

RJK1536DPN

N-Channel Power MOSFET
High-Speed Switching Use

REJ03G1594-0300

Rev.3.00

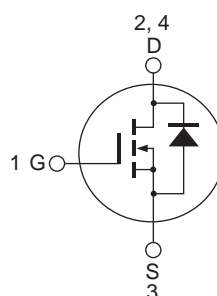
Jun 30, 2010

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

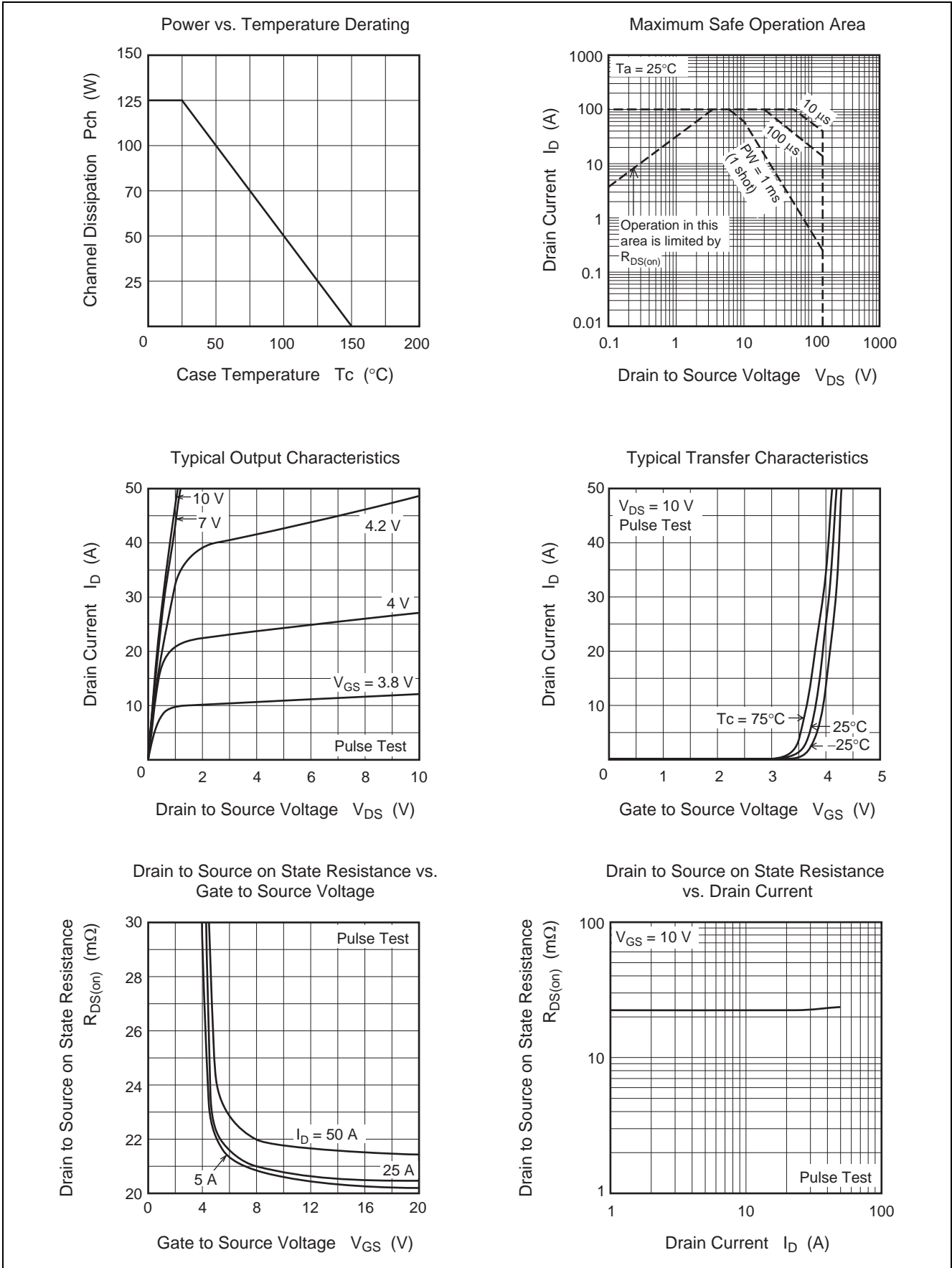
Electrical Characteristics

(Ta = 25°C)

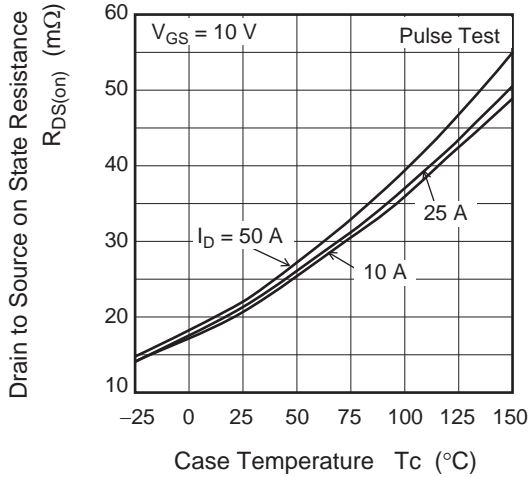
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	150	—	—	V	$I_D = 1 \text{ mA}, V_{GS} = 0$
Zero gate voltage drain current	I_{DSS}	—	—	100	μA	$V_{DS} = 150 \text{ V}, V_{GS} = 0$
Gate to source leak current	I_{GSS}	—	—	± 0.1	μA	$V_{GS} = \pm 20 \text{ V}, V_{DS} = 0$
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

