

# RJK1536DPE

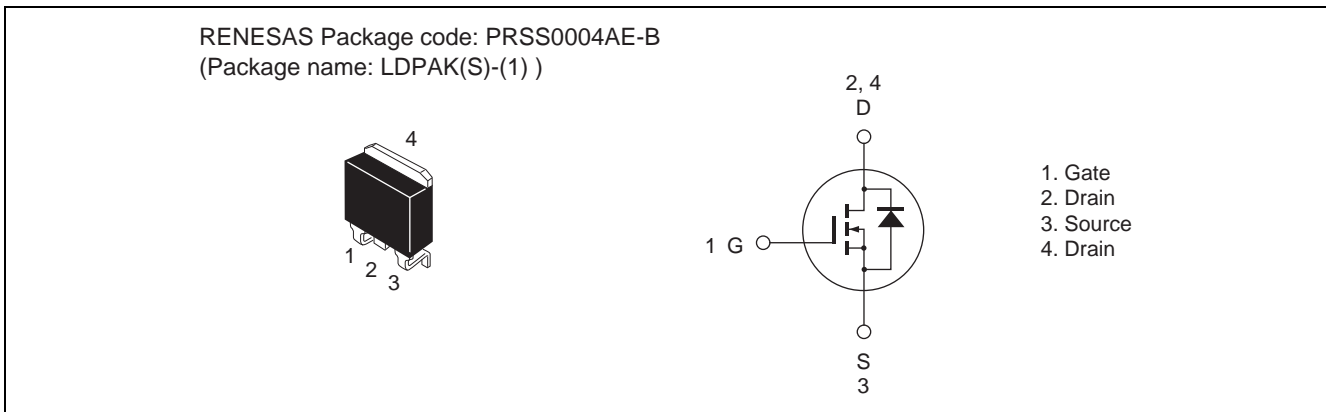
N-Channel Power MOSFET  
High-Speed Switching Use

REJ03G1612-0300  
Rev.3.00  
Jun 30, 2010

## Features

- $V_{DSS}$  : 150 V
- $R_{DS(on)}$  : 30 m $\Omega$  (Max)
- $I_D$  : 50 A

## Outline



## Application

- Motor control, Lighting control, Solenoid control, DC-DC converter, etc.

## Absolute Maximum Ratings

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

Item	Symbol	Ratings	Unit
Drain to source voltage	$V_{DSS}$	150	V
Gate to source voltage	$V_{GSS}$	$\pm 20$	V
Drain current	$I_D$	50	A
Drain peak current	$I_{D(pulse)}$	100	A
Body-drain diode reverse drain current	$I_{DR}$	50	A
Body-drain diode reverse drain peak current	$I_{DR(pulse)}$	100	A
Avalanche current	$I_{AP}$ <sup>Note2</sup>	25	A
Channel dissipation	$P_{ch}$ <sup>Note1</sup>	125	W
Channel to case thermal impedance	$\theta_{ch-c}$	1.0	$^\circ\text{C}/\text{W}$
Channel temperature	$T_{ch}$	150	$^\circ\text{C}$
Storage temperature	$T_{stg}$	-55 to +150	$^\circ\text{C}$

Notes: 1. Value at  $T_c = 25^\circ\text{C}$

2.  $ST_{ch} = 25^\circ\text{C}$ ,  $T_{ch} \leq 150^\circ\text{C}$ ,  $L = 100 \mu\text{H}$

