

# PQ070XH02Z Series

Low Voltage Operation Low Power-Loss Voltage Regulator

## Features

- Low voltage operation (Minimum operating voltage: 2.35V)  
2.5V input → available 1.5 to 1.8V output
- Large output current type (I<sub>o</sub>: 2A)
- Low dissipation current  
(Quiescent current: MAX. 2mA  
Output OFF-state dissipation current: MAX. 5μA)
- Low power-loss
- Built-in overcurrent and overheat protection functions
- TO-263 surface mount package

## Applications

- Personal computers and peripheral equipment
- Power supplies for various digital electronic equipment such as DVD player or STB
- Power supplies for automotive equipment such as car navigation system.

## Model Line-up

Output current (I <sub>o</sub> )	Package type	Variable output type
2A	Taping	PQ070XH02ZP
	Sleeve	PQ070XH02ZZ

## Absolute Maximum Ratings

(T<sub>a</sub>=25°C)

Parameter	Symbol	Rating	Unit
*1 Input voltage	V <sub>IN</sub>	10	V
*1 ON/OFF control terminal voltage	V <sub>C</sub>	10	V
*1 Output adjustment terminal voltage	V <sub>ADJ</sub>	5	V
Output current	I <sub>o</sub>	2	A
*2 Power dissipation	P <sub>D</sub>	35	W
*3 Junction temperature	T <sub>j</sub>	150	°C
Operating temperature	T <sub>opr</sub>	-40 to +85	°C
Storage temperature	T <sub>stg</sub>	-40 to +150	°C
Soldering temperature	T <sub>sol</sub>	260(10s)	°C

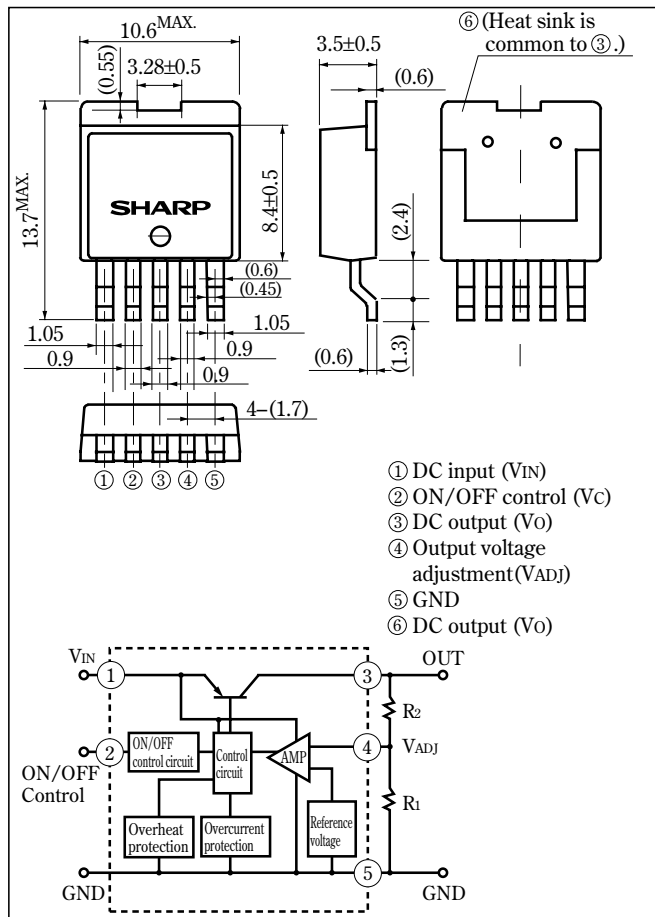
\*1 All are open except GND and applicable terminals.

\*2 P<sub>D</sub>:With infinite heat sink

\*3 Overheat protection may operate at 125 ≤ T<sub>j</sub> < 150°C.

## Outline Dimensions

(Unit : mm)



•Please refer to the chapter " Handling Precautions ".

