

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

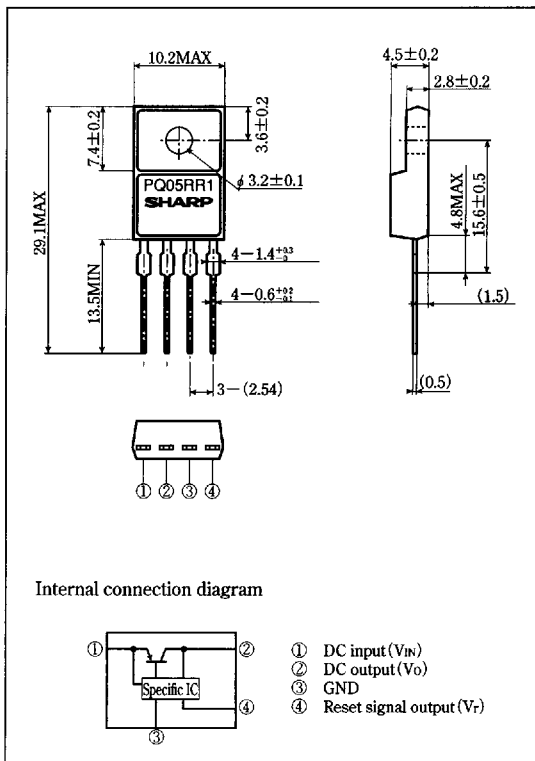
- Series power supply for equipment provided with microcomputer such as electronic musical instruments and VCRs

Model Line-ups

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

Outline Dimensions

(Unit : mm)



Internal connection diagram

Absolute Maximum Ratings

(Ta=25°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	°C
Operating temperature	T _{opr}	-20 to +80	°C
Storage temperature	T _{stg}	-40 to +150	°C
Soldering temperature	T _{sol}	260 (For 10s)	°C

*1 All are open except GND and applicable terminals.

*2 Overheat protection may operate at 125 ≤ T_j ≤ 150°C

• Please refer to the chapter "Handling Precautions".

SHARP

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	R_{egL}	$I_o=5mA$ to $1.0A$	—	0.1	2.0	%
Line regulation	R_{egI}	$V_{IN}=6$ to $12V$	—	0.5	2.5	%
Temperature coefficient of output voltage	$T_C V_o$	$T_j=0$ to $125^{\circ}C$	—	± 0.02	—	$\%/^{\circ}C$
Ripple rejection	RR	Refer to Fig. 2	45	55	—	dB
Dropout voltage	V_{I-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_{rlk}	$I_o=5mA$, $V_r=35V$	—	—	30	μA
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

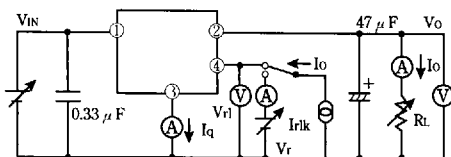
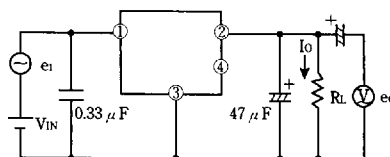
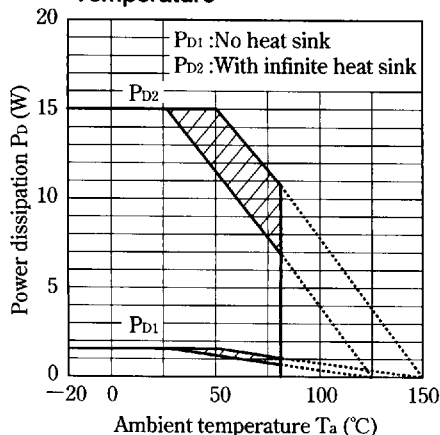


Fig. 2 Test Circuit of Ripple Rejection



$f=120Hz$ (sine wave)
 $e_1=0.5V_{rms}$
 $RR=20 \log(e_1/e_0)$

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)

