

To our customers,

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## Old Company Name in Catalogs and Other Documents

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April 1<sup>st</sup>, 2010  
Renesas Electronics Corporation

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# RJK1008DPN

N-Channel Power MOSFET  
High-Speed Switching Use

REJ03G1627-0100

Rev.1.00

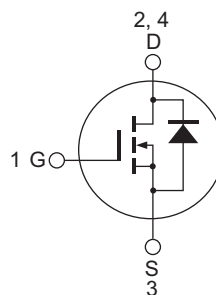
Mar 21, 2008

## Features

- $V_{DSS}$  : 100 V
- $R_{DS(on)}$  : 11 m $\Omega$  (Max)
- $I_D$  : 80 A

## Outline

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



1. Gate
2. Drain
3. Source
4. Drain

## Application

- Motor control, Lighting control, Solenoid control, DC-DC converter, etc.

## Absolute Maximum Ratings

( $T_a = 25^\circ\text{C}$ )

Item	Symbol	Ratings	Unit
Drain to source voltage	$V_{DSS}$	100	V
Gate to source voltage	$V_{GSS}$	$\pm 20$	V
Drain current	$I_D$	80	A
Drain peak current	$I_{D(pulse)}$	160	A
Body-drain diode reverse drain current	$I_{DR}$	80	A
Body-drain diode reverse drain peak current	$I_{DR(pulse)}$	160	A
Avalanche current	$I_{AP}$ <sup>Note2</sup>	40	A
Channel dissipation	$P_{ch}$ <sup>Note1</sup>	125	W
Channel to case thermal impedance	$\theta_{ch-c}$	1.0	$^\circ\text{C}/\text{W}$
Channel temperature	$T_{ch}$	150	$^\circ\text{C}$
Storage temperature	$T_{stg}$	-55 to +150	$^\circ\text{C}$

Notes: 1. Value at  $T_c = 25^\circ\text{C}$

2.  $ST_{ch} = 25^\circ\text{C}$ ,  $T_{ch} \leq 150^\circ\text{C}$ ,  $L = 100 \mu\text{H}$