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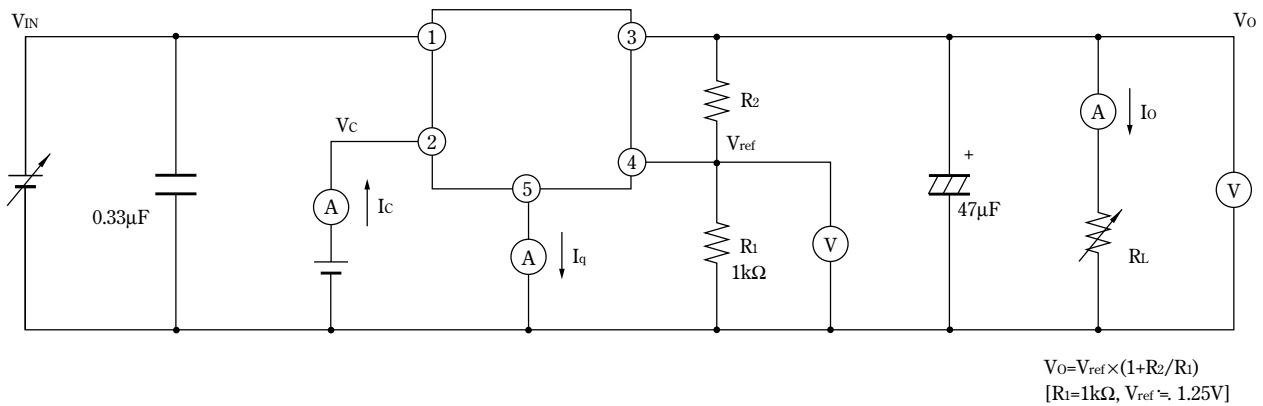
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**Electrical Characteristics** (Unless otherwise specified, condition shall be  $V_{IN}=5V, V_O=3V(R_1=1k\Omega), I_O=1A, V_C=2.7V, T_a=25^\circ C$ )

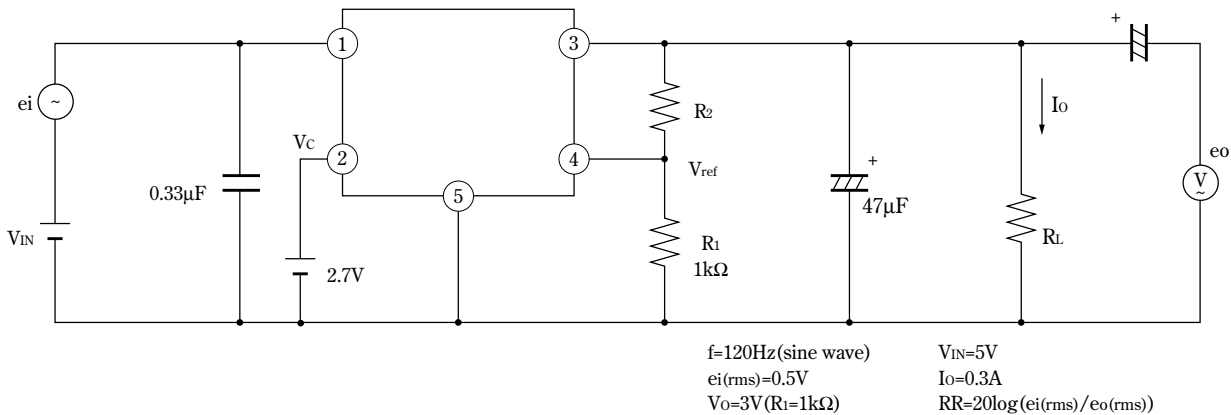
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Input voltage	$V_{IN}$	-	2.35	-	10	V
Output voltage	$V_O$	-	1.5	-	7	V
Reference voltage	$V_{REF}$	-	1.225	1.25	1.275	V
Load regulation	$Reg_L$	$I_O=5mA$ to $2A$	-	0.2	2.0	%
Line regulation	$Reg_I$	$V_{IN}=4$ to $8V, I_O=5mA$	-	0.2	1.0	%
Temperature coefficient of reference voltage	$T_C V_{REF}$	$T_j=0$ to $125^\circ C, I_O=5mA$	-	$\pm 1.0$	-	%/ $^\circ C$
Ripple rejection	RR	Refer to Fig.2	45	60	-	dB
Dropout voltage	$V_{LO}$	$V_{IN}=2.85A, I_O=2A$	-	-	0.5	V
※4 ON-state voltage for control	$V_{C(ON)}$	-	2	-	-	V
ON-state current for control	$I_{C(ON)}$	-	-	-	200	$\mu A$
OFF-state voltage for control	$V_{C(OFF)}$	$I_O=0A$	-	-	0.8	V
OFF-state current for control	$I_{C(OFF)}$	$I_O=0A, V_C=0.4V$	-	-	2	$\mu A$
Quiescent current	$I_q$	$I_O=0A$	-	1	2	mA
Output OFF-state dissipation current	$I_{qs}$	$I_O=0A, V_C=0.4V$	-	-	5	$\mu A$

