RJK0629DPK

N Channel Power MOS FET
High-Speed Switching Use

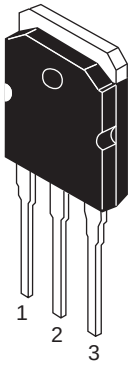
REJ03G1875-0100
Rev.1.00
Dec 15, 2009

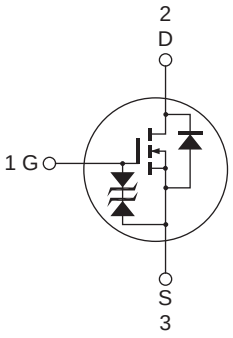
Features

- V_{DSS}: 60 V
- $R_{DS(on)}$: 4.5 mΩ (Max)
- I_D: 100 A

Outline

RENESAS Package code: PRSS0004ZE-A
(Package name: TO-3P)





1. Gate
2. Drain (Flange)
3. Source

Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Value	Unit
Drain to source voltage	V_{DSS}	60	V
Gate to source voltage	V_{GSS}	±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	Pch Note3	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. Tch ≤ 150°C
2. STch = 25°C, Tch ≤ 150°C, L = 100 μH
3. Value at Tc = 25°C

Electrical Characteristics

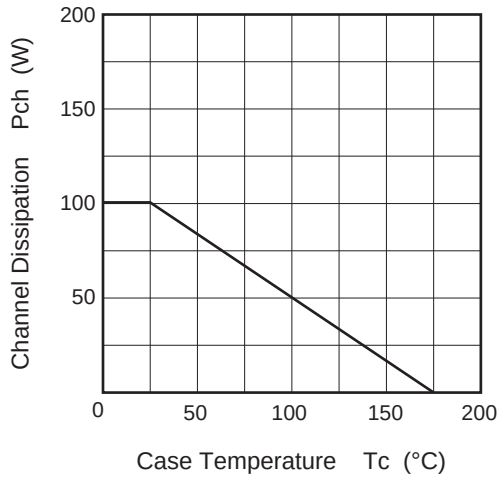
(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	60	—	—	V	I_D = 100 μA, V_{GS} = 0
Gate to source breakdown voltage	$V_{(BR)GSS}$	±20	—	—	V	I_G = ±100 μA, 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} = ±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	mΩ	I_D = 43A, V_{GS} = 10 V [Note4]
		—	4.9	6.6	mΩ	I_D = 43 A, V_{GS} = 4.5 V [Note4]
Input capacitance	Ciss	—	4100	—	pF	V_{DS} = 10 V, V_{GS} = 0 f = 1 MHz
Output capacitance	Coss	—	1000	—	pF	
Reverse transfer capacitance	Crss	—	780	—	pF	
Total gate charge	Qg	—	85	—	nC	V_{DD} = 25 V, V_{GS} = 10 V, I_D = 85 A
Gate to source charge	Qgs	—	11	—	nC	
Gate to drain charge	Qgd	—	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 Ω
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/μs