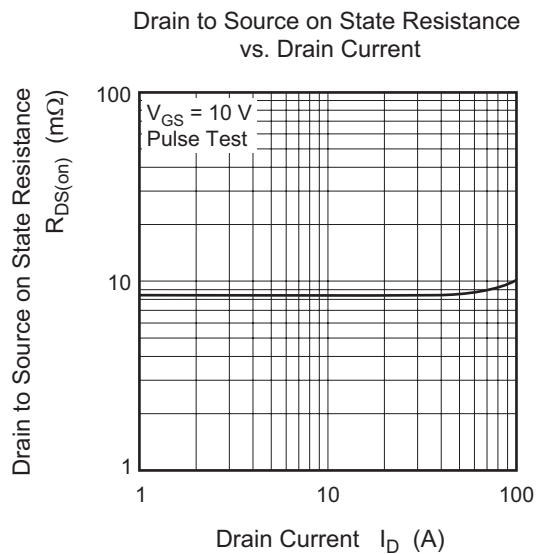
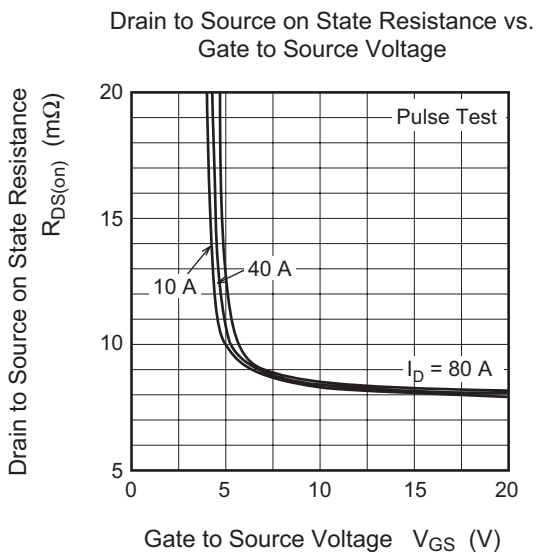
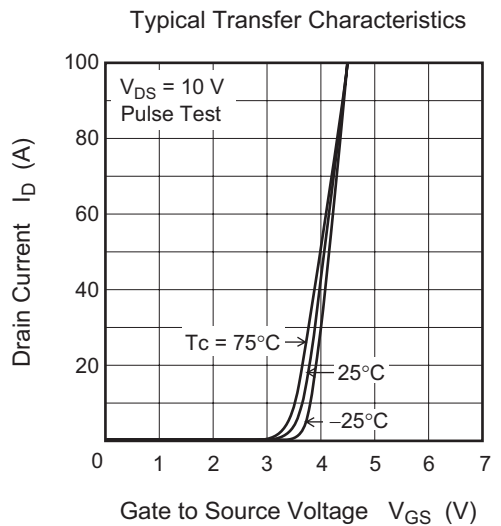
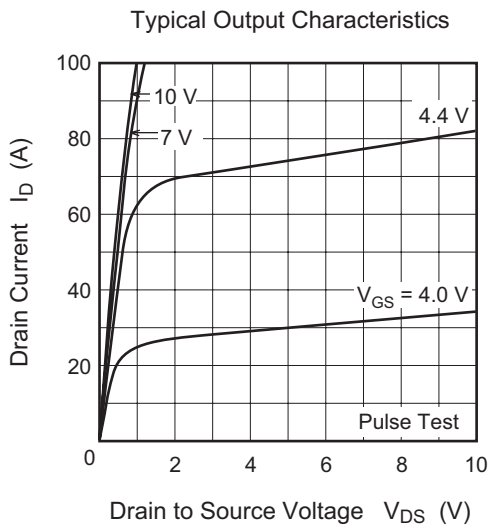
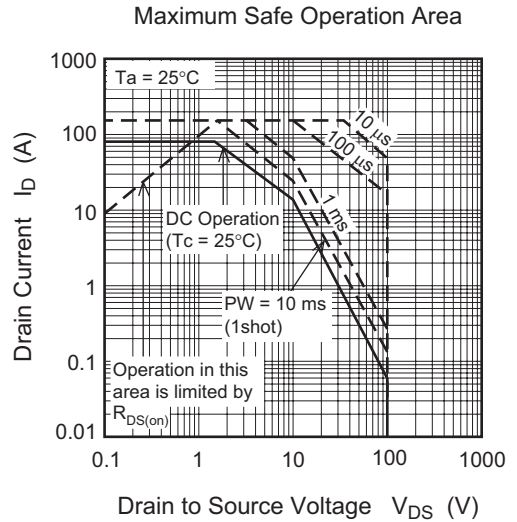
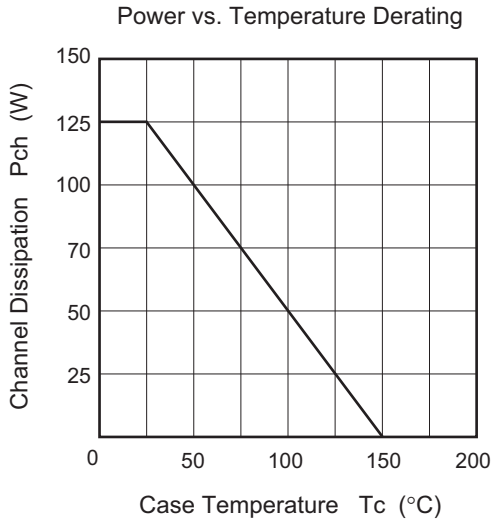
## Electrical Characteristics

(Ta = 25°C)

