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April 1st, 2010
Renesas Electronics Corporation

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

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H7N0307AB

Silicon N Channel MOS FET
High Speed Power Switching

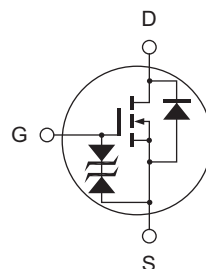
REJ03G1120-0300
(Previous: ADE-208-1568A)
Rev.3.00
Sep 07, 2005

Features

- Low on-resistance
 $R_{DS(on)} = 4.6 \text{ m}\Omega$ typ.
- Low drive current
- 4.5 V gate drive device can be driven from 5 V source

Outline

RENESAS Package code: PRSS0004AC-A
(Package name: TO-220AB)



1. Gate
2. Drain (Flange)
3. Source

Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Value	Unit
Drain to source voltage	V _{DSS}	30	V
Gate to source voltage	V _{GSS}	±20	V
Drain current	I _D	60	A
Drain peak current	I _{D (pulse)} ^{Note 1}	240	A
Body-drain diode reverse drain current	I _{DR}	60	A
Channel dissipation	P _{ch} ^{Note 2}	90	W
Channel to case thermal impedance	θ _{ch-c}	1.39	°C/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

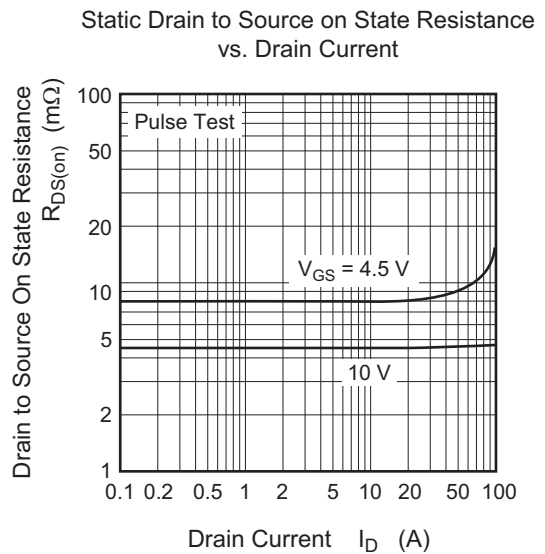
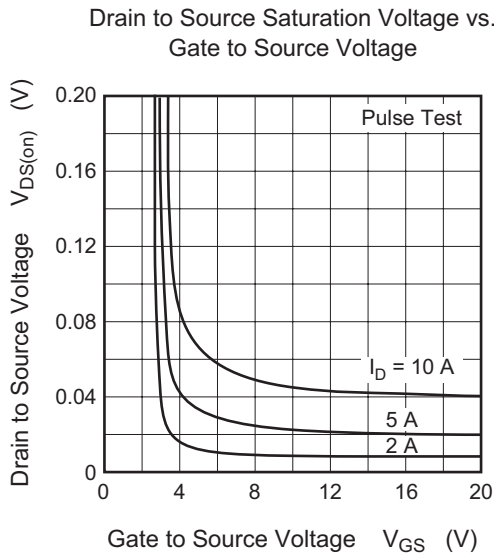
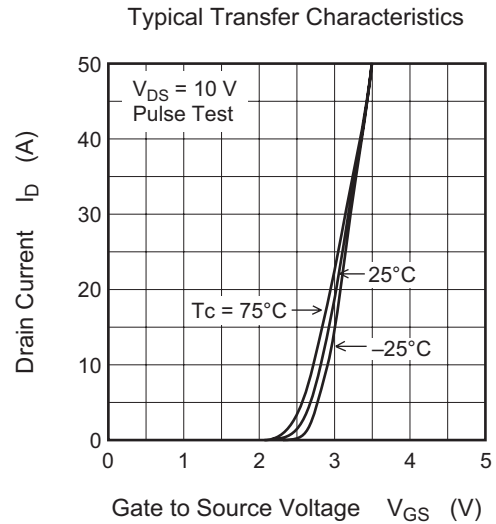
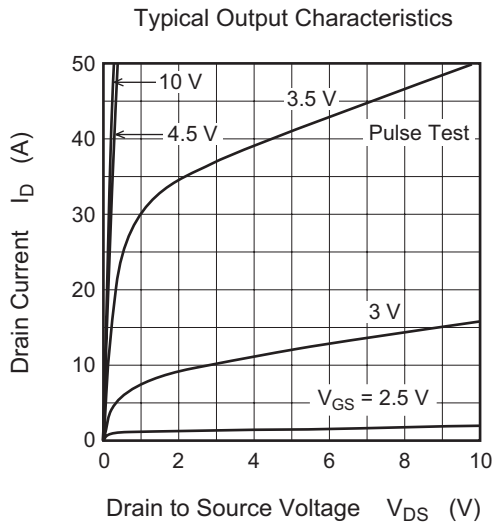
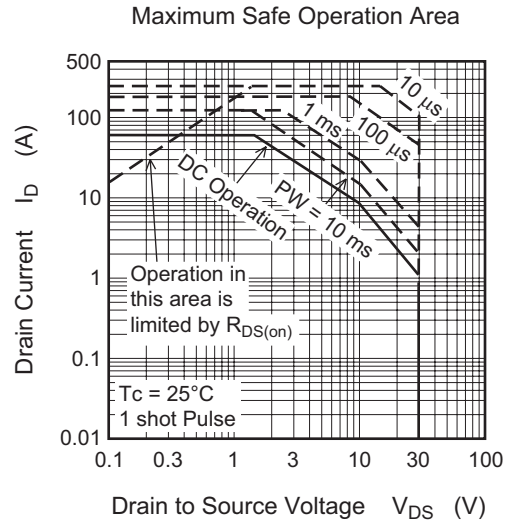
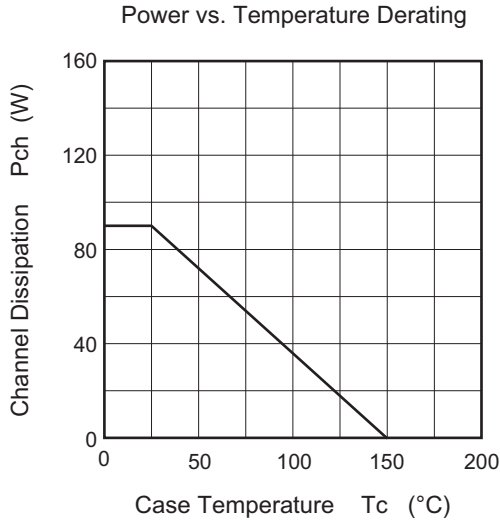
Electrical Characteristics

