To our customers,

Old Company Name in Catalogs and Other Documents

On April 1st, 2010, NEC Electronics Corporation merged with Renesas Technology Corporation, and Renesas Electronics Corporation took over all the business of both companies. Therefore, although the old company name remains in this document, it is a valid Renesas Electronics document. We appreciate your understanding.

Renesas Electronics website: http://www.renesas.com

April 1st, 2010
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (http://www.renesas.com)

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H7N0607DL, H7N0607DS

Silicon N Channel MOS FET
High Speed Power Switching

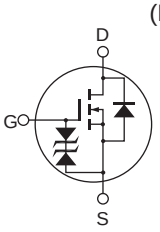
REJ03G0124-0300
Rev.3.00
Jan.27.2005

Features

- Low on-resistance
  $R_{DS(on)}$ = 26 mΩ typ.
- Low drive current.
- Capable of 4.5 V gate drive

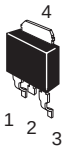
Outline

PRSS0004ZD-B
(Previous code: DPAK(L)-2)



H7N0607DL

PRSS0004ZD-C
(Previous code: DPAK-(S))



H7N0607DS

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

Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Rating	Unit
Drain to source voltage	V_{DSS}	60	V
Gate to source voltage	V_{GSS}	±20	V
Drain current	I_D	20	A
Drain peak current	I_D (pulse)[Note1]	80	A
Body drain diode reverse drain current	I_{DR}	20	A
Avalanche current	I_{AP}[Note3]	8	A
Avalanche energy	E_{AR}[Note3]	5.48	mj
Channel dissipation	Pch[Note2]	25	W
Channel temperature	Tch	150	°C
Storage temperature	Tstg	–55 to +150	°C

Notes: 1. PW ≤ 10 µs, duty cycle ≤ 1%
2. Tc = 25°C
3. Value at Tch = 25°C, Rg ≥ 50 Ω

Electrical Characteristics

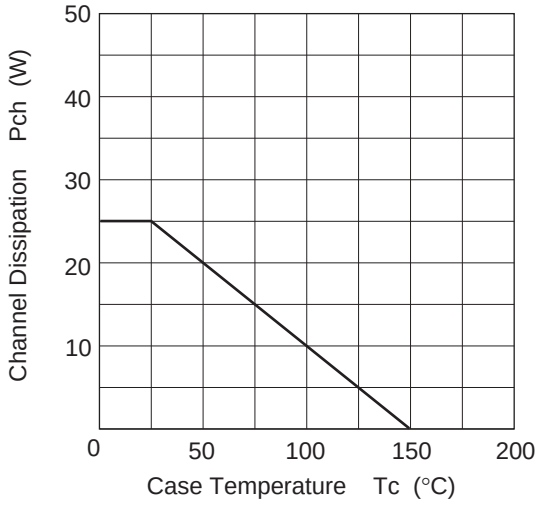
(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source break down voltage	$V_{(BR)DSS}$	60	—	—	V	I_D = 10 mA, V_{GS} = 0
Gate to source breakdown voltage	$V_{(BR)GSS}$	±20	—	—	V	I_G = ±100 µA, V_{DS} = 0
Gate to source leak current	I_{GSS}	—	—	±10	µA	V_{GS} = ±16 V, V_{DS} = 0
Zero gate voltage drain current	I_{DSS}	—	—	10	µA	V_{DS} = 60 V, V_{GS} = 0
Gate to source cut off voltage	$V_{GS(off)}$	1.5	—	2.5	V	I_D = 1 mA, V_{DS} = 10 V
Static drain to source on state resistance	$R_{DS(on)}$	—	26	34	mΩ	I_D = 10 A, V_{GS} = 10 V[Note4]
		—	40	56	mΩ	I_D = 10 A, V_{GS} = 4.5 V[Note4]
Forward transfer admittance	$\|y_{fs}\|$	11	18	—	S	I_D = 10 A, V_{DS} = 10 V[Note4]
Input capacitance	Ciss	—	1100	—	pF	V_{DS} = 10 V V_{GS} = 0 f = 1 MHz
Output capacitance	Coss	—	160	—	pF	
Reverse transfer admittance	Crss	—	90	—	pF	
Total gate charge	Qg	—	21	—	nC	V_{DD} = 10 V V_{GS} = 10 V I_D = 20 A
Gate to source charge	Qgs	—	4	—	nC	
Gate to drain charge	Qgd	—	5	—	nC	
Turn-off delay time	$t_{d(on)}$	—	20	—	ns	V_{GS} = 10 V, I_D = 10 A R_L = 3.0 Ω Rg = 4.7 Ω
Rise time	t_r	—	90	—	ns	
Body-drain diode forward voltage	$t_{d(off)}$	—	65	—	ns	
Fall time	t_f	—	15	—	ns	
Body-drain diode forward voltage	V_{DF}	—	0.93	—	V	I_F = 20 A, V_{GS} = 0[Note4]
Body-drain diode reverse recovery time	t_{rr}	—	25	—	ns	I_F = 20 A, V_{GS} = 0 diF / dt = 100 A / µs