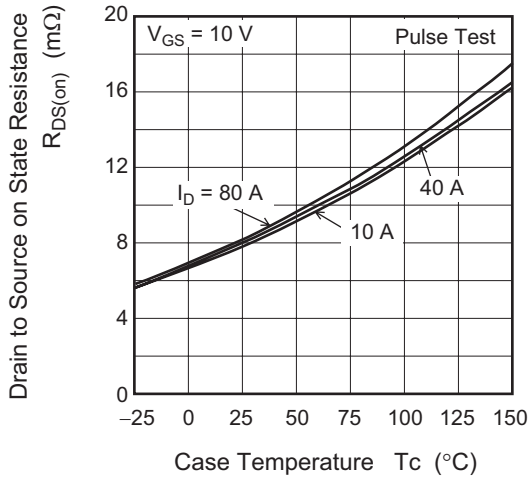
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	100	—	—	V	$I_D = 1 \text{ mA}$ , $V_{GS} = 0$
Zero gate voltage drain current	$I_{DSS}$	—	—	100	$\mu\text{A}$	$V_{DS} = 100 \text{ V}$ , $V_{GS} = 0$
Gate to source leak current	$I_{GSS}$	—	—	$\pm 0.1$	$\mu\text{A}$	$V_{GS} = \pm 20 \text{ V}$ , $V_{DS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	2.0	3.0	4.0	V	$I_D = 1 \text{ mA}$ , $V_{DS} = 10 \text{ V}$ <sup>Note3</sup>
Static drain to source on state voltage	$V_{DS(on)}$	—	0.34	0.44	V	$I_D = 40 \text{ A}$ , $V_{GS} = 10 \text{ V}$ <sup>Note3</sup>
Static drain to source on state resistance	$R_{DS(on)}$	—	8.5	11	$\text{m}\Omega$	$I_D = 40 \text{ A}$ , $V_{GS} = 10 \text{ V}$ <sup>Note3</sup>
Input capacitance	$C_{iss}$	—	5200	—	pF	$V_{DS} = 10 \text{ V}$ $V_{GS} = 0$ $f = 1 \text{ MHz}$
Output capacitance	$C_{oss}$	—	820	—	pF	
Reverse transfer capacitance	$C_{rss}$	—	220	—	pF	
Turn-on delay time	$t_{d(on)}$	—	52	—	ns	$V_{DD} = 50 \text{ V}$ $I_D = 40 \text{ A}$ $V_{GS} = 10 \text{ V}$ $R_G = 25 \Omega$
Rise time	$t_r$	—	100	—	ns	
Turn-off delay time	$t_{d(off)}$	—	230	—	ns	
Fall time	$t_f$	—	125	—	ns	
Body-drain diode forward voltage	$V_{DF}$	—	0.9	1.5	V	$I_F = 40 \text{ A}$ , $V_{GS} = 0$
Body-drain diode reverse recovery time	$t_{rr}$	—	70	—	ns	$I_F = 80 \text{ A}$ , $V_{GS} = 0$ $di_F/dt = 100 \text{ A}/\mu\text{s}$

Notes: 3. Pulse test

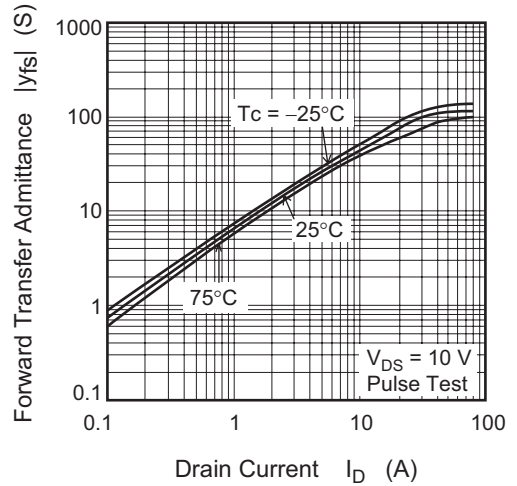
Main Characteristics



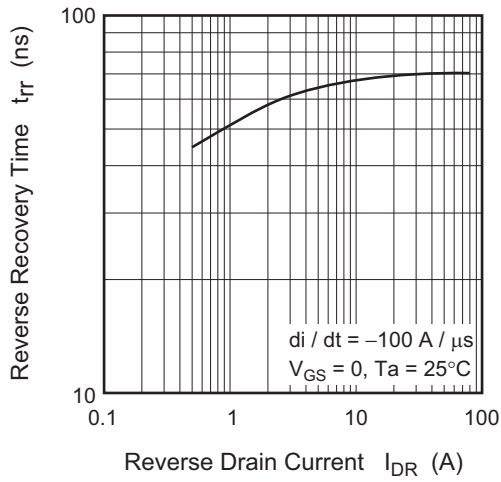
Drain to Source on State Resistance vs. Temperature



