

RJK0629DPN

N Channel Power MOS FET
High-Speed Switching Use

REJ03G1873-0100

Rev.1.00

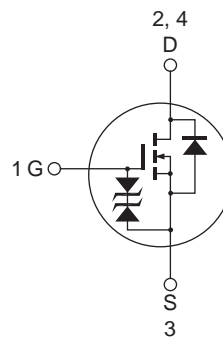
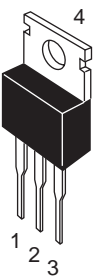
Dec 15, 2009

Features

- V_{DSS} : 60 V
- $R_{DS(on)}$: 4.5 m Ω (Max)
- I_D : 85 A

Outline

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



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

Absolute Maximum Ratings

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

Item	Symbol	Value	Unit
Drain to source voltage	V_{DSS}	60	V
Gate to source voltage	V_{GS}	± 20	V
Drain current	I_D	85	A
Drain peak current	I_D (pulse) ^{Note1}	340	A
Body-drain diode reverse drain current	I_{DR}	85	A
Body-drain diode reverse drain peak current	I_{DR} (pulse) ^{Note1}	340	A
Avalanche current	I_{AP} ^{Note2}	55	A
Channel dissipation	P_{ch} ^{Note3}	100	W
Channel to case thermal impedance	θ_{ch-c}	1.25	$^\circ\text{C/W}$
Channel temperature	T_{ch}	150	$^\circ\text{C}$
Storage temperature	T_{stg}	-55 to +150	$^\circ\text{C}$

- Notes: 1. $PW \leq 10 \mu\text{s}$, duty cycle $\leq 1\%$
 2. $T_c = 25^\circ\text{C}$, $T_{ch} \leq 150^\circ\text{C}$, $L = 100 \mu\text{H}$
 3. Value at $T_c = 25^\circ\text{C}$

