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April 1st, 2010
Renesas Electronics Corporation

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

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HAT2085T

Silicon N Channel MOS FET
High Speed Power Switching

REJ03G0163-0500

Rev.5.00

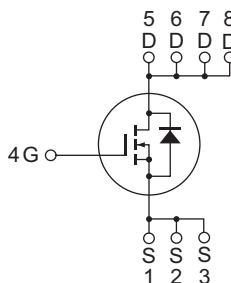
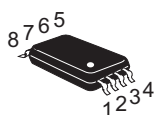
Nov 27, 2007

Features

- Low on-resistance
- Low drive current
- High density mounting

Outline

RENESAS Package code: PTSP0008JB-B
(Package name: TSSOP-8 <TTP-8DV>)



1, 2, 3 Source
4 Gate
5, 6, 7, 8 Drain

Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Value	Unit
Drain to source voltage	V _{DSS}	200	V
Gate to source voltage	V _{GSS}	±30	V
Drain current	I _D	1.4	A
Drain peak current	I _{D (pulse)} ^{Note 1}	11.2	A
Body to drain diode reverse drain current	I _{DR}	1.4	A
Channel dissipation	P _{ch} ^{Note 2}	1.3	W
Channel temperature	T _{ch}	150	°C
Storage temperature	T _{stg}	-55 to +150	°C

Notes: 1. PW ≤ 10 μs, duty cycle ≤ 1%

2. When using the glass epoxy board (FR4 40 × 40 × 1.6 mm), PW ≤ 10 s

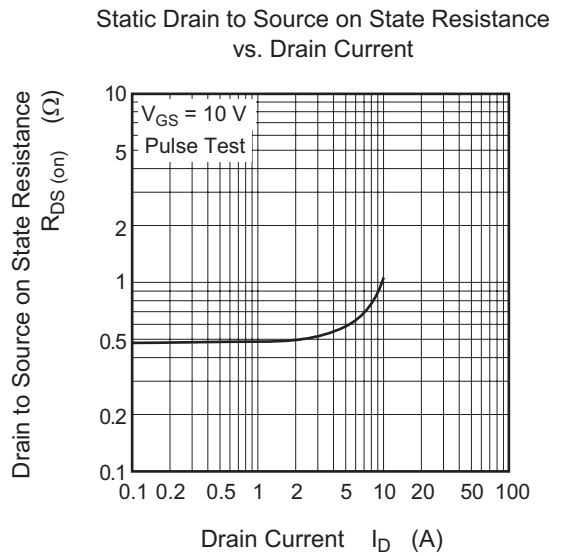
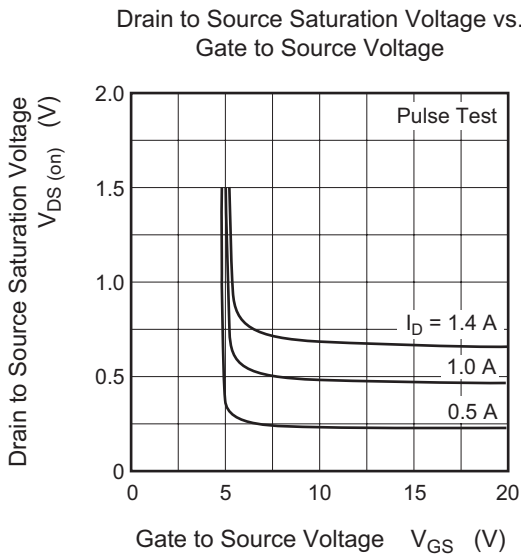
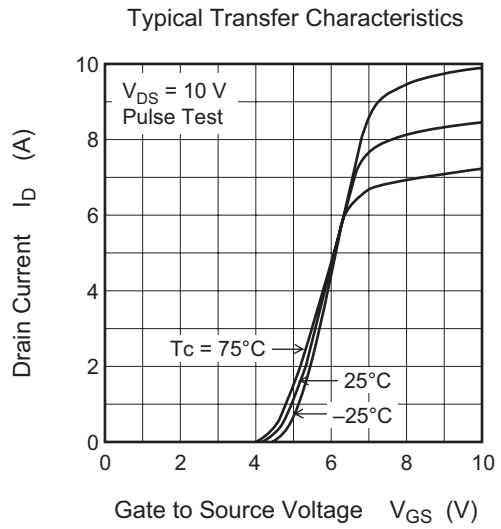
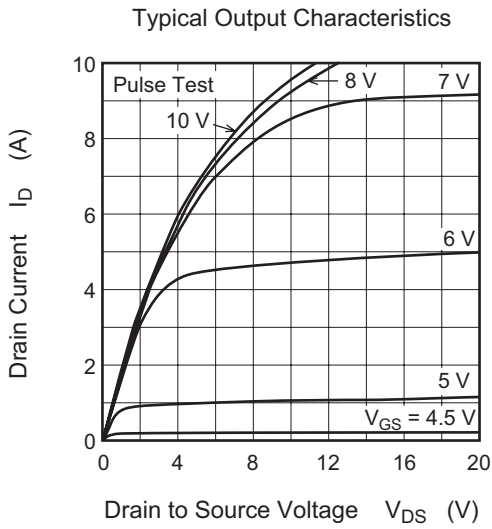
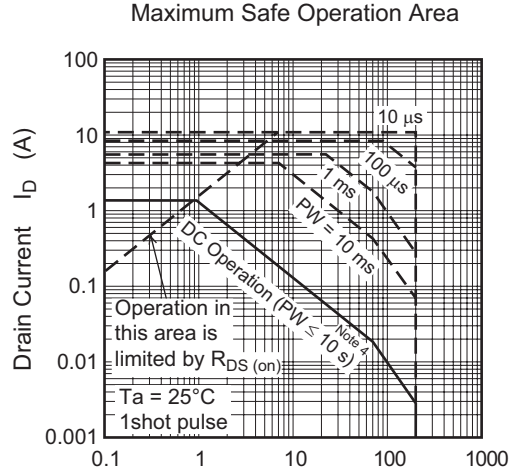
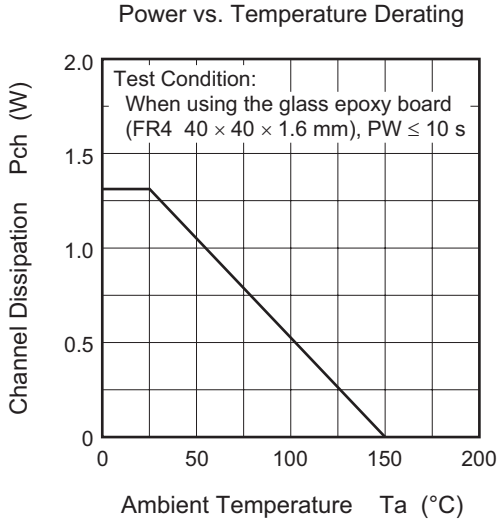
Electrical Characteristics

