To our customers,

Old Company Name in Catalogs and Other Documents

On April 1st, 2010, NEC Electronics Corporation merged with Renesas Technology Corporation, and Renesas Electronics Corporation took over all the business of both companies. Therefore, although the old company name remains in this document, it is a valid Renesas Electronics document. We appreciate your understanding.

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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RJK1021DPE

N-Channel Power MOSFET
High-Speed Switching Use

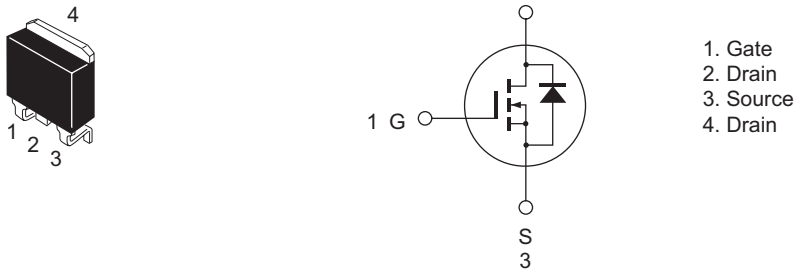
REJ03G1630-0100
Rev.1.00
Apr 03, 2008

Features

- V_{DSS} : 100 V
- $R_{DS(on)}$: 20 mΩ (Max)
- I_D : 70 A

Outline

RENESAS Package code: PRSS0004AE-B
(Package name: LDPAK(S)-(1))



Application

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

Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	V_{DSS}	100	V
Gate to source voltage	V_{GSS}	±20	V
Drain current	I_D	70	A
Drain peak current	$I_{D\ (pulse)}$	140	A
Body-drain diode reverse drain current	I_{DR}	70	A
Body-drain diode reverse drain peak current	$I_{DR\ (pulse)}$	140	A
Avalanche current	I_{AP} Note2	35	A
Channel dissipation	Pch Note1	100	W
Channel to case thermal impedance	θch-c	1.25	°C/W
Channel temperature	Tch	150	°C
Storage temperature	Tstg	–55 to +150	°C

Notes: 1. Value at Tc = 25°C
2. STch = 25°C, Tch ≤ 150°C, L = 100 µH

Electrical Characteristics

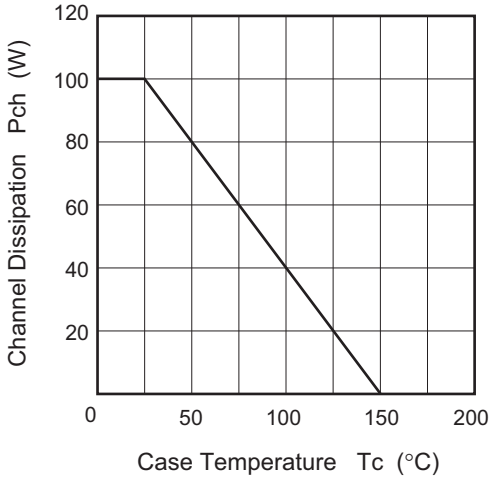
(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	100	—	—	V	I_D = 1 mA, V_{GS} = 0
Zero gate voltage drain current	I_{DSS}	—	—	100	µA	V_{DS} = 100 V, V_{GS} = 0
Gate to source leak current	I_{GSS}	—	—	±0.1	µA	V_{GS} = ±20 V, V_{DS} = 0
Gate to source cutoff voltage	$V_{GS(off)}$	2.0	3.0	4.0	V	I_D = 1 mA, V_{DS} = 10 V Note3
Static drain to source on state voltage	$V_{DS(on)}$	—	0.56	0.70	V	I_D = 35 A, V_{GS} = 10 V Note3
Static drain to source on state resistance	$R_{DS(on)}$	—	16	20	mΩ	I_D = 35 A, V_{GS} = 10 V Note3
Input capacitance	Ciss	—	2600	—	pF	V_{DS} = 10 V V_{GS} = 0 f = 1 MHz
Output capacitance	Coss	—	430	—	pF	
Reverse transfer capacitance	Crss	—	160	—	pF	
Turn-on delay time	$t_{d(on)}$	—	30	—	ns	V_{DD} = 50 V I_D = 35 A V_{GS} = 10 V R_G = 25 Ω
Rise time	t_r	—	70	—	ns	
Turn-off delay time	$t_{d(off)}$	—	110	—	ns	
Fall time	t_f	—	65	—	ns	
Body-drain diode forward voltage	V_{DF}	—	0.9	1.5	V	I_F = 35 A, V_{GS} = 0
Body-drain diode reverse recovery time	t_{rr}	—	80	—	ns	I_F = 70 A, V_{GS} = 0 di_F/dt = 100 A/µs

