

# PQ05RR1/11/1B

1A Output, Low Power-Loss Voltage Regulators (Built-in Reset Signal Generating Function)

## Features

- Low power-loss (Dropout voltage : MAX. 0.5V)
- Compact resin full-mold package
- Built-in reset signal generating function to prevent errors of microcomputer when the output voltage drops.
- Lead forming type (PQ05RR1B) is also available.

## Applications

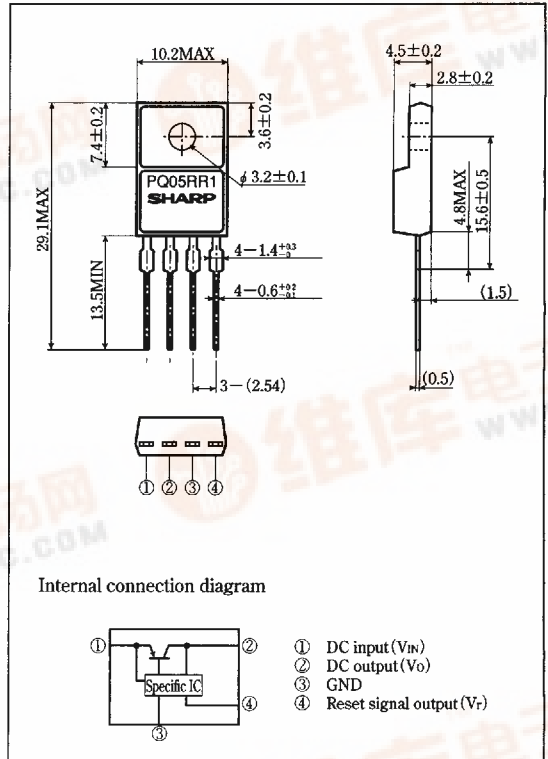
- Series power supply for equipment provided with microcomputer such as electronic musical instruments and VCRs

## Model Line-ups

Output voltage	5V output
Output voltage precision: $\pm 5\%$	PQ05RR1
Output voltage precision: $\pm 2.5\%$	PQ05RR11

## Outline Dimensions

(Unit : mm)



## Absolute Maximum Ratings

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

Parameter	Symbol	Rating	Unit
*1 Input voltage	$V_{IN}$	35	V
*1 Reset output voltage	$V_r$	35	V
Output current	$I_O$	1	A
Reset output current	$I_r$	10	mA
Power dissipation (No heat sink)	$P_{D1}$	1.5	W
*2 Power dissipation (With infinite heat sink)	$P_{D2}$	15	W
Junction temperature	$T_j$	150	$^\circ\text{C}$
Operating temperature	$T_{opr}$	-20 to +80	$^\circ\text{C}$
Storage temperature	$T_{stg}$	-40 to +150	$^\circ\text{C}$
Soldering temperature	$T_{sol}$	260 (For 10s)	$^\circ\text{C}$

\*1 All are open except GND and applicable terminals.

\*2 Overheat protection may operate at  $125 \leq T_j \leq 150^\circ\text{C}$



**Electrical Characteristics**

(Unless otherwise specified, condition shall be  $V_{IN}=7V$ ,  $I_o=0.5A$ ,  $T_a=25^\circ C$ )

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Output voltage	PQ05RR1	—	4.75	5.0	5.25	V
	PQ05RR11		4.88	5.0	5.12	
Load regulation	$RegL$	$I_o=5mA$ to $1.0A$	—	0.1	2.0	%
Line regulation	$RegI$	$V_{IN}=6$ to $12V$	—	0.5	2.5	%
Temperature coefficient of output voltage	$TcV_o$	$T_j=0$ to $125^\circ C$	—	$\pm 0.02$	—	%/ $^\circ C$
Ripple rejection	RR	Refer to Fig. 2	45	55	—	dB
Dropout voltage	$V_{r-o}$	*3	—	—	0.5	V
Low reset output voltage	$V_{rl}$	$I_o=5mA$ , $I_r=5mA$	—	—	0.8	V
Reset threshold voltage	$V_{rt}$	$I_o=5mA$	$V_o-0.25$	—	$V_o-0.1$	V
Reset output leak current	$I_{rk}$	$I_o=5mA$ , $V_r=35V$	—	—	30	$\mu A$
Quiescent current	$I_q$	$I_o=0$	—	—	10	mA

\*3 Input voltage shall be the value when output voltage is 95% in comparison with the initial value.

