

RJK1536DPN

N-Channel Power MOSFET
High-Speed Switching Use

REJ03G1594-0200

Rev.2.00

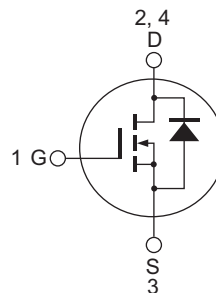
Mar 11, 2008

Features

- V_{DSS} : 150 V
- $R_{DS(on)}$: 30 m Ω (Max)
- I_D : 50 A

Outline

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



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

Application

- Motor 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}	150	V
Gate to source voltage	V_{GSS}	± 20	V
Drain current	I_D	50	A
Drain peak current	$I_{D(pulse)}$	100	A
Body-drain diode reverse drain current	I_{DR}	50	A
Body-drain diode reverse drain peak current	$I_{DR(pulse)}$	100	A
Avalanche current	I_{AP} ^{Note2}	25	A
Channel dissipation	P_{ch} ^{Note1}	125	W
Channel to case thermal impedance	θ_{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. $ST_{ch} = 25^\circ\text{C}$, $T_{ch} \leq 150^\circ\text{C}$, $L = 100 \mu\text{H}$

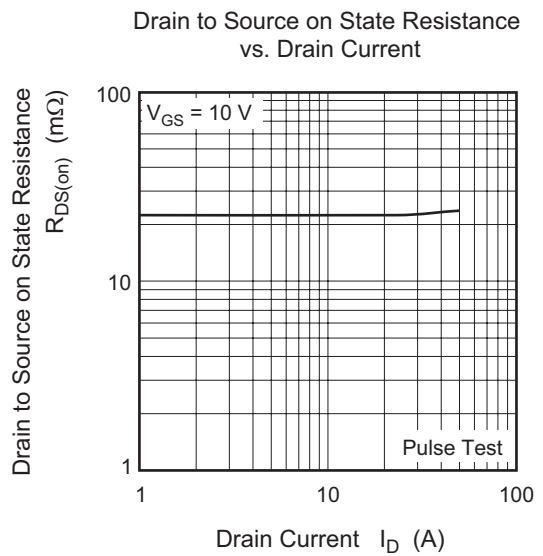
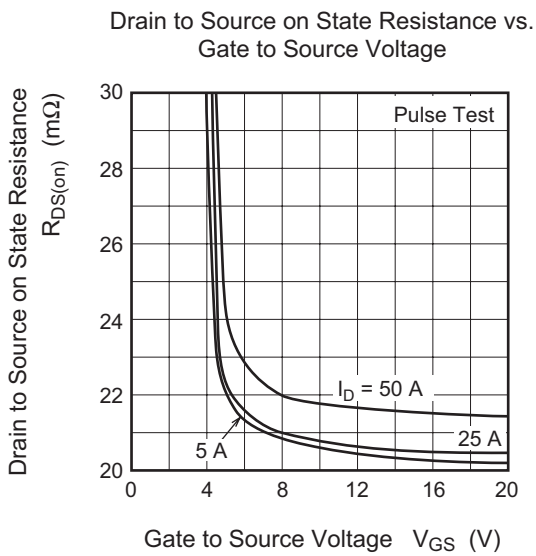
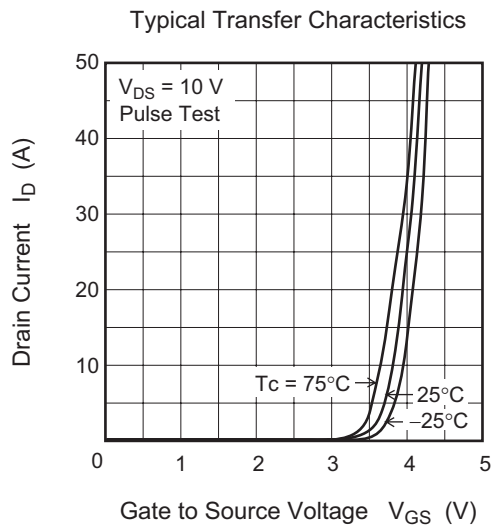
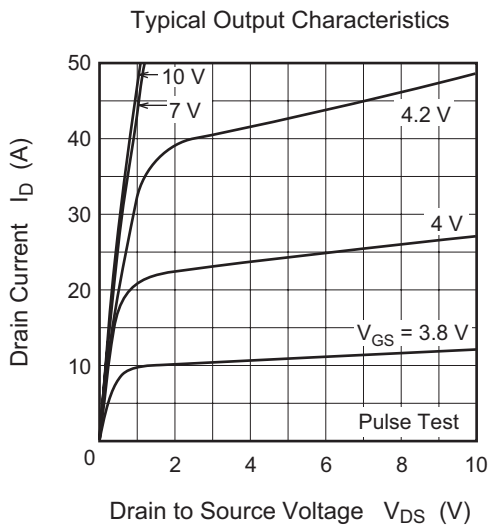
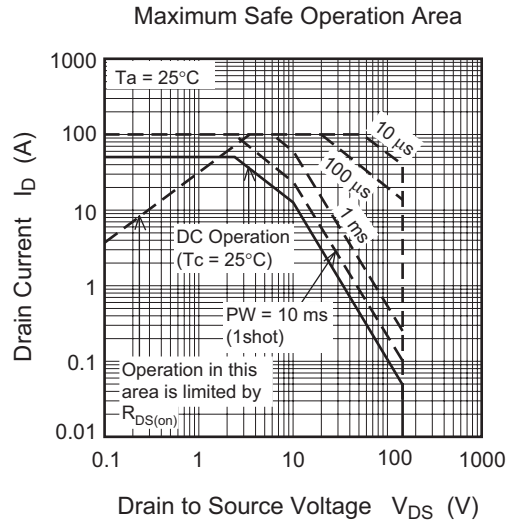
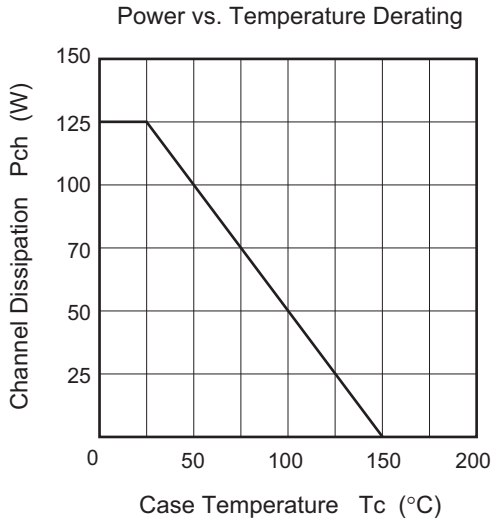
Electrical Characteristics

