RJK1525DPJ, RJK1525DPE, RJK1525DPF

Silicon N Channel MOS FET
High Speed Power Switching

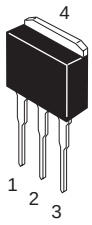
REJ03G0623-0100
Rev.1.00
Apr.22,2005

Features

- Low on-resistance
- Low leakage current
- High speed switching

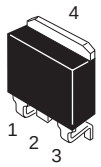
Outline

RENESAS Package code: PRSS0004AE-A
(Package name LDPAK(L))



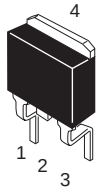
RJK1525DPJ

RENESAS Package code: PRSS0004AE-B
(Package name LDPAK(S)-(1))

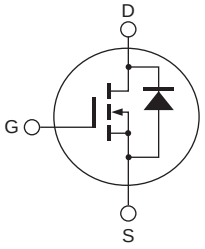


RJK1525DPE

RENESAS Package code: PRSS0004AE-C
(Package name LDPAK(S)-(2))



RJK1525DPF



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

Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to Source voltage	V_{DSS}	150	V
Gate to Source voltage	V_{GSS}	±30	V
Drain current	I_D	25	A
Drain peak current	$I_{D\ (pulse)}$ Note1	50	A
Body-Drain diode reverse Drain current	I_{DR}	25	A
Body-Drain diode reverse Drain peak current	$I_{DR\ (pulse)}$ Note1	50	A
Avalanche current	I_{AP} Note3	17	A
Avalanche energy	E_{AR} Note3	21.6	mJ
Channel dissipation	Pch Note2	75	W
Channel to case thermal impedance	θch-c	1.67	°C/W
Channel temperature	Tch	150	°C
Storage temperature	Tstg	–55 to +150	°C

Notes: 1. PW ≤ 10 µs, duty cycle ≤ 1%
2. Value at Tc = 25°C
3. STch = 25°C, Tch ≤ 150°C

Electrical Characteristics

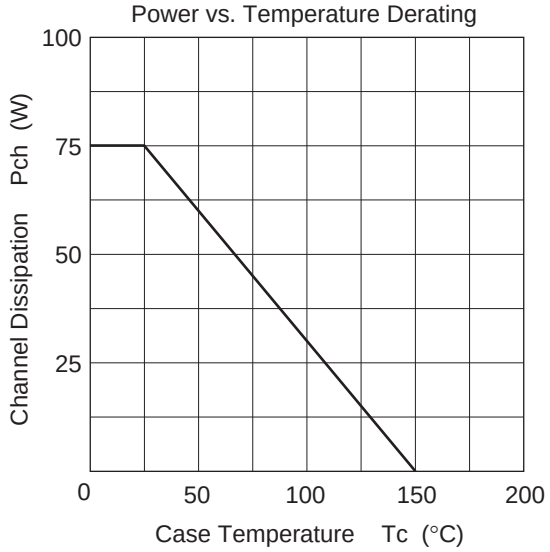
(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to Source breakdown voltage	$V_{(BR)DSS}$	150	—	—	V	I_D = 10 mA, V_{GS} = 0
Zero Gate voltage drain current	I_{DSS}	—	—	1	µA	V_{DS} = 150 V, V_{GS} = 0
Gate to Source leak current	I_{GSS}	—	—	±0.1	µA	V_{GS} = ±30 V, V_{DS} = 0
Gate to Source cutoff voltage	$V_{GS(off)}$	3.0	—	4.5	V	V_{DS} = 10 V, I_D = 1 mA
Forward transfer admittance	|yfs|	7	12	—	S	I_D = 12.5 A, V_{DS} = 10 V Note4
Static Drain to Source on state resistance	$R_{DS(on)}$	—	0.093	0.110	Ω	I_D = 12.5 A, V_{GS} = 10 V Note4
Input capacitance	Ciss	—	680	—	pF	V_{DS} = 25 V V_{GS} = 0 f = 1 MHz
Output capacitance	Coss	—	150	—	pF	
Reverse transfer capacitance	Crss	—	22	—	pF	
Turn-on delay time	td(on)	—	22	—	ns	I_D = 12.5 A V_{GS} = 10 V R_L = 6 Ω Rg = 10 Ω
Rise time	tr	—	110	—	ns	
Turn-off delay time	td(off)	—	45	—	ns	
Fall time	tf	—	12	—	ns	
Total Gate charge	Qg	—	18	—	nC	V_{DD} = 120 V V_{GS} = 10 V I_D = 25 A
Gate to Source charge	Qgs	—	4.5	—	nC	
Gate to Drain charge	Qgd	—	9	—	nC	
Body-Drain diode forward voltage	V_{DF}	—	0.95	1.50	V	I_F = 25 A, V_{GS} = 0 Note4
Body-Drain diode reverse recovery time	trr	—	100	—	ns	I_F = 25 A, V_{GS} = 0 diF/dt = 100 A/µs
Body-Drain diode reverse recovery charge	Qrr	—	0.4	—	µC	