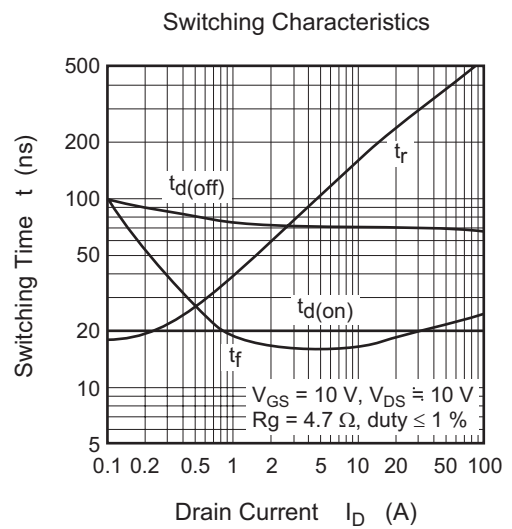
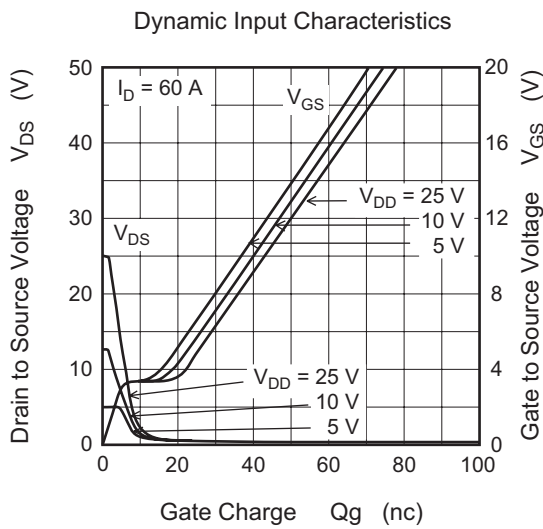
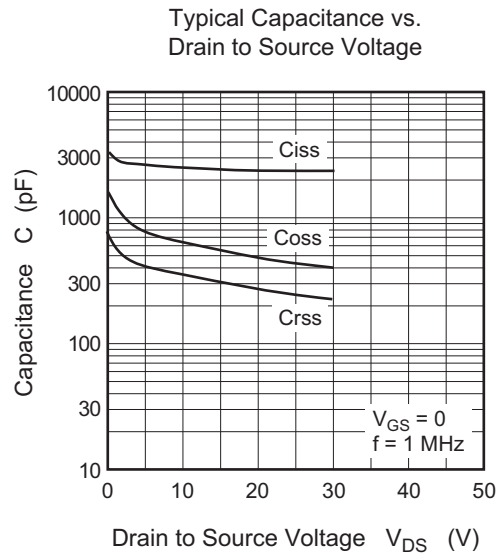
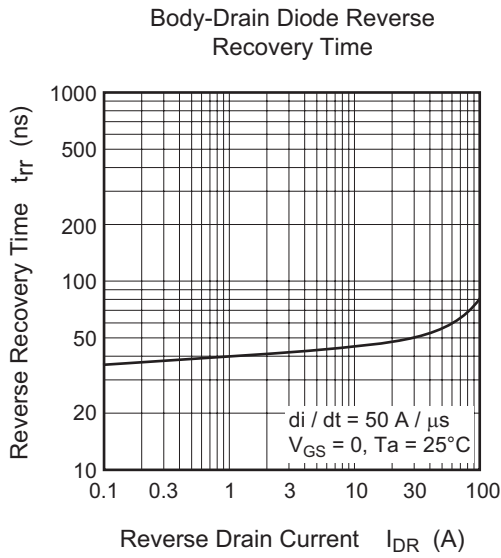
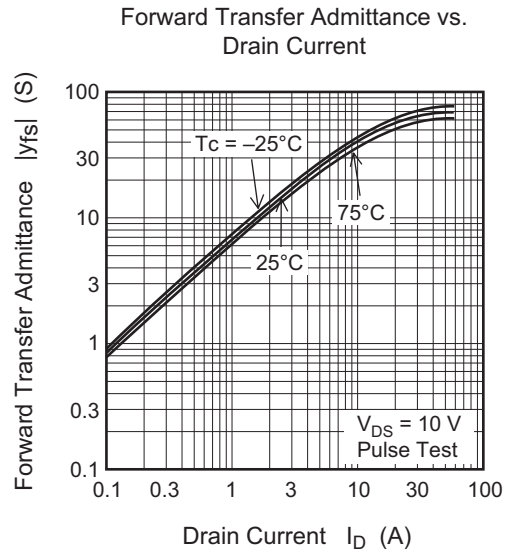
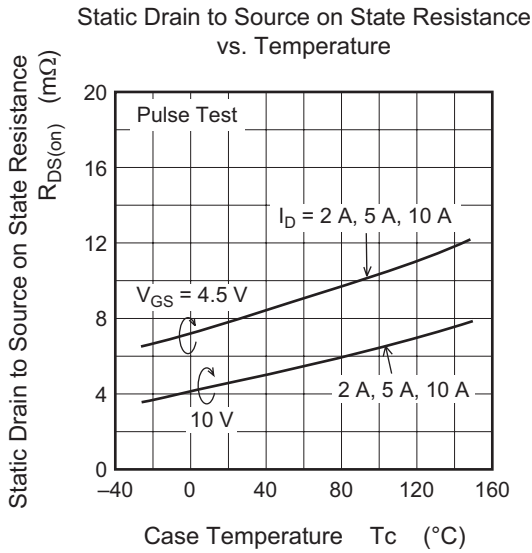
(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	V _{(BR)DSS}	30	—	—	V	I _D = 10 mA, V _{GS} = 0
Gate to source breakdown voltage	V _{(BR)GSS}	±20	—	—	V	I _G = ±100 μA, V _{DS} = 0
Gate to source leak current	I _{GSS}	—	—	±10	μA	V _{GS} = ±16 V, V _{DS} = 0
Zero gate voltage drain current	I _{DSS}	—	—	10	μA	V _{DS} = 30 V, V _{GS} = 0
Gate to source cutoff voltage	V _{GS (off)}	1.0	—	2.5	V	I _D = 1 mA, V _{DS} = 10 V ^{Note 3}
Static drain to source on state resistance	R _{DS (on)}	—	4.6	5.8	mΩ	I _D = 30 A, V _{GS} = 10 V ^{Note 3}