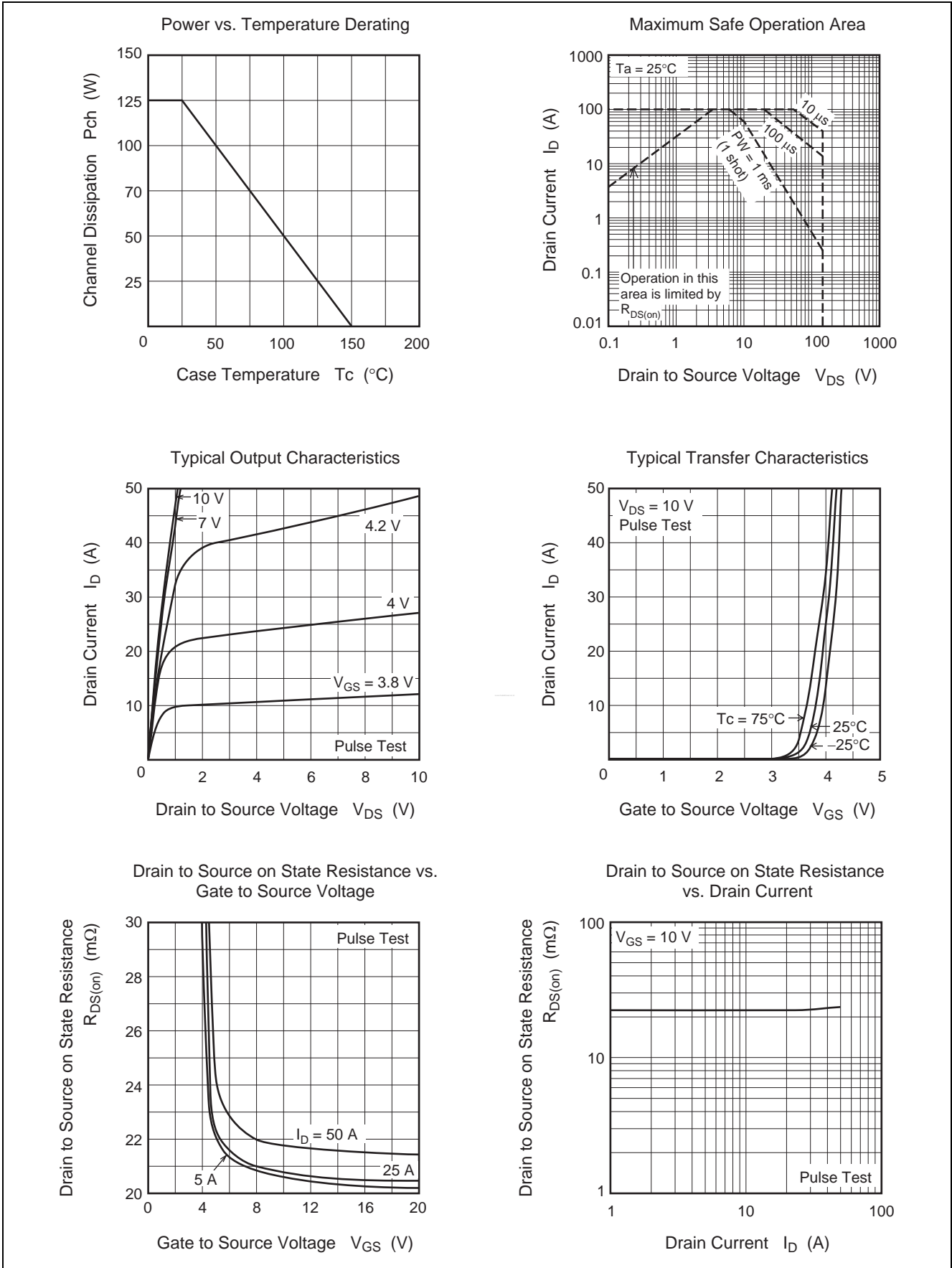
## Electrical Characteristics

(Ta = 25°C)