Fig. 1 Test Circuit

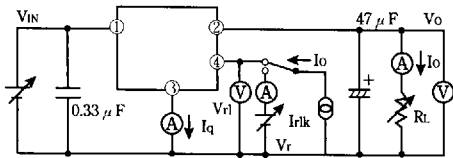
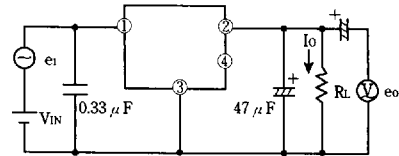
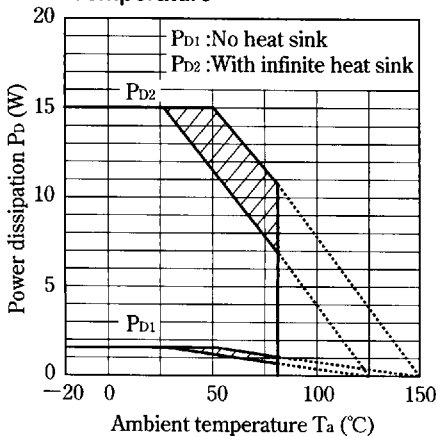


Fig. 2 Test Circuit of Ripple Rejection



$f=120Hz$  (sine wave)  
 $e_1=0.5V_{rms}$   
 $RR=20 \log(e_1/e_o)$

Fig. 3 Power Dissipation vs. Ambient Temperature



Note) Oblique line portion : Overheat protection may operate in this area.

Fig. 4 Overcurrent Protection Characteristics (Typical Value)

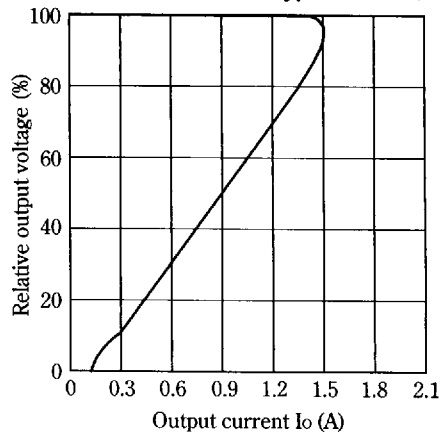


Fig. 5 Output Voltage Deviation vs. Junction Temperature

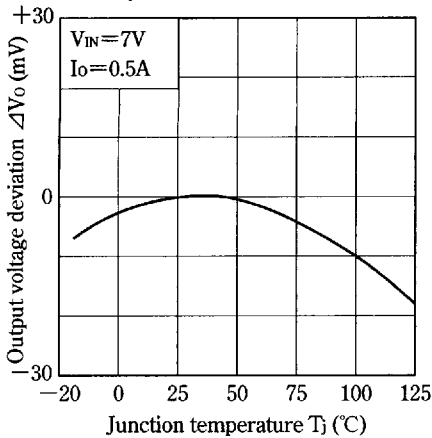


Fig. 6 Output Voltage vs. Input Voltage (Typical Value)

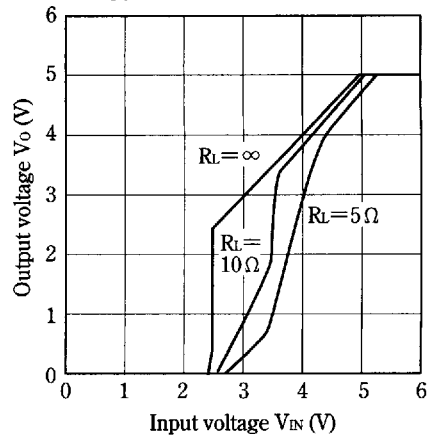


Fig. 7 Circuit Operating Current vs. Input Voltage (Typical Value)