		—	8.0	11.5	mΩ	I _D = 30 A, V _{GS} = 4.5 V ^{Note 3}
Forward transfer admittance	y _{fs}	40	65	—	S	I _D = 30 A, V _{DS} = 10 V ^{Note 3}
Input capacitance	C _{iss}	—	2500	—	pF	V _{DS} = 10 V
Output capacitance	C _{oss}	—	650	—	pF	V _{GS} = 0
Reverse transfer capacitance	C _{rss}	—	350	—	pF	f = 1 MHz
Total gate charge	Q _g	—	40	—	nC	V _{DD} = 10 V
Gate to source charge	Q _{gs}	—	7	—	nC	V _{GS} = 10 V
Gate to drain charge	Q _{gd}	—	8	—	nC	I _D = 60 A
Turn-on delay time	t _{d (on)}	—	20	—	ns	V _{GS} = 10 V, I _D = 30 A
Rise time	t _r	—	300	—	ns	R _L = 0.33 Ω
Turn-off delay time	t _{d (off)}	—	70	—	ns	R _g = 4.7 Ω
Fall time	t _f	—	20	—	ns	
Body-drain diode forward voltage	V _{DF}	—	0.92	—	V	I _F = 60 A, V _{GS} = 0
Body-drain diode reverse recovery time	t _{rr}	—	60	—	ns	I _F = 60 A, V _{GS} = 0 di _F /dt = 50 A/μs