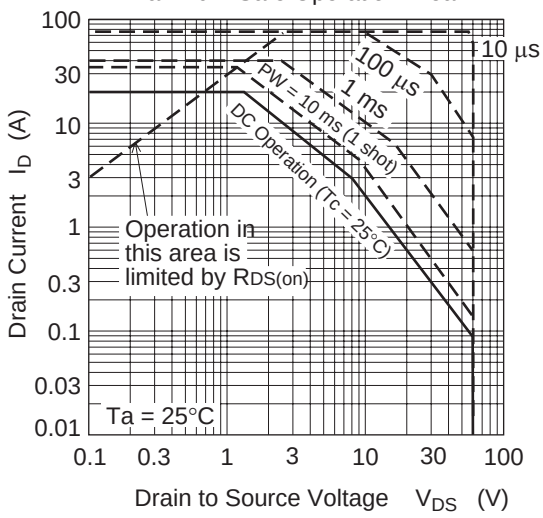
Notes: 4. Pulse test

Main Characteristics

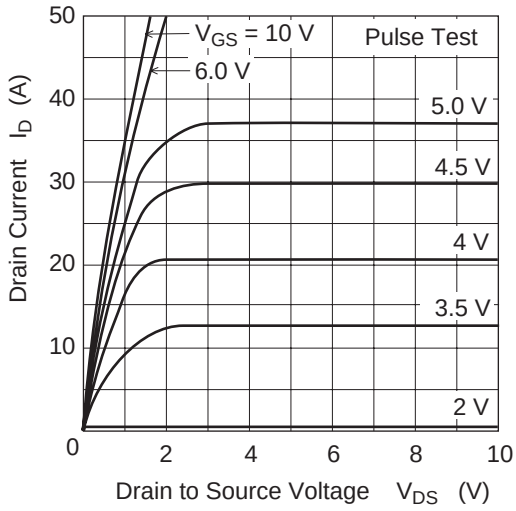
Power vs. Temperature Derating



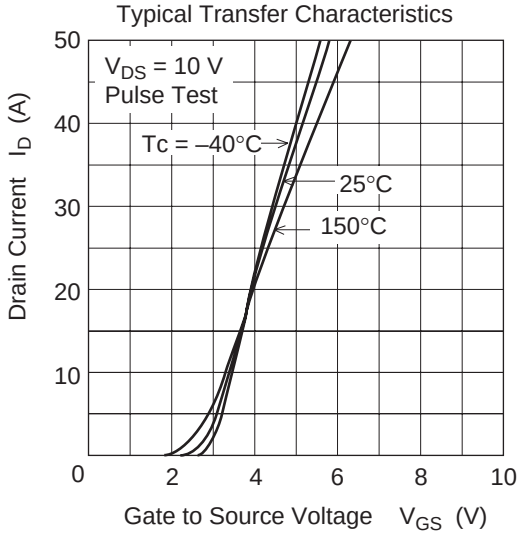
Maximum Safe Operation Area



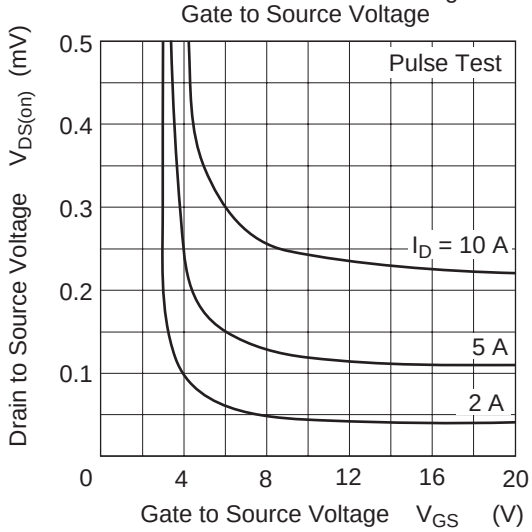
Typical Output Characteristics



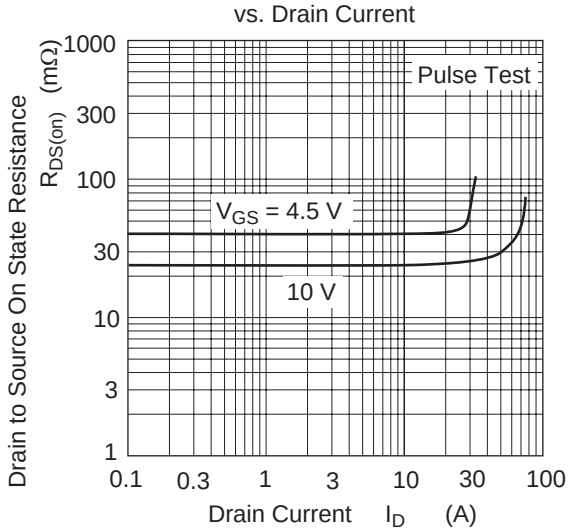
