

# RQK0606KGDQA

## Silicon N Channel MOS FET Power Switching

REJ03G1497-0100

Rev.1.00

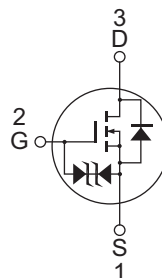
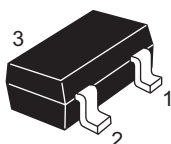
Jan 15, 2007

### Features

- Low on-resistance  
 $R_{DS(on)} = 173 \text{ m}\Omega$  typ.(at  $V_{GS} = 4.5 \text{ V}$ ,  $I_D = 0.8 \text{ A}$ )
- Low drive current
- High speed switching
- $V_{DSS} \geq 60 \text{ V}$  and capable of 2.5 V gate drive

### Outline

RENESAS Package code: PLSP0003ZB-A  
(Package name: MPAK)



1. Source  
2. Gate  
3. Drain

Notes: Marking is "KG".

### Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	$V_{DSS}$	60	V
Gate to source voltage	$V_{GSS}$	$\pm 12$	V
Drain current	$I_D$	1.5	A
Drain peak current	$I_{D(pulse)}$ <sup>Note1</sup>	6	A
Body - drain diode reverse drain current	$I_{DR}$	1.5	A
Channel dissipation	$P_{ch}$ <sup>Note2</sup>	0.8	W
Channel temperature	$T_{ch}$	150	°C
Storage temperature	$T_{stg}$	-55 to +150	°C

