

# PQ05RD11 Series

1A Output, General Purpose Low Power-loss Voltage Regulators

## Features

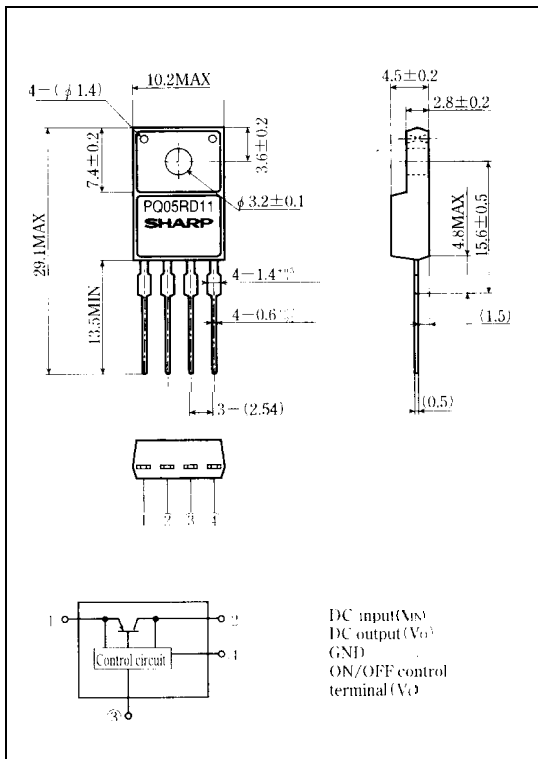
- Low Power-loss ( Dropout voltage :MAX.0.5V at  $I_o=0.5A$ )
- Line-up for 5V, 9V and 12V output type
- Compact resin package (TO-220 package)
- High-precision output voltage type  
Output voltage precisinn :  $\pm 3.0\%$
- Built-in ON/OFF\* control function
- Built-in overcurrent protection, overheat protection, ASO protection circuit

## Applications

- Power supplies for various electronic equipment such as AV, OA equipment

## Outline Dimensions

(Unit : mm)



## Absolute Maximum Ratings

(T<sub>a</sub>=25 (°))

Parameter	Symbol	Rating	Unit
*1 Input voltage	V <sub>IN</sub>	20	V
*1 ON/OFF control terminal voltage	V <sub>c</sub>	20	V
output current	I <sub>O</sub>	1.0	A
Power dissipation (No heat sink)	P <sub>D1</sub>	1.4	W
Power dissipation (With infinite heat sink)	P <sub>D2</sub>	15	
*2 Junction temperature	T <sub>j</sub>	150	°C
operating temperature	T <sub>opr</sub>	-20 to +80	°C
Storage temperature	T <sub>stg</sub>	-40 to + 150	°c
Soldering temperature	T <sub>sol</sub>	260 (Fur 10s)	°C

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

\*2 Overheat protection may operate at 125 ≤ T<sub>j</sub> ≤ 150 C

Please refer to the chapter "Handling Precautions"



Electrical Characteristics

(Unless otherwise specified, conditions shall be  $I_o=0.5A$ ,  $T_a=25^{\circ}C$ )

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Output voltage	V(l)		4.85	5.0	5.15	v
			8.73	9.0	9.27	
			11.64	12.0	12.36	
Load regulation	$R_{gL}$	$I_o=5mA$ to 1.0A		0.1	2.0	%
Line regulation	$R_{gI}$	*4, $I_o=5mA$		0.5	2.5	%
Temperature coefficient of output voltage	$T_c V_o$	$T_j=0$ to 125 C, $I_o=5mA$		$\pm 0.02$		%/°C
Ripple rejection	RR		45	55		dB
Dropout voltage	$V_{l-0}$	*5			0.5	v
ON-state voltage for control	$V_{C(ON)}$		2			V
ON-state current for control	$I_{C(ON)}$	$V_C=2.7V$			20	$\mu A$
OFF-state voltage for control	$V_{C(OFF)}$				0.8	V
OFF-state current for control	$I_{C(OFF)}$	$V_C=0.4V$			-0.4	mA
Quiescent current	$I_q$	$I_o=0A$				

