

To our customers,

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## Old Company Name in Catalogs and Other Documents

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April 1<sup>st</sup>, 2010  
Renesas Electronics Corporation

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# RQJ0304DQDQS

Silicon P Channel MOS FET  
Power Switching

REJ03G1778-0100

Rev.1.00

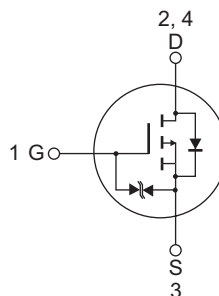
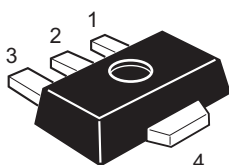
Mar 16, 2009

## Features

- Low gate drive  
 $V_{DSS}$  : -30 V and 2.5 V gate drive
- Low drive current
- High speed switching
- Small traditional Power package (UPAK)

## Outline

RENESAS package code: PLZZ0004CA-A  
(Package name: UPAK®)



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

Notes: Marking is "DQ".

## Absolute Maximum Ratings

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

Item	Symbol	Ratings	Unit
Drain to source voltage	$V_{DSS}$	-30	V
Gate to source voltage	$V_{GSS}$	+8 / -12	V
Drain current	$I_D$	-2.6	A
Drain peak current	$I_{D(pulse)}$ <sup>Note1</sup>	-10	A
Body - drain diode reverse drain current	$I_{DR}$	2.6	A
Channel dissipation	$P_{ch}$ <sup>Note2</sup>	1.5	W
Thermal resistance	$R_{th(ch-a)}$ <sup>Note2</sup>	83	$^\circ\text{C} / \text{W}$
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. When using the glass epoxy board (FR-4 40 × 40 × 1 mm)