Typical Transfer Characteristics



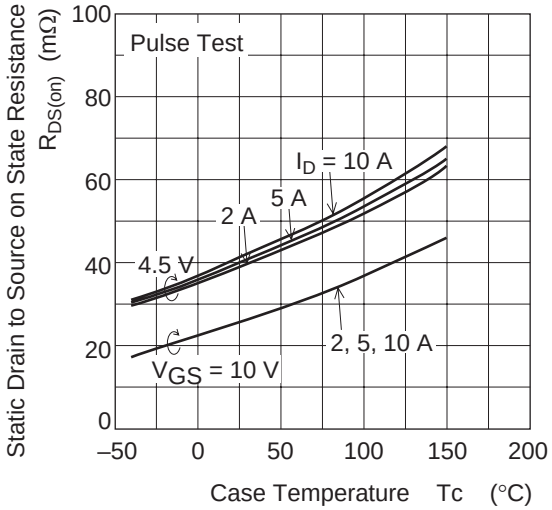
Drain to Source Saturation Voltage vs. Gate to Source Voltage



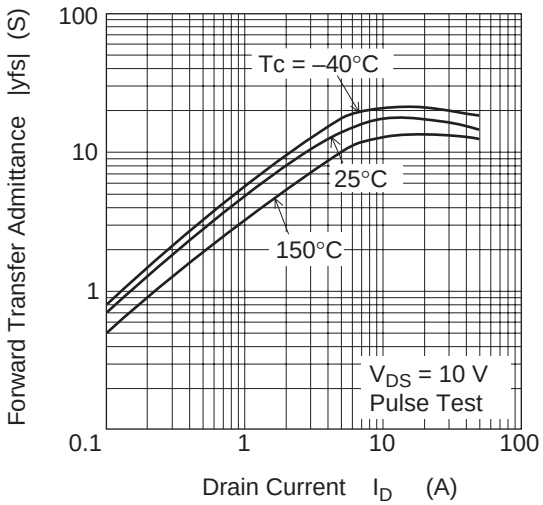
Static Drain to Source on State Resistance vs. Drain Current



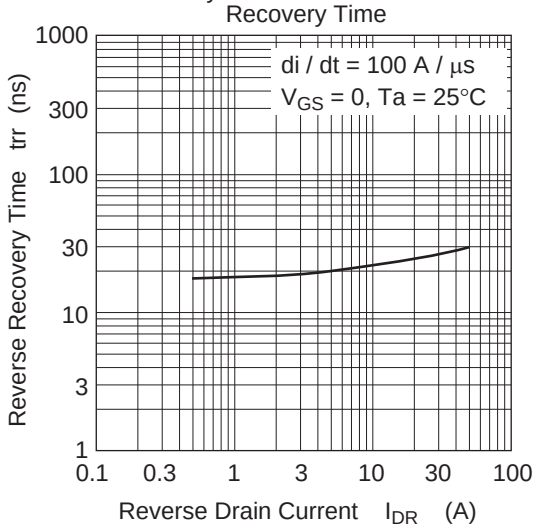
Static Drain to Source on State Resistance vs. Temperature