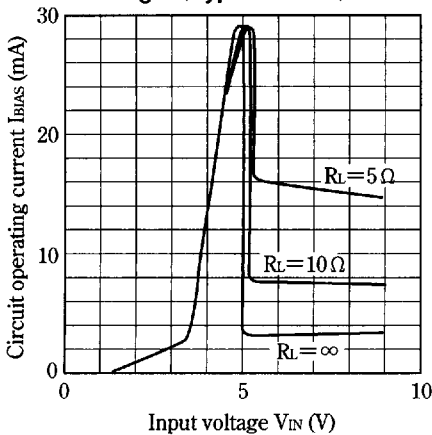


Fig. 8 Quiescent Current vs. Junction Temperature

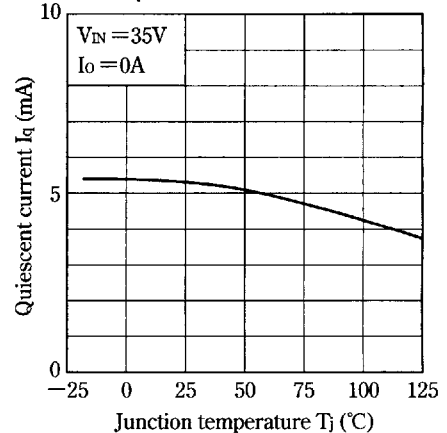


Fig. 9 Ripple Rejection vs. Input Ripple Frequency

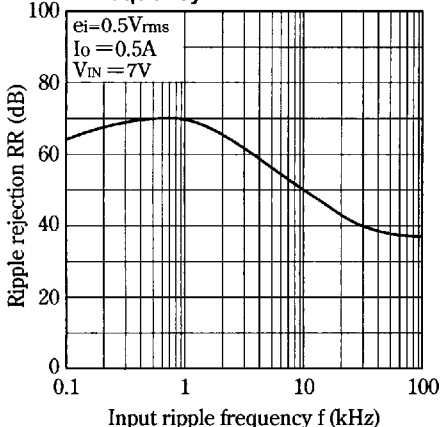


Fig.10 Ripple Rejection vs. Output Current

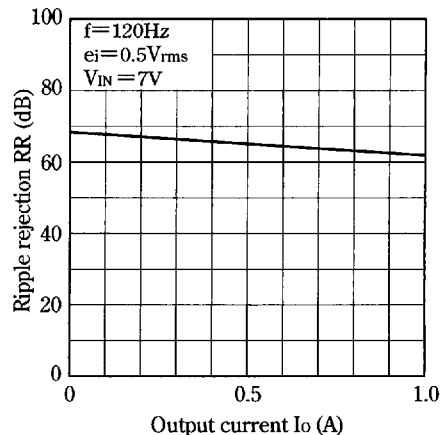


Fig.11 Output Peak Current vs. Junction Temperature

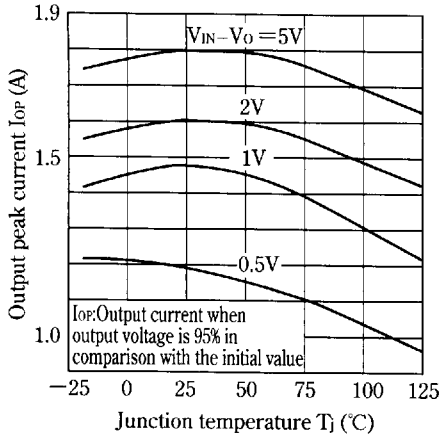


Fig.12 Output Peak Current vs. Dropout Voltage

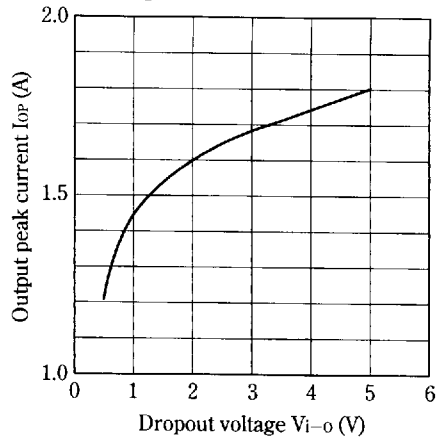
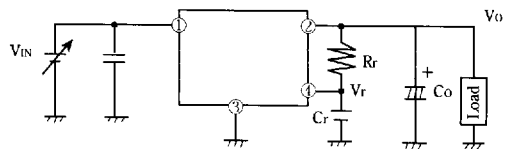
