

RJK0323JPD

Silicon N Channel MOS FET
High Speed Power Switching

R07DS0334EJ0100

Rev.1.00

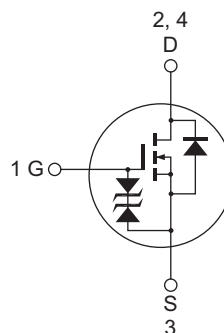
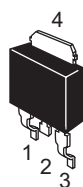
Apr 18, 2011

Features

- For Automotive application
- AEC-Q101 compliant
- Low on-resistance : $R_{DS(on)} = 7.0 \text{ m}\Omega$ typ.
- Low drive current
- Capable of 4.5 V gate drive

Outline

RENESAS Package code: PRSS0004ZD-C
(Package name: DPAK (S))



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

Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Value	Unit
Drain to source voltage	V_{DS}	30	V
Gate to source voltage	V_{GS}	± 20	V
Drain current	I_D	30	A
Drain peak current	I_D (pulse) ^{Note1}	120	A
Body-drain diode reverse drain current	I_{DR}	30	A
Avalanche current	I_{AP} ^{Note2}	30	A
Avalanche energy	E_{AR} ^{Note2}	90	mJ
Channel dissipation	P_{ch} ^{Note3}	40	W
Channel temperature	T_{ch} ^{Note4}	150	°C
Storage temperature	T_{stg}	-55 to +150	°C

Notes: 1. $PW \leq 10 \mu s$, duty cycle $\leq 1\%$

2. $T_{ch} = 25^\circ C$, $R_g \geq 50 \Omega$

3. $T_c = 25^\circ C$

Thermal Impedance Characteristics

- Channel to case thermal impedance θ_{ch-c} : $3.125^\circ C/W$

Electrical Characteristics

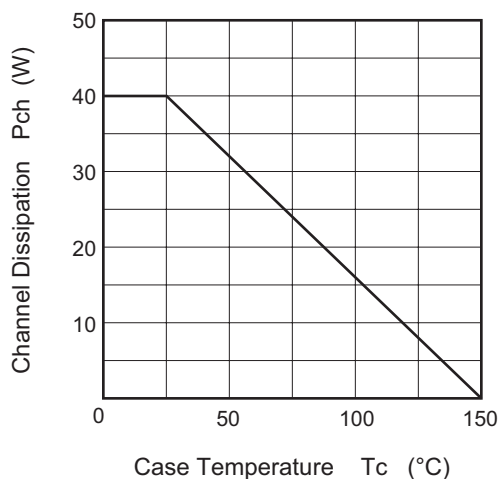
(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Gate to source leak current	I_{GSS}	—	—	±10	μA	$V_{GS} = \pm 20\text{ V}$, $V_{DS} = 0$
Zero gate voltage drain current	I_{DSS}	—	—	10	μA	$V_{DS} = 30\text{ V}$, $V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	1.0	—	2.5	V	$I_D = 1\text{ mA}$, $V_{DS} = 10\text{ V}$
Static drain to source on state resistance	$R_{DS(on)}$	—	7	9	mΩ	$I_D = 15\text{ A}$, $V_{GS} = 10\text{ V}$ ^{Note4}
		—	9	13	mΩ	$I_D = 15\text{ A}$, $V_{GS} = 4.5\text{ V}$ ^{Note4}
Input capacitance	C_{iss}	—	2600	—	pF	$V_{DS} = 10\text{ V}$, $V_{GS} = 0$ $f = 1\text{ MHz}$
Output capacitance	C_{oss}	—	470	—	pF	
Reverse transfer capacitance	C_{rss}	—	200	—	pF	
Total gate charge	Q_g	—	40	—	nC	$V_{DD} = 10\text{ V}$, $V_{GS} = 10\text{ V}$, $I_D = 30\text{ A}$
Gate to source charge	Q_{gs}	—	6	—	nC	
Gate to drain charge	Q_{gd}	—	5	—	nC	
Turn-on delay time	$t_{d(on)}$	—	25	—	ns	$V_{GS} = 10\text{ V}$, $I_D = 15\text{ A}$, $V_{DD} = 10\text{ V}$, $R_L = 2.0\text{ }\Omega$ $R_G = 4.7\text{ }\Omega$
Rise time	t_r	—	300	—	ns	
Turn-off delay time	$t_{d(off)}$	—	85	—	ns	
Fall time	t_f	—	7	—	ns	
Body-drain diode forward voltage	V_{DF}	—	0.9	—	V	$I_F = 30\text{ A}$, $V_{GS} = 0$
Body-drain diode reverse recovery time	t_{rr}	—	30	—	ns	$I_F = 30\text{ A}$, $V_{GS} = 0$, $di_F/dt = 100\text{ A}/\mu\text{s}$