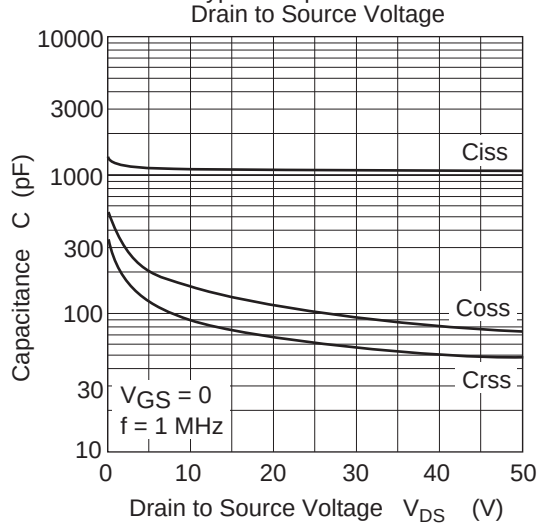
Forward Transfer Admittance vs. Drain Current



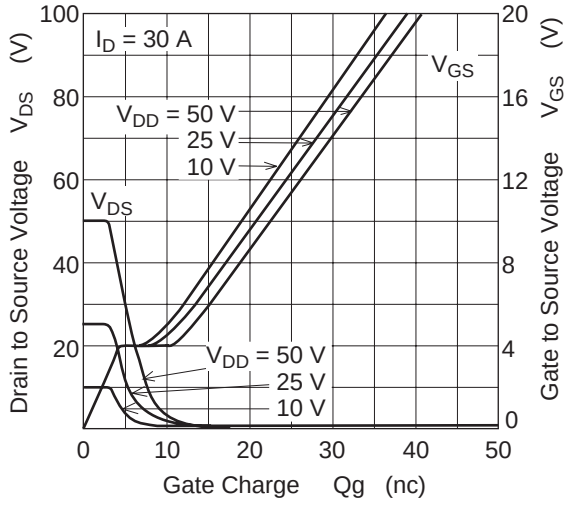
Body-Drain Diode Reverse Recovery Time



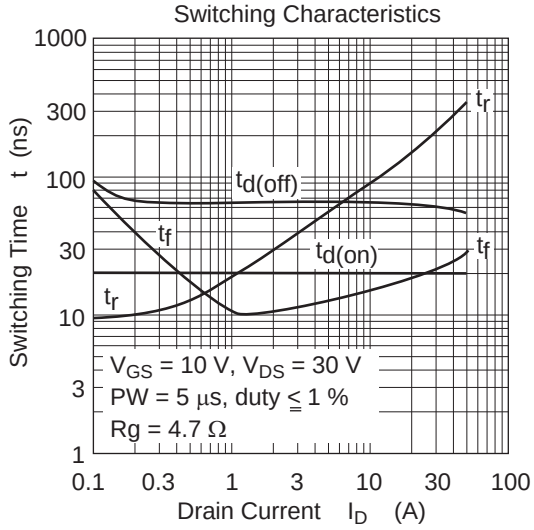
Typical Capacitance vs. Drain to Source Voltage