※4 In case of opening control terminal ②, output voltage turns off

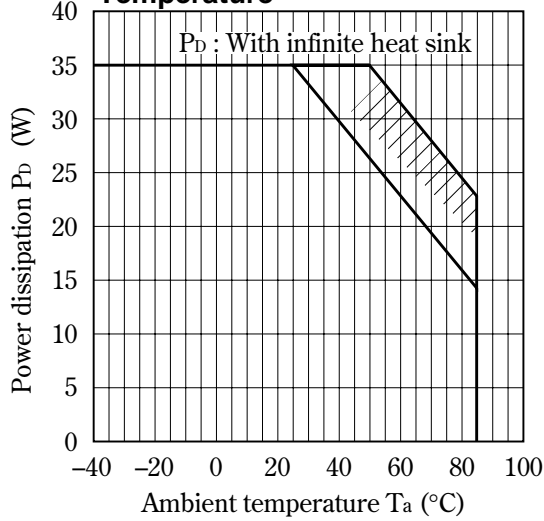
**Fig.1 Test Circuit**



**Fig.2 Test Circuit of Ripple Rejection**

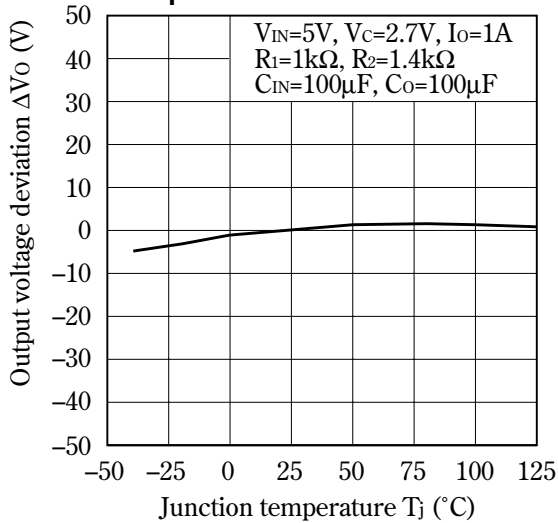


**Fig.3 Power Dissipation vs. Ambient Temperature**

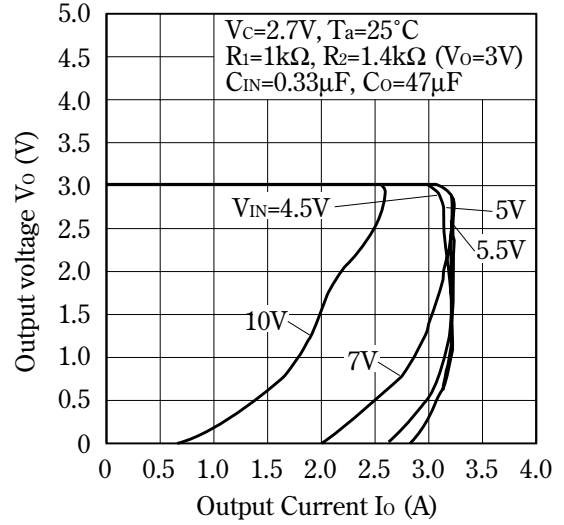


Note) Oblique line portion: Overheat protection may operate in this area.

