

# PQ070XZ5MZxH

# PQ070XZ01ZxH

Low Voltage Operation  
Low Power-loss Voltage Regulator

## ■ Features

- 1.Low voltage operation (Minimum operating voltage: 2.35V)  
2.5V input → available 1.5 to 1.8V
- 2.Low dissipation current  
Dissipation current at no load: MAX.2mA  
Output OFF-state dissipation current: MAX.5μA
- 3.Low power-loss (Dropout voltage: MAX.0.5V)
- 4.Built-in overcurrent and overheat protection functions
- 5.RoHS directive compliant

## ■ Applications

- 1.Peripheral equipment of personal computers
- 2.Power supplies for various electronic equipment such as DVD player or STB

## ■ Model Line-up

Output current (I <sub>o</sub> )	Package type	Variable output
0.5A	Taping	<b>PQ070XZ5MZPH</b>
	Sleeve	<b>PQ070XZ5MZZH</b>
1A	Taping	<b>PQ070XZ01ZPH</b>
	Sleeve	<b>PQ070XZ01ZZH</b>

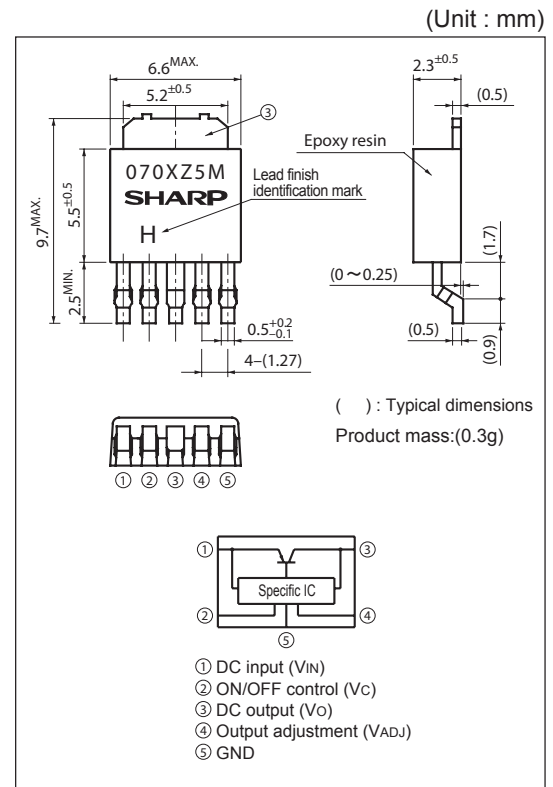
## ■ Absolute Maximum Ratings

(Ta=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>	0.5	A
		1	
*2 Power dissipation	P <sub>D</sub>	8	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 T<sub>J</sub>:125°C to 150°C

## ■ Outline Dimensions



Lead finish:Lead-free solder plating  
(Composition: Sn2Cu)

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## Electrical Characteristics

(Unless otherwise specified, condition shall be  $V_{IN}=5V$ ,  $V_O=3V(R1=1k\Omega)$ ,  $I_O=0.3A$ ,  $V_C=2.7V$ ,  $T_a=25^\circ C$ , (PQ070XZ5MZxH))  
 (Unless otherwise specified, condition shall be  $V_{IN}=5V$ ,  $V_O=3V(R1=1k\Omega)$ ,  $I_O=0.5A$ ,  $V_C=2.7V$ ,  $T_a=25^\circ C$ , (PQ070XZ01ZxH))