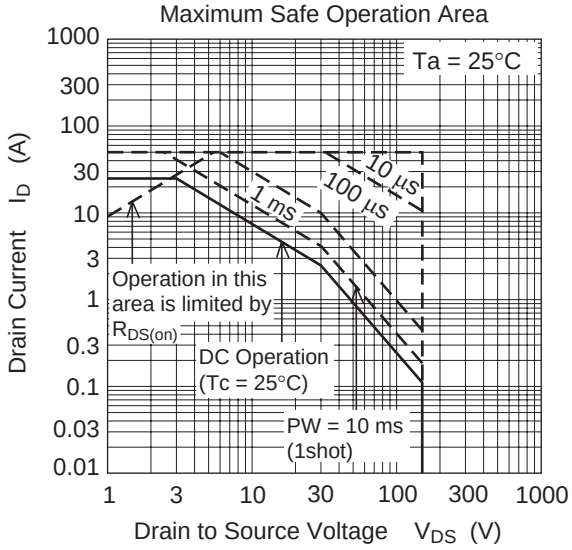
Notes: 4. Pulse test

Main Characteristics

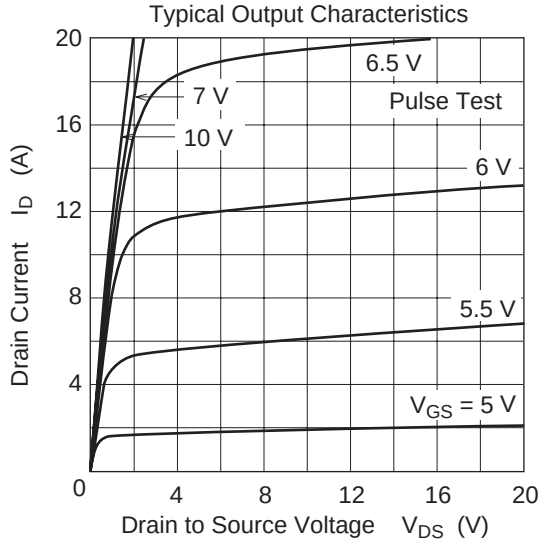
Power vs. Temperature Derating



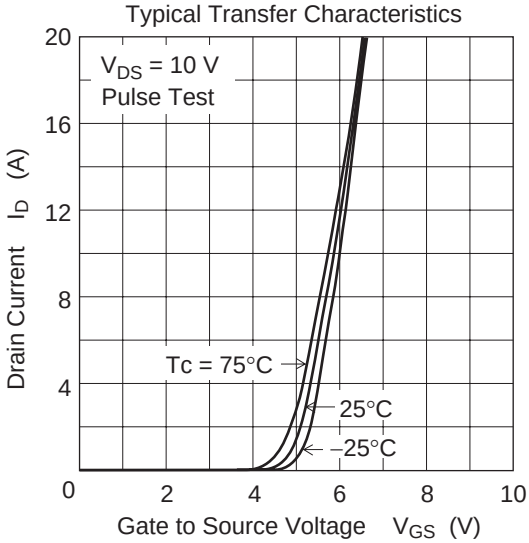
Maximum Safe Operation Area



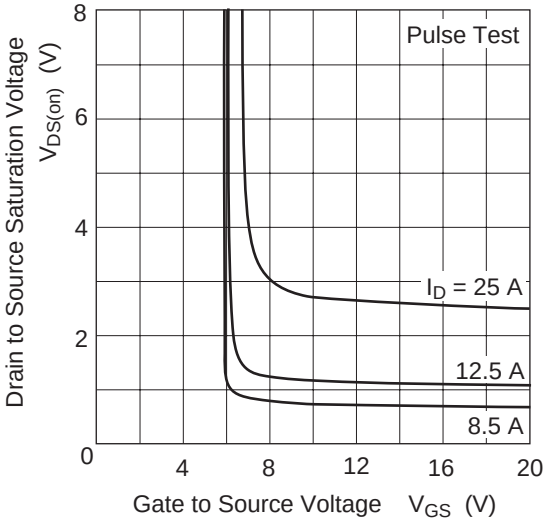
Typical Output Characteristics