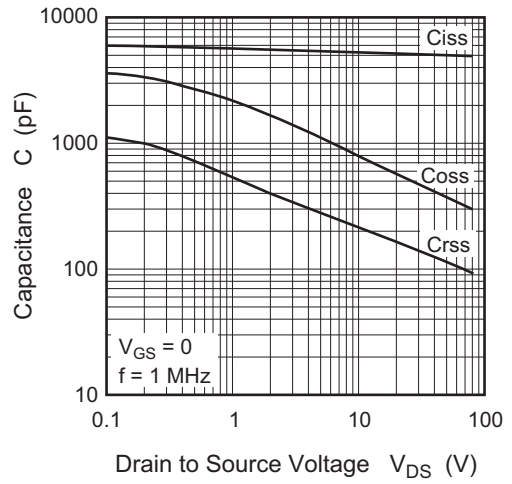
Forward Transfer Admittance vs. Drain Current



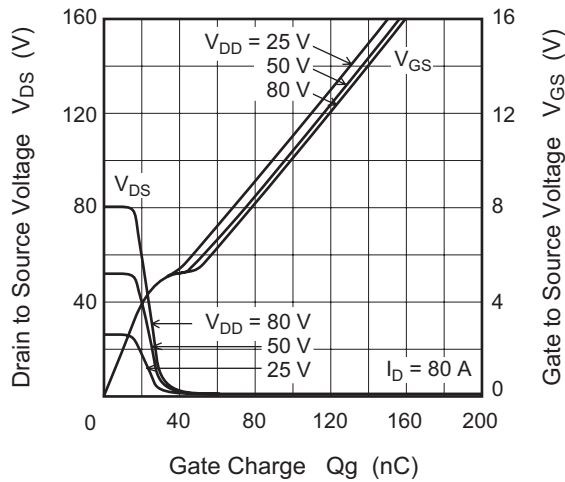
Body-Drain Diode Reverse Recovery Time



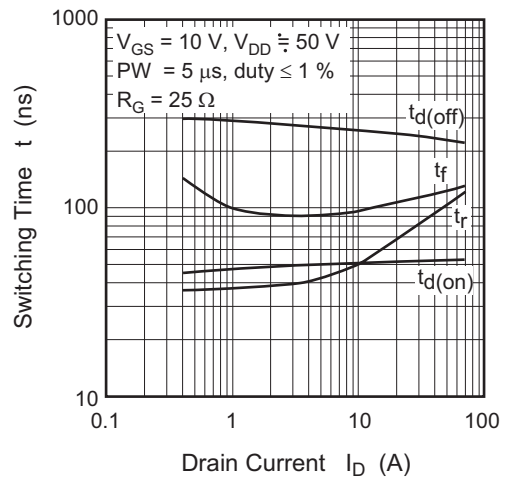
Typical Capacitance vs. Drain to Source Voltage