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Input voltage	$V_{IN}$	-	2.35	-	10	V
Output voltage	$V_O$	-	1.5	-	7	V
Load regulation	RegL	$I_O=5mA$ to 0.5A	-	0.2	2.0	%
		$I_O=5mA$ to 1.0A	-	0.2	2.0	%
Line regulation	RegL	$V_{IN}=4$ to 8V, $I_O=5mA$	-	0.2	1.0	%
Ripple rejection	RR	Refer to Fig.2	45	60	-	dB
Dropout voltage	$V_{I-O}$	$V_{IN}=2.85V$ , $I_O=0.3A$	-	-	0.5	V
		$V_{IN}=2.85V$ , $I_O=0.5A$	-	-	0.5	V
Reference voltage	$V_{ref}$	-	1.225	1.25	1.275	V
Temperature coefficient of reference voltage	$T_C V_{ref}$	$T_j=0$ to $125^\circ C$ , $I_O=5mA$	-	$\pm 1.0$	-	%
*4 ON-state voltage for control	$V_{C(ON)}$	*4	2.0	-	-	V
ON-state current for control	$I_{C(ON)}$	-	-	-	200	$\mu A$
OFF-state voltage for control	$V_{C(OFF)}$	$I_O=0mA$	-	-	0.8	V
OFF-state current for control	$I_{C(OFF)}$	$I_O=0mA$ , $V_C=0.4V$	-	-	2	$\mu A$
Quiescent current	$I_q$	$I_O=0A$	-	1	2	mA
Output OFF-state consumption current	$I_{qs}$	$V_C=0.4V$	-	-	5	$\mu A$

\*4 In case of opening control terminal ②, output voltage turns off.

Fig.1 Test Circuit

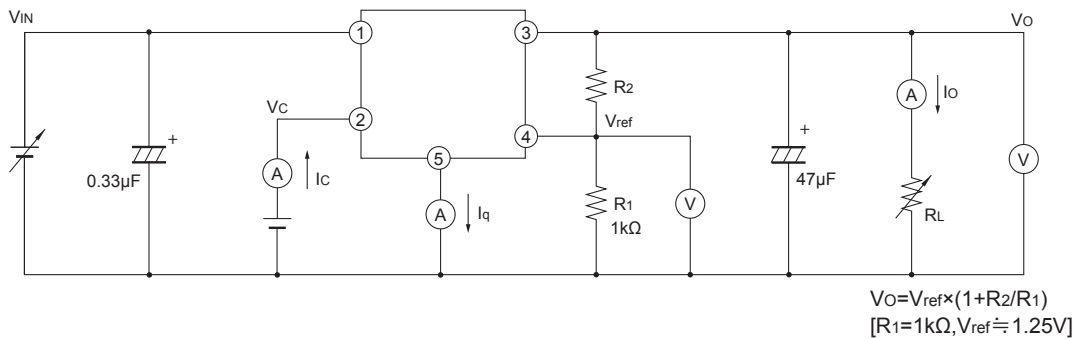


Fig.2 Test Circuit for Ripple Rejection

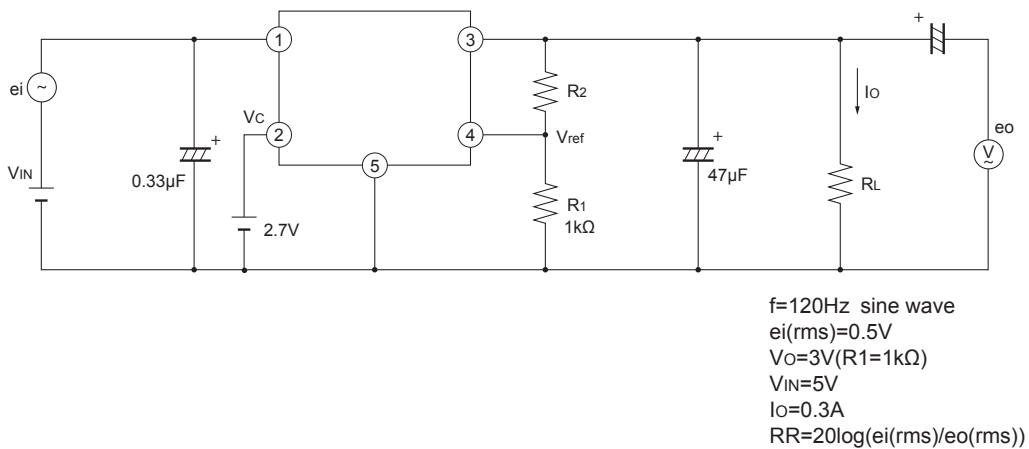
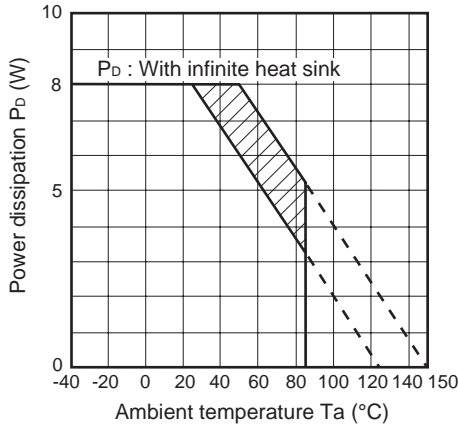