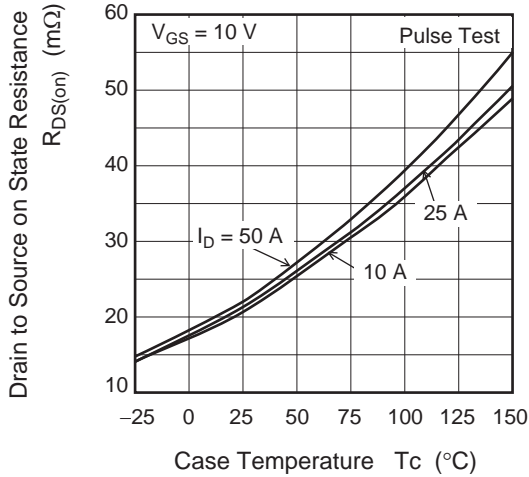
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	150	—	—	V	$I_D = 1 \text{ mA}, V_{GS} = 0$
Zero gate voltage drain current	$I_{DSS}$	—	—	100	$\mu\text{A}$	$V_{DS} = 150 \text{ V}, V_{GS} = 0$
Gate to source leak current	$I_{GSS}$	—	—	$\pm 0.1$	$\mu\text{A}$	$V_{GS} = \pm 20 \text{ V}, V_{DS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	2.0	3.0	4.0	V	$I_D = 1 \text{ mA}, V_{DS} = 10 \text{ V}$ <sup>Note3</sup>
Static drain to source on state voltage	$V_{DS(on)}$	—	0.60	0.75	V	$I_D = 25 \text{ A}, V_{GS} = 10 \text{ V}$ <sup>Note3</sup>
Static drain to source on state resistance	$R_{DS(on)}$	—	24	30	$\text{m}\Omega$	$I_D = 25 \text{ A}, V_{GS} = 10 \text{ V}$ <sup>Note3</sup>
Input capacitance	$C_{iss}$	—	5000	—	pF	$V_{DS} = 10 \text{ V}$ $V_{GS} = 0$ $f = 1 \text{ MHz}$
Output capacitance	$C_{oss}$	—	560	—	pF	
Reverse transfer capacitance	$C_{rss}$	—	165	—	pF	
Turn-on delay time	$t_{d(on)}$	—	50	—	ns	$V_{DD} = 80 \text{ V}$ $I_D = 25 \text{ A}$ $V_{GS} = 10 \text{ V}$ $R_G = 25 \Omega$
Rise time	$t_r$	—	75	—	ns	
Turn-off delay time	$t_{d(off)}$	—	250	—	ns	
Fall time	$t_f$	—	100	—	ns	
Body-drain diode forward voltage	$V_{DF}$	—	0.9	1.5	V	$I_F = 25 \text{ A}, V_{GS} = 0$
Body-drain diode reverse recovery time	$t_{rr}$	—	130	—	ns	$I_F = 50 \text{ A}, V_{GS} = 0$ $di_F/dt = 100 \text{ A}/\mu\text{s}$

Notes: 3. Pulse test

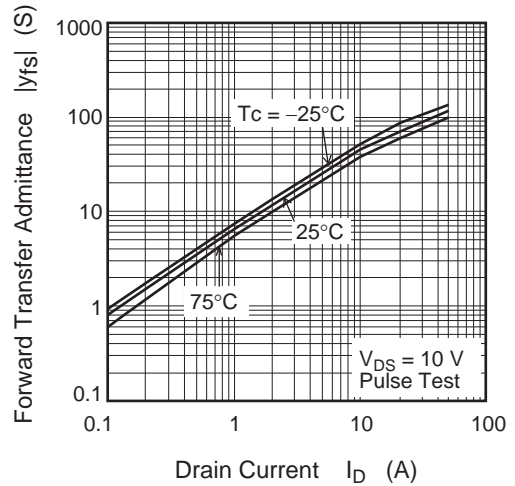
### Main Characteristics



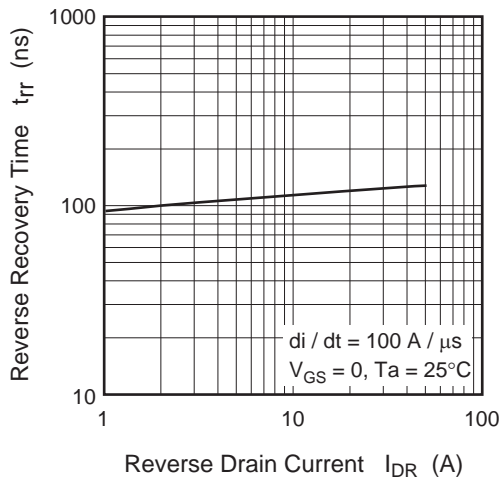
Drain to Source on State Resistance vs. Temperature