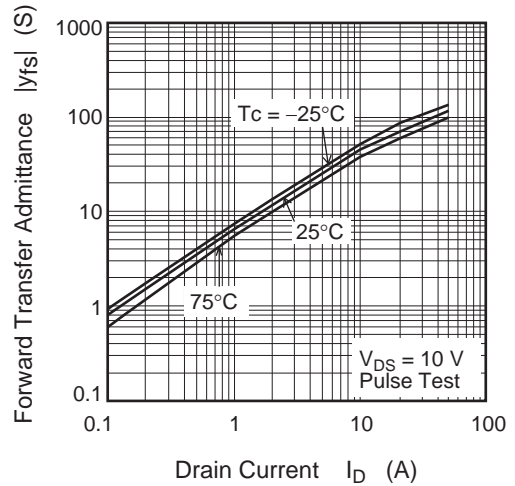
Main Characteristics



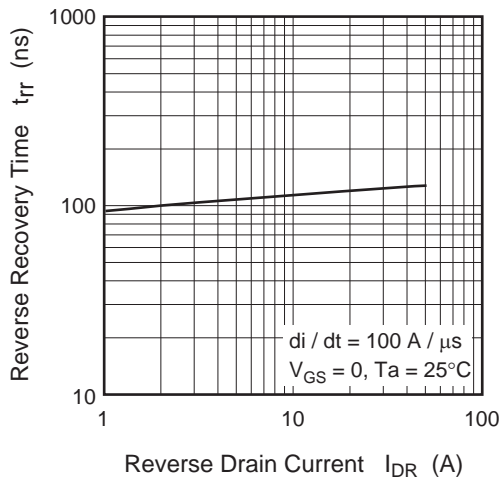
Drain to Source on State Resistance vs. Temperature



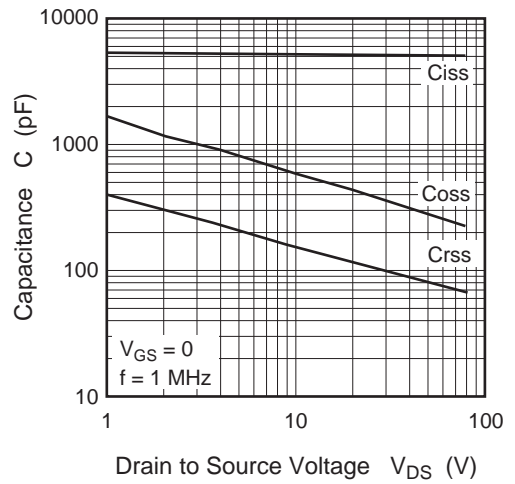
Forward Transfer Admittance vs. Drain Current



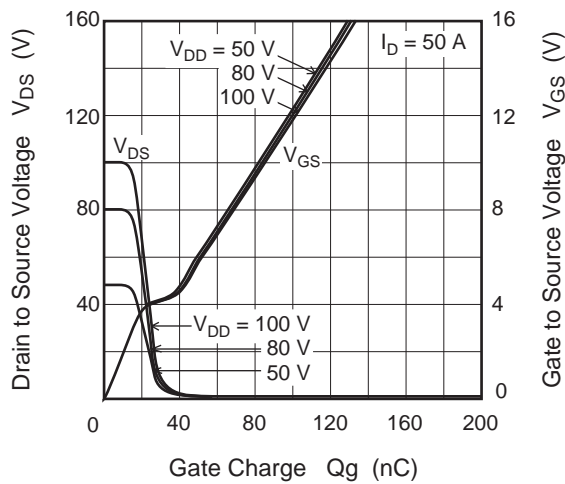
Body-Drain Diode Reverse Recovery Time



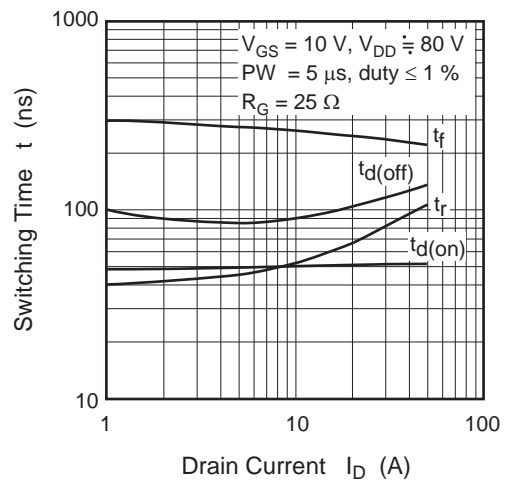
Typical Capacitance vs. Drain to Source Voltage