Fig.3 Power Dissipation vs. Ambient Temperature



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

Fig.4 Overcurrent Protection Characteristics (PQ070XZ01ZxH)

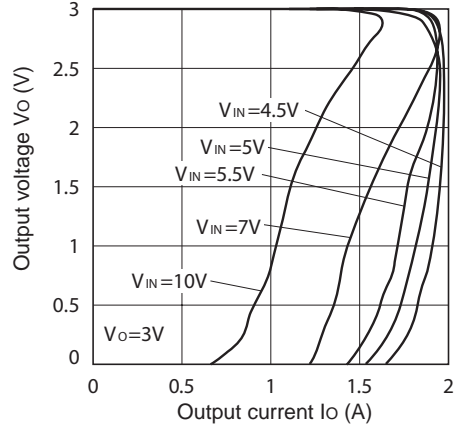


Fig.5 Overcurrent Protection Characteristics (PQ070XZ5MZxH)

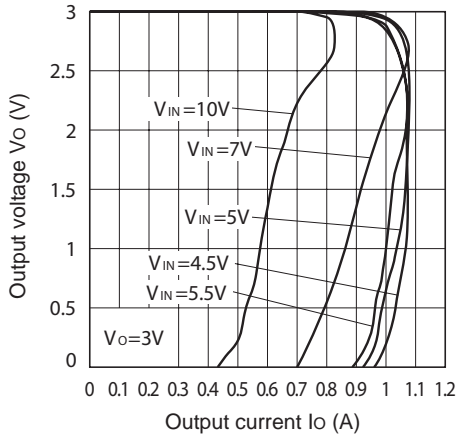


Fig.6 Reference Voltage vs. Ambient Temperature

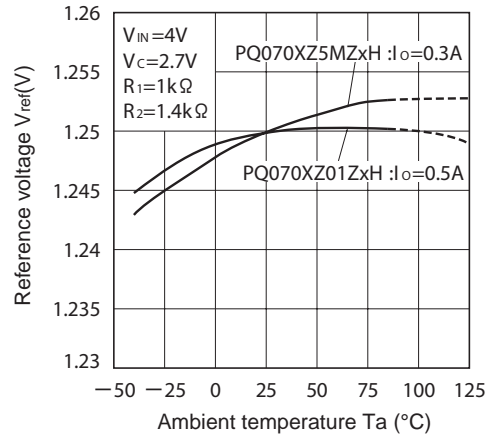


Fig.7 Output Voltage vs. Input Voltage (PQ070XZ5MZxH)

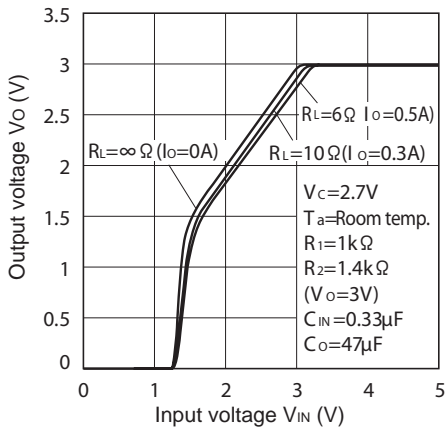


Fig.8 Output Voltage vs. Input Voltage (PQ070XZ01ZxH)

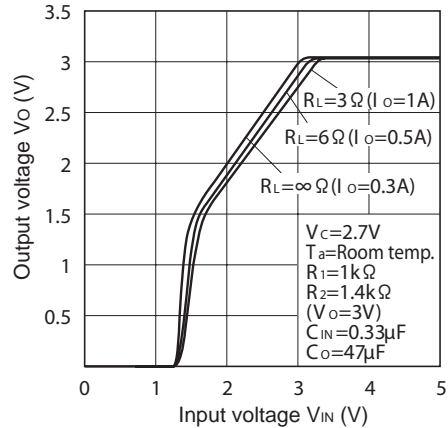


Fig.9 Circuit Operating Current vs. Input Voltage (PQ070XZ5MZxH)

