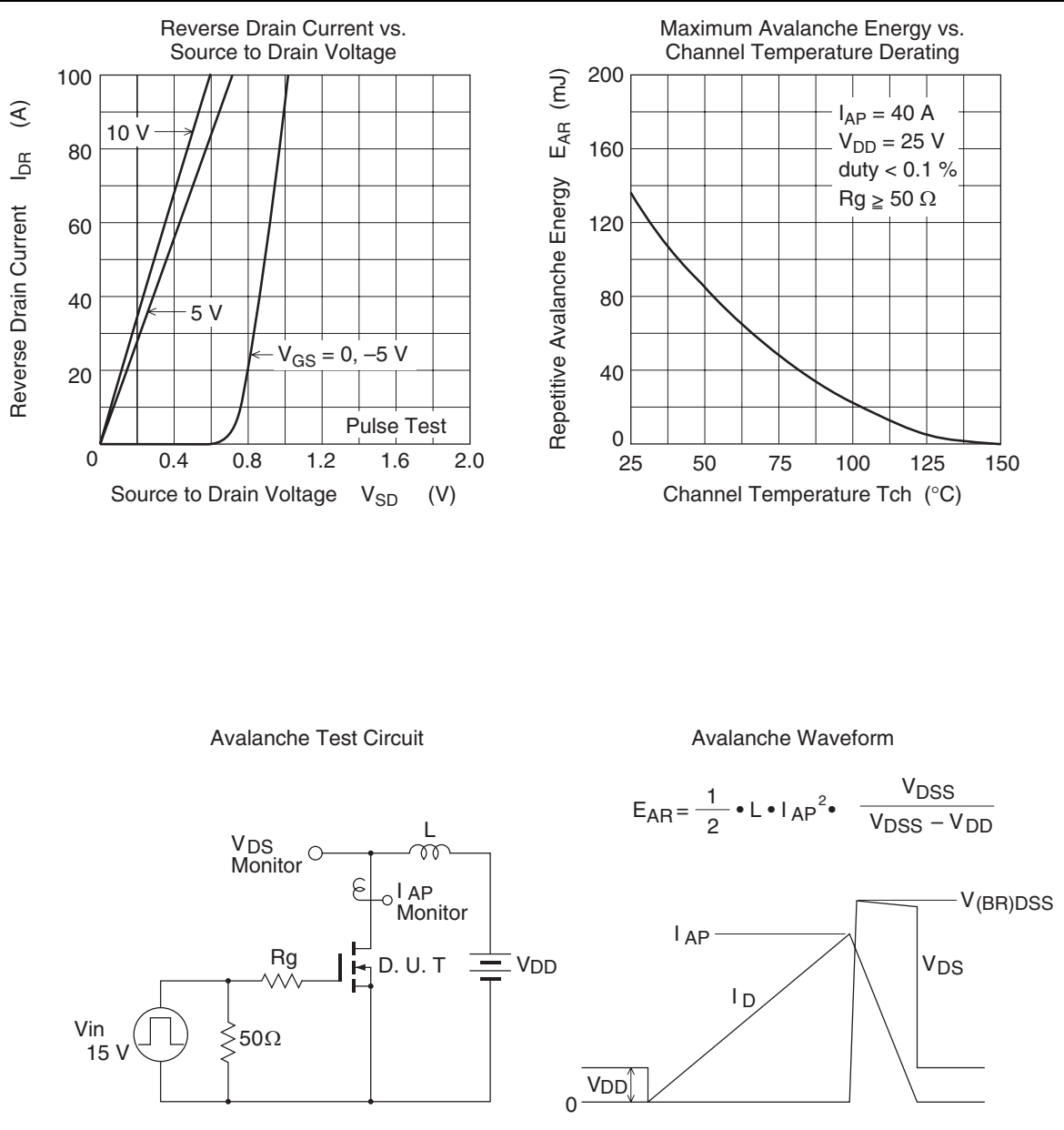
Notes: 4. Pulse test

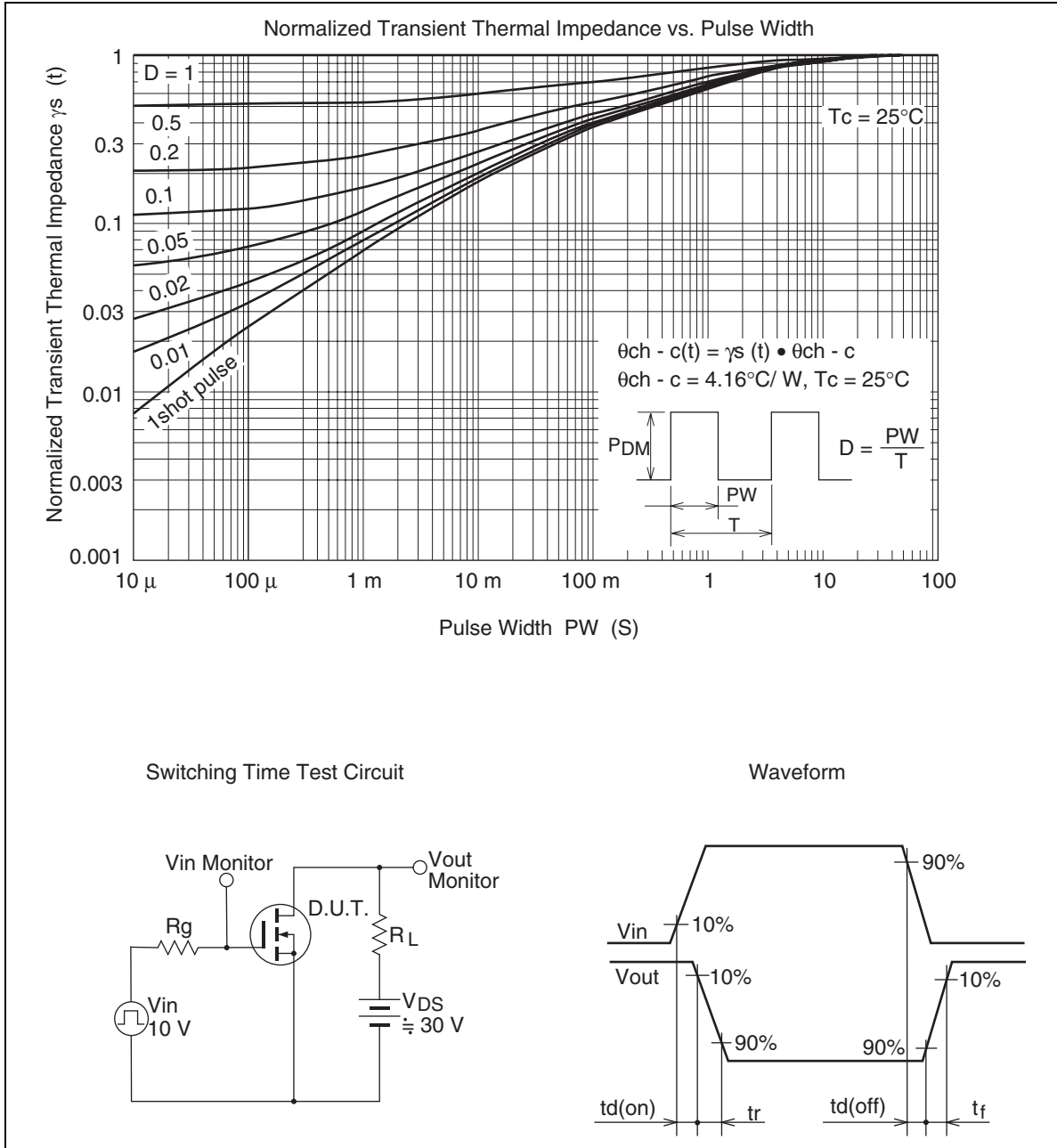
Main Characteristics





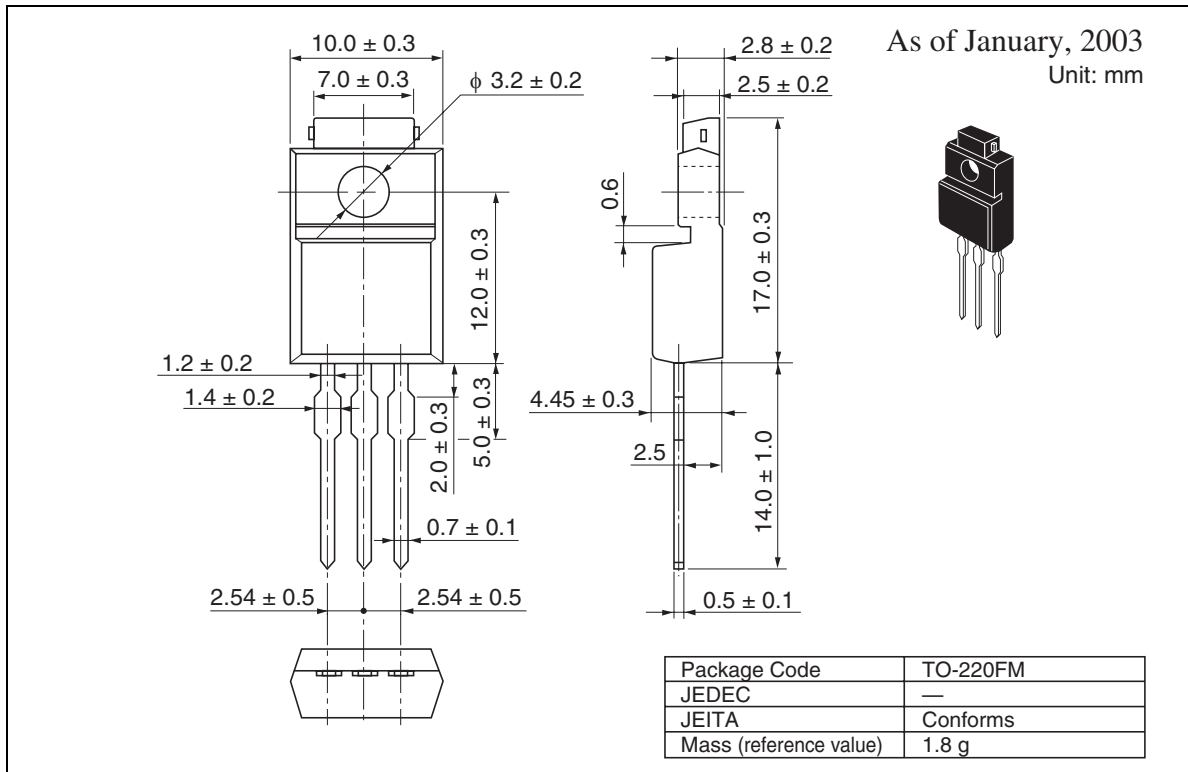








Package Dimensions



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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

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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