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

2. When using the glass epoxy board (FR-4 40 × 40 × 1 mm)

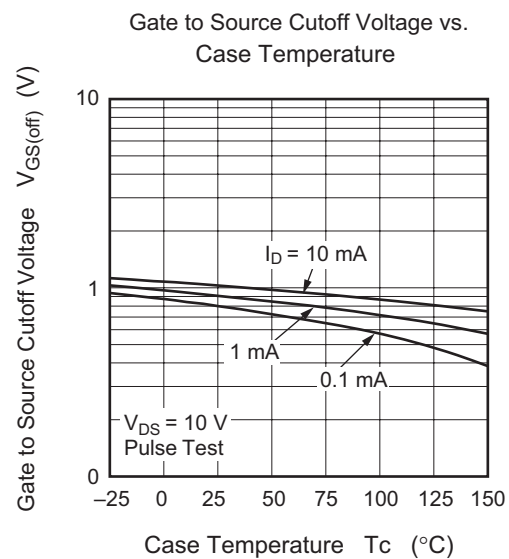
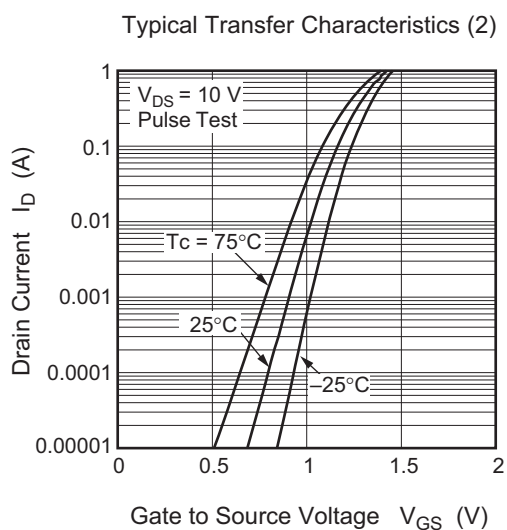
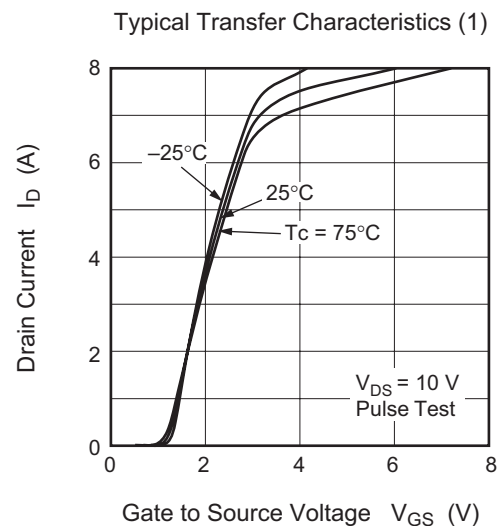
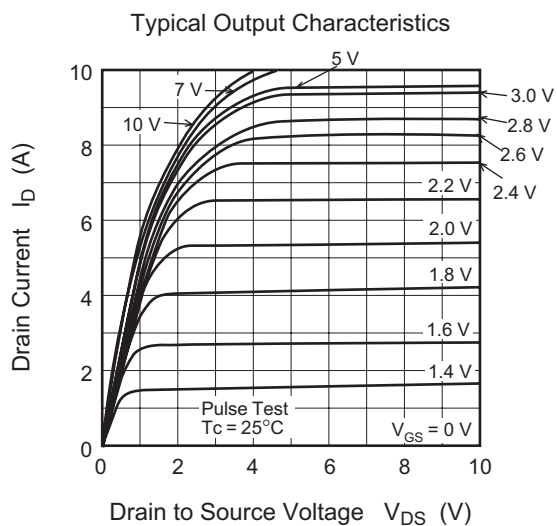
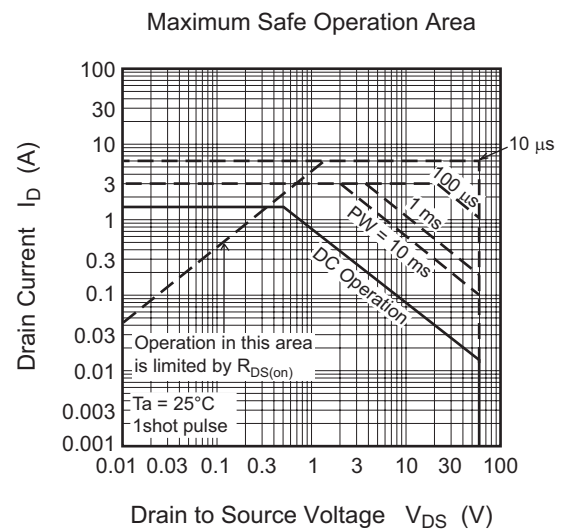
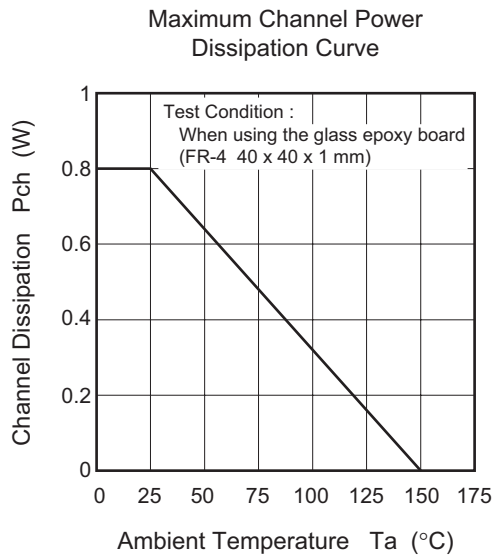
## Electrical Characteristics