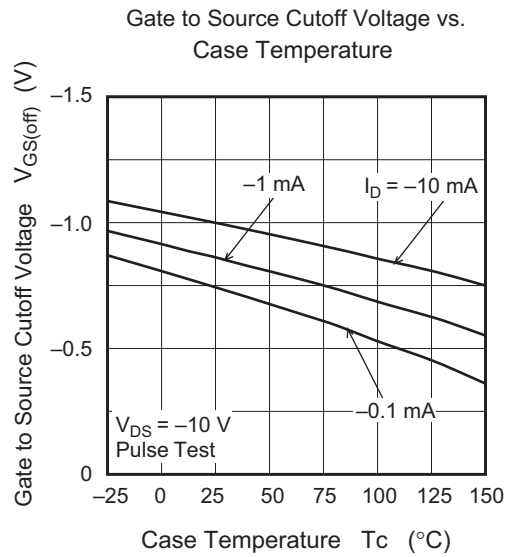
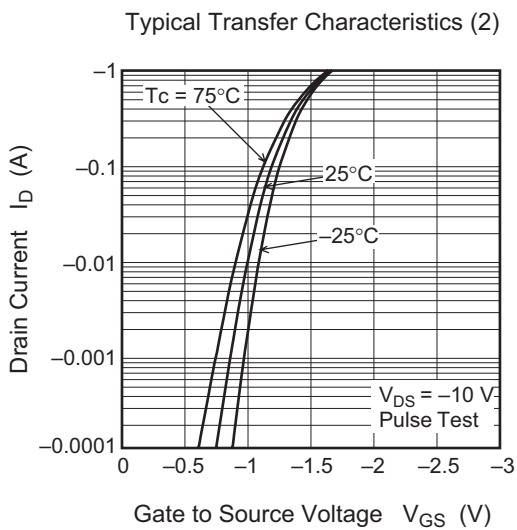
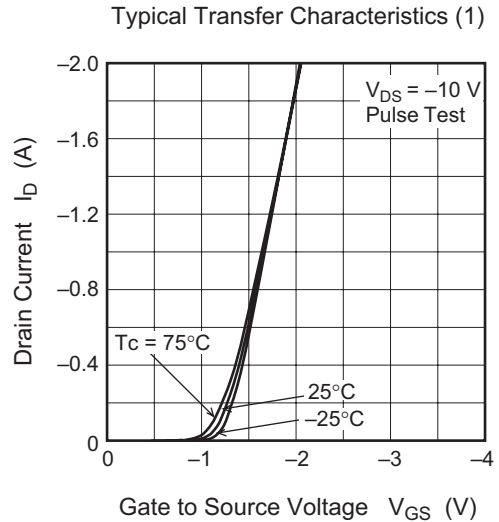
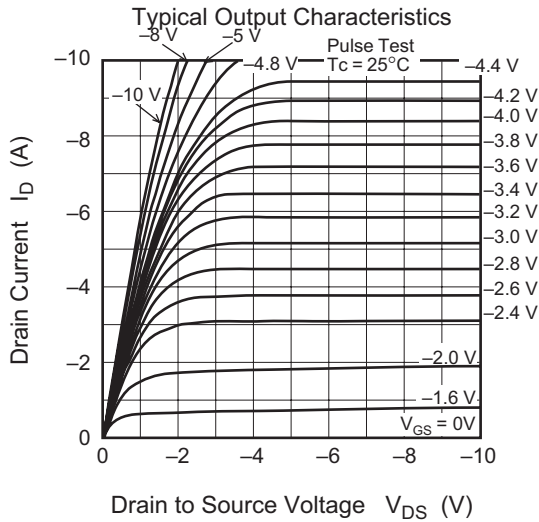
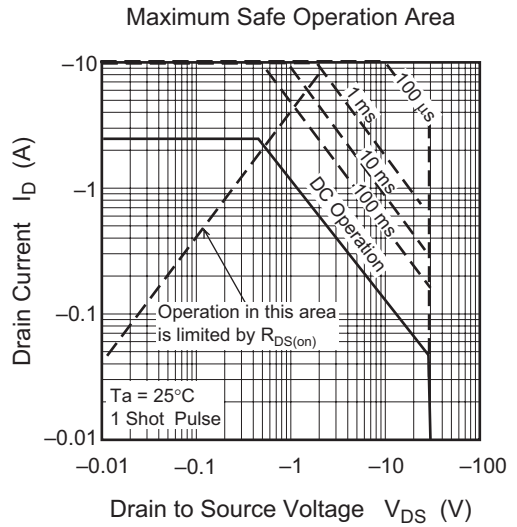
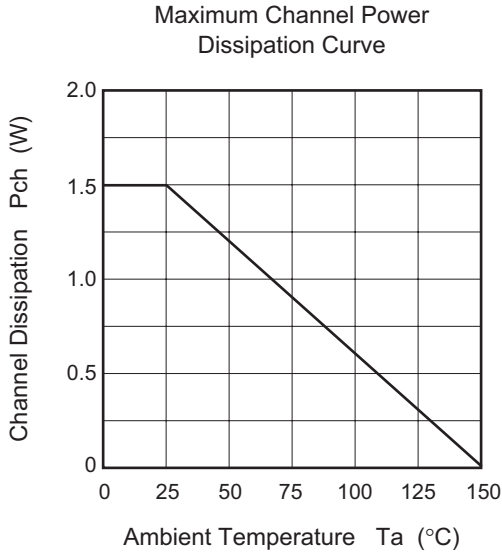
## Electrical Characteristics