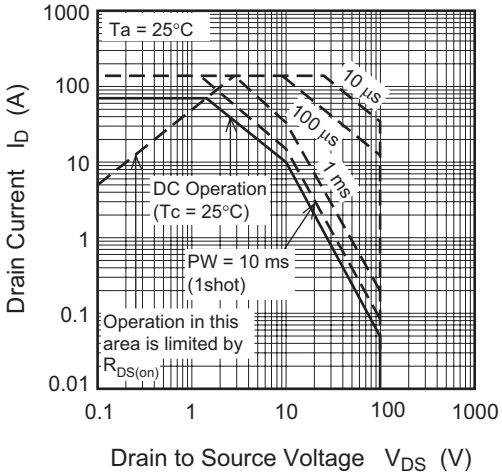
Notes: 3. Pulse test

Main Characteristics

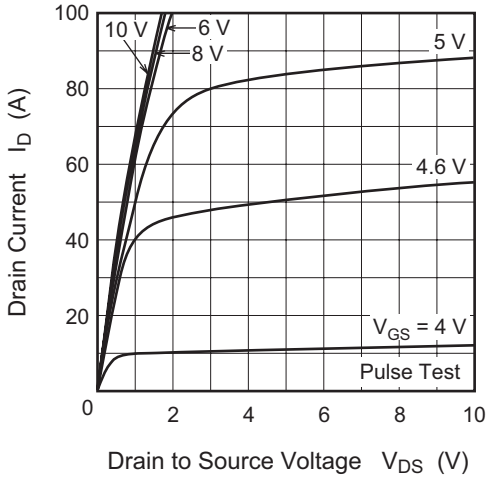
Power vs. Temperature Derating



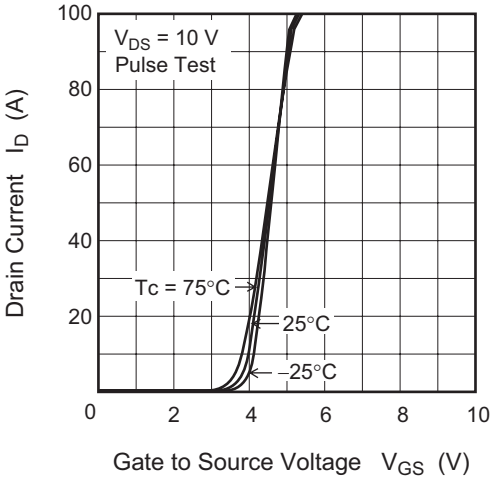
Maximum Safe Operation Area



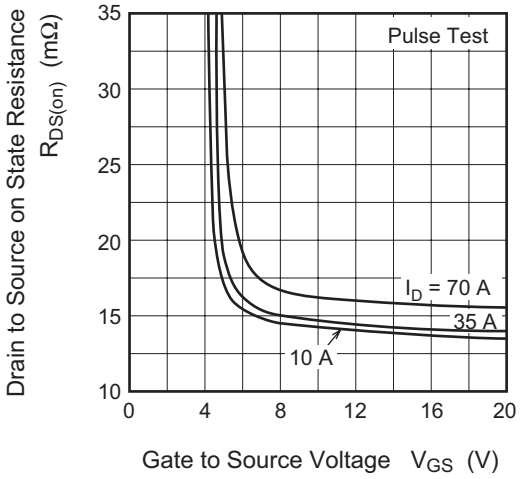
Typical Output Characteristics



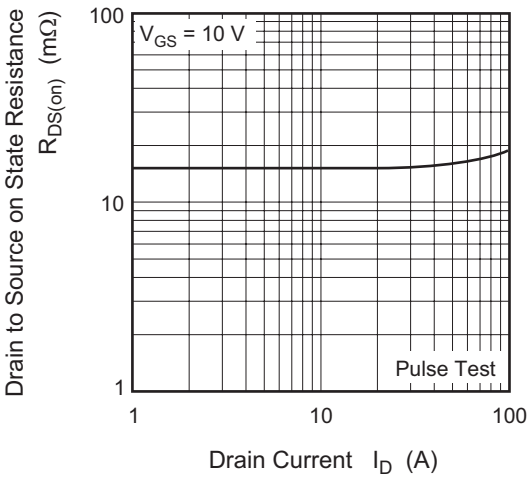
Typical Transfer Characteristics