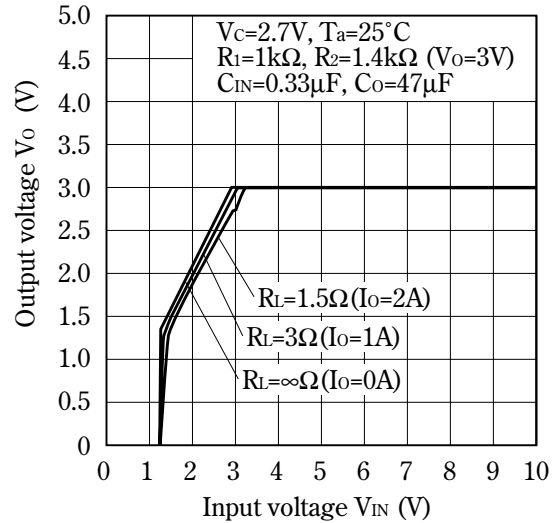
**Fig.5 Output Voltage Fluctuation vs. Junction Temperature**



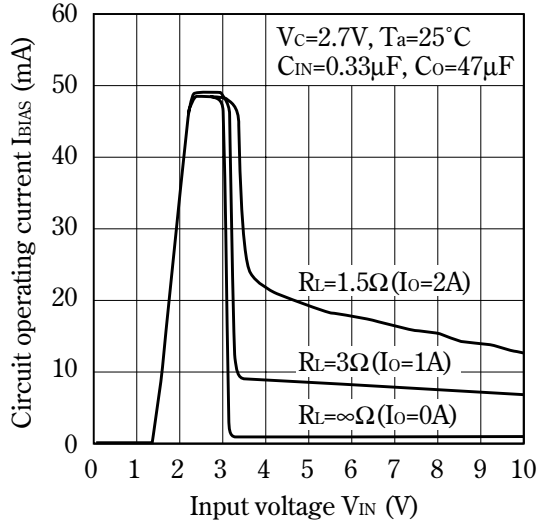
**Fig.4 Overcurrent Protection Characteristics**



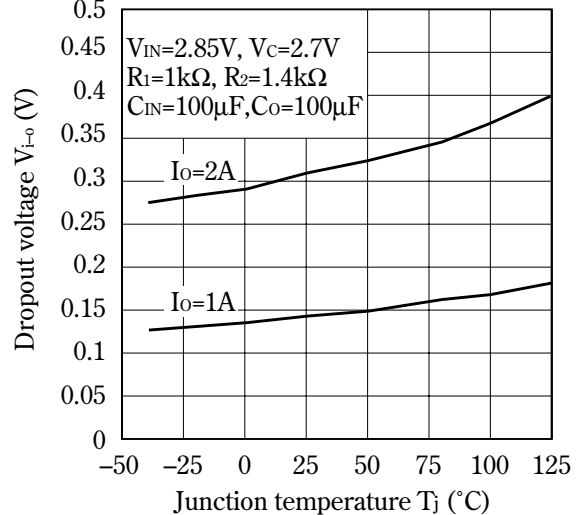
**Fig.6 Output Voltage vs. Input Voltage**



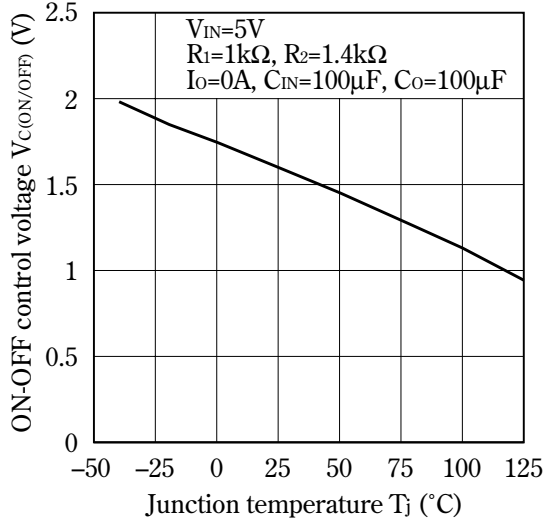
**Fig.7 Circuit Operating Current vs. Input Voltage**



