

# PQ05RR12/13

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

## ■ Features

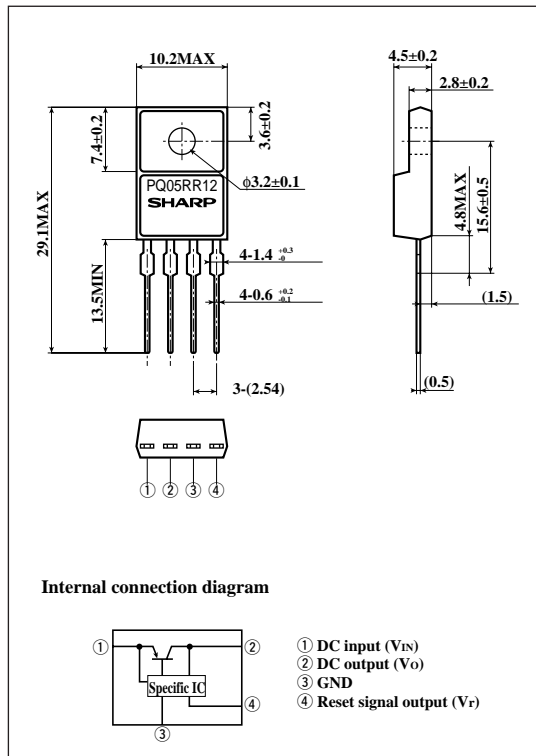
- Compact resin full-mold package
- Low power-loss (Dropout voltage : MAX. 0.5V)
- The regulators are provided with reset signal generating function to prevent errors of microcomputer when input voltage is applied and output voltage drops.
- High-precision output type  
(Output Voltage precision :  $\pm 2.5\%$ ) (PQ05RR13)

## ■ Applications

- Series power supply for equipment such as TVs, VCRs and electronic music instruments

## ■ Outline Dimensions

(Unit : mm)



## ■ Absolute Maximum Ratings

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

Parameter	Symbol	Rating	Unit
*1 Input voltage	$V_{IN}$	24	V
*1 Reset output voltage	$V_r$	24	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	$^{\circ}\text{C}$
*3 Soldering temperature	$T_{sol}$	260	$^{\circ}\text{C}$

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

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

\*3 For 10s

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■ 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	$V_o$	-	PQ05RR12	4.75	5.0	5.25	V
			PQ05RR13	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	$T_cV_o$	$T_J=0$ to 125°C	-	$\pm 0.02$	-	%/°C	
Ripple rejection	RR	Refer to Fig. 2	45	55	-	dB	
Dropout voltage	$V_{i-o}$	<sup>*4</sup>	-	-	0.5	V	
Low reset output voltage	$V_{rl}$	$I_o=5mA, I_r=5mA$	-	-	0.8	V	
Reset threshold voltage	$V_{rt}$	$I_o=5mA, ^{*5}$	3.55	3.75	3.95	V	
Reset output leak current	$I_{rlk}$	$I_o=5mA, V_r=24V$	-	-	30	$\mu A$	
Quiescent current	$I_q$	$I_o=0$	-	-	10	mA	

<sup>\*4</sup> Input voltage shall be the value when output voltage is 95% in comparison with the initial value.

<sup>\*5</sup> Output voltage shall be the value when input voltage lowers and  $V_r$  becomes low.

Fig.1 Test Circuit

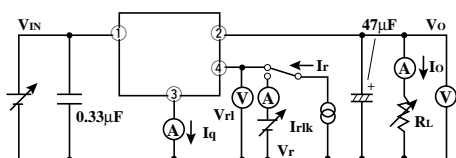
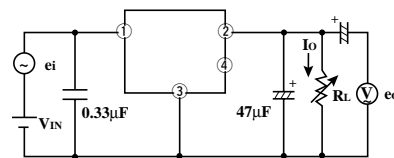
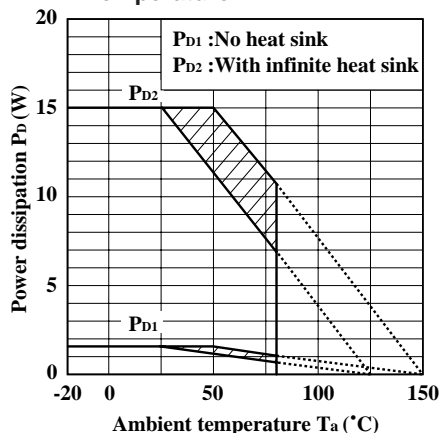