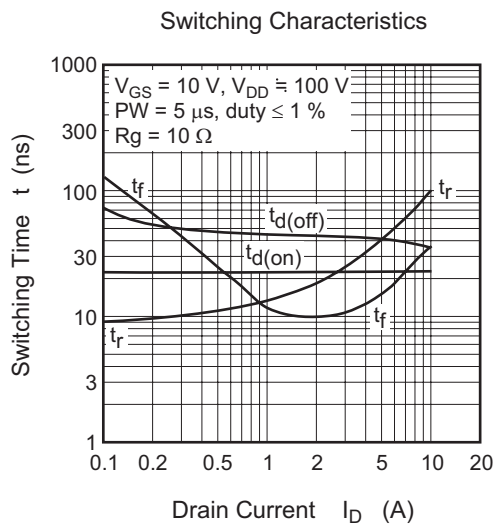
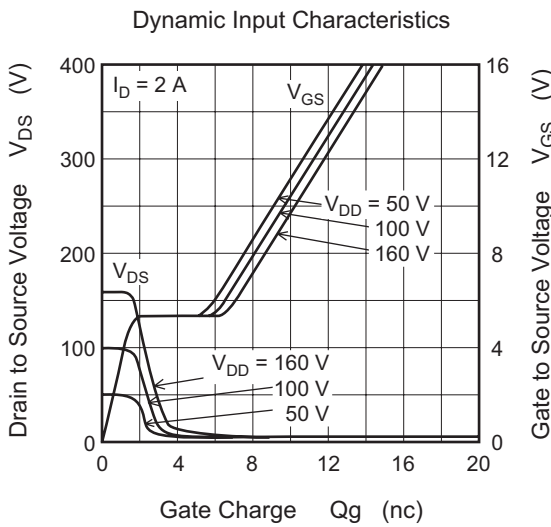
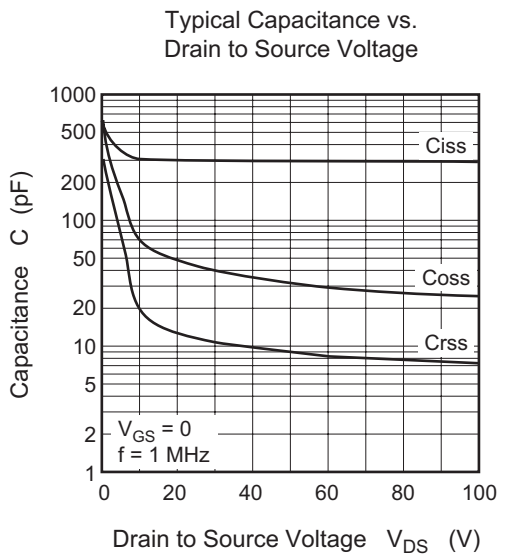
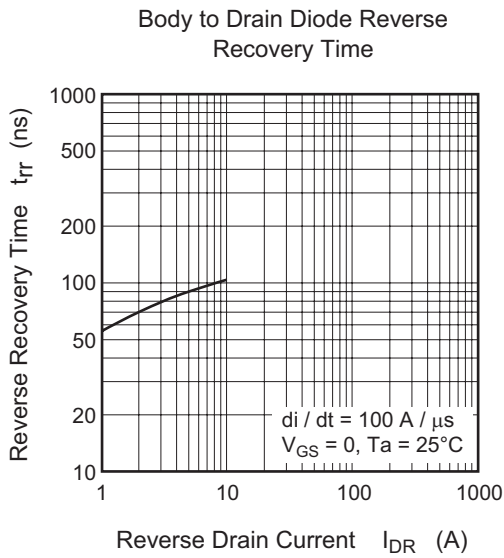
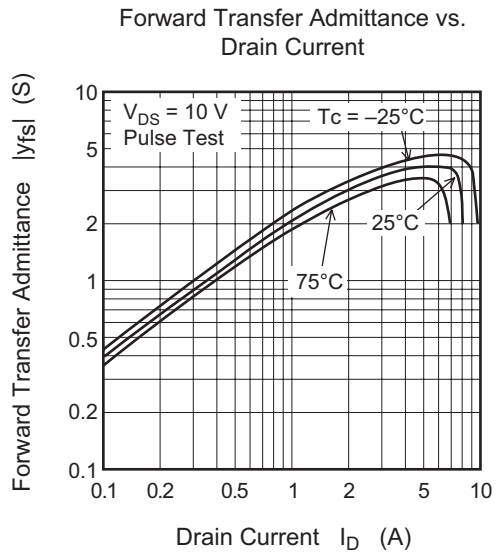
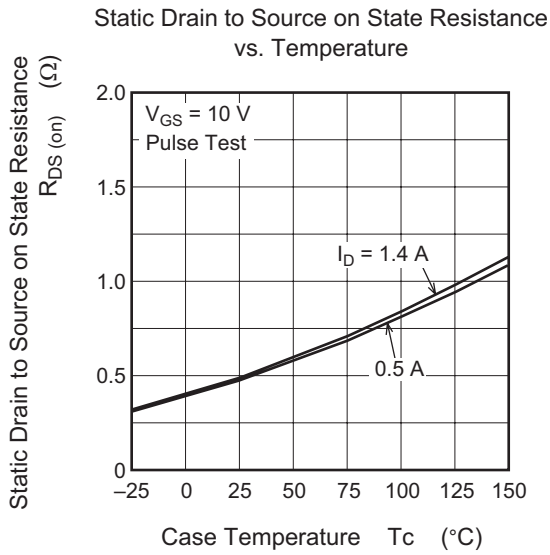
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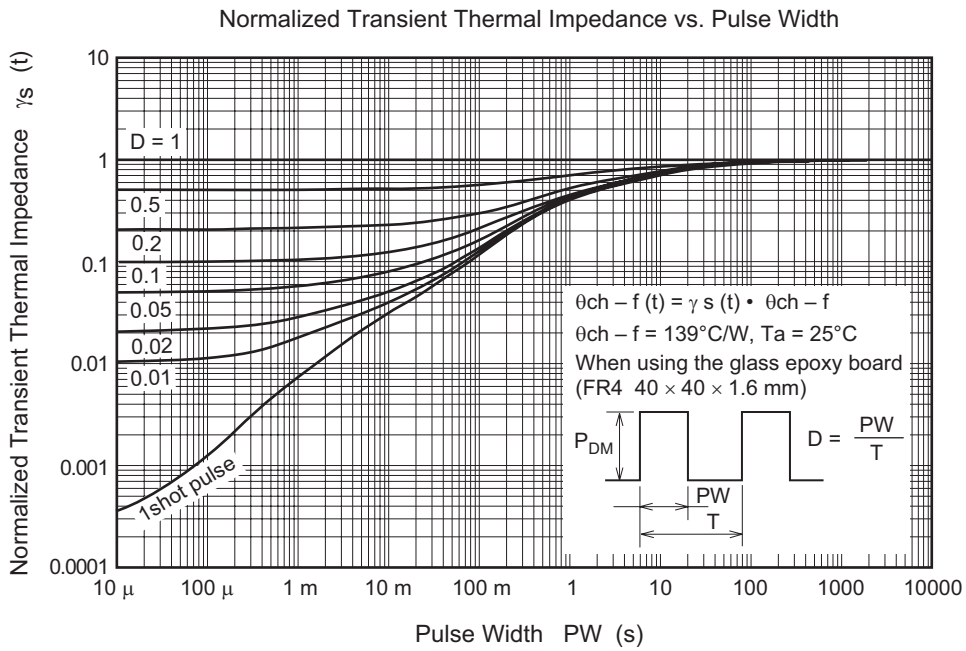
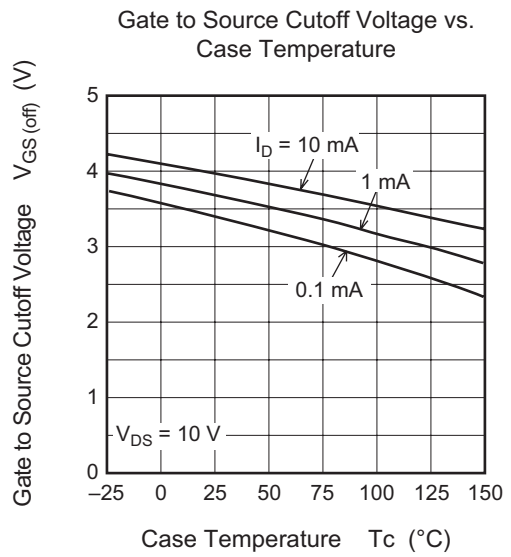
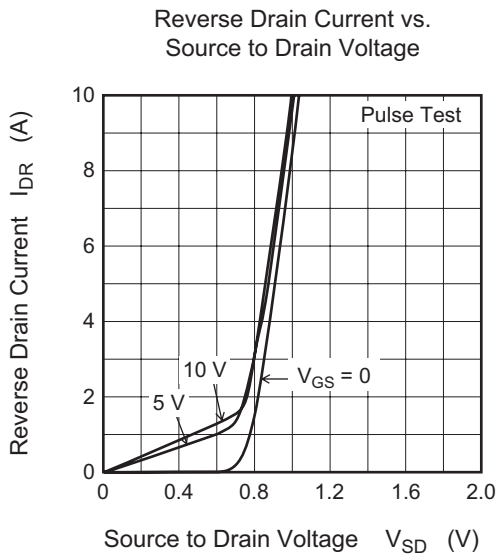
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	200	—	—	V	$I_D = 10 \text{ mA}$, $V_{GS} = 0$
Gate to source leak current	I_{GSS}	—	—	± 0.1	μA	$V_{GS} = \pm 30 \text{ V}$, $V_{DS} = 0$