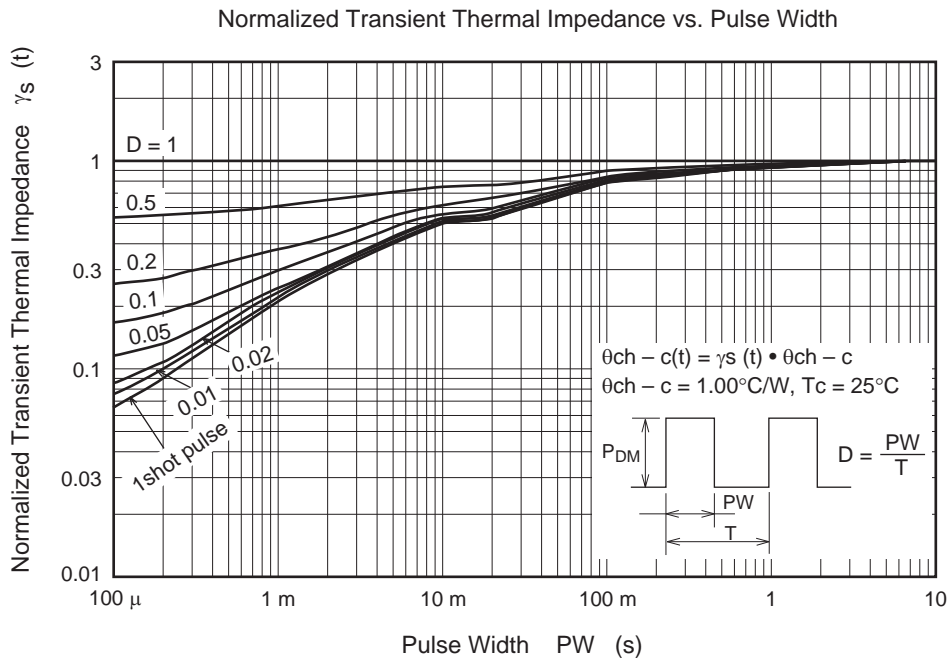
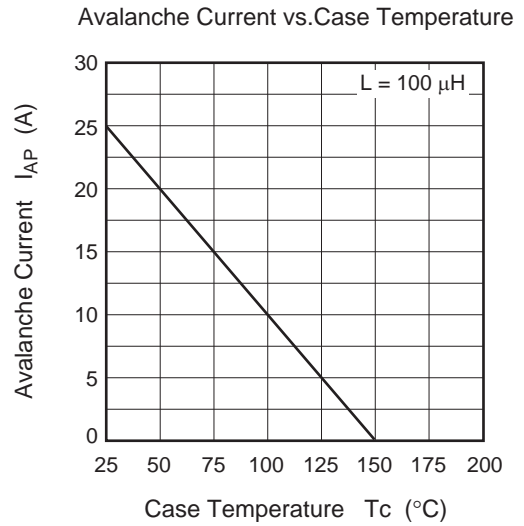
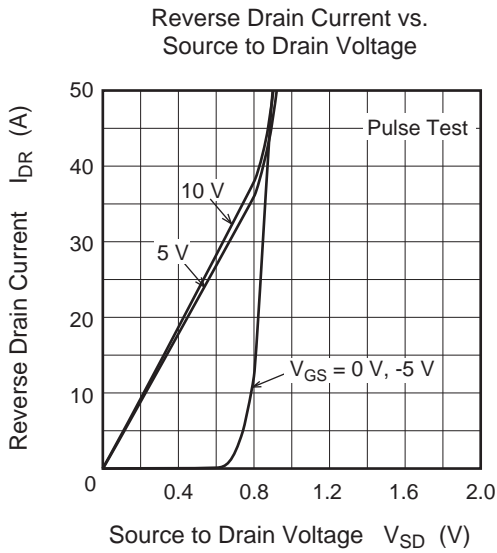


Dynamic Input Characteristics

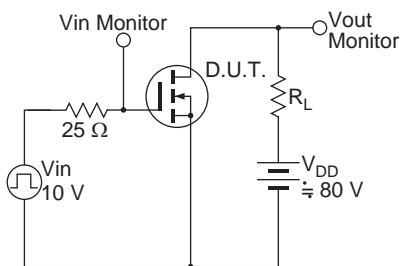


Switching Characteristics

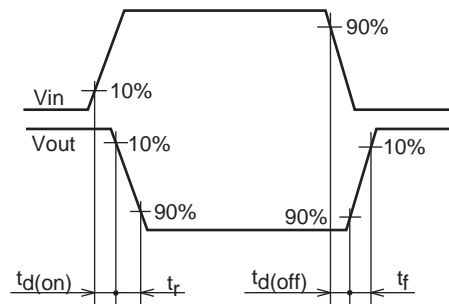




Switching Time Test Circuit



Waveform



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