Fig.2 Test Circuit of Ripple Rejection



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

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)

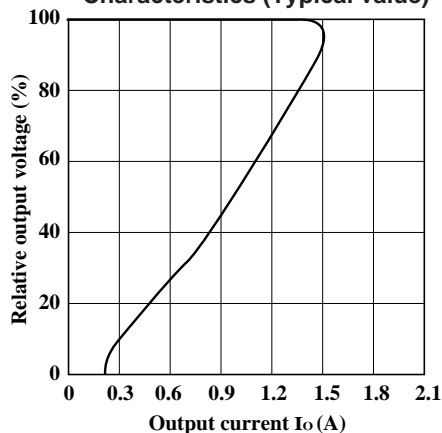


Fig.5 Output Voltage Deviation vs. Junction Temperature

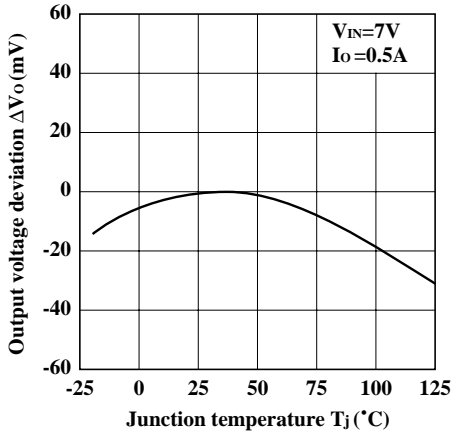


Fig.6 Output Voltage vs. Input Voltage

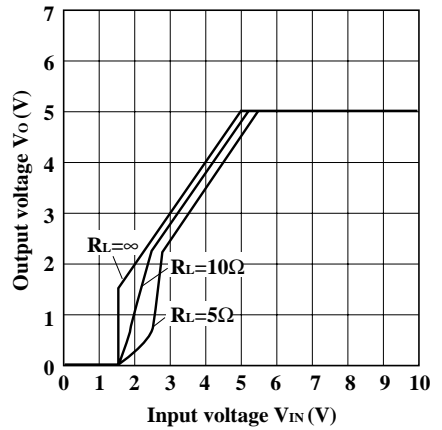


Fig.7 Circuit Operating Current vs. Input Voltage

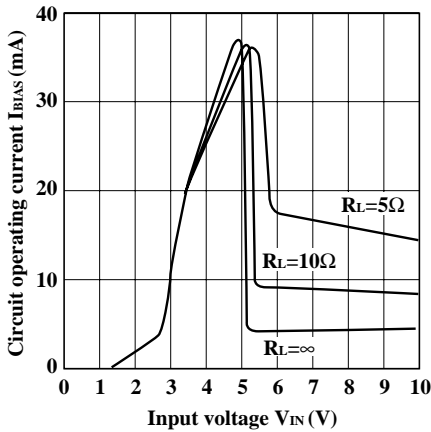


Fig.8 Quiescent Current vs. Junction Temperature

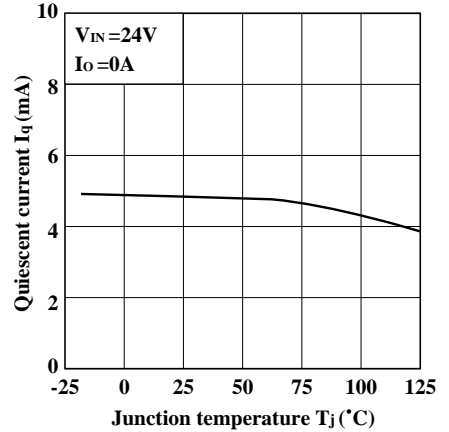