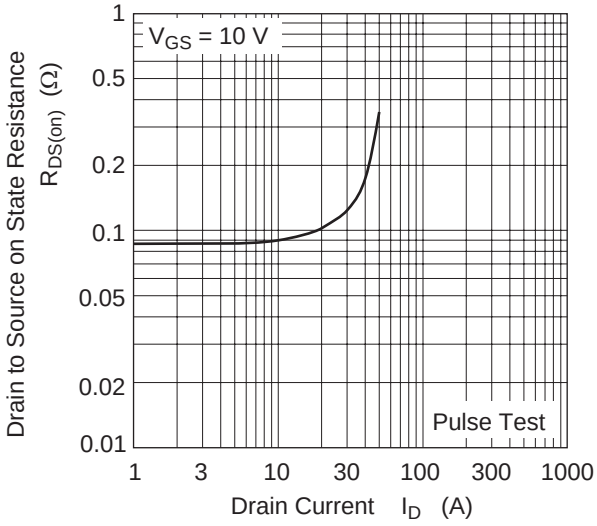
Typical Transfer Characteristics



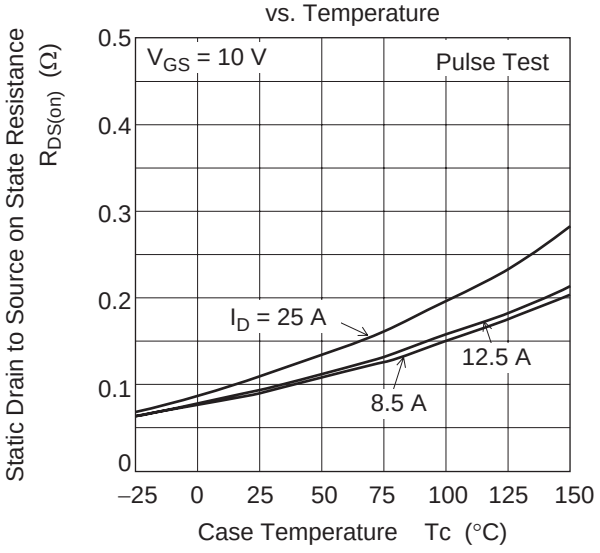
Drain to Source Saturation Voltage vs. Gate to Source Voltage



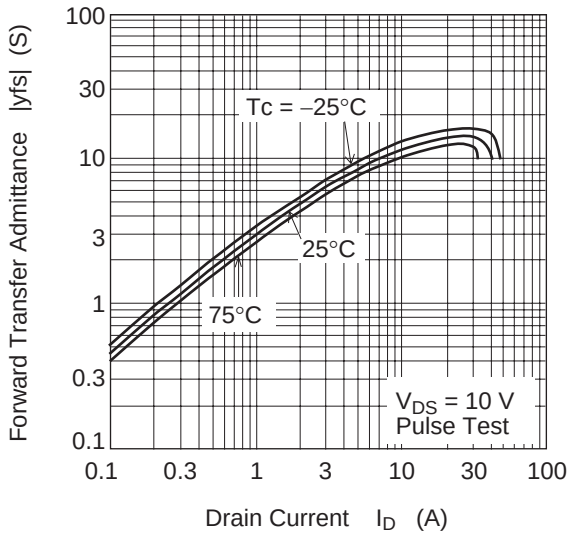
Static Drain to Source on State Resistance vs. Drain Current