(Ta = 25°C)

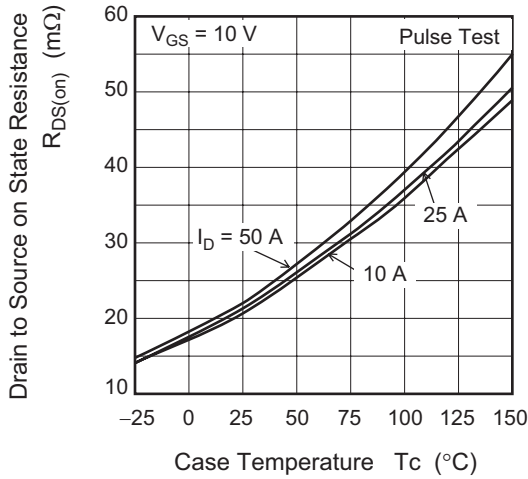
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	150	—	—	V	$I_D = 1 \text{ mA}$, $V_{GS} = 0$
Zero gate voltage drain current	I_{DSS}	—	—	100	μA	$V_{DS} = 150 \text{ V}$, $V_{GS} = 0$
Gate to source leak current	I_{GSS}	—	—	± 0.1	μA	$V_{GS} = \pm 20 \text{ V}$, $V_{DS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	2.0	3.0	4.0	V	$I_D = 1 \text{ mA}$, $V_{DS} = 10 \text{ V}$ ^{Note3}
Static drain to source on state voltage	$V_{DS(on)}$	—	0.60	0.75	V	$I_D = 25 \text{ A}$, $V_{GS} = 10 \text{ V}$ ^{Note3}
Static drain to source on state resistance	$R_{DS(on)}$	—	24	30	$\text{m}\Omega$	$I_D = 25 \text{ A}$, $V_{GS} = 10 \text{ V}$ ^{Note3}
Input capacitance	C_{iss}	—	5000	—	pF	$V_{DS} = 10 \text{ V}$ $V_{GS} = 0$ $f = 1 \text{ MHz}$
Output capacitance	C_{oss}	—	560	—	pF	
Reverse transfer capacitance	C_{rss}	—	165	—	pF	
Turn-on delay time	$t_{d(on)}$	—	50	—	ns	$V_{DD} = 80 \text{ V}$ $I_D = 25 \text{ A}$ $V_{GS} = 10 \text{ V}$ $R_G = 25 \Omega$
Rise time	t_r	—	75	—	ns	
Turn-off delay time	$t_{d(off)}$	—	250	—	ns	
Fall time	t_f	—	100	—	ns	
Body-drain diode forward voltage	V_{DF}	—	0.9	1.5	V	$I_F = 25 \text{ A}$, $V_{GS} = 0$
Body-drain diode reverse recovery time	t_{rr}	—	130	—	ns	$I_F = 50 \text{ A}$, $V_{GS} = 0$ $di_F/dt = 100 \text{ A}/\mu\text{s}$