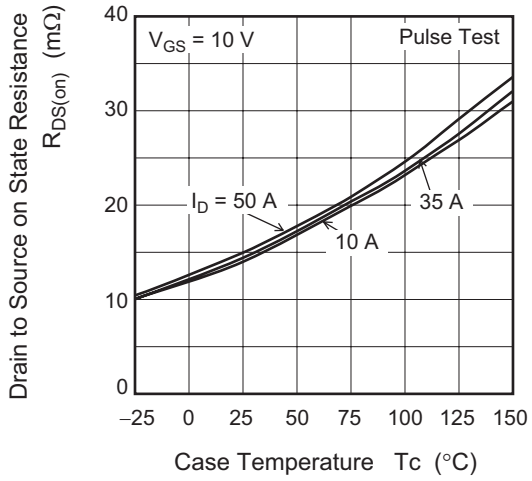
Drain to Source on State Resistance vs.
Gate to Source Voltage



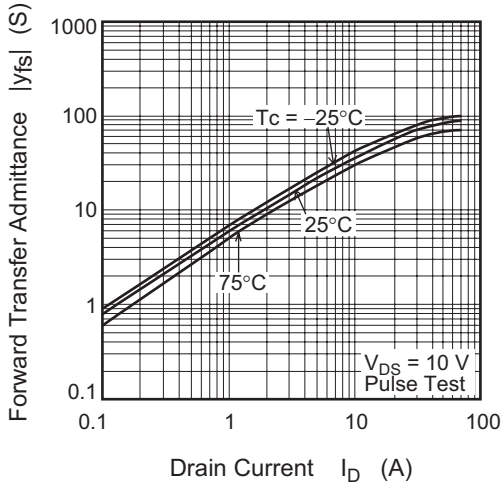
Drain to Source on State Resistance
vs. Drain Current



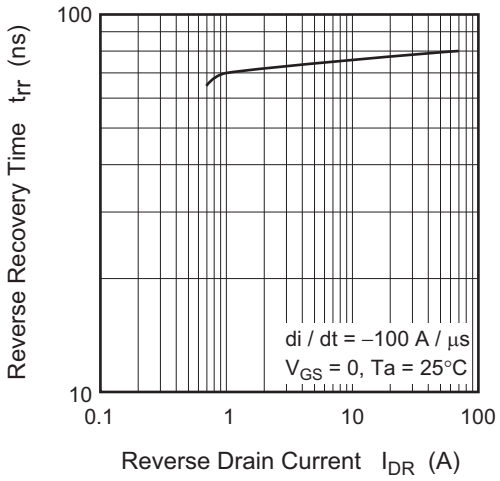
Drain to Source on State Resistance vs. Temperature



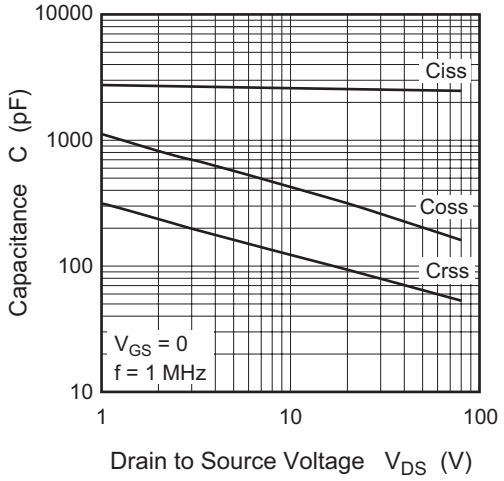
Forward Transfer Admittance vs. Drain Current