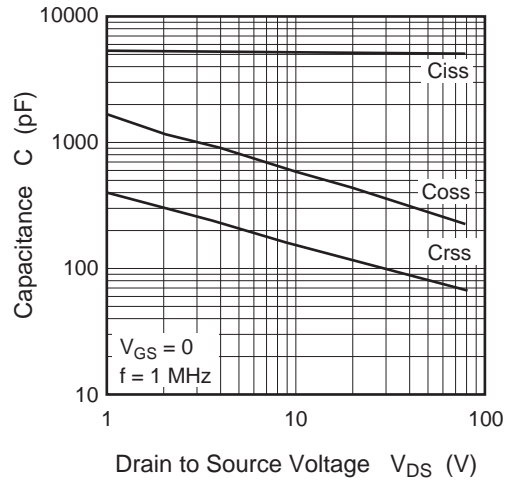
Forward Transfer Admittance vs. Drain Current



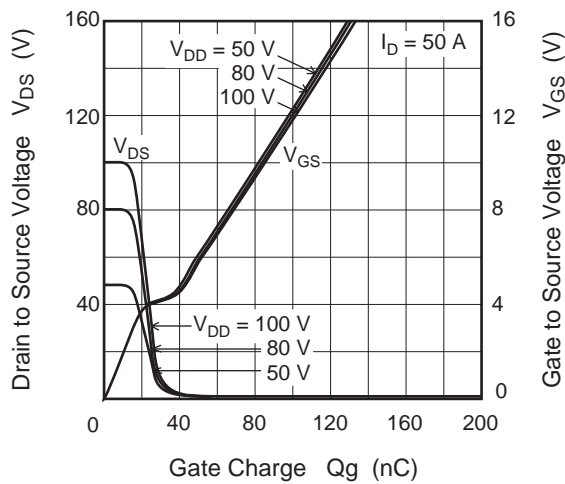
Body-Drain Diode Reverse Recovery Time



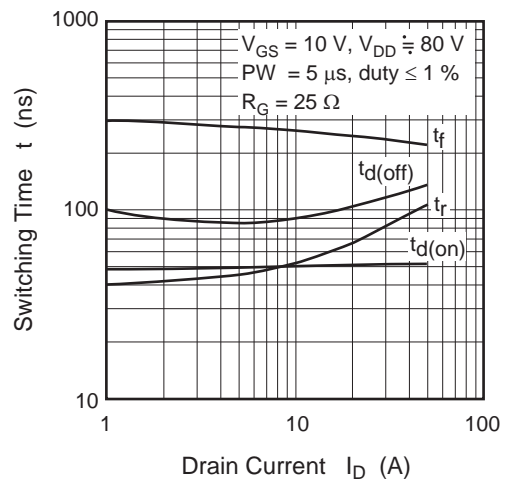
Typical Capacitance vs. Drain to Source Voltage