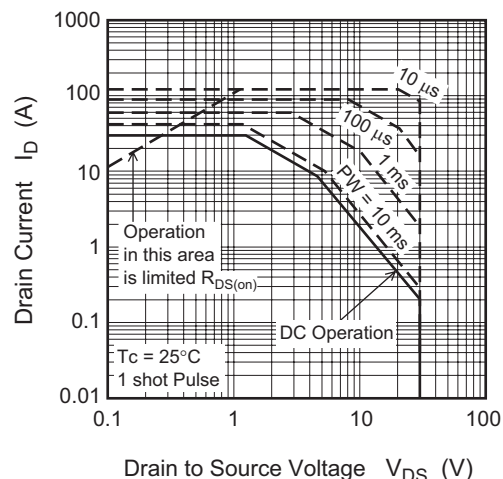
Note: 4. Pulse test

Main Characteristics

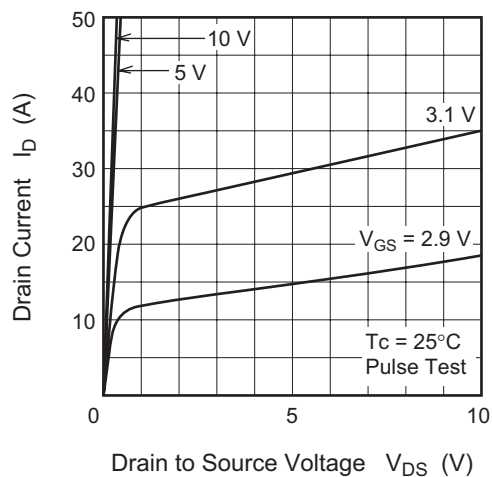
Power vs. Temperature Derating



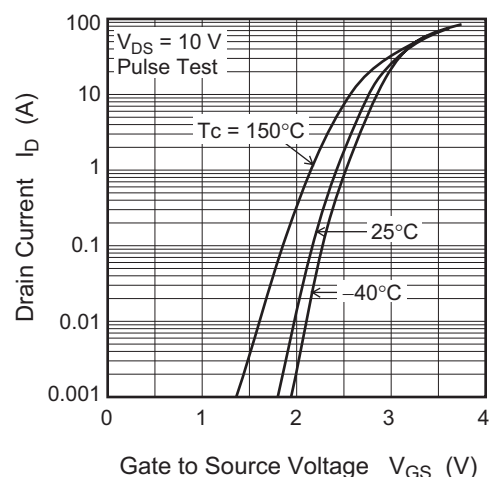
Maximum Safe Operation Area



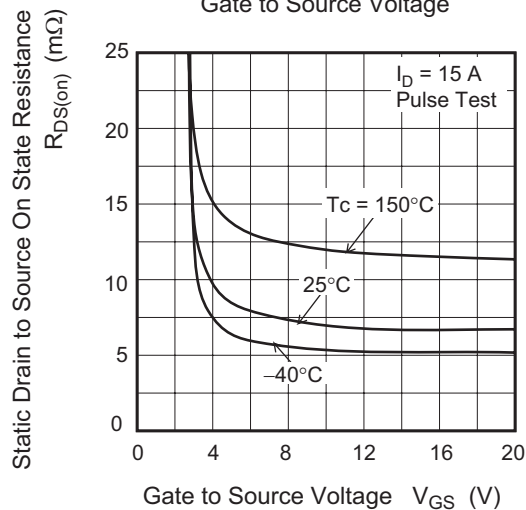
Typical Output Characteristics



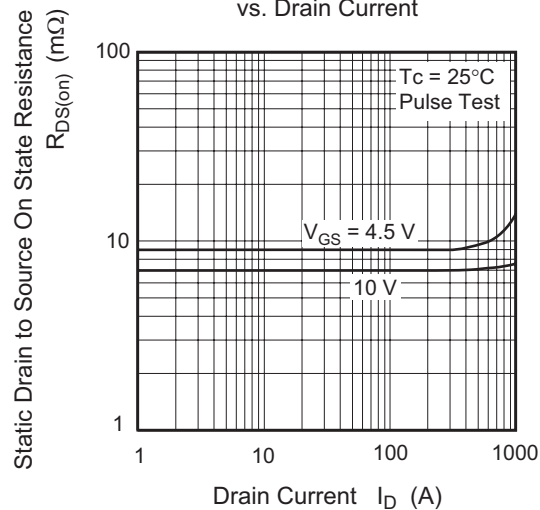