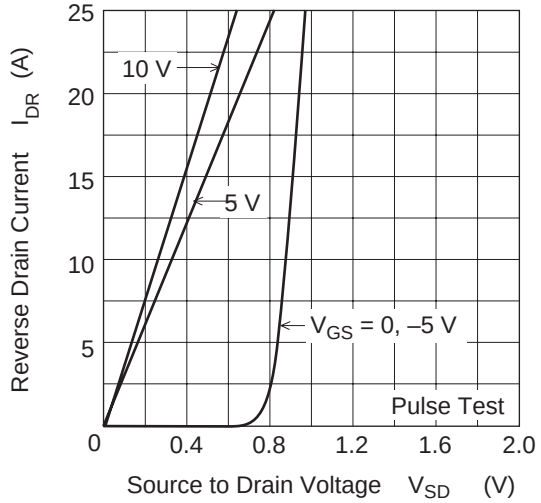
Dynamic Input Characteristics



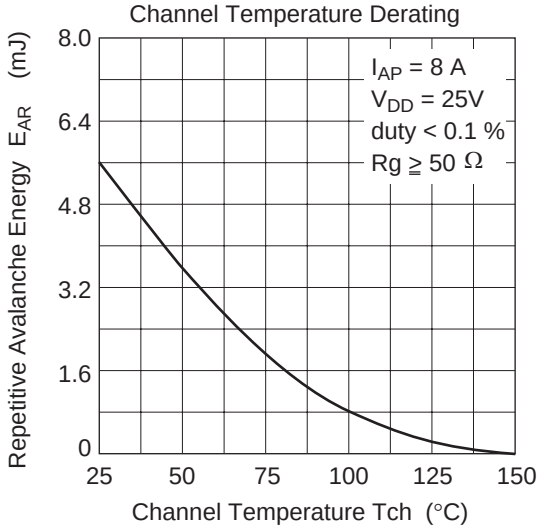
Switching Characteristics



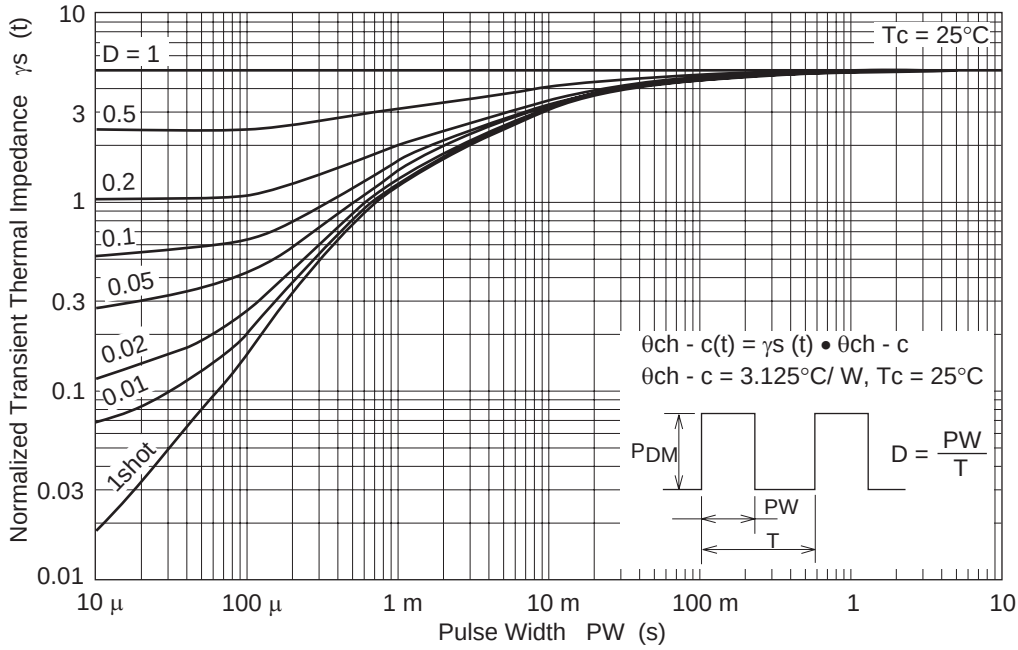
Reverse Drain Current vs. Source to Drain Voltage



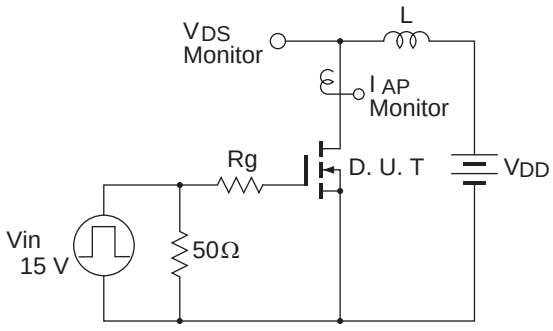
Maximum Avalanche Energy vs. Channel Temperature Derating