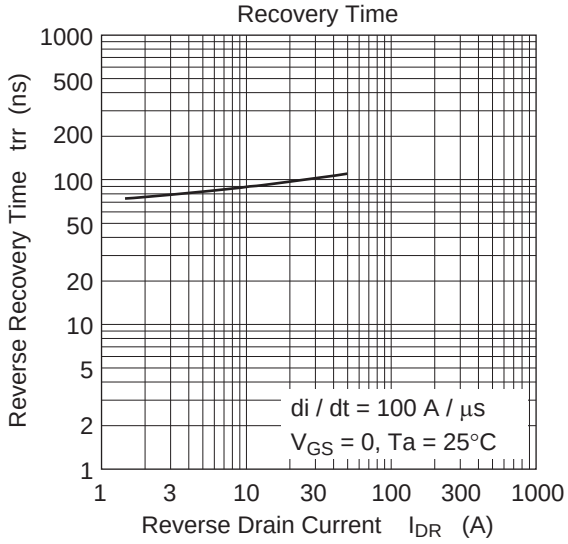
Static Drain to Source on State Resistance vs. Temperature



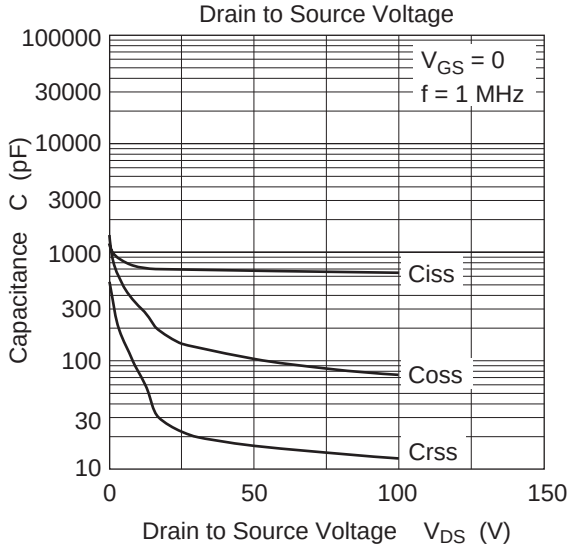
Forward Transfer Admittance vs. Drain Current