Notes: 3. Pulse test

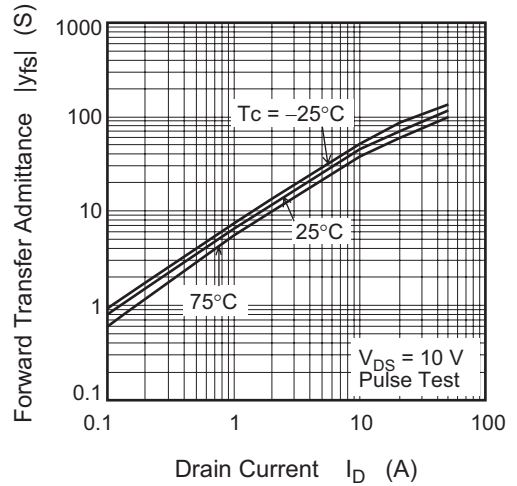
Main Characteristics



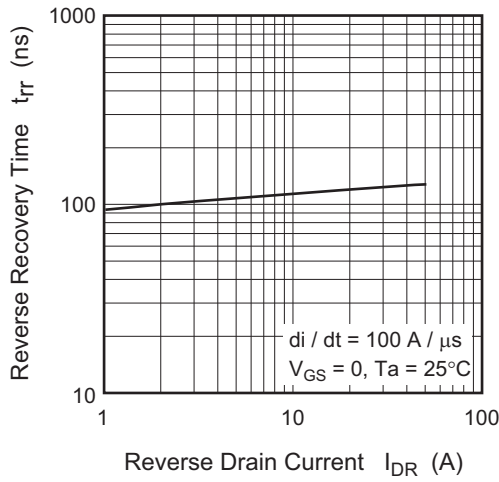
Drain to Source on State Resistance vs. Temperature



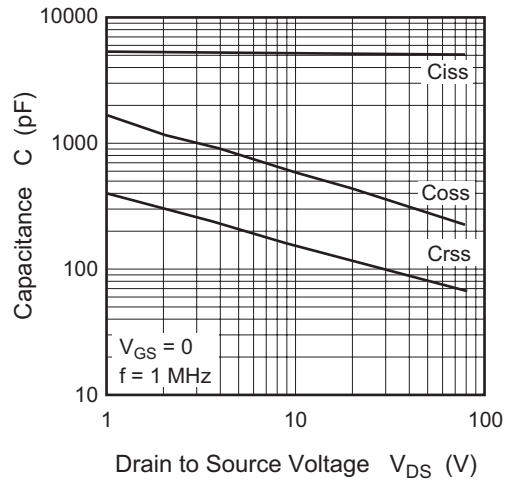
Forward Transfer Admittance vs. Drain Current



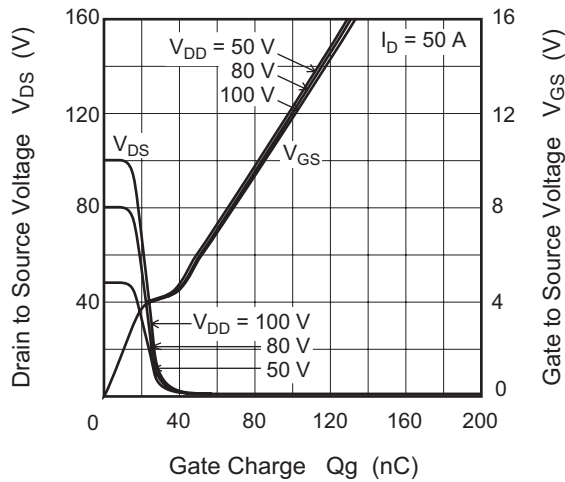
Body-Drain Diode Reverse Recovery Time



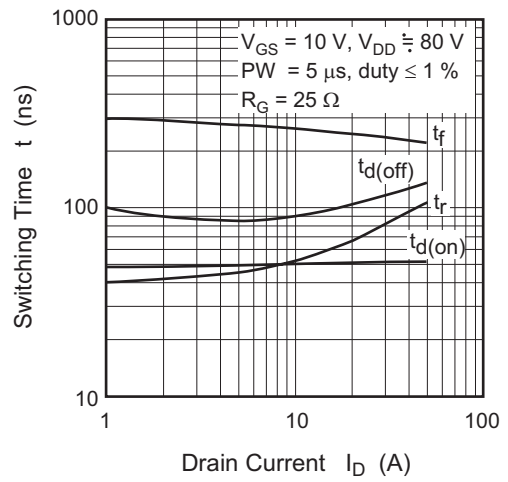
Typical Capacitance vs. Drain to Source Voltage