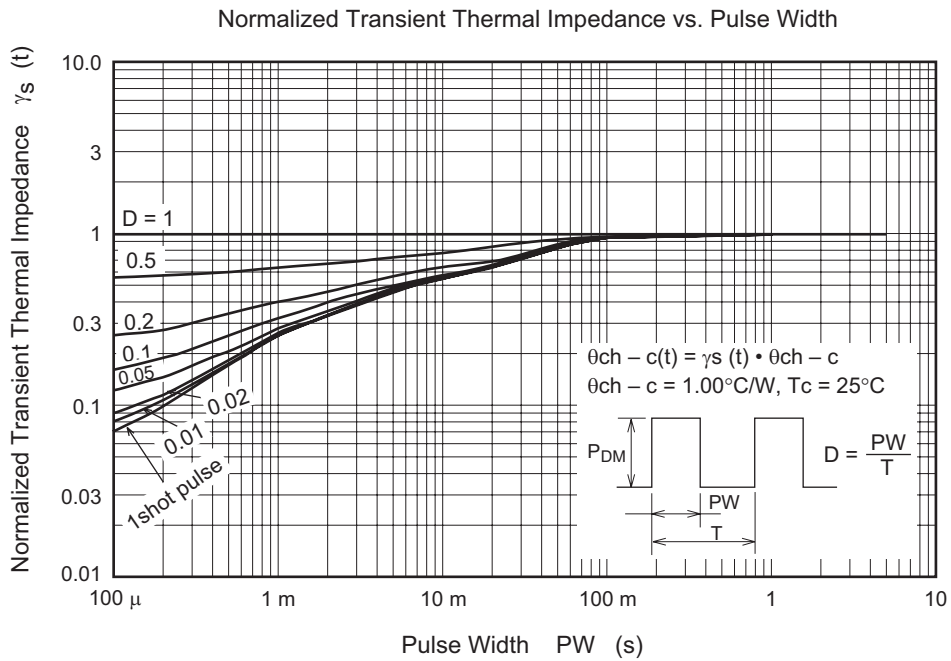
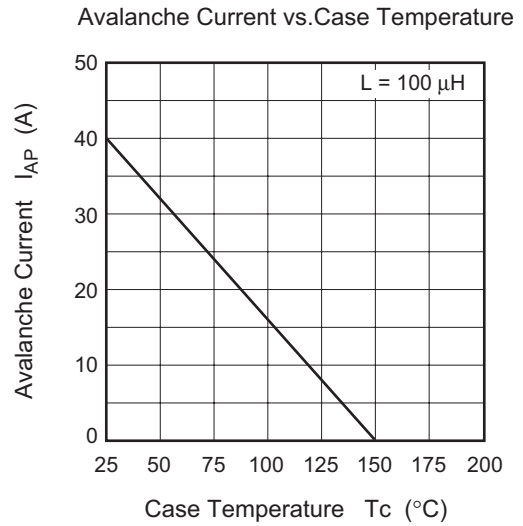
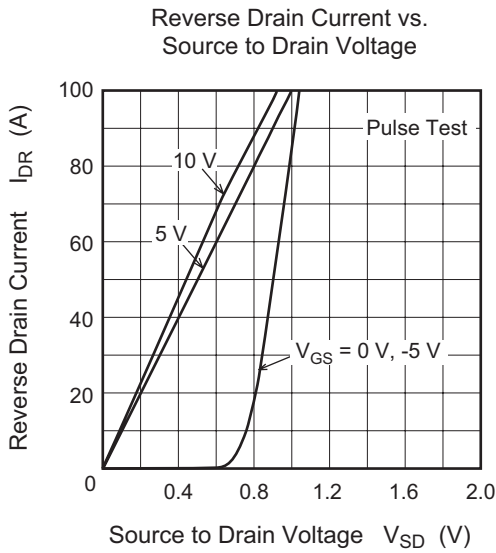