Fig.9 Ripple Rejection vs. Input Ripple Frequency

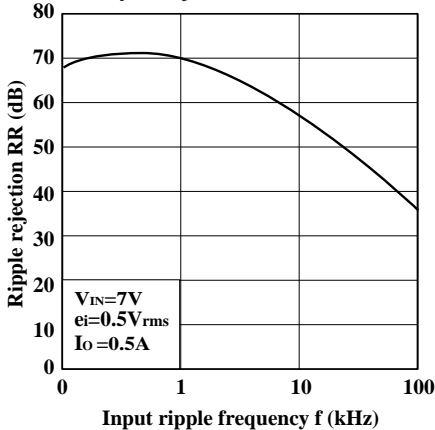


Fig.10 Ripple Rejection vs. Output Current

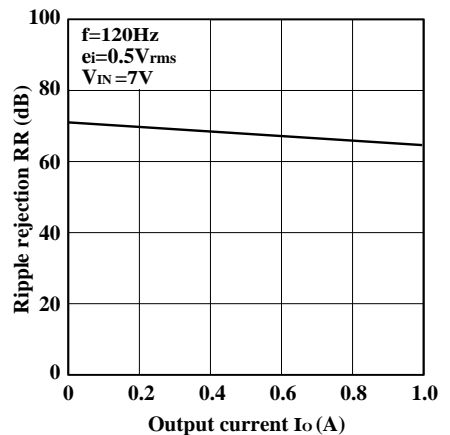


Fig.11 Output Peak Current vs. Junction Temperature

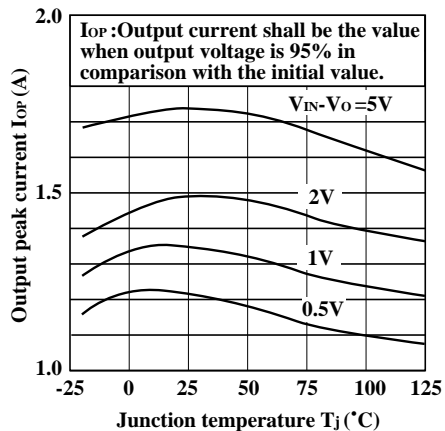
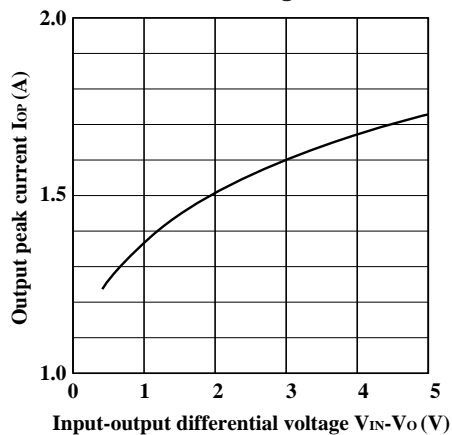
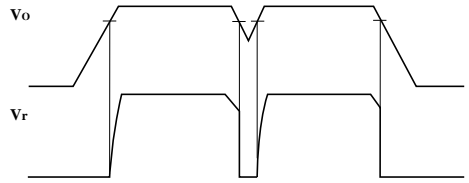
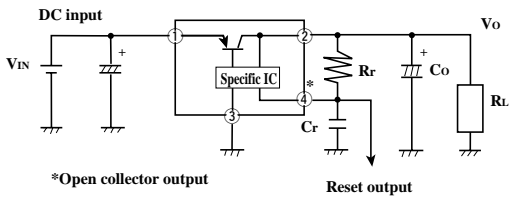


Fig.12 Output Peak Current vs. Input-output differential voltage



■ Typical Application

■ Reset Output Response Characteristics



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