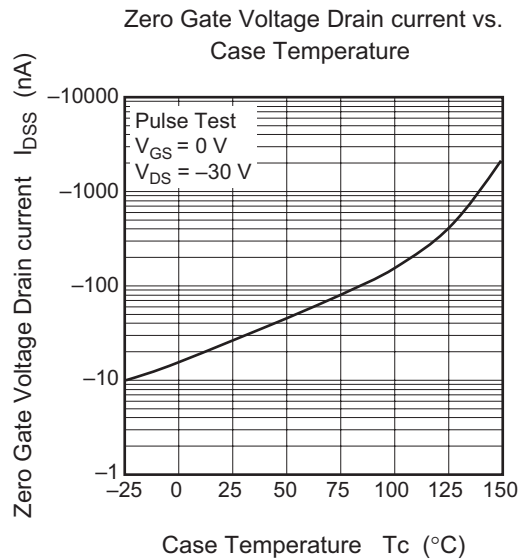
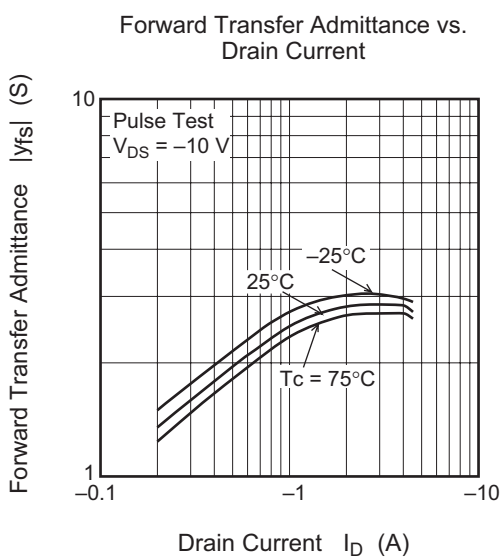
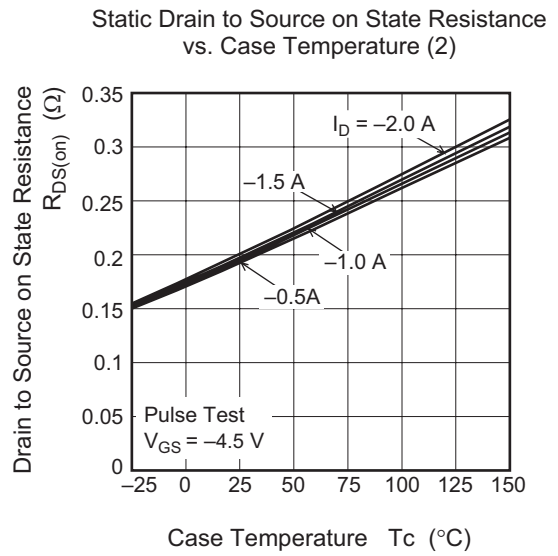
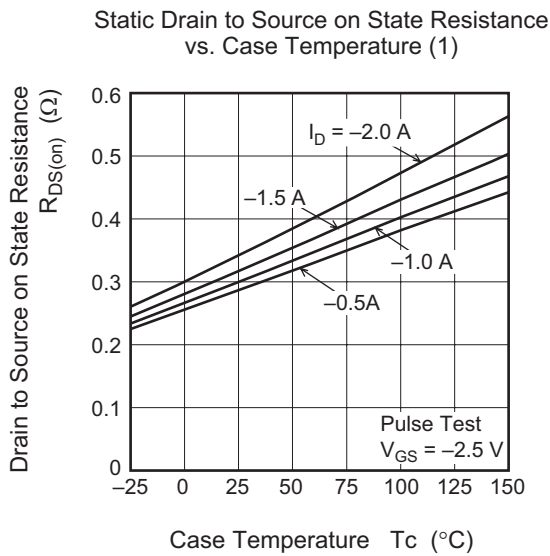
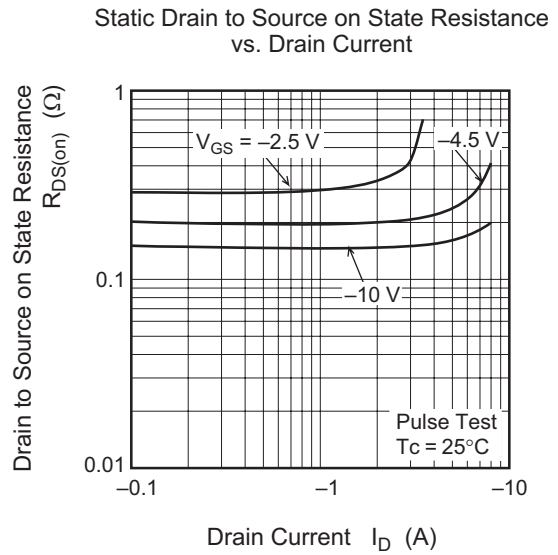
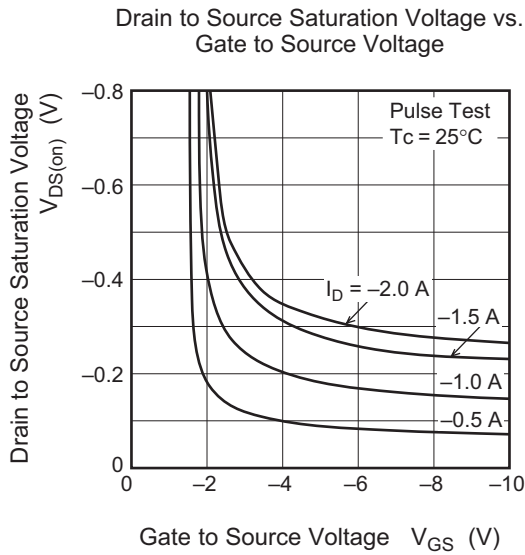
(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	-30	—	—	V	$I_D = -10 \text{ mA}$ , $V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	+8	—	—	V	$I_G = +100 \text{ }\mu\text{A}$ , $V_{DS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	-12	—	—	V	$I_G = -100 \text{ }\mu\text{A}$ , $V_{DS} = 0$
Gate to source leak current	$I_{GSS}$	—	—	+10	$\mu\text{A}$	$V_{GS} = +6 \text{ V}$ , $V_{DS} = 0$
Gate to source leak current	$I_{GSS}$	—	—	-10	$\mu\text{A}$	$V_{GS} = -10 \text{ V}$ , $V_{DS} = 0$
Drain to source leak current	$I_{DSS}$	—	—	-1	$\mu\text{A}$	$V_{DS} = -30 \text{ V}$ , $V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	-0.4	—	-1.4	V	$V_{DS} = -10 \text{ V}$ , $I_D = -1 \text{ mA}$
Drain to source on state resistance	$R_{DS(on)}$	—	195	245	$\text{m}\Omega$	$I_D = -1.3 \text{ A}$ , $V_{GS} = -4.5 \text{ V}$ <sup>Note3</sup>