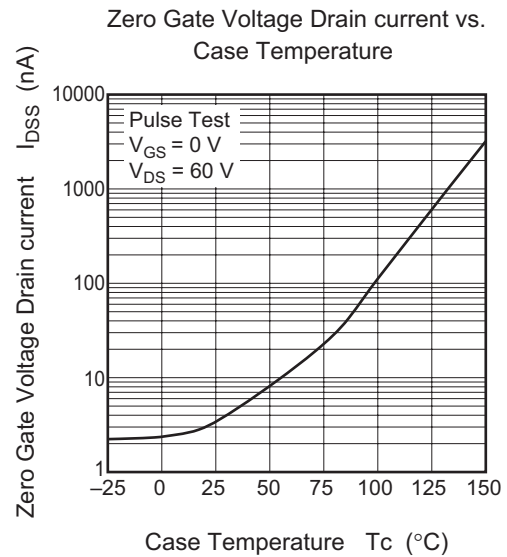
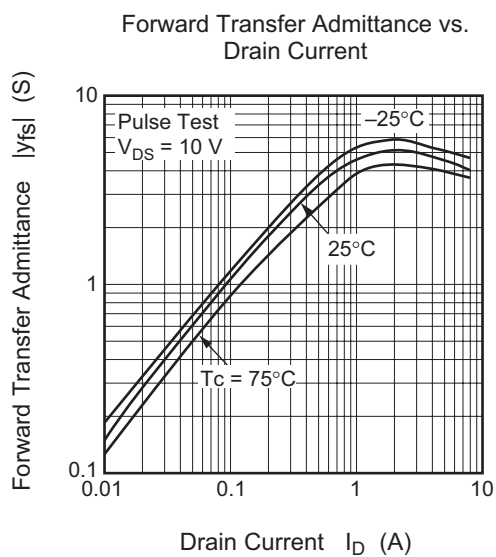
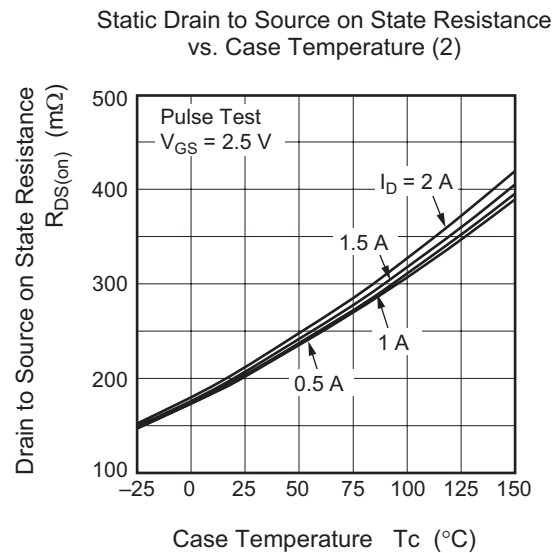
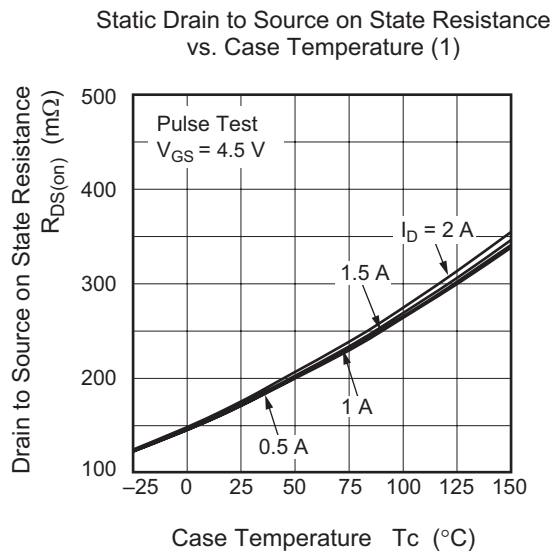
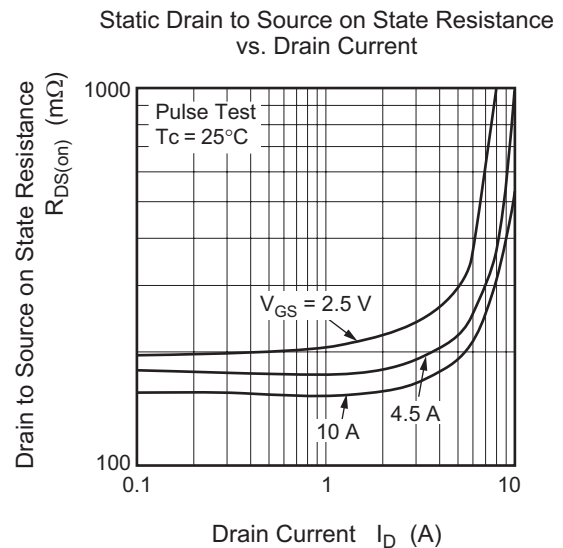
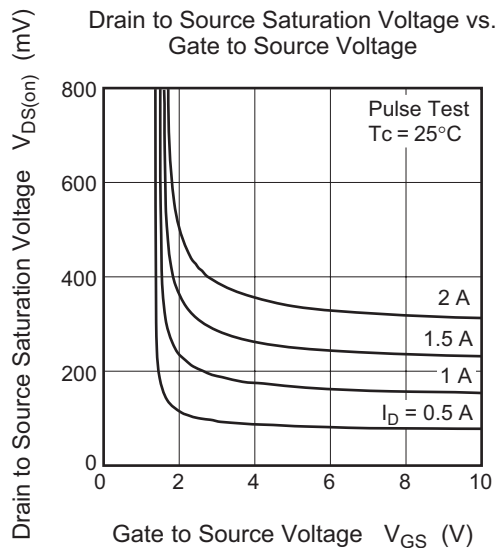
(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	60	—	—	V	$I_D = 10 \text{ mA}$ , $V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	+12	—	—	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	$\mu\text{A}$	$V_{GS} = +10 \text{ V}$ , $V_{DS} = 0$
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	$\mu\text{A}$	$V_{DS} = 60 \text{ V}$ , $V_{GS} = 0$
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	$R_{DS(on)}$	—	173	225	$\text{m}\Omega$	$I_D = 0.8 \text{ A}$ , $V_{GS} = 4.5 \text{ V}$ <sup>Note3</sup>
Drain to source on state resistance	$R_{DS(on)}$	—	207	290	$\text{m}\Omega$	$I_D = 0.8 \text{ A}$ , $V_{GS} = 2.5 \text{ V}$ <sup>Note3</sup>