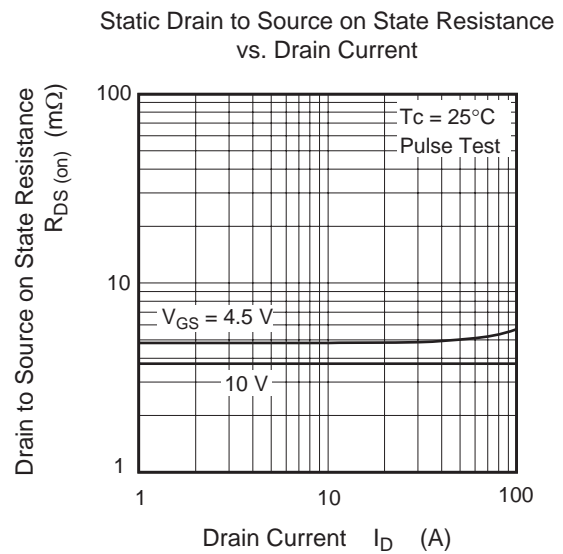
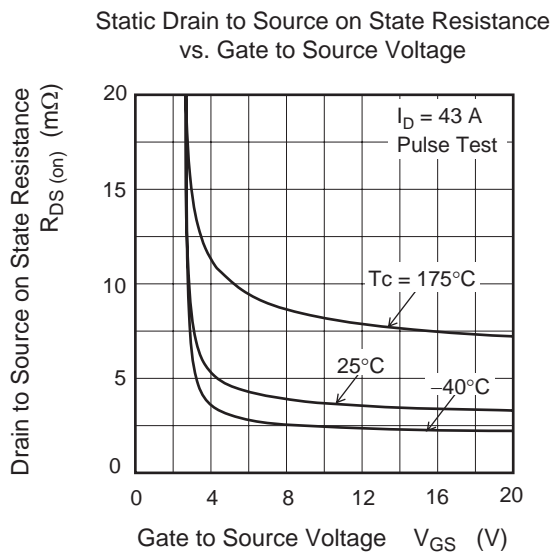
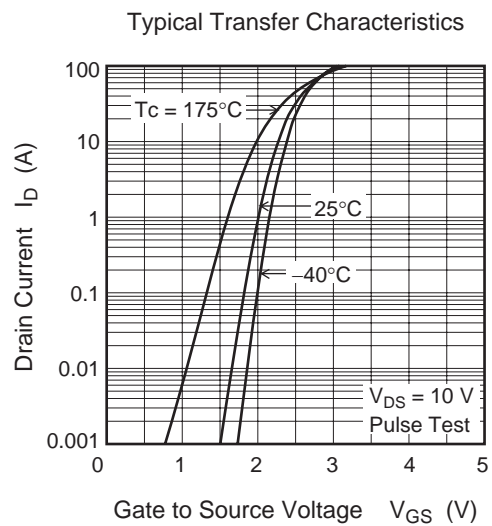
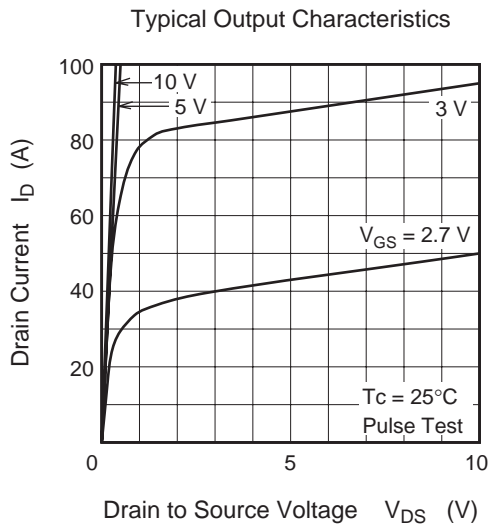
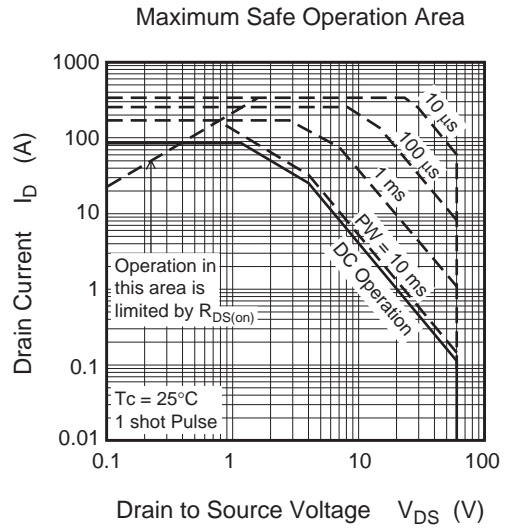
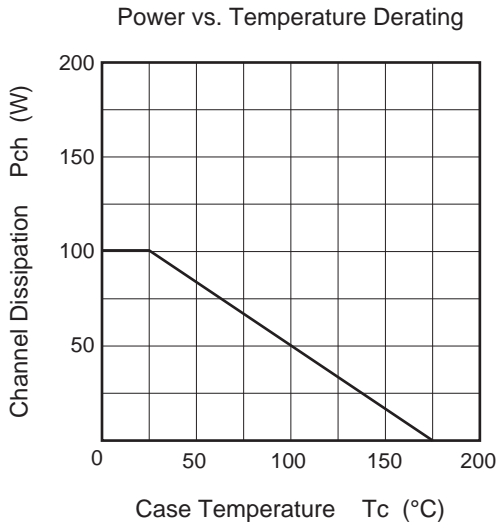
Electrical Characteristics

(Ta = 25°C)