Drain to source on state resistance	$R_{DS(on)}$	—	300	420	$\text{m}\Omega$	$I_D = -1.3 \text{ A}$ , $V_{GS} = -2.5 \text{ V}$ <sup>Note3</sup>
Forward transfer admittance	$ y_{fs} $	1.8	2.5	—	S	$I_D = -1.3 \text{ A}$ , $V_{DS} = -10 \text{ V}$ <sup>Note3</sup>
Input capacitance	$C_{iss}$	—	185	—	pF	$V_{DS} = -10 \text{ V}$ , $V_{GS} = 0$ , $f = 1 \text{ MHz}$
Output capacitance	$C_{oss}$	—	45	—	pF	
Reverse transfer capacitance	$C_{rss}$	—	25	—	pF	
Turn - on delay time	$t_{d(on)}$	—	18	—	ns	$I_D = -1.0 \text{ A}$ $V_{GS} = -4.5 \text{ V}$ $R_L = 10 \text{ }\Omega$ $R_g = 4.7 \text{ }\Omega$
Rise time	$t_r$	—	33	—	ns	
Turn - off delay time	$t_{d(off)}$	—	22	—	ns	
Fall time	$t_f$	—	5	—	ns	
Total gate charge	$Q_g$	—	1.9	—	nC	$V_{DD} = -10 \text{ V}$
Gate to Source charge	$Q_{gs}$	—	0.4	—	nC	$V_{GS} = -4.5 \text{ V}$
Gate to drain charge	$Q_{gd}$	—	0.7	—	nC	$I_D = -2.0 \text{ A}$
Body - drain diode forward voltage	$V_{DF}$	—	-0.9	-1.3	V	$I_F = -2.6 \text{ A}$ , $V_{GS} = 0$ <sup>Note3</sup>