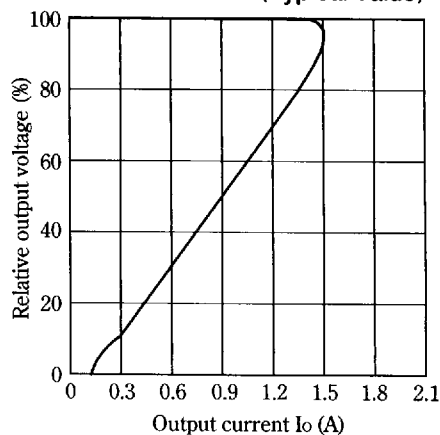


Fig. 5 Output Voltage Deviation vs. Junction Temperature

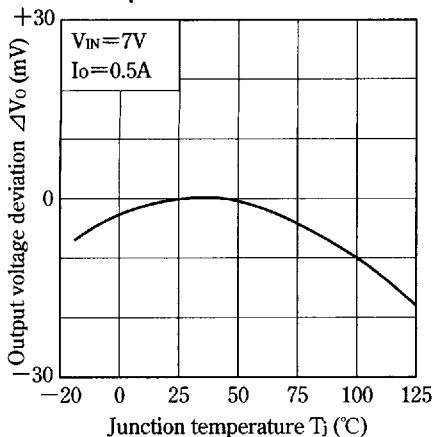


Fig. 6 Output Voltage vs. Input Voltage (Typical Value)

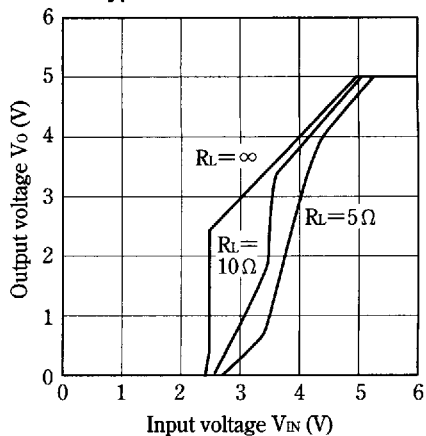


Fig. 7 Circuit Operating Current vs. Input Voltage (Typical Value)