Zero gate voltage drain current	I_{DSS}	—	—	1	μA	$V_{DS} = 200 \text{ V}$, $V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	3.0	—	4.5	V	$I_D = 1 \text{ mA}$, $V_{DS} = 10 \text{ V}$
Static drain to source on state resistance	$R_{DS(on)}$	—	0.49	0.64	Ω	$I_D = 0.7 \text{ A}$, $V_{GS} = 10 \text{ V}$ ^{Note 3}
Forward transfer admittance	$ y_{fs} $	1.0	1.7	—	S	$I_D = 0.7 \text{ A}$, $V_{DS} = 10 \text{ V}$ ^{Note 3}
Input capacitance	C_{iss}	—	300	—	pF	$V_{DS} = 25 \text{ V}$
Output capacitance	C_{oss}	—	43	—	pF	$V_{GS} = 0$
Reverse transfer capacitance	C_{rss}	—	12	—	pF	$f = 1 \text{ MHz}$
Turn-on delay time	$t_{d(on)}$	—	21	—	ns	$V_{DD} \cong 100 \text{ V}$, $I_D = 0.7 \text{ A}$
Rise time	t_r	—	11	—	ns	$V_{GS} = 10 \text{ V}$
Turn-off delay time	$t_{d(off)}$	—	48	—	ns	$R_L = 143 \Omega$
Fall time	t_f	—	18	—	ns	$R_g = 10 \Omega$
Total gate charge	Q_g	—	10	—	nC	$V_{DD} = 160 \text{ V}$
Gate to source charge	Q_{gs}	—	1.8	—	nC	$V_{GS} = 10 \text{ V}$
Gate to drain charge	Q_{gd}	—	4.8	—	nC	$I_D = 1.4 \text{ A}$
Body to drain diode forward voltage	V_{DF}	—	0.8	1.2	V	$I_F = 1.4 \text{ A}$, $V_{GS} = 0$ ^{Note 3}
Body to drain diode reverse recovery time	t_{rr}	—	65	—	ns	$I_F = 1.4 \text{ A}$, $V_{GS} = 0$ $di_F/dt = 100 \text{ A}/\mu\text{s}$