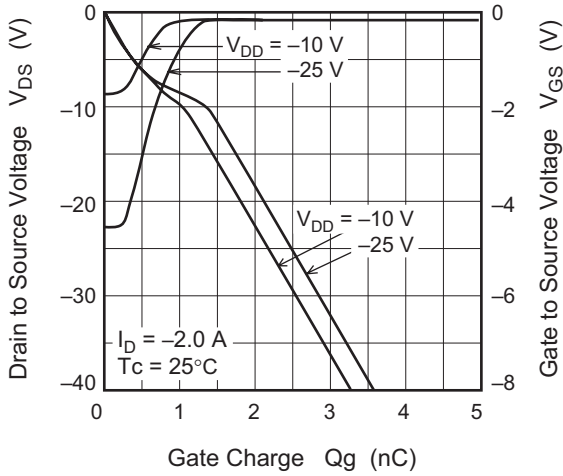
Notes: 3. Pulse test

Main Characteristics

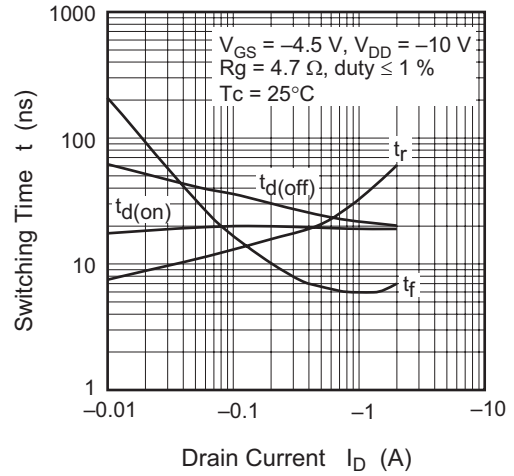




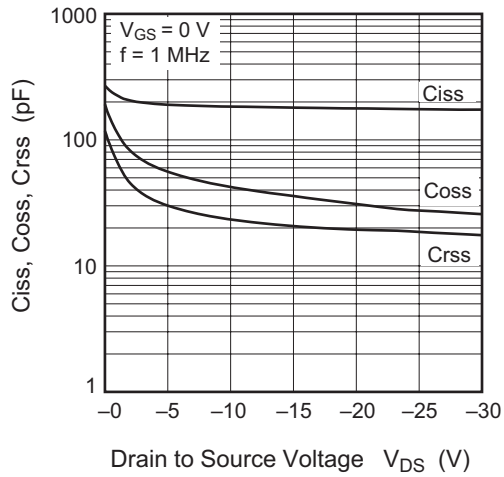
Dynamic Input Characteristics



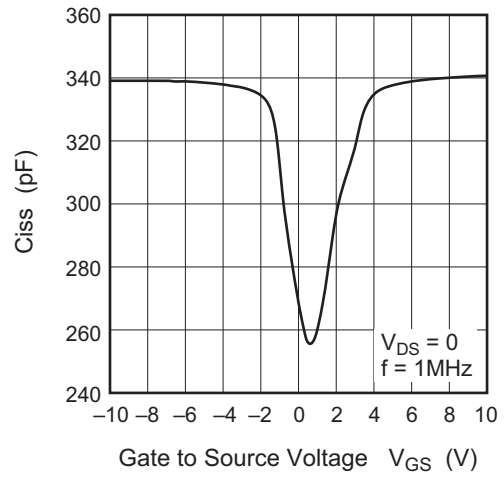
Switching Characteristics



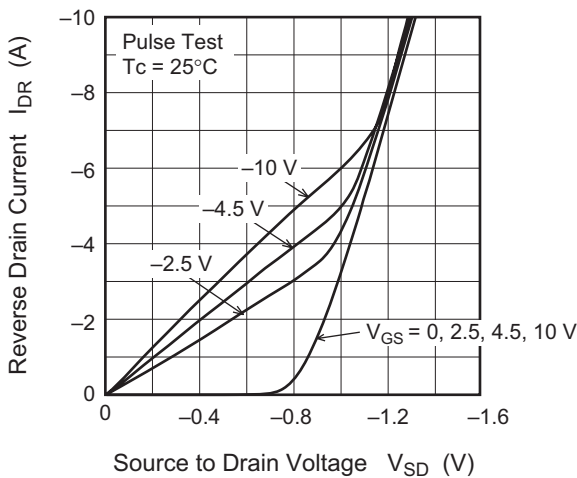
Typical Capacitance vs. Drain to Source Voltage



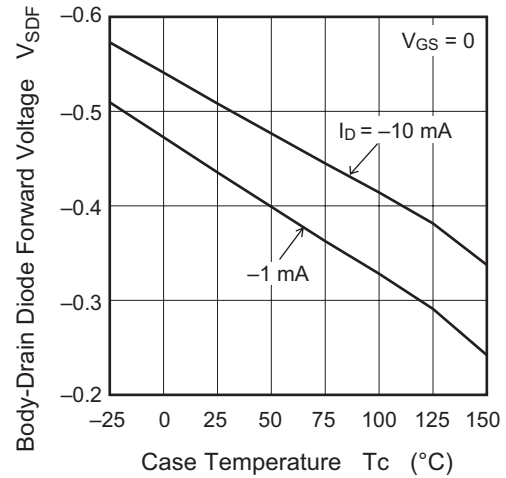
Input Capacitance vs. Gate to Source Voltage