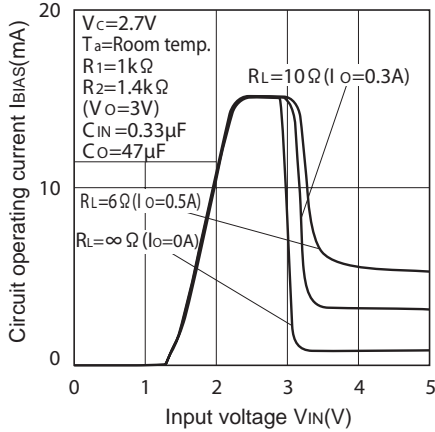


Fig.10 Circuit Operating Current vs. Input Voltage (PQ070XZ01ZxH)

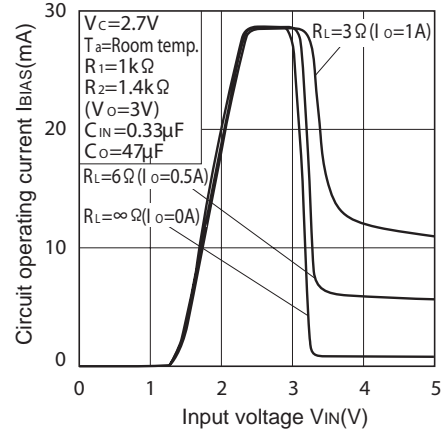


Fig.11 Dropout Voltage vs. Junction Temperature

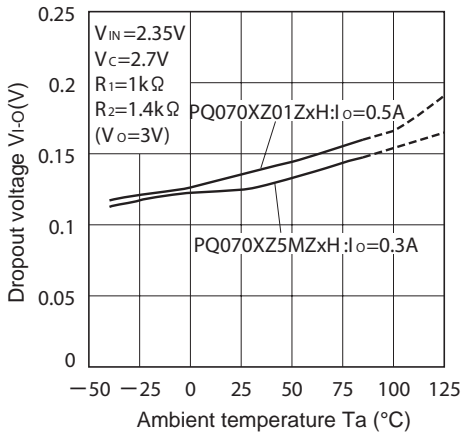


Fig.12 Quiescent Current vs. Junction Temperature

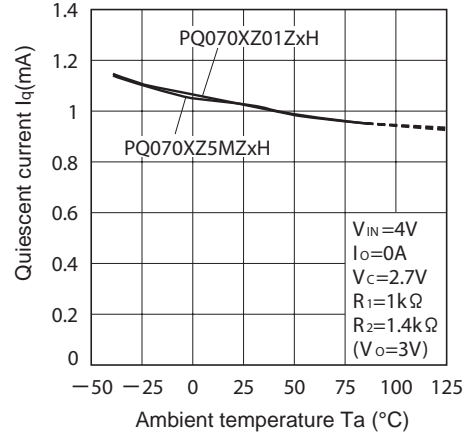


Fig.13 Ripple Rejection vs. Input Ripple Frequency

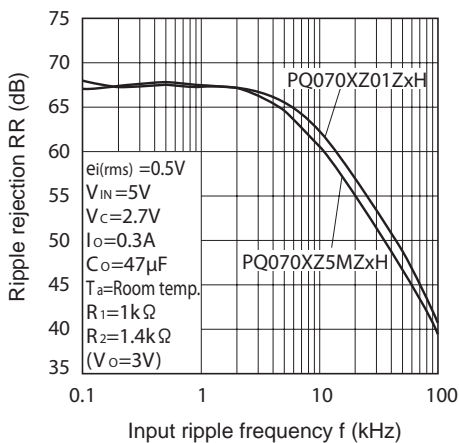


Fig.14 Ripple Rejection vs. Output Current

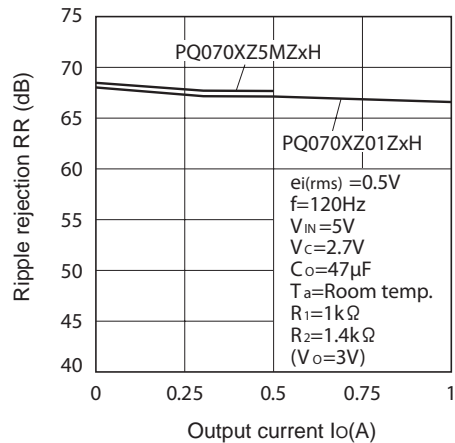


Fig.15 Typical Application

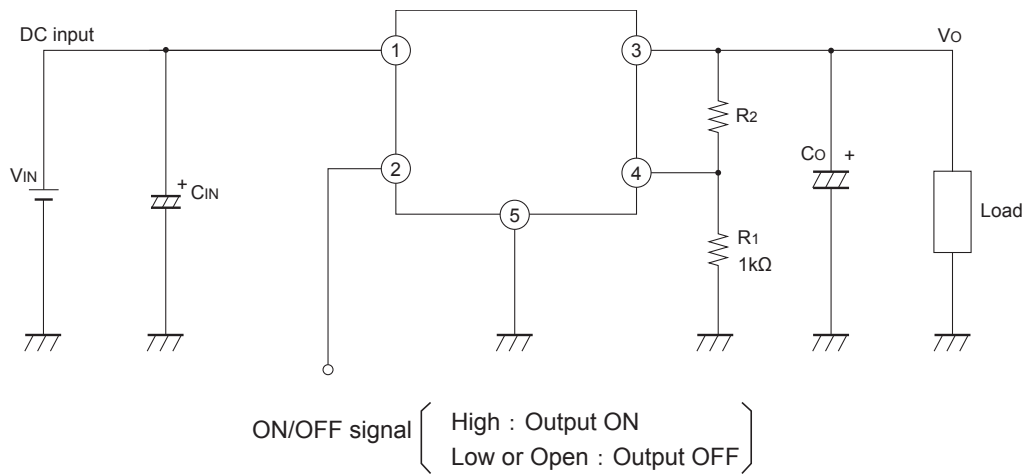