Typical Transfer Characteristics

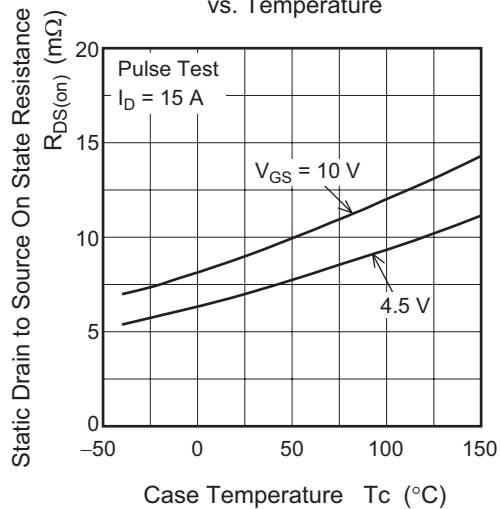
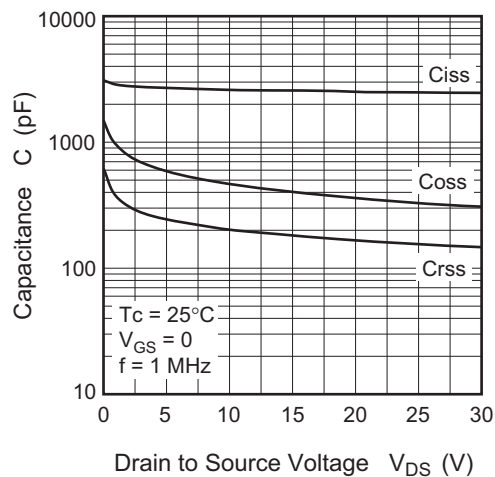


Static Drain to Source On State Resistance vs. Gate to Source Voltage

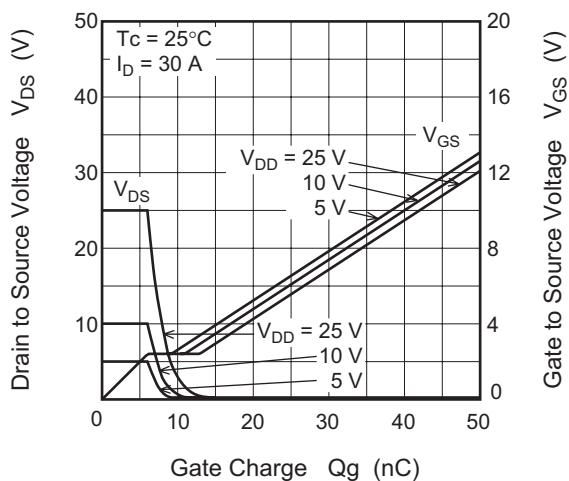
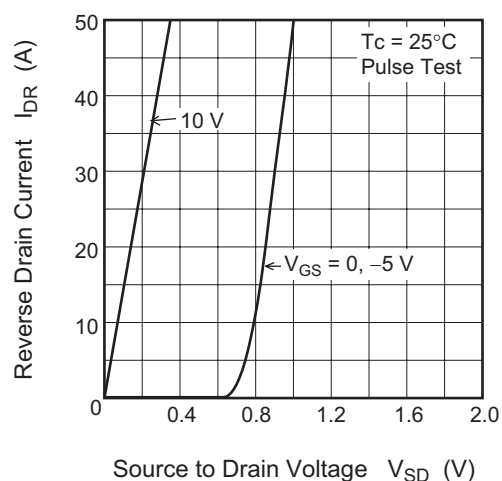
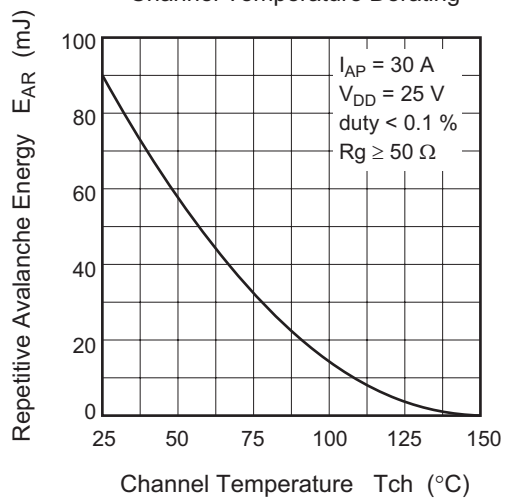