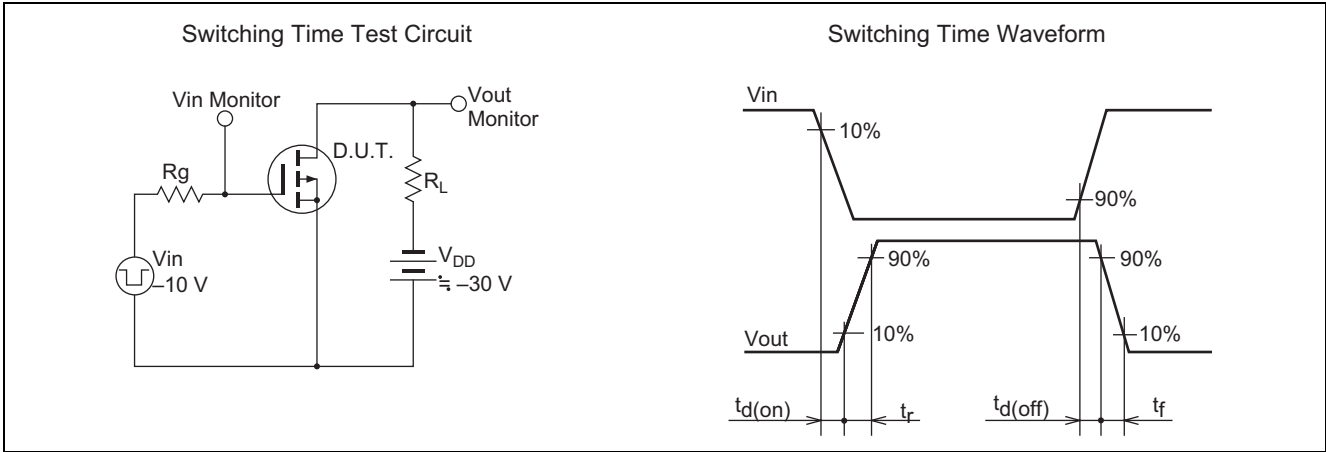


Reverse Drain Current vs. Source to Drain Voltage



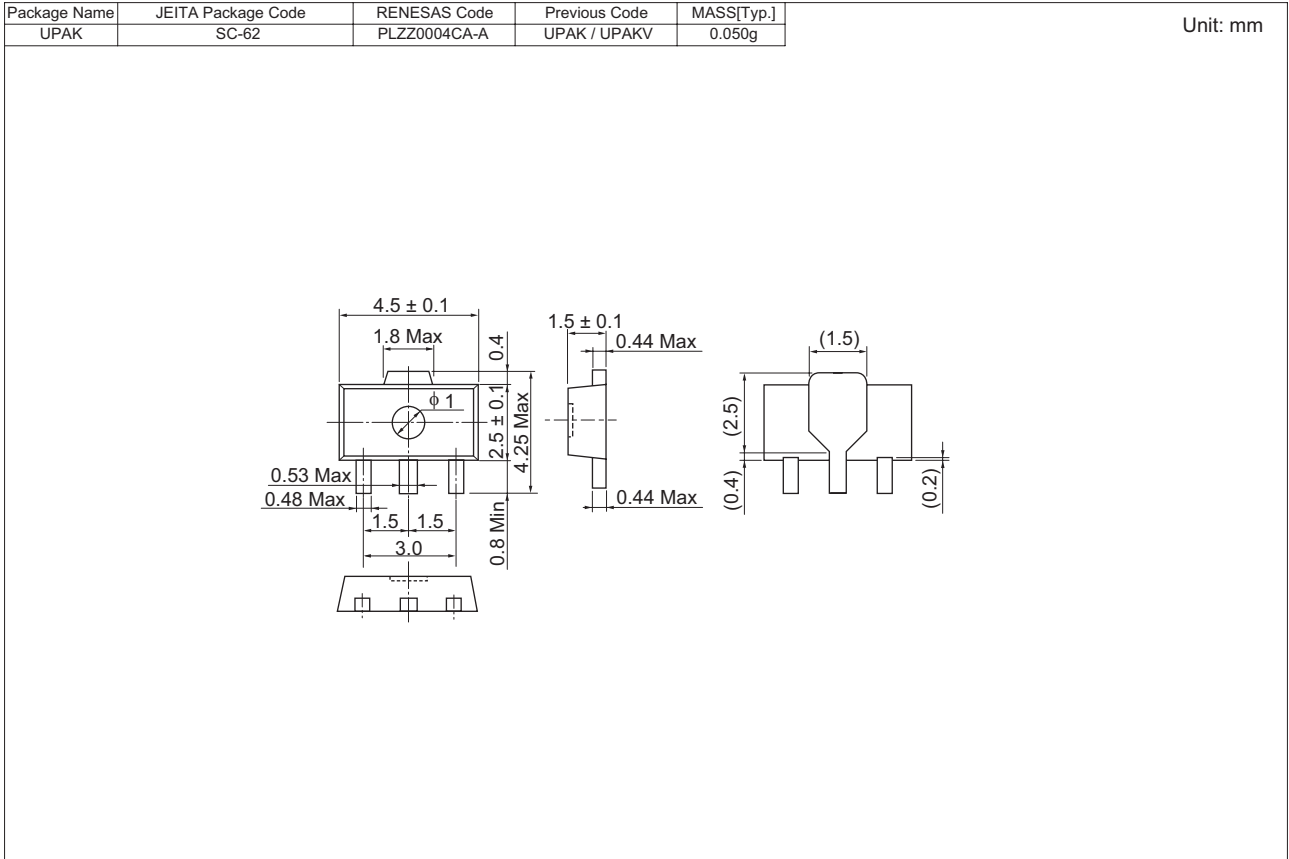
Body-Drain Diode Forward Voltage vs. Case Temperature







**Package Dimensions**



**Ordering Information**

Part No.	Quantity	Shipping Container
RQJ0304DQDQSTL-E	1000 pcs.	$\phi 178$ mm reel, 12 mm Emboss taping

Notes:

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