Forward transfer admittance	$ y_{fs} $	2.3	4	—	S	$I_D = 0.8 \text{ A}$ , $V_{DS} = 10 \text{ V}$ <sup>Note3</sup>
Input capacitance	$C_{iss}$	—	200	—	pF	$V_{DS} = 10 \text{ V}$ $V_{GS} = 0$ $f = 1 \text{ MHz}$
Output capacitance	$C_{oss}$	—	25	—	pF	
Reverse transfer capacitance	$C_{rss}$	—	14	—	pF	
Turn - on delay time	$t_{d(on)}$	—	11	—	ns	$I_D = 0.8 \text{ A}$ $V_{GS} = 10 \text{ V}$ $R_L = 12.5 \text{ } \Omega$ $R_g = 4.7 \text{ } \Omega$
Rise time	$t_r$	—	27	—	ns	
Turn - off delay time	$t_{d(off)}$	—	31	—	ns	
Fall time	$t_f$	—	4	—	ns	
Total gate charge	$Q_g$	—	2.2	—	nC	$V_{DD} = 10 \text{ V}$ $V_{GS} = 4.5 \text{ V}$ $I_D = 1.5 \text{ A}$
Gate to Source charge	$Q_{gs}$	—	0.4	—	nC	
Gate to drain charge	$Q_{gd}$	—	0.7	—	nC	
Body - drain diode forward voltage	$V_{DF}$	—	0.8	—	V	$I_F = 1.5 \text{ A}$ , $V_{GS} = 0$ <sup>Note3</sup>