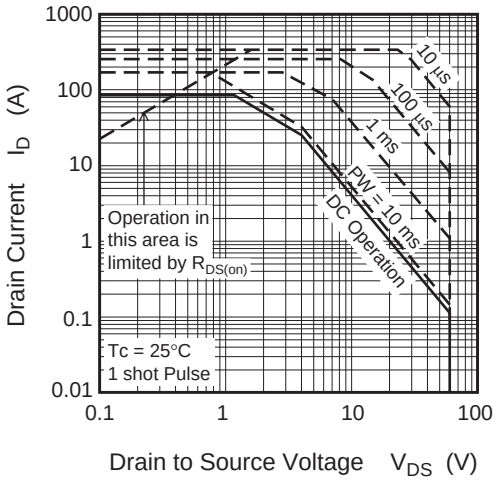
Note: 4. Pulse test

Main Characteristics

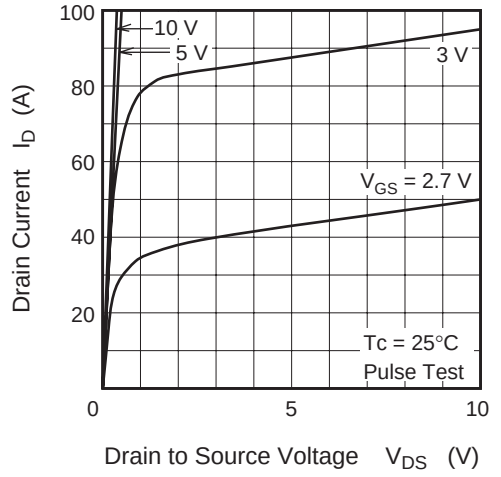
Power vs. Temperature Derating



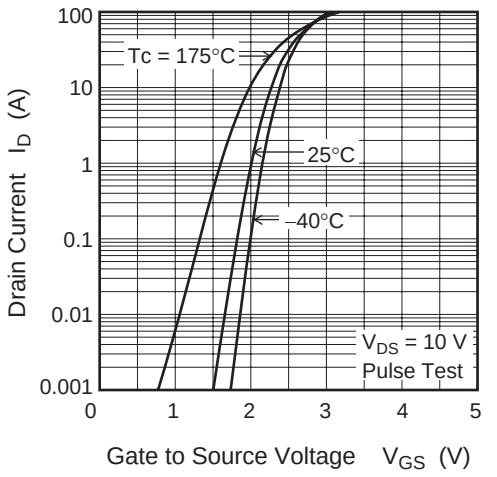
Maximum Safe Operation Area



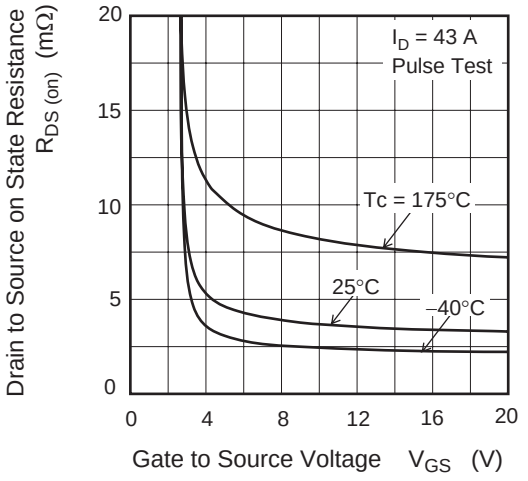
Typical Output Characteristics



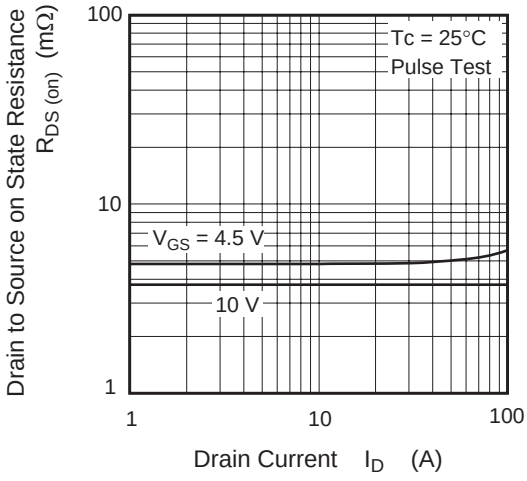
Typical Transfer Characteristics



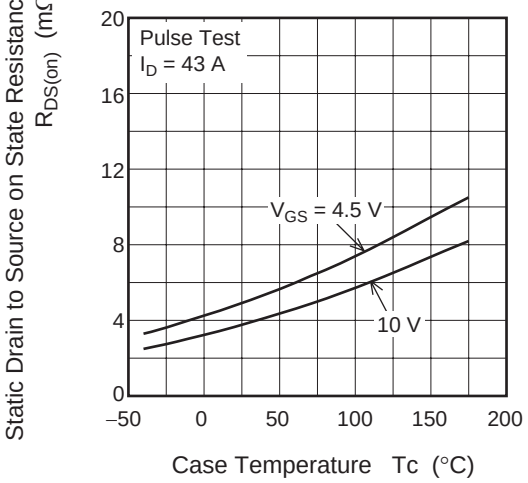
Static Drain to Source on State Resistance vs. Gate to Source Voltage



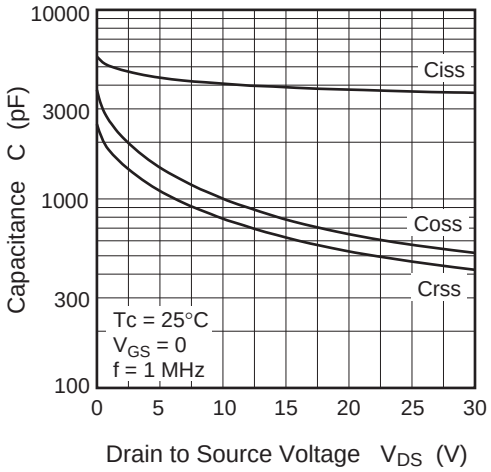
Static Drain to Source on State Resistance vs. Drain Current