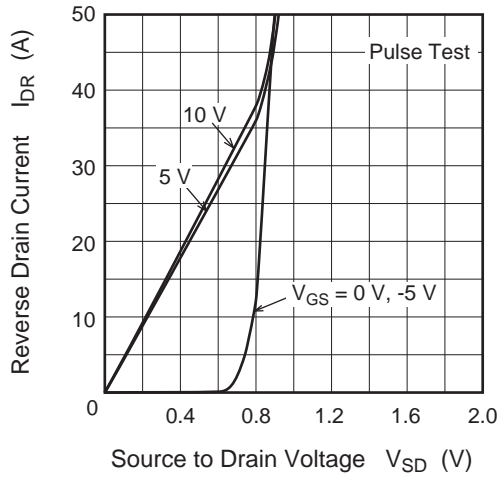
Dynamic Input Characteristics



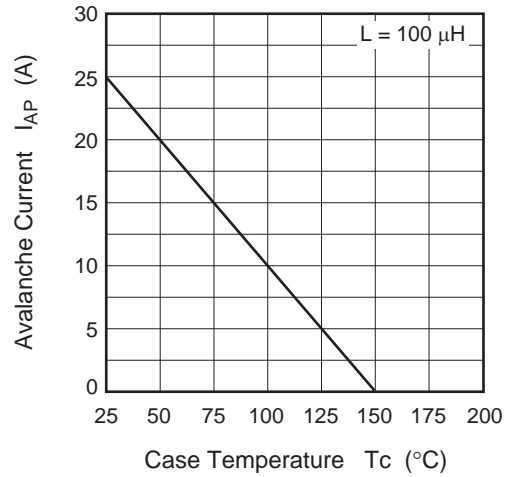
Switching Characteristics



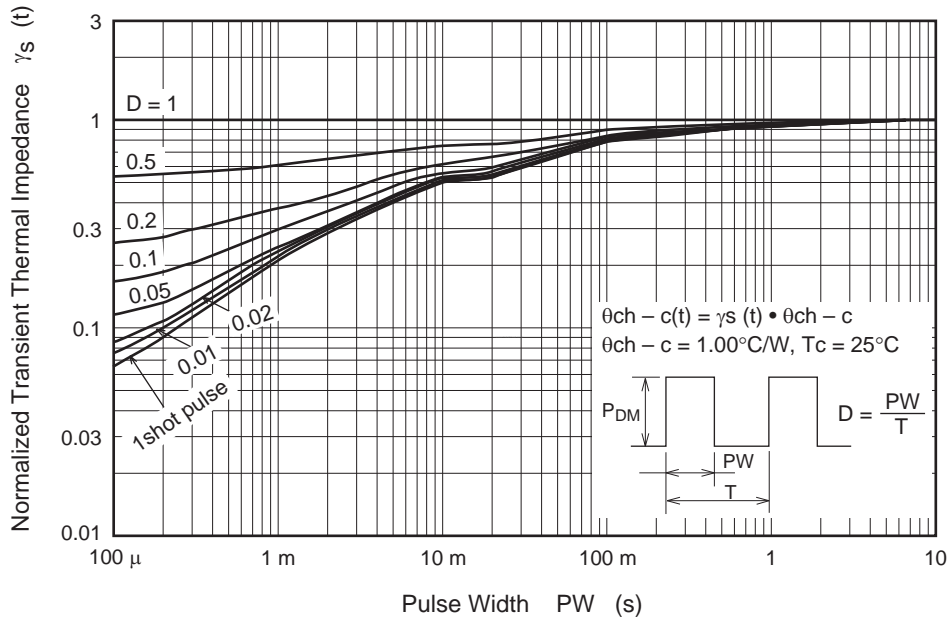
Reverse Drain Current vs. Source to Drain Voltage



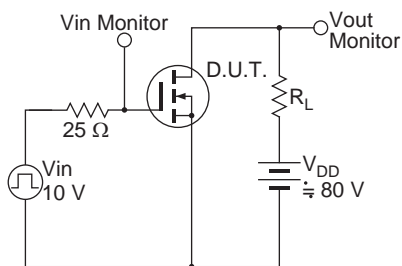
Avalanche Current vs. Case Temperature



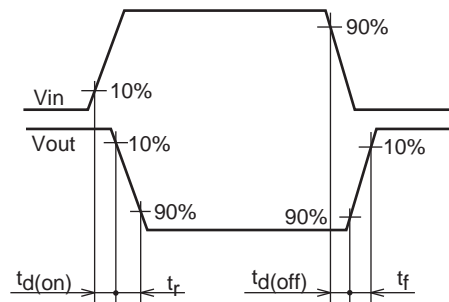
Normalized Transient Thermal Impedance vs. Pulse Width