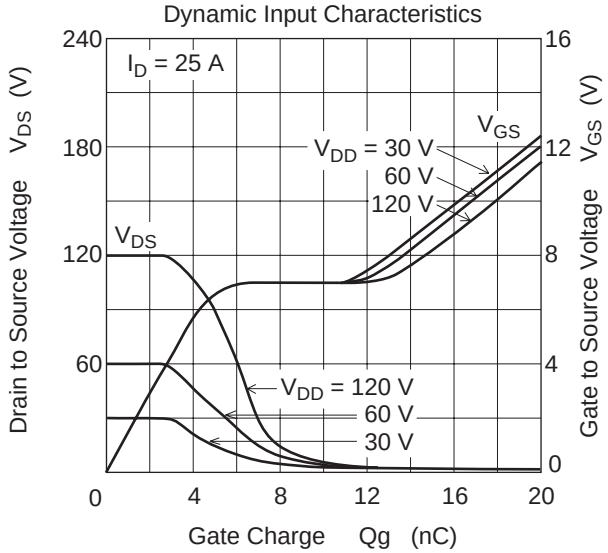
Body-Drain Diode Reverse Recovery Time



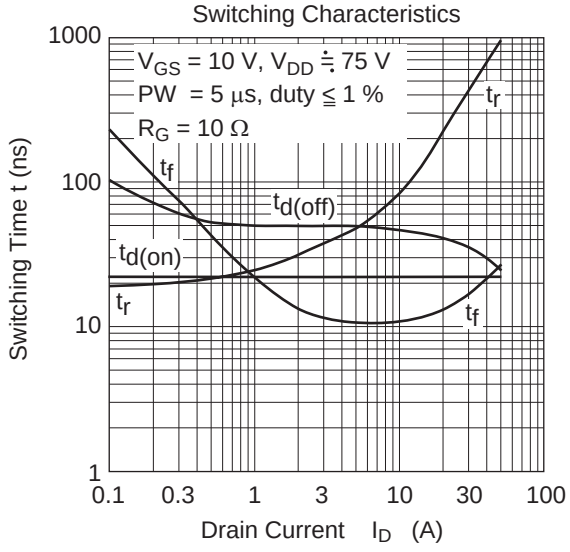
Typical Capacitance vs. Drain to Source Voltage