Dynamic Input Characteristics

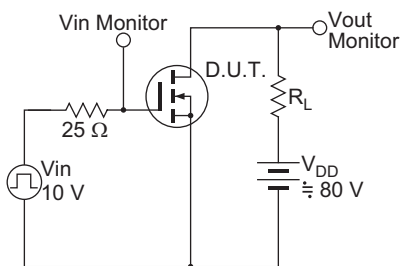


Switching Characteristics

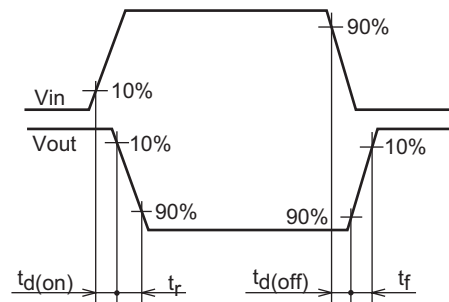




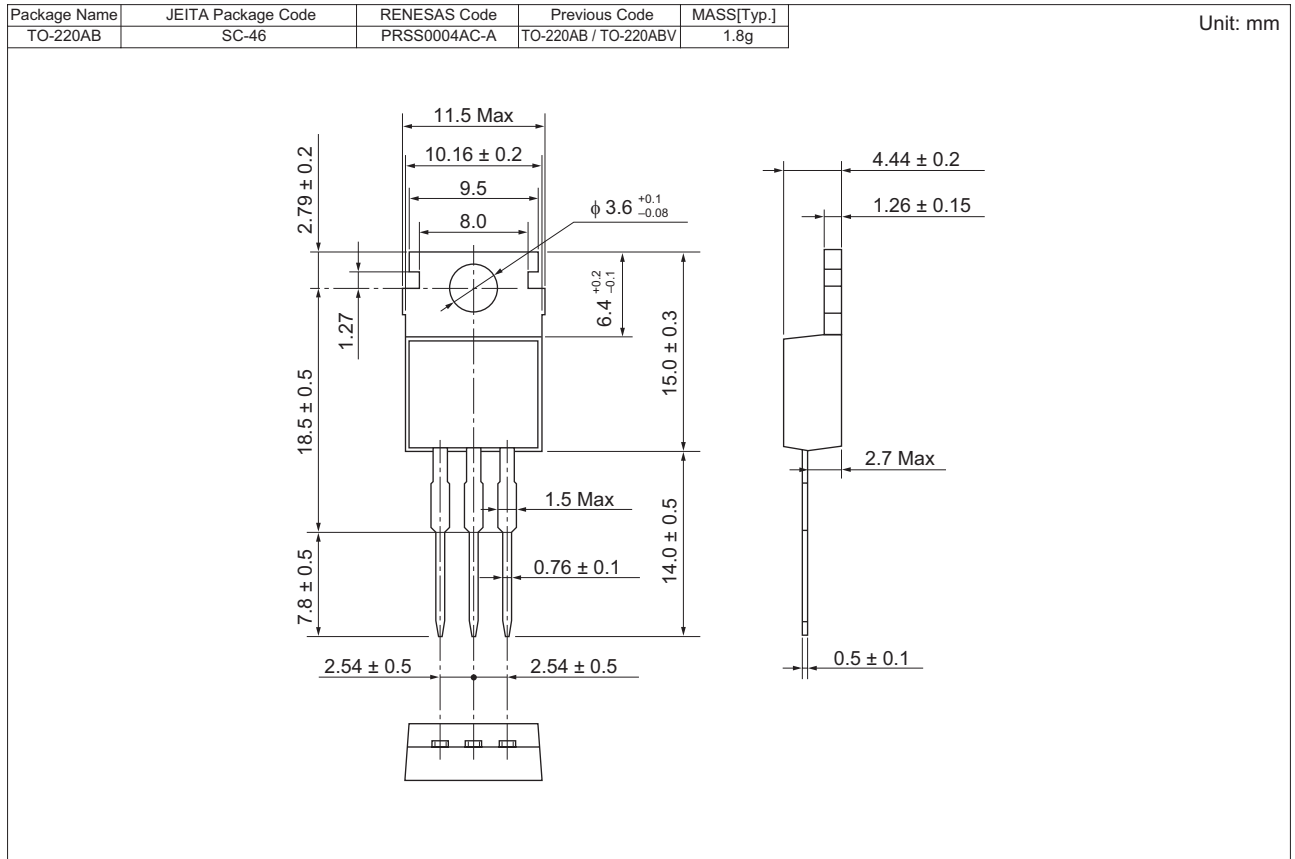
Switching Time Test Circuit



Waveform



### Package Dimensions



### Ordering Information

Part No.	Quantity	Shipping Container
RJK1008DPN-00-02	500 pcs	Box (Sack)



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