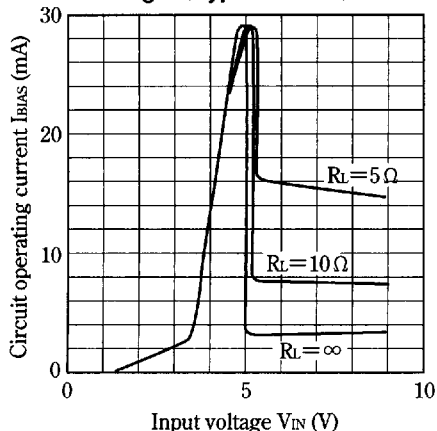


Fig. 8 Quiescent Current vs. Junction Temperature

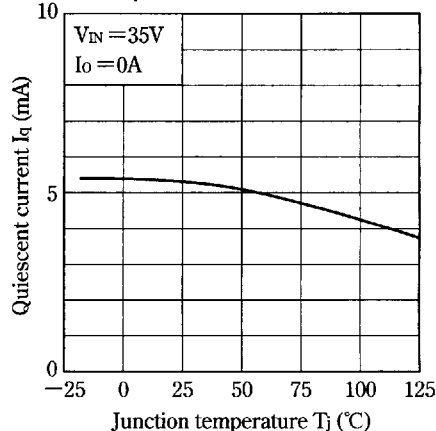


Fig. 9 Ripple Rejection vs. Input Ripple Frequency

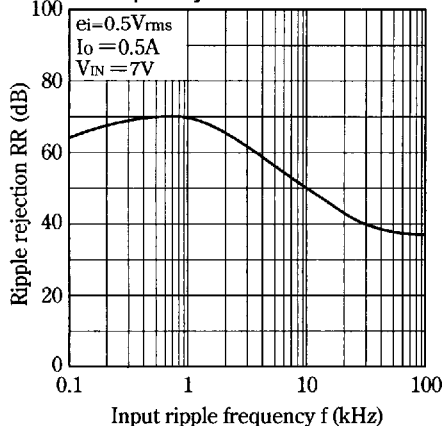


Fig.10 Ripple Rejection vs. Output Current

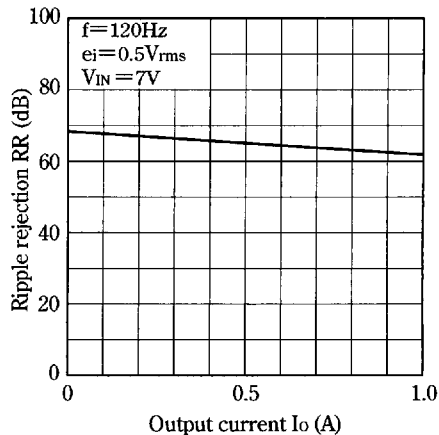


Fig.11 Output Peak Current vs. Junction Temperature

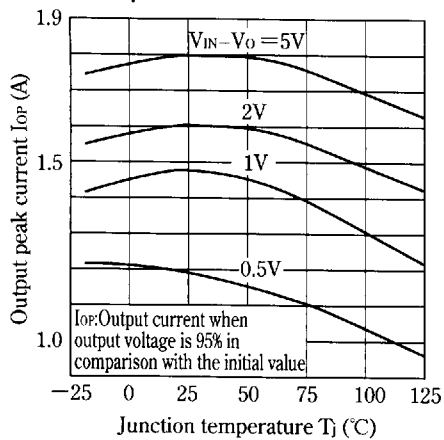


Fig.12 Output Peak Current vs. Dropout Voltage

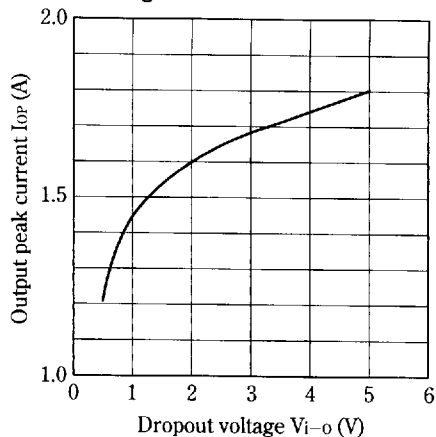
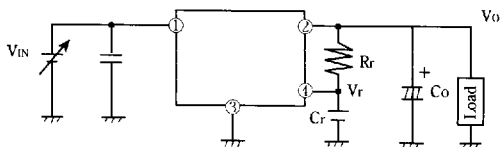
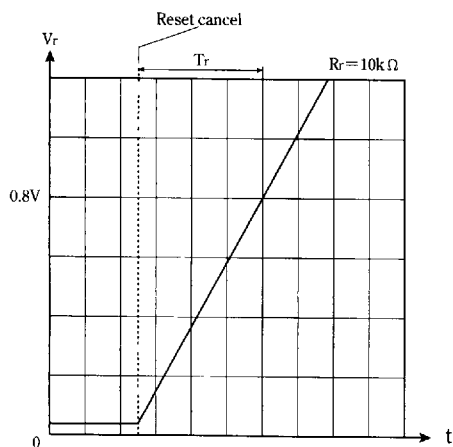
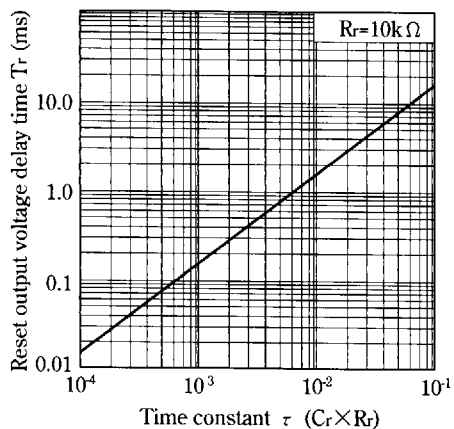
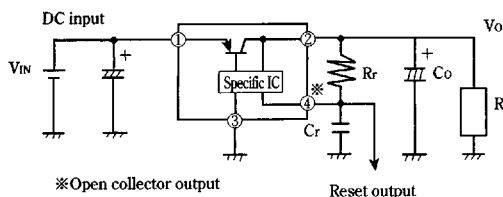


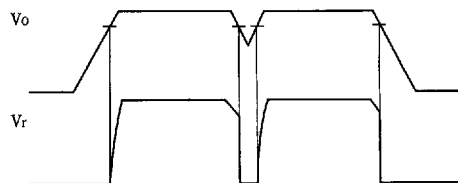
Fig.13 Reset Output Delay Time vs. Time Constant



Typical Application



Reset Output Response Characteristics

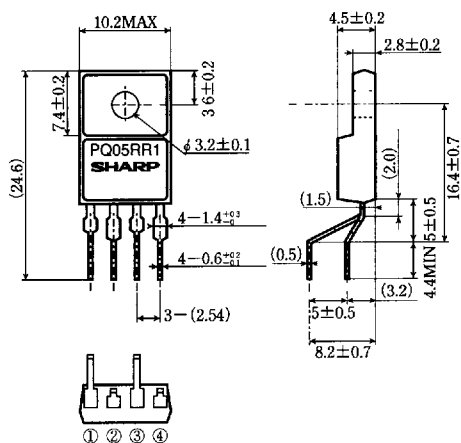


Model Line-up for Lead Forming Type

Output voltage	5V _{output}
Output voltage precision: $\pm 2.5\%$	PQ05RR1B

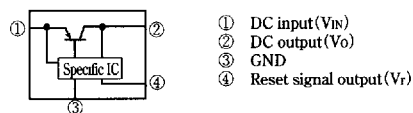
Outline Dimensions

(Unit : mm)



- () : Typical value
- Radius of lead forming portion : $R=0.5$ to 1.5 mm

Internal connection diagram



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