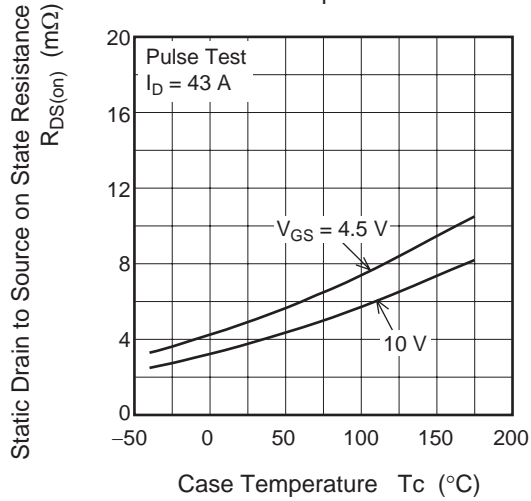
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	60	—	—	V	$I_D = 100 \mu A, V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	± 20	—	—	V	$I_G = \pm 100 \mu A, V_{DS} = 0$
Zero gate voltage drain current	I_{DSS}	—	—	1	μA	$V_{DS} = 60 V, V_{GS} = 0$
Gate to source leak current	I_{GSS}	—	—	± 10	μA	$V_{GS} = \pm 20 V, V_{DS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	1.0	—	2.0	V	$I_D = 1 mA, V_{DS} = 10 V$
Static drain to source on state voltage	$V_{DS(on)}$	—	161	194	mV	$I_D = 43A, V_{GS} = 10 V$ ^{Note4}
Static drain to source on state resistance	$R_{DS(on)}$	—	3.75	4.5	m Ω	$I_D = 43A, V_{GS} = 10 V$ ^{Note4}
		—	4.9	6.6	m Ω	$I_D = 43 A, V_{GS} = 4.5 V$ ^{Note4}
Input capacitance	C_{iss}	—	4100	—	pF	$V_{DS} = 10 V, V_{GS} = 0$ $f = 1 MHz$
Output capacitance	C_{oss}	—	1000	—	pF	
Reverse transfer capacitance	C_{rss}	—	780	—	pF	
Total gate charge	Q_g	—	85	—	nC	$V_{DD} = 25 V, V_{GS} = 10 V,$ $I_D = 85 A$
Gate to source charge	Q_{gs}	—	11	—	nC	
Gate to drain charge	Q_{gd}	—	25	—	nC	
Turn-on delay time	$t_{d(on)}$	—	20	—	ns	$V_{DD} = 30V, I_D = 43A,$ $V_{GS} = 10 V, R_G = 4.7 \Omega$
Rise time	t_r	—	40	—	ns	
Turn-off delay time	$t_{d(off)}$	—	100	—	ns	
Fall time	t_f	—	40	—	ns	
Body-drain diode forward voltage	V_{DF}	—	0.92	1.2	V	$I_F = 85 A, V_{GS} = 0$ ^{Note4}
Body-drain diode reverse recovery time	t_{rr}	—	50	—	ns	$I_F = 85 A, V_{GS} = 0,$ $di_F/dt = 100 A/\mu s$

Note: 4. Pulse test

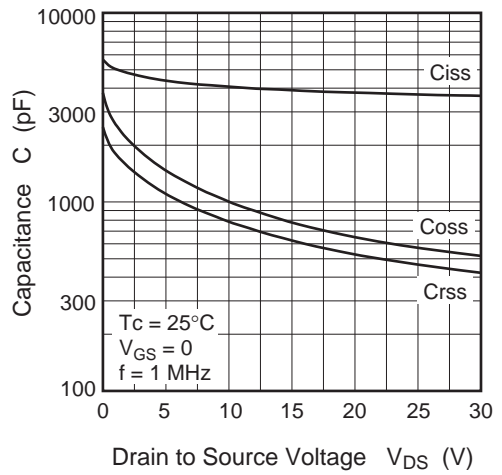
Main Characteristics



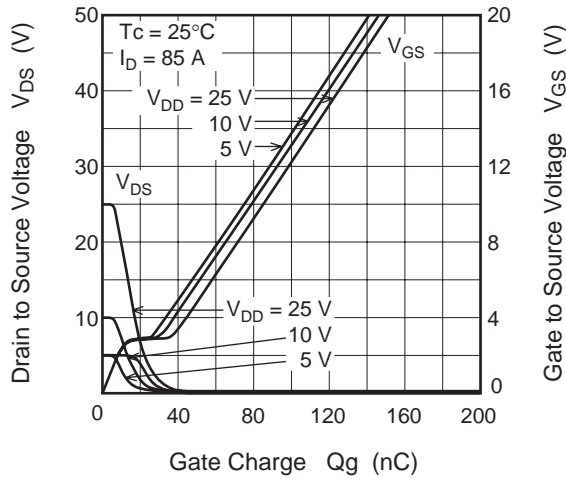
Static Drain to Source on State Resistance vs. Temperature



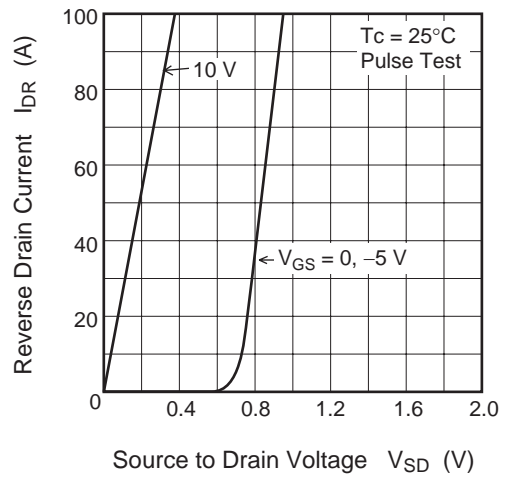
Typical Capacitance vs. Drain to Source Voltage