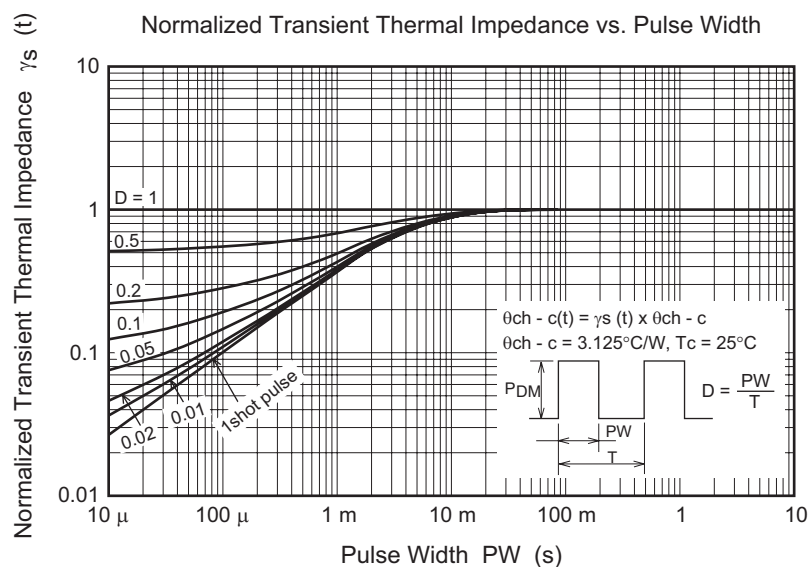
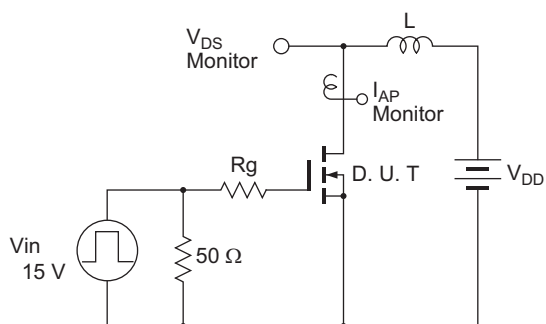
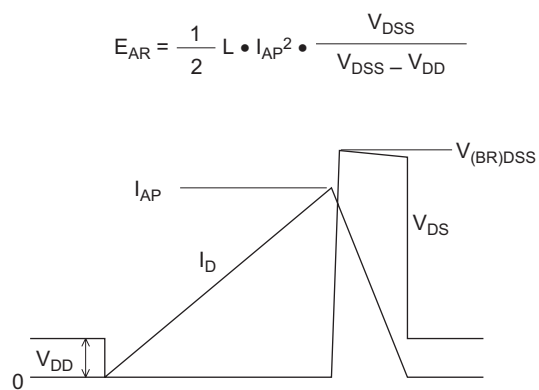
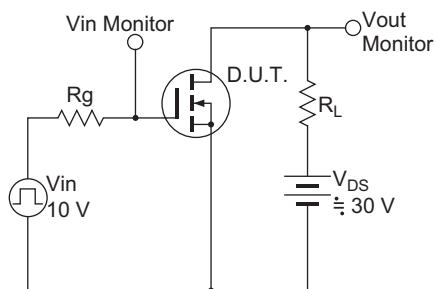
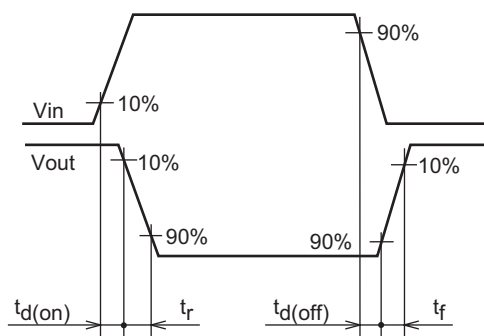
Static Drain to Source On State Resistance vs. Drain Current



Static Drain to Source On State Resistance
vs. TemperatureTypical Capacitance vs.
Drain to Source Voltage

Dynamic Input Characteristics

Reverse Drain Current vs.
Source to Drain VoltageAvalanche Energy vs.
Channel Temperature Derating

**Avalanche Test Circuit****Avalanche Waveform****Switching Time Test Circuit****Switching Time Waveform**

Package Dimensions

Package Name	JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]	Unit: mm
DPAK(S)	SC-63	PRSS0004ZD-C	DPAK(S) / DPAK(S)V	0.28g	

The drawing shows the mechanical dimensions of the RJK0323JPD DPAK(S) package. The top view shows a rectangular package with a width of 6.5 ± 0.3 mm and a length of 5.6 ± 0.5 mm. The side view shows a height of 1.5 ± 0.5 mm and a base width of 2.3 ± 0.2 mm. The bottom view shows a width of 5.1 mm and a length of 5.1 mm. The package has a central mounting pad with a width of 0.55 ± 0.1 mm and a length of 0.55 ± 0.1 mm. The package is shown with a lead height of 0.8 ± 0.1 mm and a lead width of 1.2 mm. The package is shown with a lead length of 2.29 ± 0.5 mm and a lead width of 2.29 ± 0.5 mm. The package is shown with a lead height of 1.0 Max. mm and a lead width of 1.2 Max. mm. The package is shown with a lead length of 2.5 ± 0.5 mm and a lead width of 2.5 ± 0.5 mm.

Ordering Information

Orderable Part Number	Quantity	Shipping Container
RJK0323JPD-00-J3	3000 pcs	Taping (Sinistrorse)

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