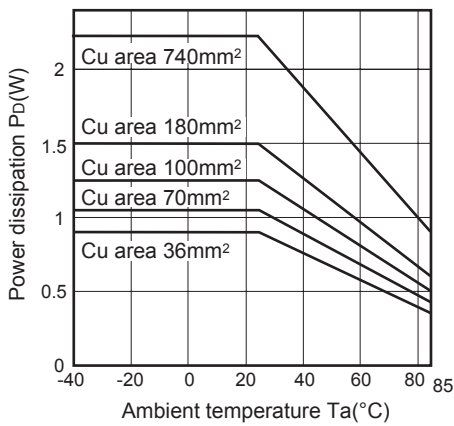
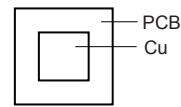


Fig.16 Power Dissipation vs. Ambient Temperature (Typical Value)

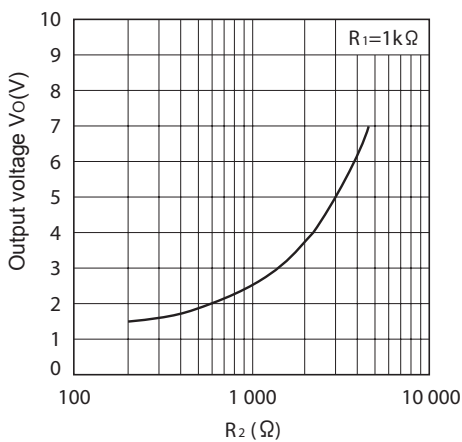


Mounting PCB



Material : Glass-cloth epoxy resin  
 Size : 50×50×1.6mm  
 Cu thickness : 35μm

Fig.17 Output Voltage Adjustment Characteristics



■ Setting of Output Voltage

Output voltage is able to set from 1.5V to 7V when resistors R<sub>1</sub> and R<sub>2</sub> are attached to ③,④,⑤ terminals. As for the external resistors to set output voltage, refer to the figure below and Fig.17.