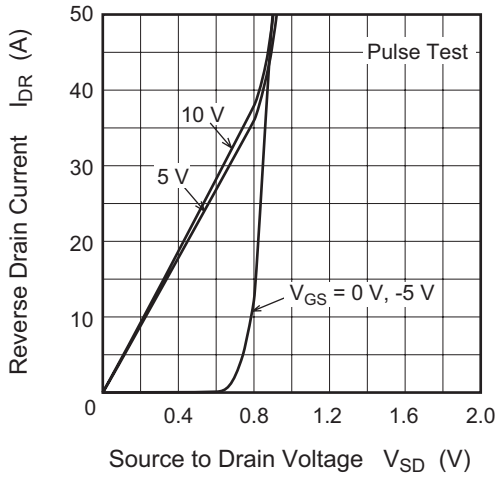
Dynamic Input Characteristics



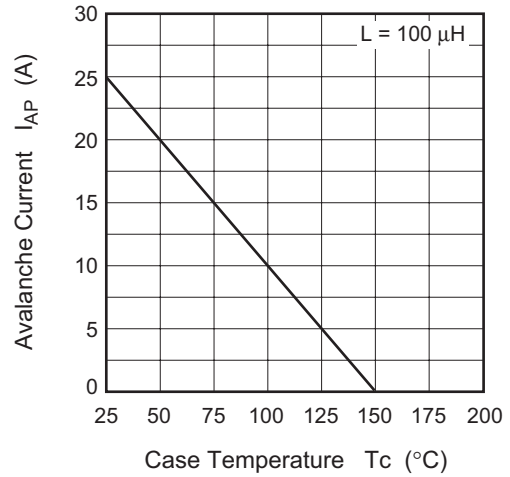
Switching Characteristics



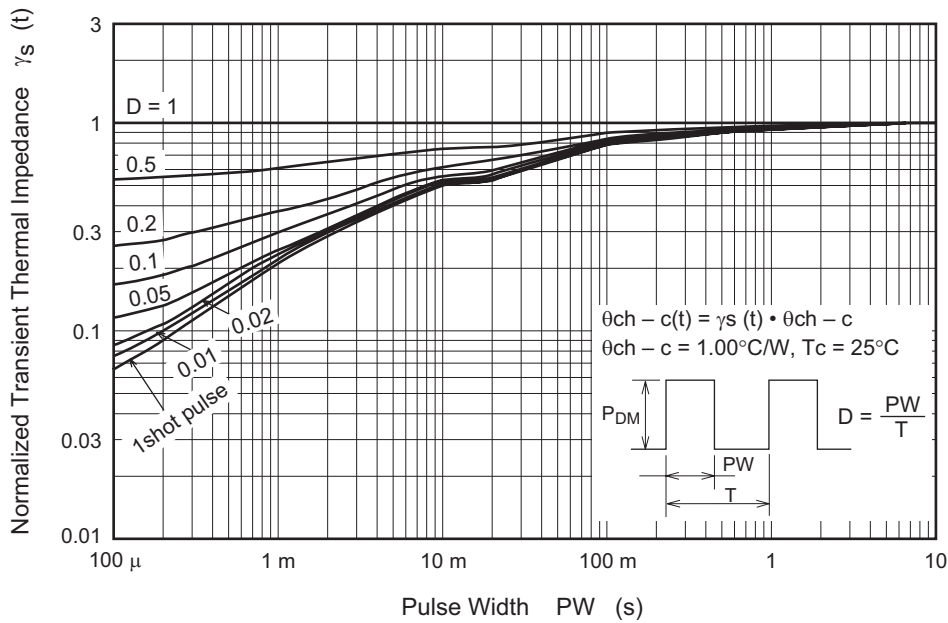
Reverse Drain Current vs. Source to Drain Voltage