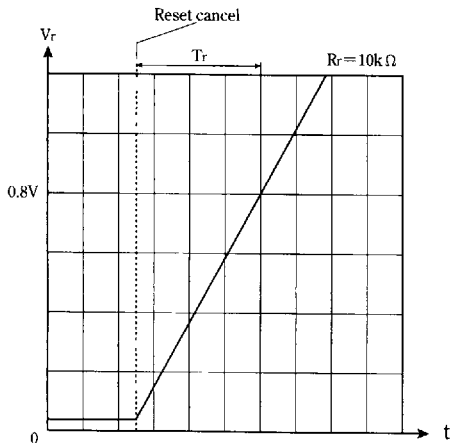
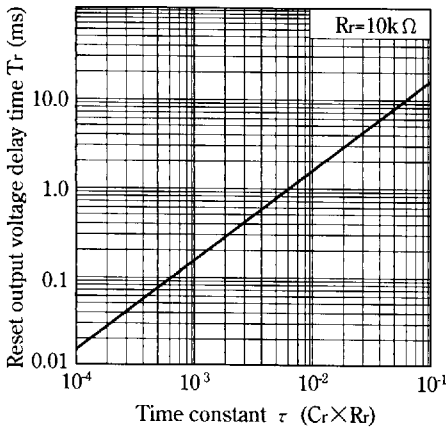
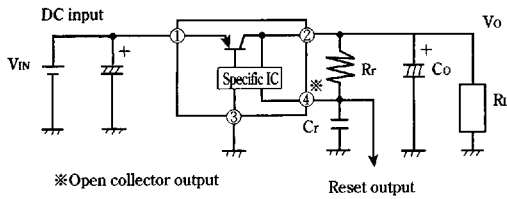


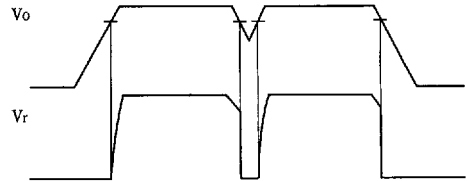
Fig.13 Reset Output Delay Time vs. Time Constant



■ Typical Application



■ Reset Output Response Characteristics

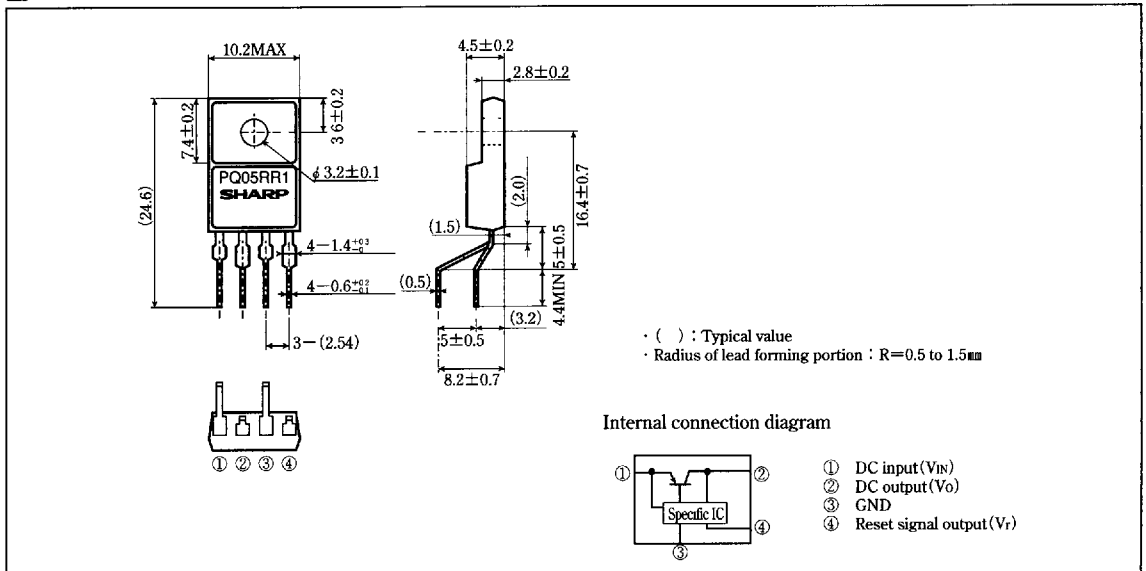


■ Model Line-up for Lead Forming Type

Output voltage	5Voutput
Output voltage precision: ±2.5%	PQ05RR1B

■ Outline Dimensions

(Unit : mm)



Note) The value of absolute maximum ratings and electrical characteristics is same as ones of PQ05RR11.