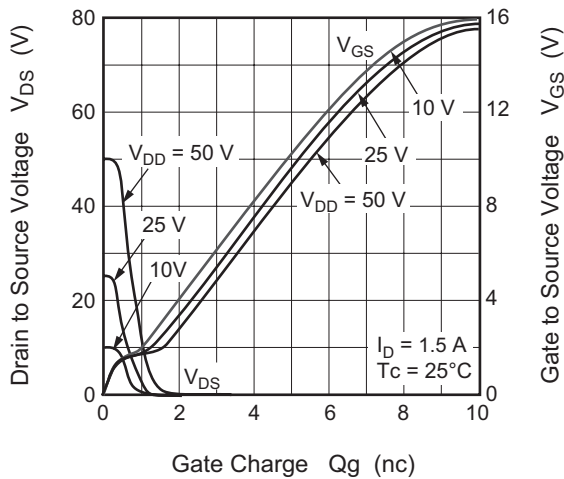
Notes: 3. Pulse test

## Main Characteristics

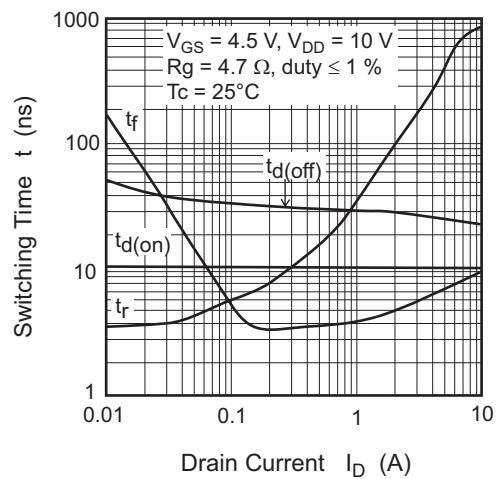




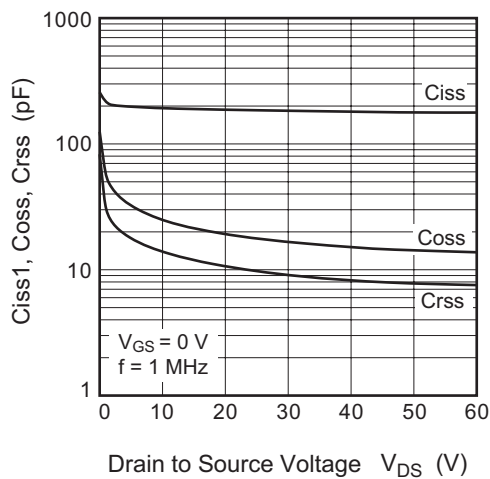
Dynamic Input Characteristics



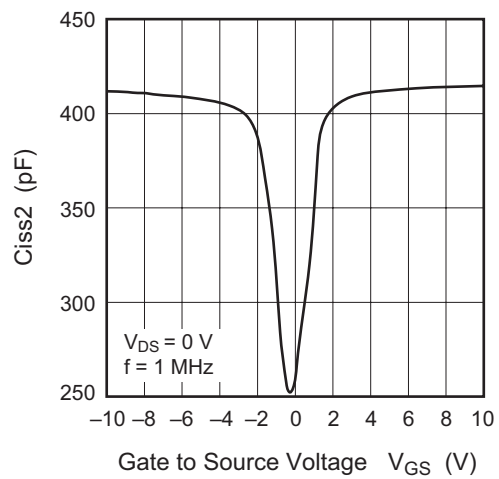
Switching Characteristics



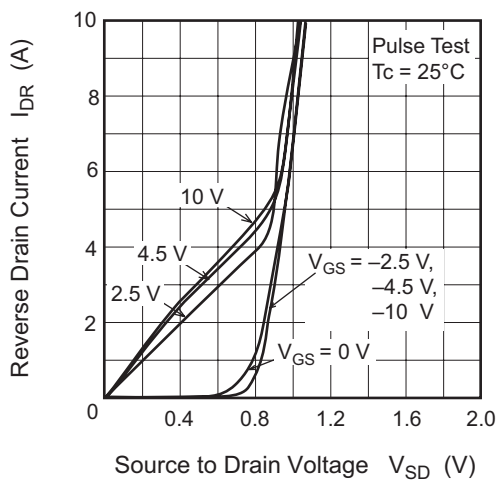
Typical Capacitance vs. Drain to Source Voltage



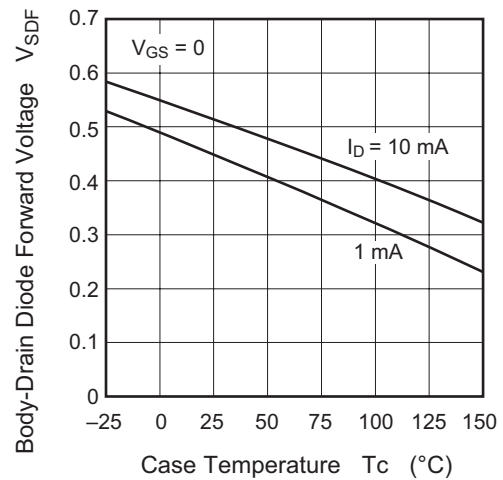
Input Capacitance vs. Gate to Source Voltage



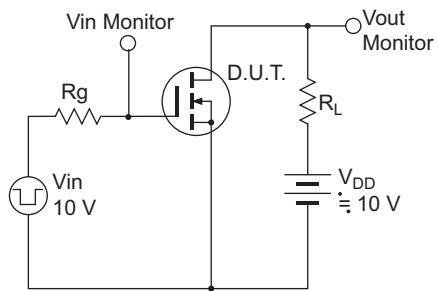
Reverse Drain Current vs. Source to Drain Voltage