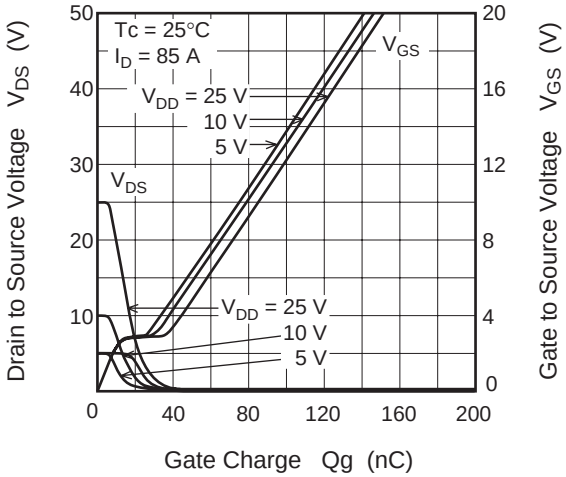
Static Drain to Source on State Resistance vs. Temperature



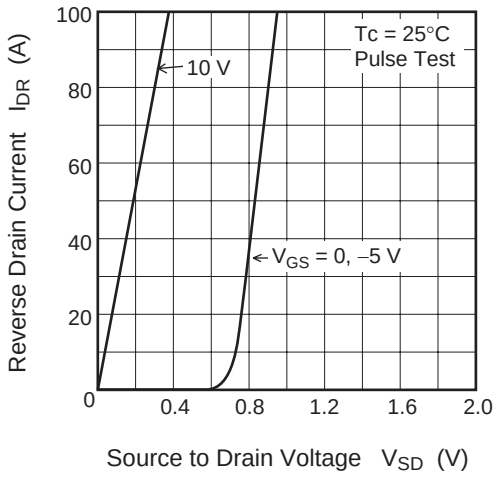
Typical Capacitance vs. Drain to Source Voltage



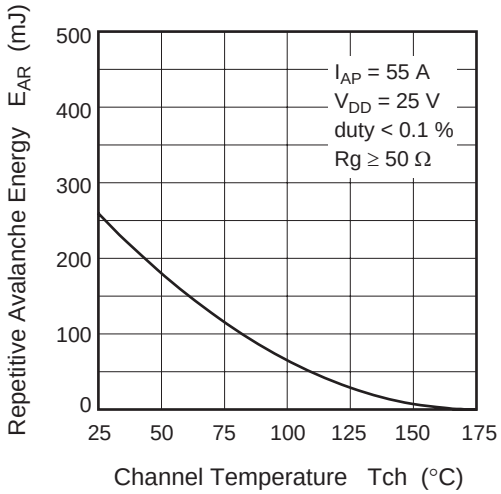
Dynamic Input Characteristics



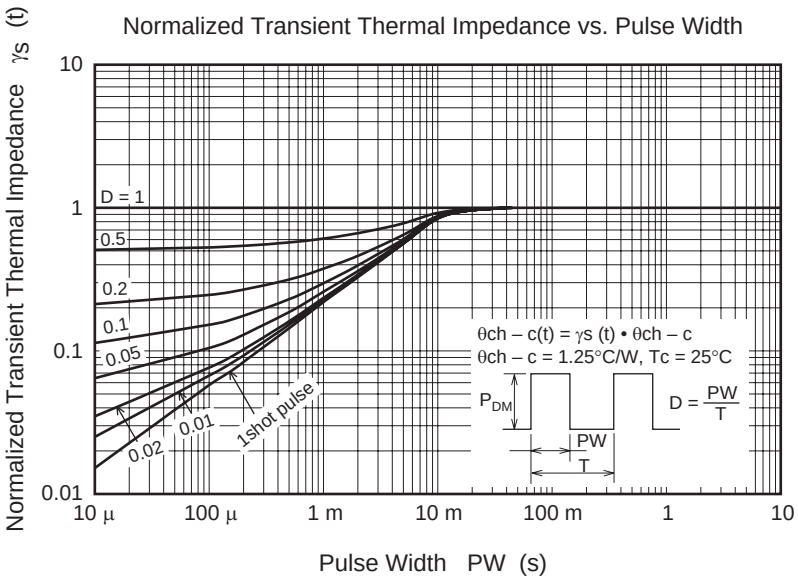
Reverse Drain Current vs. Source to Drain Voltage