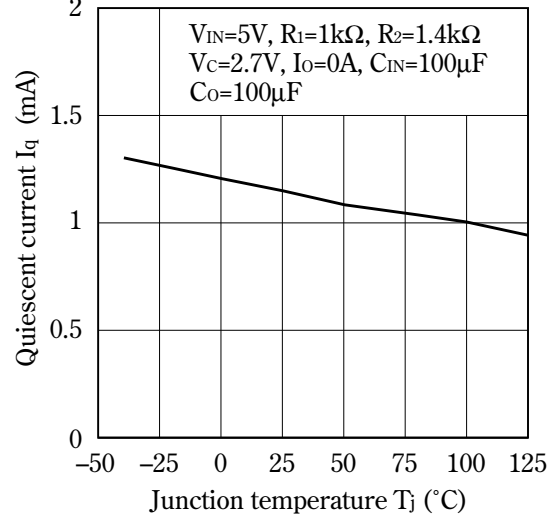
**Fig.8 Dropout Voltage vs. Junction Temperature**



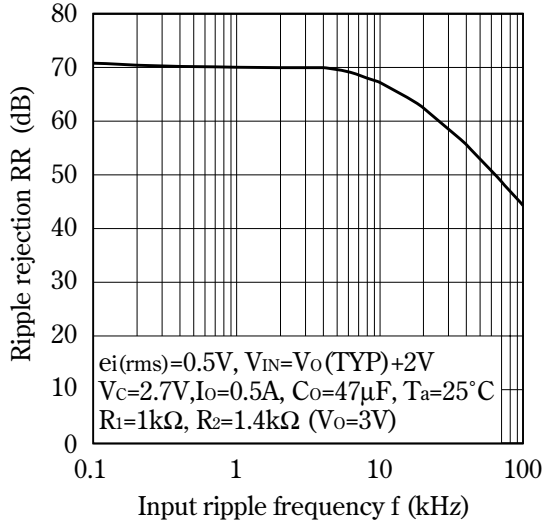
**Fig.9 ON-OFF Control Voltage vs. junction Temperature**



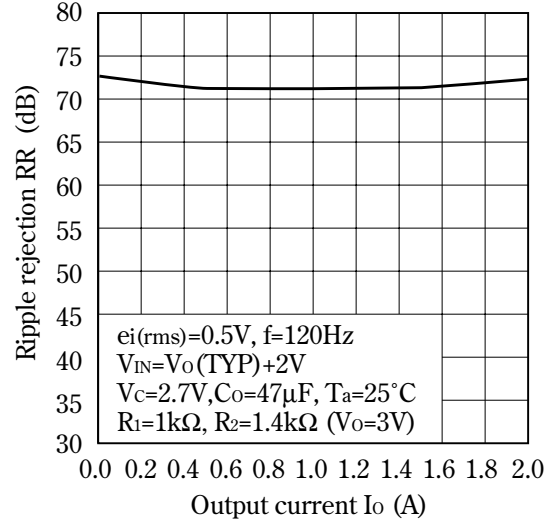
**Fig.10 Quiescent Current vs. Junction Temperature**



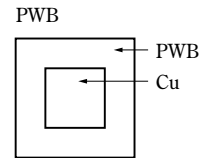
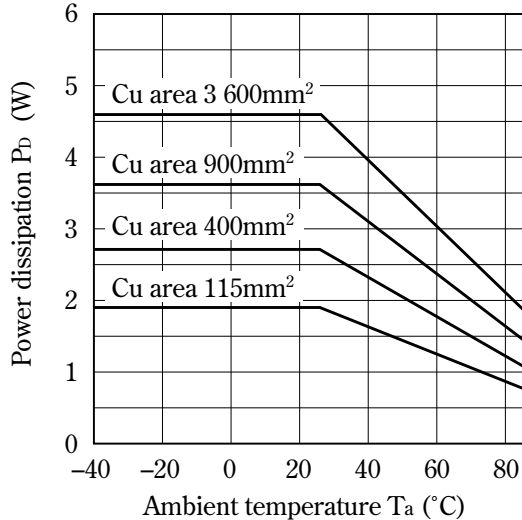
**Fig.11 Ripple Rejection vs. Input Ripple Frequency**