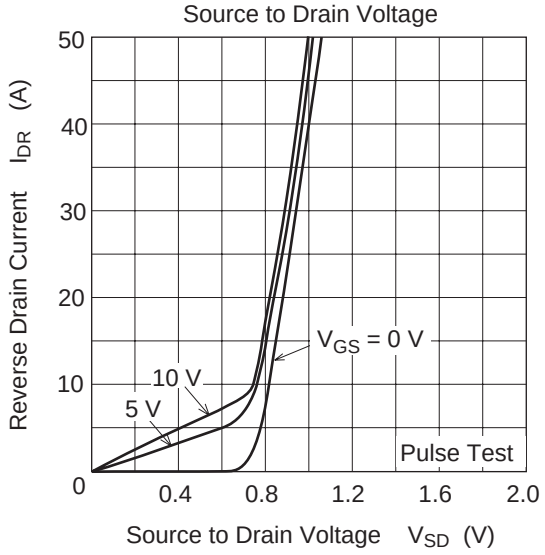
Dynamic Input Characteristics



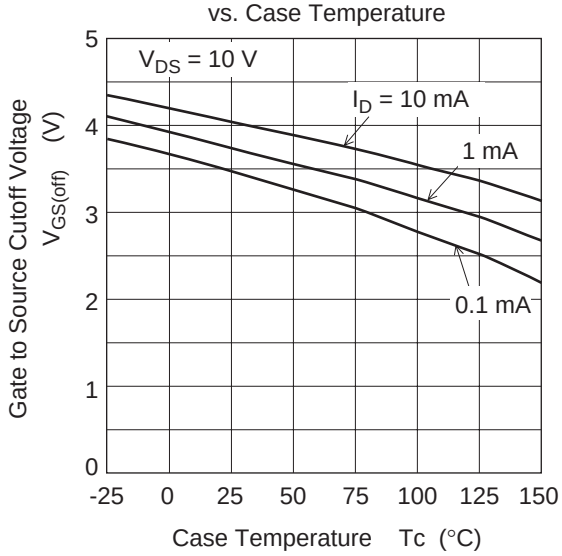
Switching Characteristics



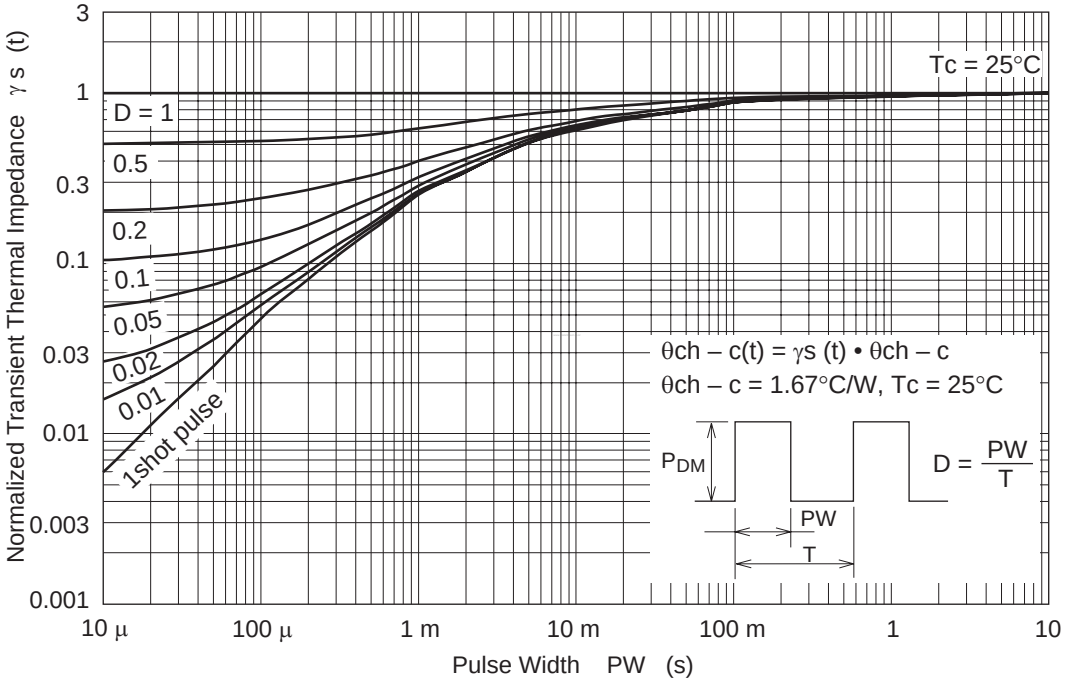
Reverse Drain Current vs. Source to Drain Voltage



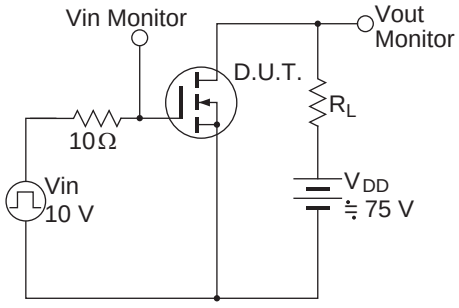
Gate to Source Cutoff Voltage vs. Case Temperature



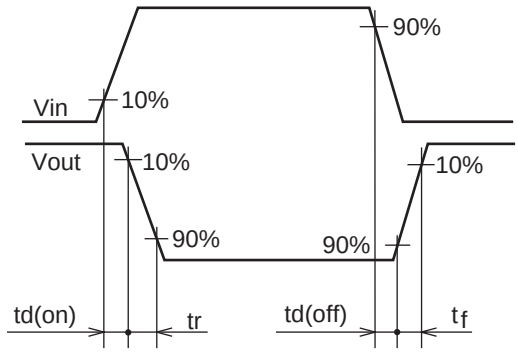
Normalized Transient Thermal Impedance vs. Pulse Width



Switching Time Test Circuit



Waveform

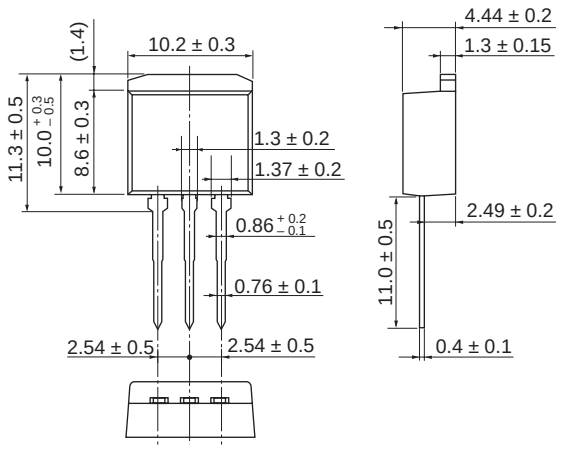


Package Dimensions

• RJK1525DPJ

JEITA Package Code	RENESAS Code	Package Name	MASS[Typ.]
—	PRSS0004AE-A	LDPAK(L) / LDPAK(L)V	1.40g