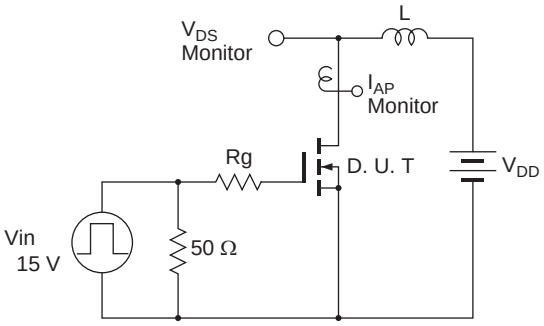
Maximum Avalanche Energy vs. Channel Temperature Derating



Normalized Transient Thermal Impedance vs. Pulse Width

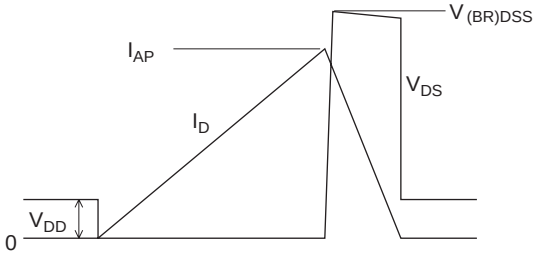


Avalanche Test Circuit

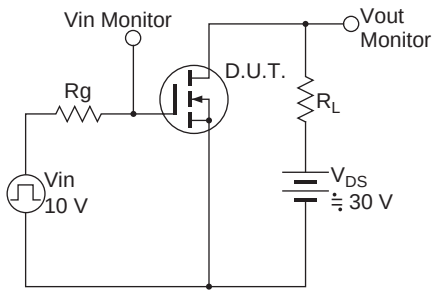


Avalanche Waveform

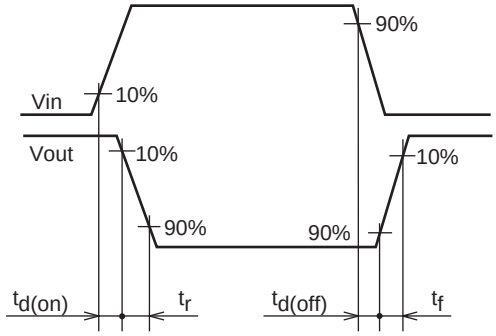
$$E_{AR} = \frac{1}{2} L \bullet I_{AP}^2 \bullet \frac{V_{DSS}}{V_{DSS} - V_{DD}}$$



Switching Time Test Circuit



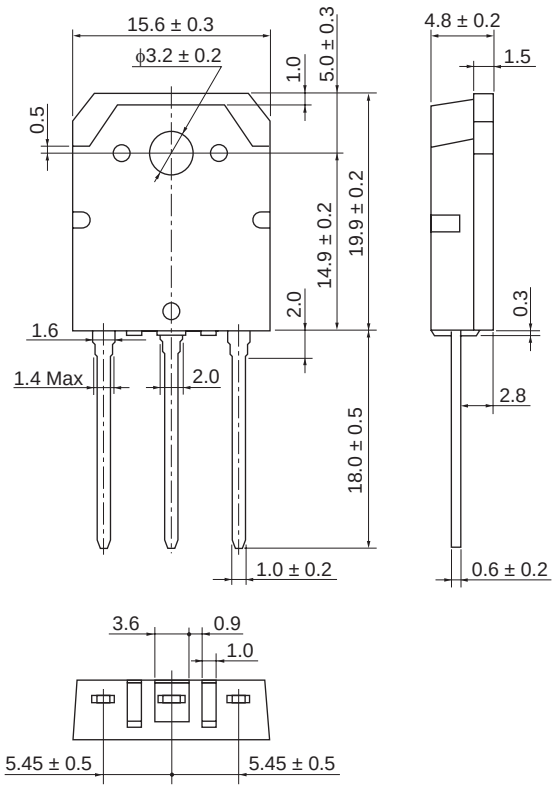
Switching Time Waveform



Package Dimensions

Package Name	JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
TO-3P	SC-65	PRSS0004ZE-A	TO-3P / TO-3PV	5.0g

Unit: mm



Ordering Information

Part No.	Quantity	Shipping Container
RJK0629DPK-00-T0	360 pcs	Box (Tube)

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