\*3 PQ05RD11:  $V_{IN}=7V$ , PQ09RD11:  $V_{IN}=11V$ , PQ12RD11:  $V_{IN}=14V$

\*4 PQ05RD11:  $V_{IN}=6$  to 12V, PQ09RD11:  $V_{IN}=10$  to 16V, PQ12RD11:  $V_{IN}=13$  to 19V

\*5 Input voltage shall be the value when output voltage is 95% in comparison with the initial value

\*6 In case of opening control terminal, output voltage turns on

Fig.1 Test Circuit

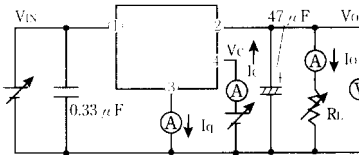
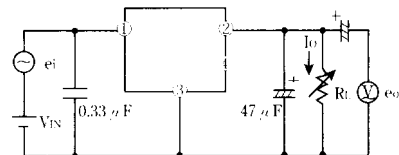
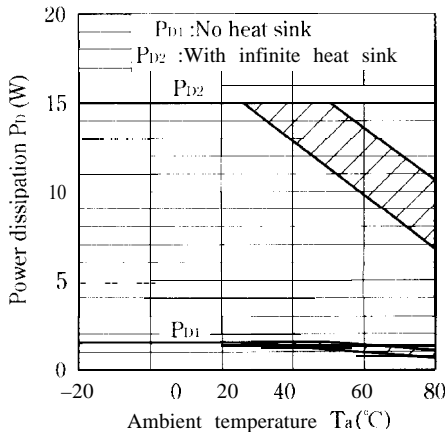


Fig.2 Test circuit for Ripple Rejection



$f=120Hz$ (sine wave)  
 $e_i=0.5V_{rms}$   
 $V_{IN}=7V$ (PQ05RD11)  
 $V_{IN}=11V$ (PQ09RD11)  
 $V_{IN}=14V$ (PQ12RD11)  
 $I_o=0.3A$   
 $RR=20 \log(e_i/e_o)$

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) (PQ05RD11)

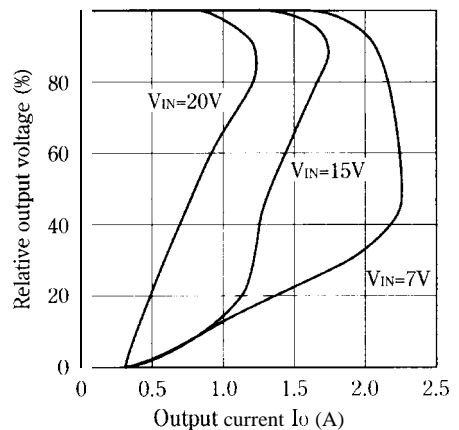


Fig.5 Overcurrent Protection Characteristics (Typical Value) (PQ09RD11)

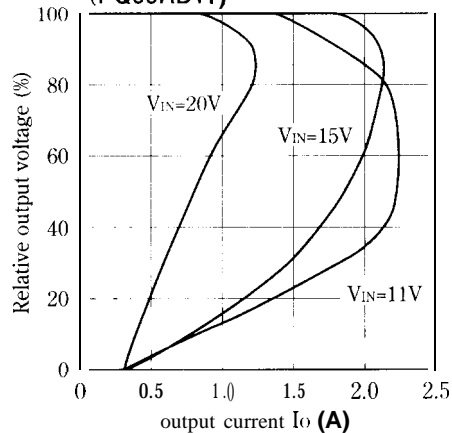


Fig.6 Overcurrent Protection Characteristics (Typical Value) (PQ12RD11)