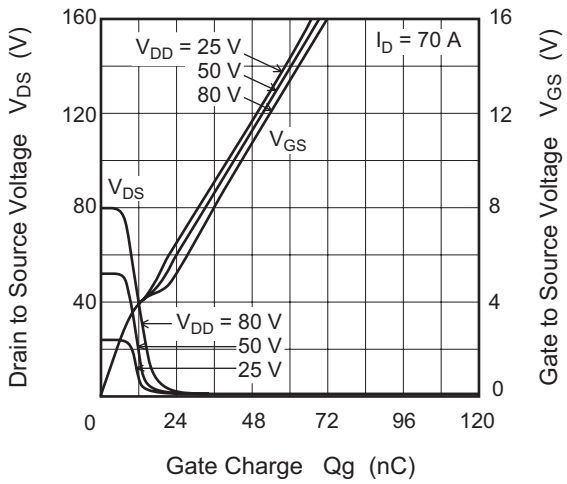
Body-Drain Diode Reverse Recovery Time



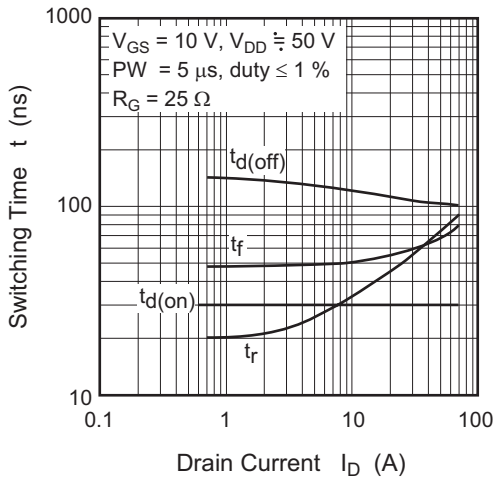
Typical Capacitance vs. Drain to Source Voltage