**Fig.12 Ripple Rejection vs. Output Current**

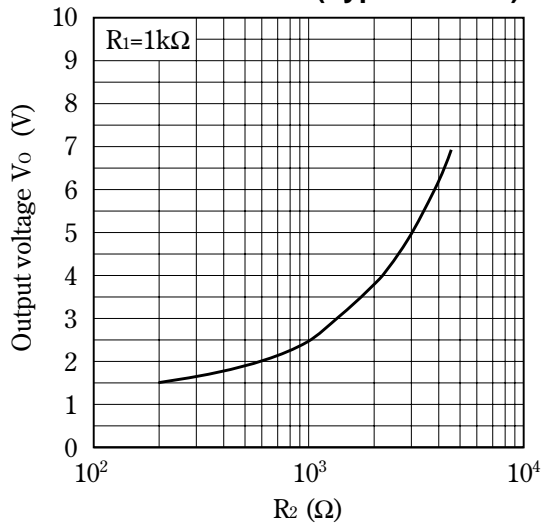


**Fig.13 Power Dissipation vs. Ambient Temperature**

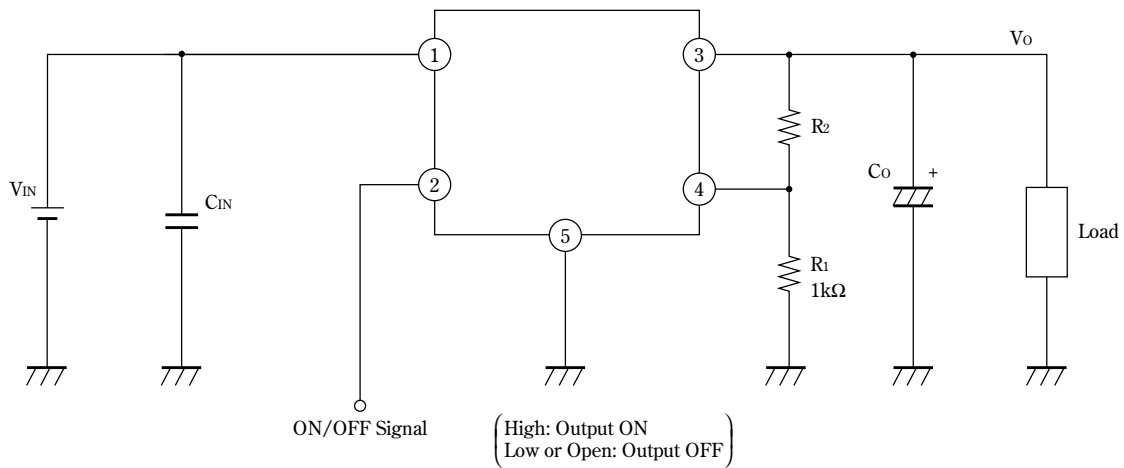


Material : Glass-cloth epoxy resin  
 Size : 60×60×1.6mm  
 Cu thickness : 65μm

**Fig.19 Output Voltage Adjustment Characteristics (Typical Value)**

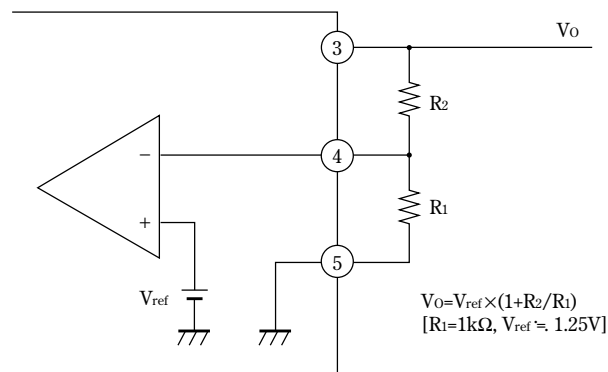


**Fig.21 Typical Application**



**Setting of Output Voltage**

Output voltage is able to set from 1.5V to 7V when resistors R<sub>1</sub>, R<sub>2</sub> are attached to ③, ④, ⑤ terminals. As for the external resistors to set output voltage, refer to the following figure.



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