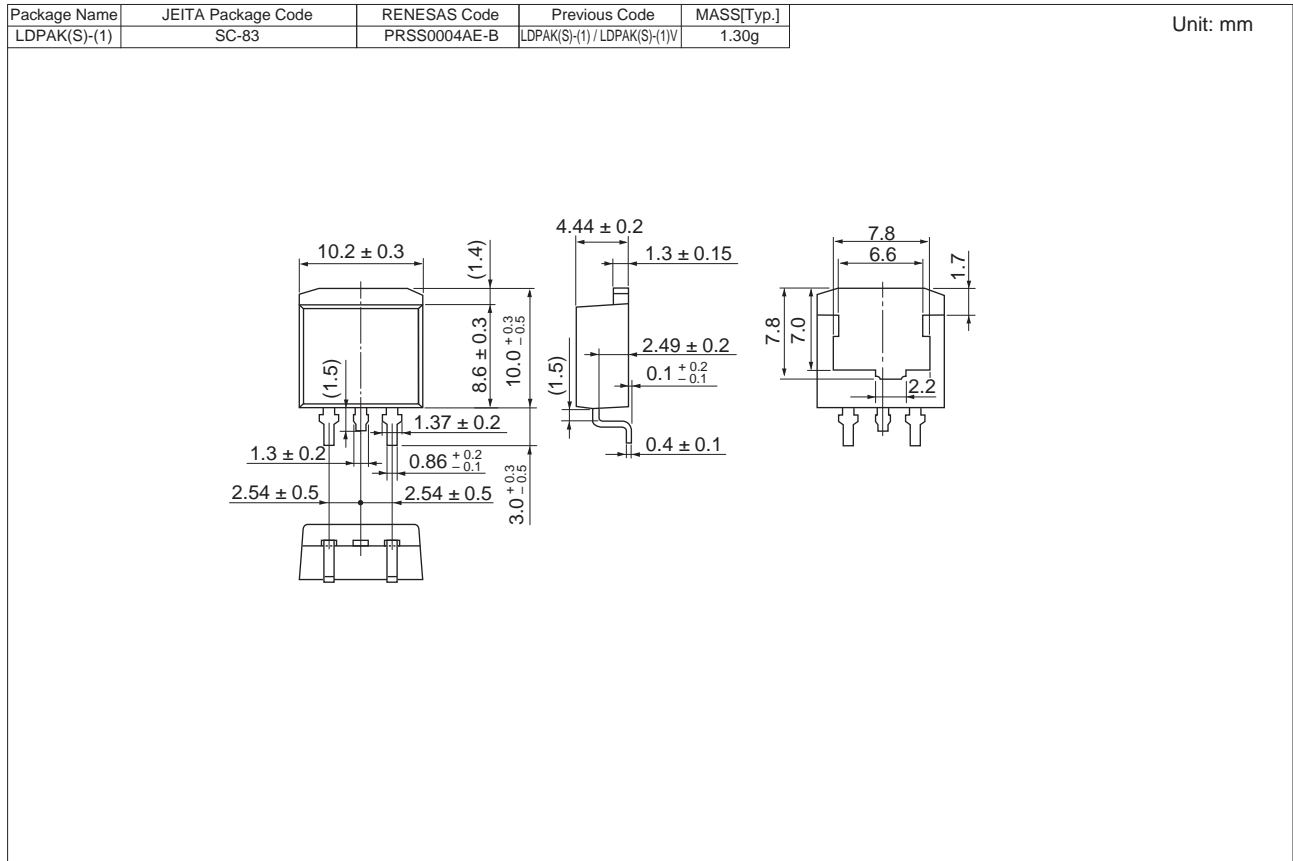
Switching Time Test Circuit



Waveform



### Package Dimensions



### Ordering Information

Part Name	Quantity	Shipping Container
RJK1536DPE-00-J3	1000 pcs	Taping

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