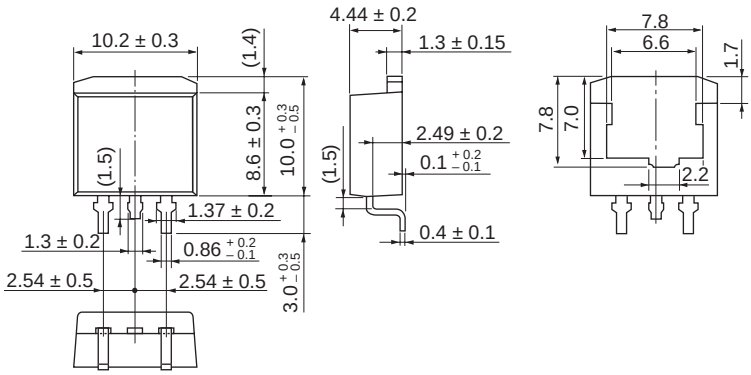
Unit: mm



• RJK1525DPE

JEITA Package Code	RENESAS Code	Package Name	MASS[Typ.]
SC-83	PRSS0004AE-B	LDPAK(S)-(1) / LDPAK(S)-(1)V	1.30g

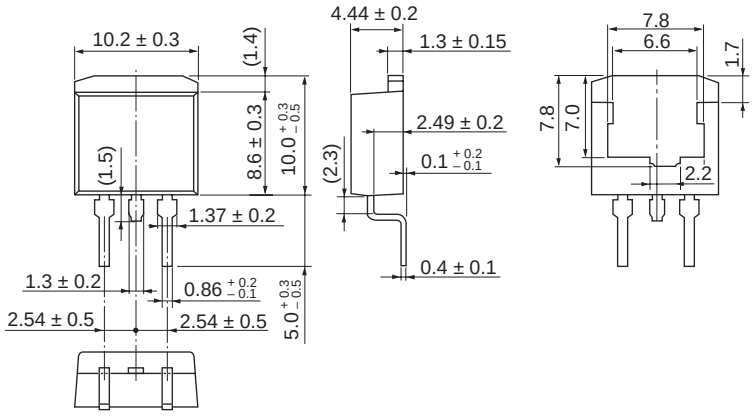
Unit: mm



• RJK1525DPF

JEITA Package Code	RENESAS Code	Package Name	MASS[Typ.]
—	PRSS0004AE-C	LDPAK(S)-(2) / LDPAK(S)-(2)V	1.35g

Unit: mm



Ordering Information

Part Name	Quantity	Shipping Container
RJK1525DPE-LE	1000 pcs	Taping

Note: For some grades, production may be terminated. Please contact the Renesas sales office to check the state of production before ordering the product.

Renesas Technology Corp. Sales Strategic Planning Div. Nippon Bldg., 2-6-2, Ohte-machi, Chiyoda-ku, Tokyo 100-0004, Japan

RENESAS SALES OFFICES

http://www.renesas.com

Refer to "**http://www.renesas.com/en/network**" for the latest and detailed information.

Renesas Technology America, Inc.
450 Holger Way, San Jose, CA 95134-1368, U.S.A
Tel: <1> (408) 382-7500, Fax: <1> (408) 382-7501

Renesas Technology Europe Limited
Dukes Meadow, Millboard Road, Bourne End, Buckinghamshire, SL8 5FH, U.K.
Tel: <44> (1628) 585-100, Fax: <44> (1628) 585-900

Renesas Technology Hong Kong Ltd.
7th Floor, North Tower, World Finance Centre, Harbour City, 1 Canton Road, Tsimshatsui, Kowloon, Hong Kong
Tel: <852> 2265-6688, Fax: <852> 2730-6071

Renesas Technology Taiwan Co., Ltd.
10th Floor, No.99, Fushing North Road, Taipei, Taiwan
Tel: <886> (2) 2715-2888, Fax: <886> (2) 2713-2999

Renesas Technology (Shanghai) Co., Ltd.
Unit2607 Ruijing Building, No.205 Maoming Road (S), Shanghai 200020, China
Tel: <86> (21) 6472-1001, Fax: <86> (21) 6415-2952

Renesas Technology Singapore Pte. Ltd.
1 Harbour Front Avenue, #06-10, Keppel Bay Tower, Singapore 098632
Tel: <65> 6213-0200, Fax: <65> 6278-8001

Colophon .2.0