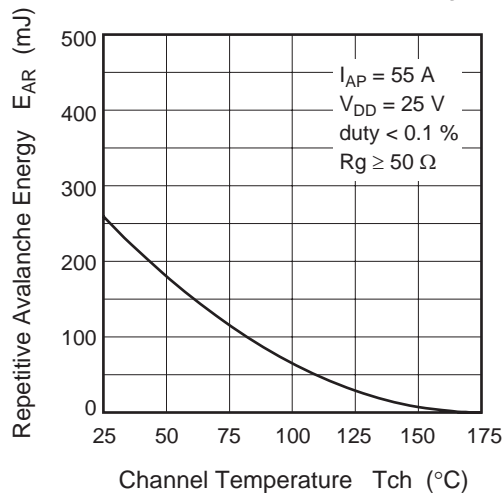
Dynamic Input Characteristics

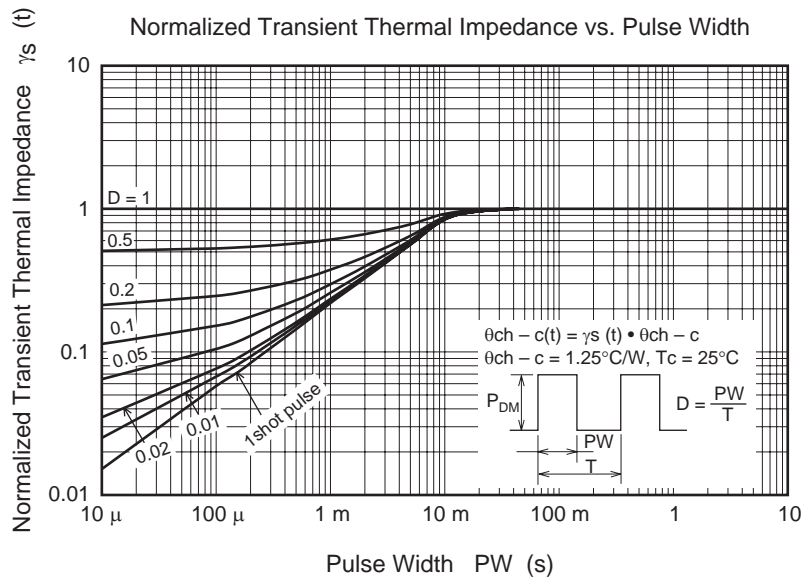


Reverse Drain Current vs. Source to Drain Voltage

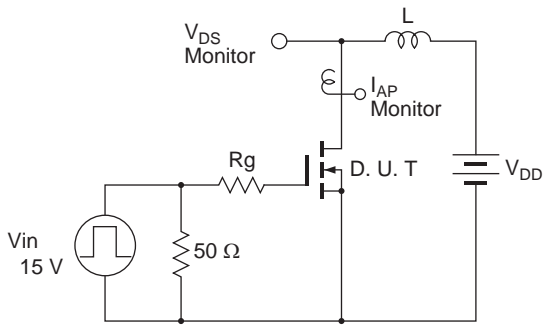


Maximum Avalanche Energy vs. Channel Temperature Derating



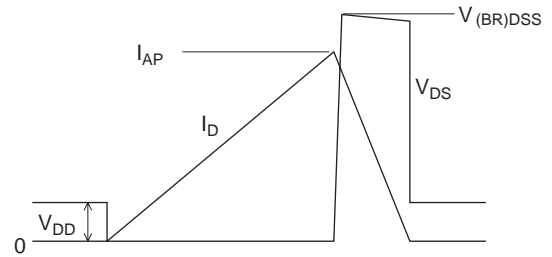


Avalanche Test Circuit

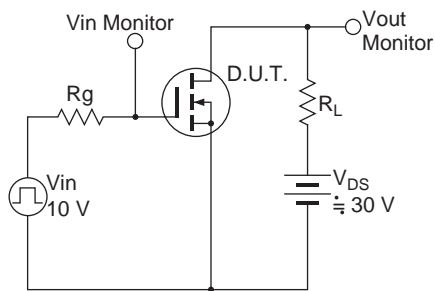


Avalanche Waveform

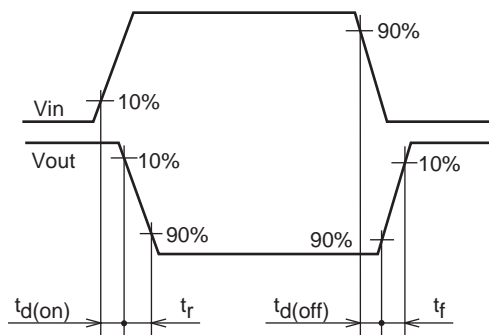
$$E_{AR} = \frac{1}{2} L \cdot I_{AP}^2 \cdot \frac{V_{DSS}}{V_{DSS} - V_{DD}}$$