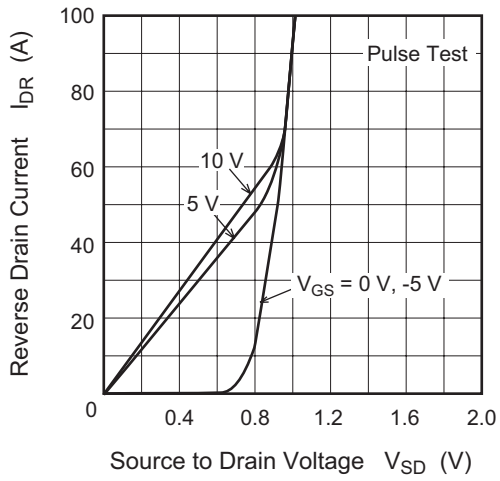
Dynamic Input Characteristics



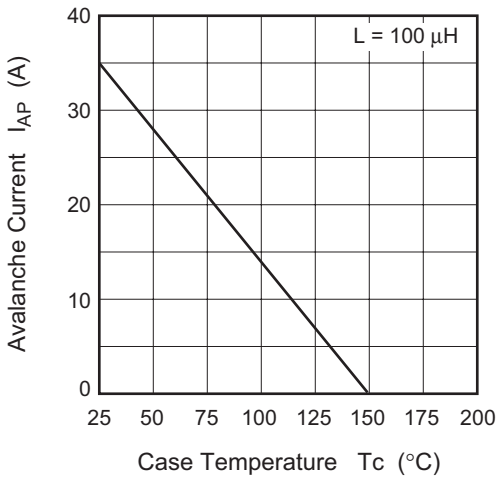
Switching Characteristics



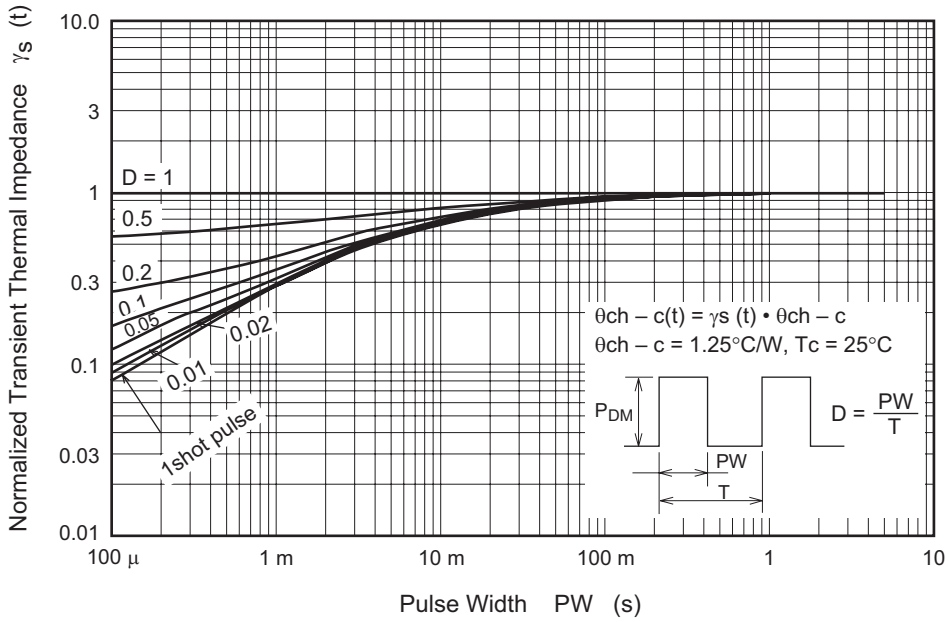
Reverse Drain Current vs.
Source to Drain Voltage



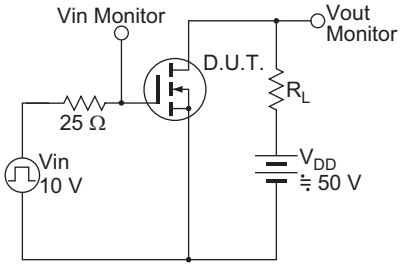
Avalanche Current vs.Case Temperature



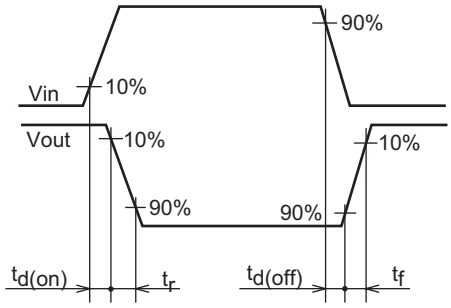
Normalized Transient Thermal Impedance vs. Pulse Width



Switching Time Test Circuit



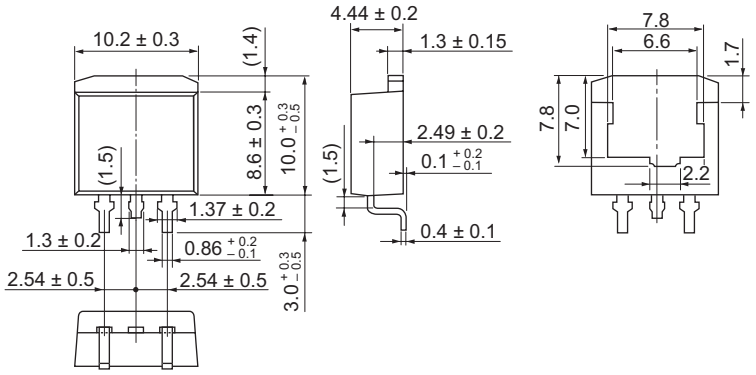
Waveform



Package Dimensions

Package Name	JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
LDPAK(S)-(1)	SC-83	PRSS0004AE-B	LDPAK(S)-(1) / LDPAK(S)-(1)V	1.30g

Unit: mm



Ordering Information

Part No.	Quantity	Shipping Container
RJK1021DPE-00-J3	1000 pcs	Taping

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Colophon .7.2