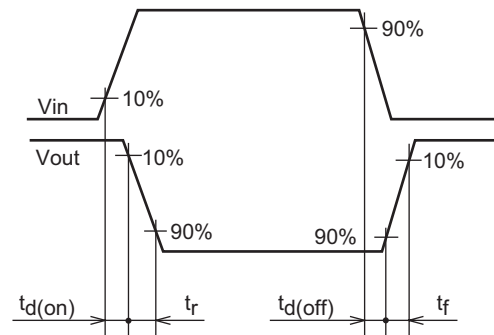
Body-Drain Diode Forward Voltage vs. Case Temperature



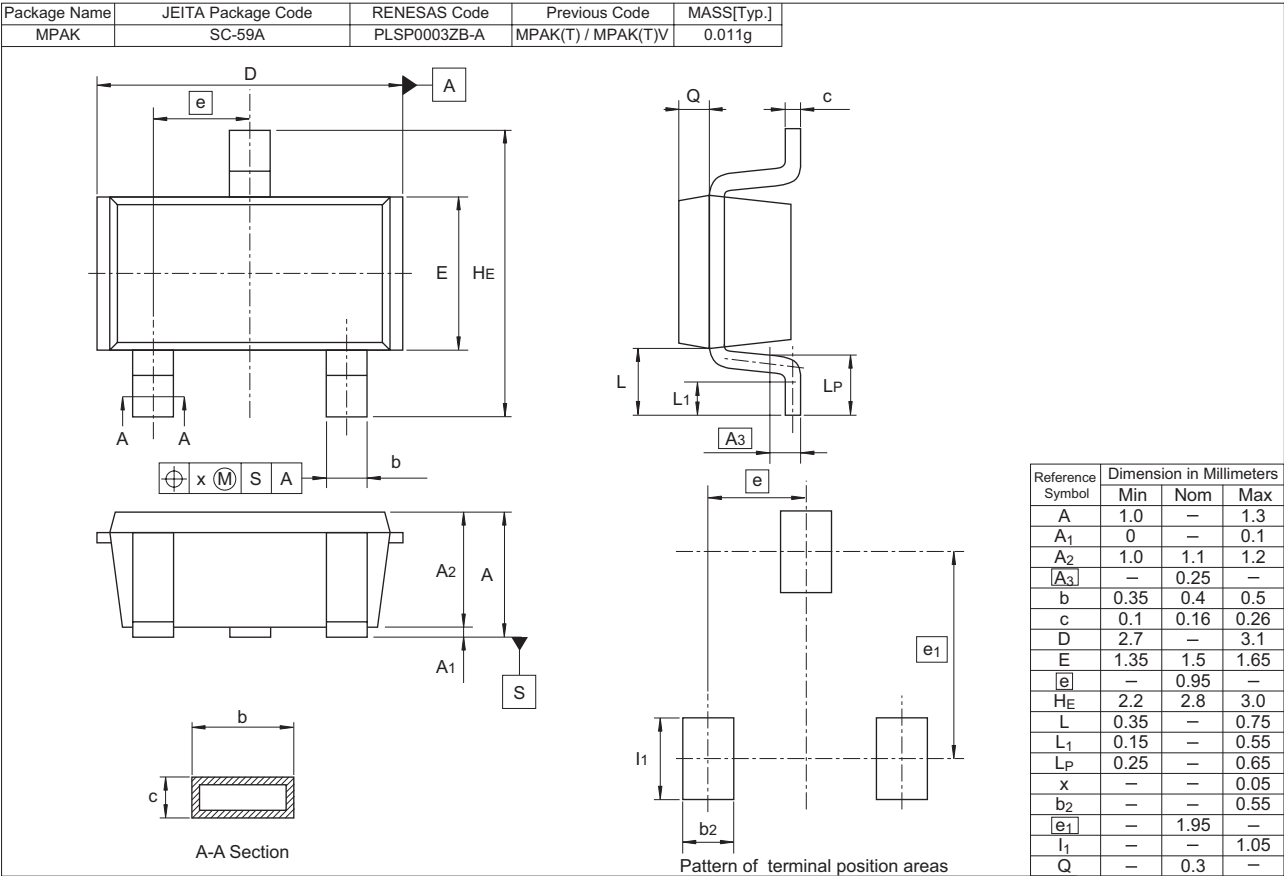
Switching Time Test Circuit



Switching Time Waveform



Package Dimensions



Ordering Information

Part No.	Quantity	Shipping Container
RQK0606KGDQATL-E	3000 pcs.	φ178 mm reel, 8 mm Emboss taping

Notes:

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