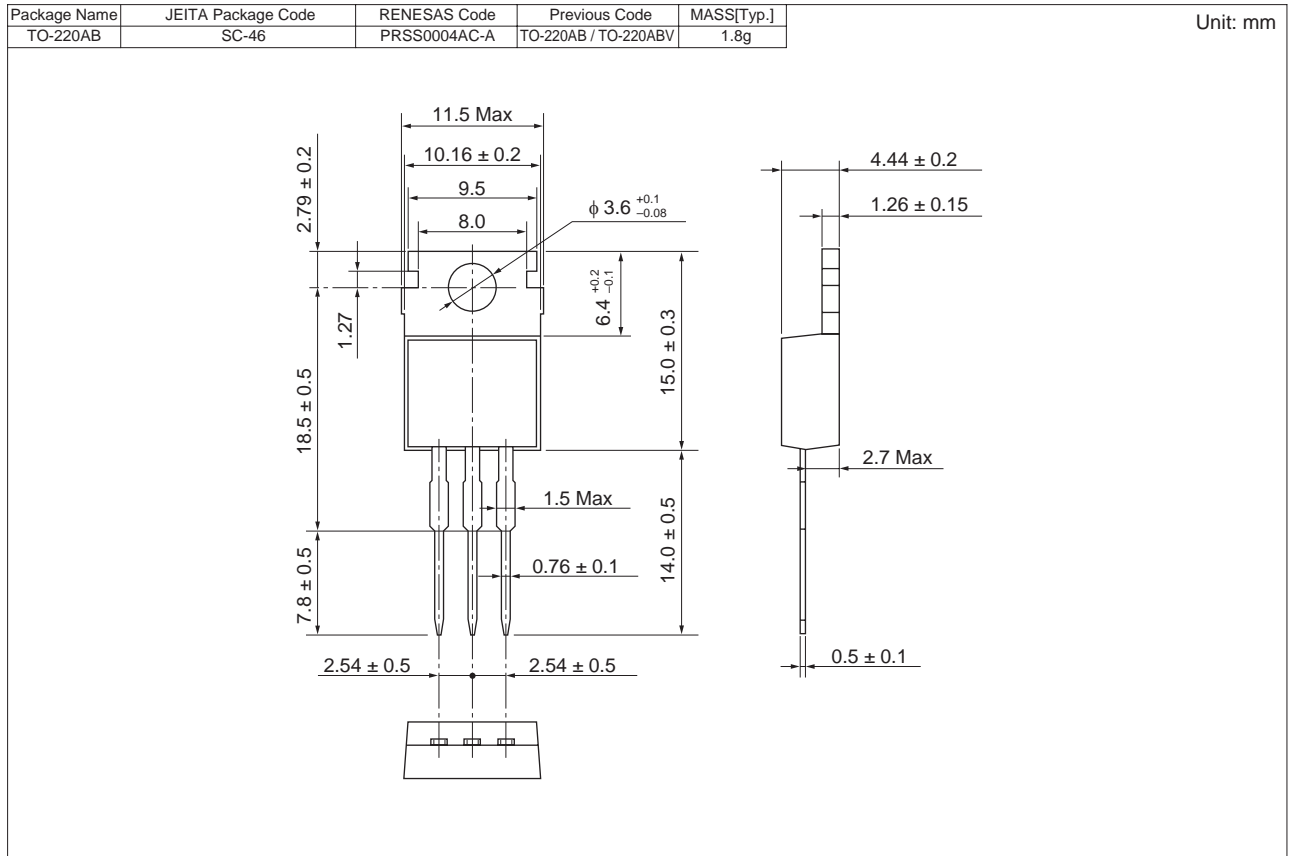
Switching Time Test Circuit



Switching Time Waveform



Package Dimensions



Ordering Information

Part No.	Quantity	Shipping Container
RJK0629DPN-00-T2	600 pcs	Box (Tube)

Notes:

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