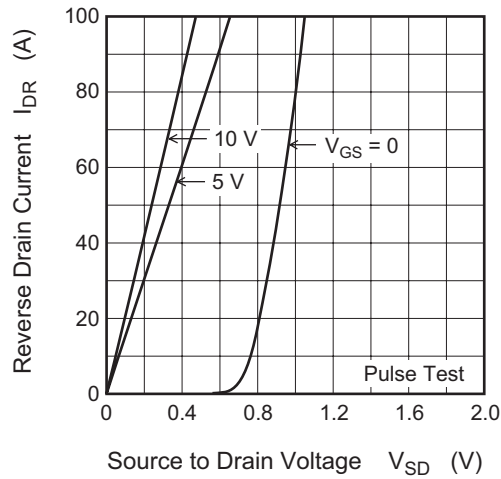
Note: 3. Pulse test

Main Characteristics

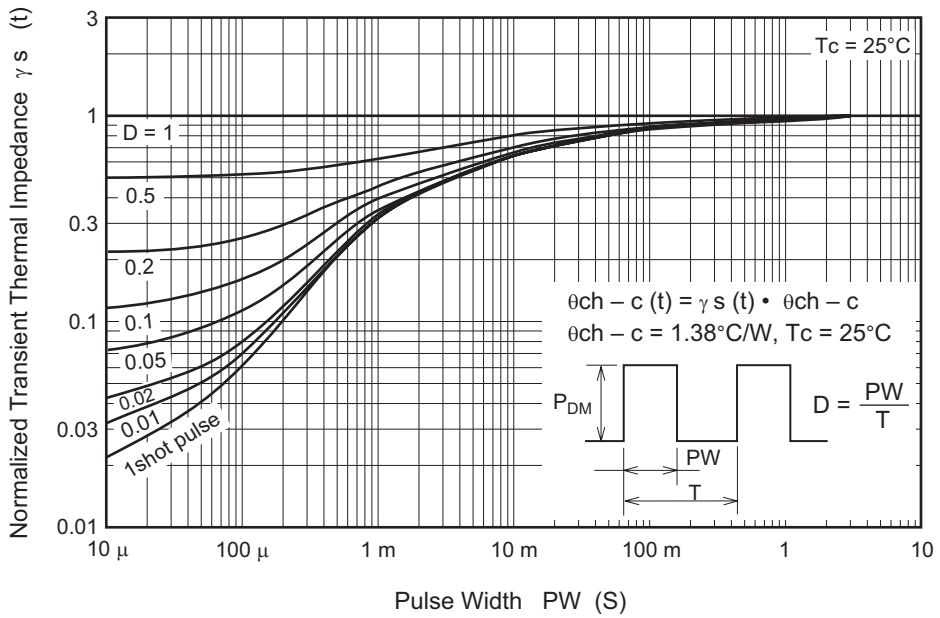




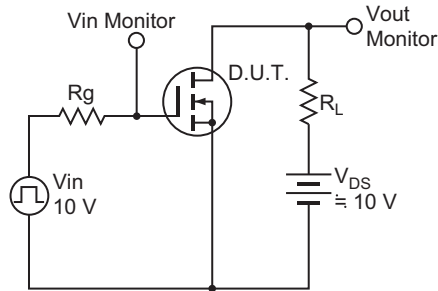
Reverse Drain Current vs. Source to Drain Voltage