Note: 3. Pulse test

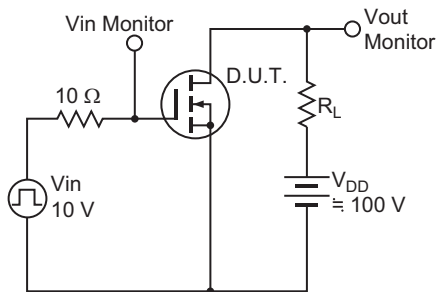
Main Characteristics



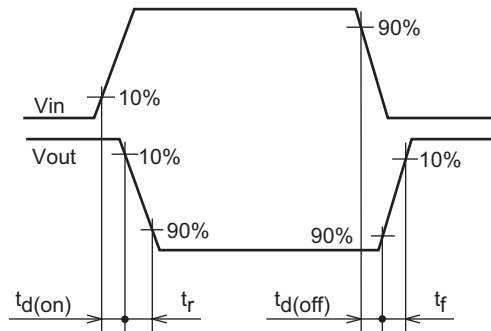




Switching Time Test Circuit

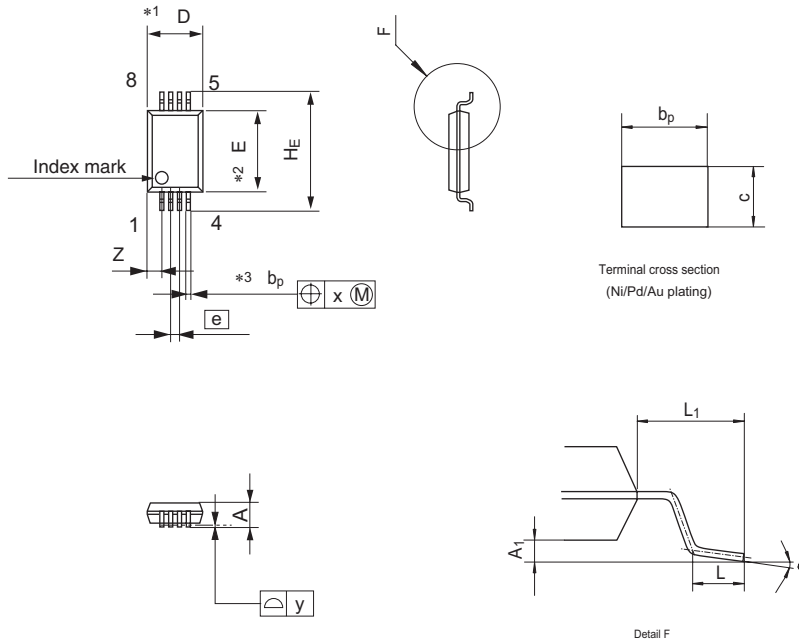


Switching Time Waveform



Package Dimensions

Package Name	JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
TSSOP-8	P-TSSOP8-4.4 × 3-0.65	PTSP0008JB-B	TTP-8DV	0.037g



Terminal cross section
(Ni/Pd/Au plating)

NOTE)
 1. DIMENSIONS **1(Nom)** AND **2*
 DO NOT INCLUDE MOLD FLASH.
 2. DIMENSION **3* DOES NOT
 INCLUDE TRIM OFFSET.

Reference Symbol	Dimension in Millimeters		
	Min	Nom	Max
D	—	3.00	3.30
E	—	4.40	—
A ₂	—	—	—
A ₁	0.03	0.07	0.10
A	—	—	1.10
b _p	0.15	0.20	0.25
b ₁	—	—	—
c	0.10	0.15	0.20
c ₁	—	—	—
φ	0°	—	8°
H _E	6.20	6.40	6.60
e	—	0.65	—
x	—	—	0.13
y	—	—	0.10
Z	—	—	0.805
L	0.40	0.50	0.60
L ₁	—	1.0	—

Ordering Information

Part No.	Quantity	Shipping Container
HAT2085T-EL-E	3000 pcs	Taping

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