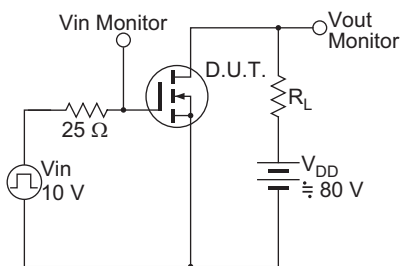
Avalanche Current vs. Case Temperature



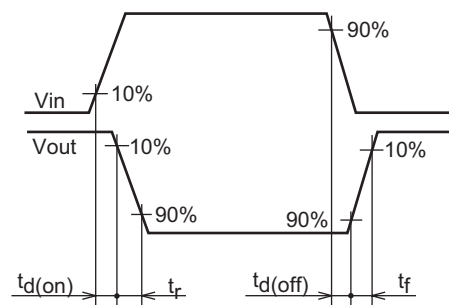
Normalized Transient Thermal Impedance vs. Pulse Width



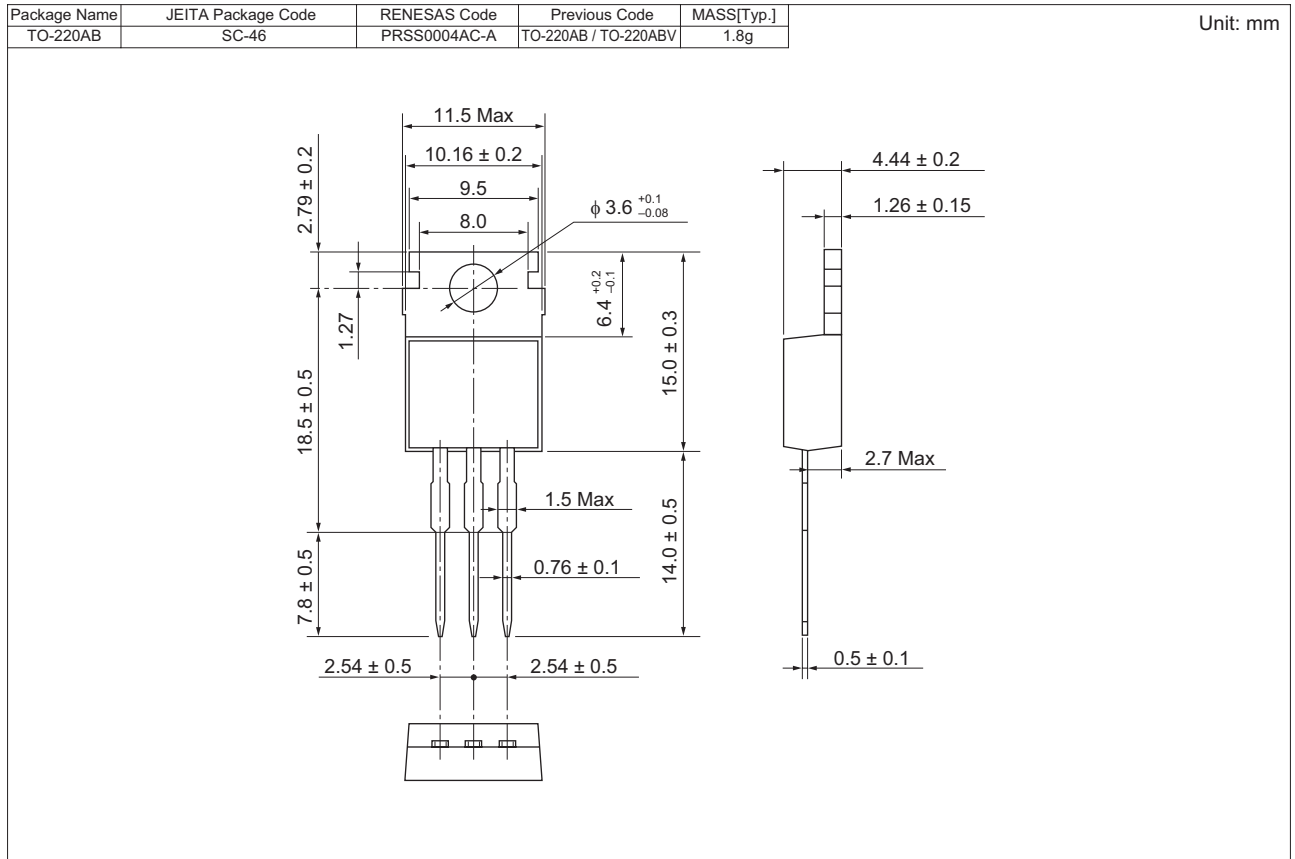
Switching Time Test Circuit



Waveform



Package Dimensions



Ordering Information

Part No.	Quantity	Shipping Container
RJK1536DPN-00-02	500 pcs	Box (Sack)

Notes:

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