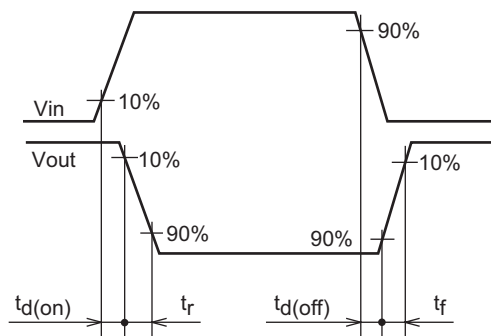
Normalized Transient Thermal Impedance vs. Pulse Width



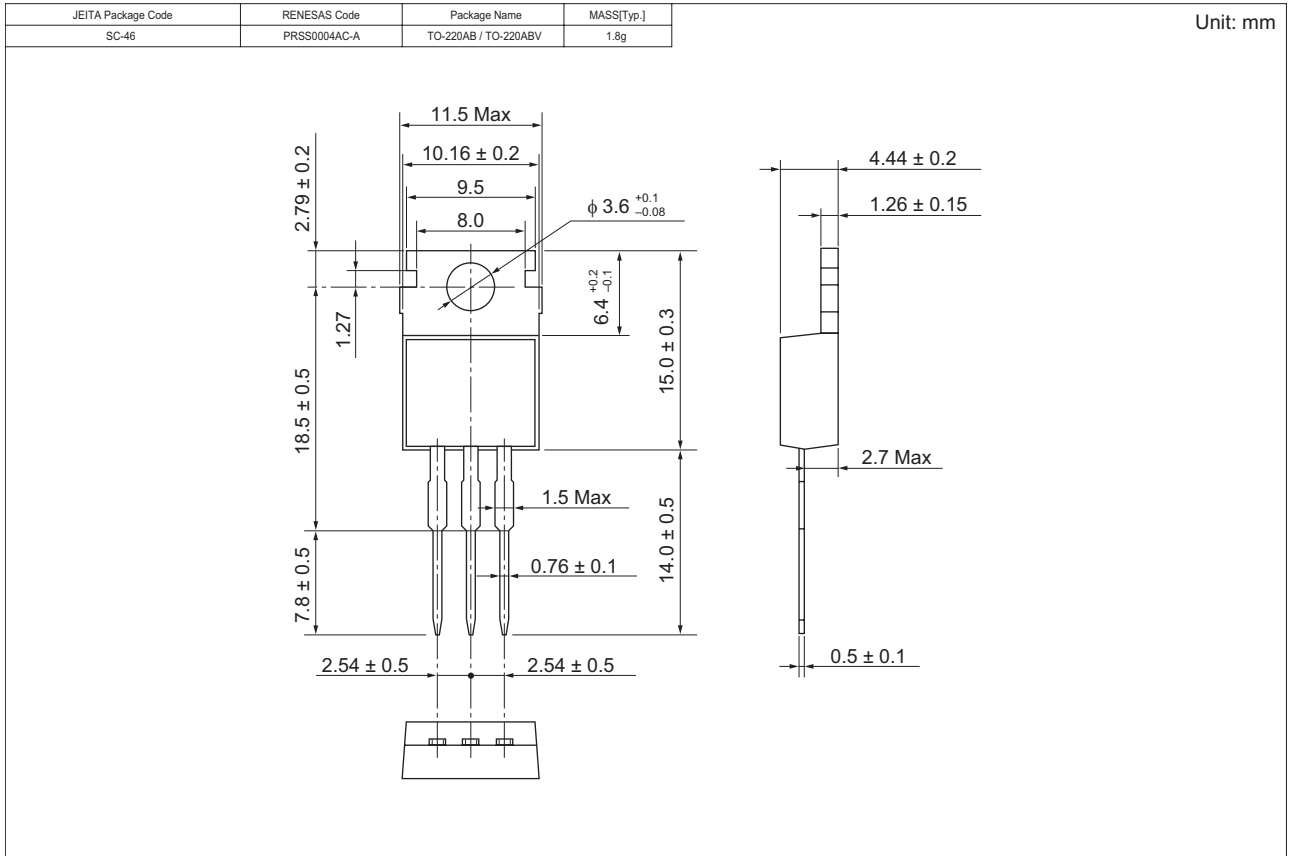
Switching Time Test Circuit



Switching Time Waveform



Package Dimensions



Ordering Information

Part Name	Quantity	Shipping Container
H7N0307AB-E	500 pcs	Box (Sack)

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