Normalized Transient Thermal Impedance vs. Pulse Width

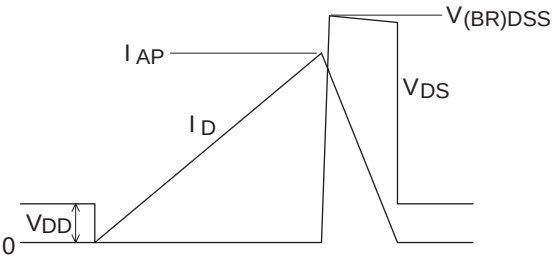


Avalanche Test Circuit

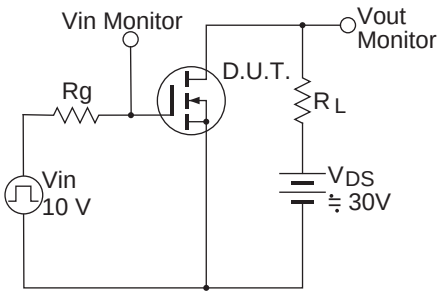


Avalanche Waveform

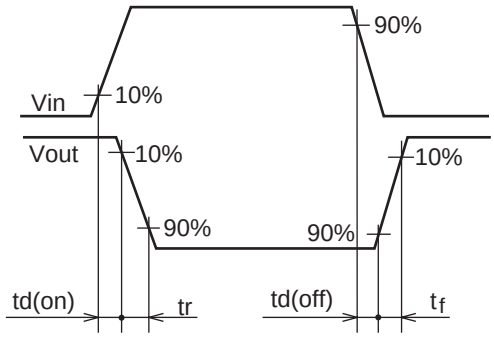
$$E_{AR} = \frac{1}{2} \bullet L \bullet I_{AP}^2 \bullet \frac{V_{DSS}}{V_{DSS} - V_{DD}}$$



Switching Time Test Circuit



Switching Time Waveform

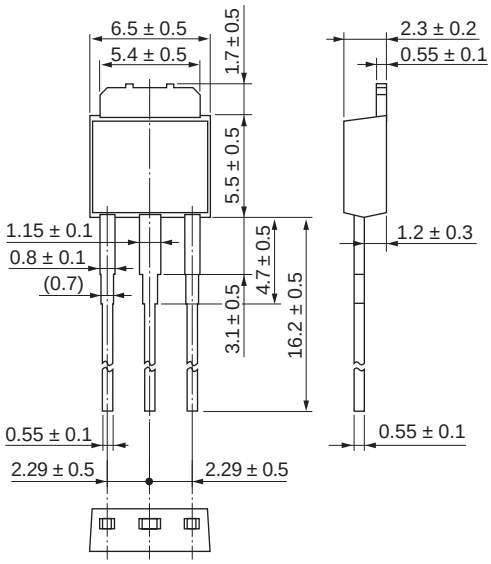


Package Dimensions

• H7N0607DL

JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
—	PRSS0004ZD-B	DPAK(L)-(2) / DPAK(L)-(2)V	0.42g

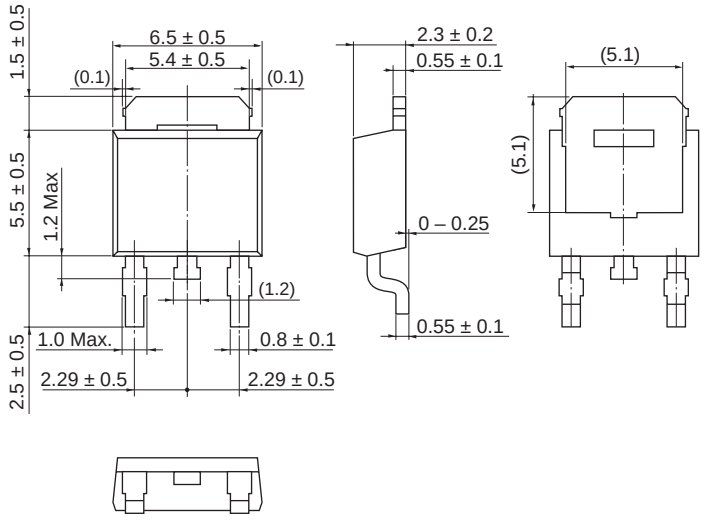
Unit: mm



• H7N0607DS

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

Unit: mm



Ordering Information

Part Name	Quantity	Shipping Container
H7N0607DL	100 pcs	Sack
H7N0607DSTL	3000 pcs	Taping
H7N0607DL-E	100 pcs	Sack
H7N0607DSTL-E	3000 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.

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Colophon .2.0