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

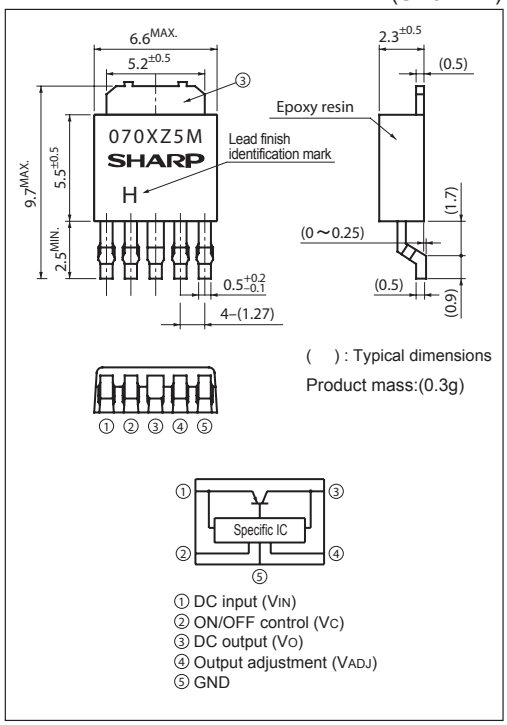
1.Peripheral equipment of personal computers
2.Power supplies for various electronic equipment such as DVD player or STB

■ Model Line-up

Output current (I_O)	Package type	Variable output
0.5A	Taping	**PQ070XZ5MZPH**
	Sleeve	**PQ070XZ5MZZH**
1A	Taping	**PQ070XZ01ZPH**
	Sleeve	**PQ070XZ01ZZH**

■ Outline Dimensions

(Unit : mm)



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

■ Absolute Maximum Ratings

(Ta=25°C)

Parameter		Symbol	Rating	Unit
*1 Input voltage		V_{IN}	10	V
*1 ON/OFF control terminal voltage		V_C	10	V
*1 Output adjustment terminal voltage		V_{ADJ}	5	V
Output current	**PQ070XZ5MZxH**	I_O	0.5	A
	PQ070XZ01ZxH		1	
*2 Power dissipation		P_D	8	W
*3 Junction temperature		T_j	150	°C
Operating temperature		T_{opr}	-40 to +85	°C
Storage temperature		T_{stg}	-40 to +150	°C
Soldering temperature		T_{sol}	260(10s)	°C

*1 All are open except GND and applicable terminals.
*2 P_D:With infinite heat sink
*3 Overheat protection may operate at Tj:125°C to 150°C

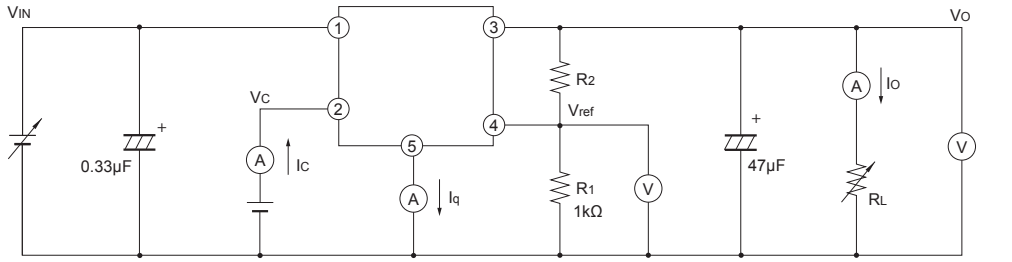
■ Electrical Characteristics

(Unless otherwise specified, condition shall be V_{IN}=5V, V_O=3V(R1=1kΩ), I_O=0.3A, V_C=2.7V,Ta=25°C,(**PQ070XZ5MZxH**))
(Unless otherwise specified, condition shall be V_{IN}=5V, V_O=3V(R1=1kΩ), I_O=0.5A, V_C=2.7V,Ta=25°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	**PQ070XZ5MZxH**	R_{egL}	I_O=5mA to 0.5A	-	0.2	2.0	%
	PQ070XZ01ZxH		I_O=5mA to 1.0A				
Line regulation		R_{egI}	V_{IN}=4 to 8V,I_O=5mA	-	0.2	1.0	%
Ripple rejection		RR	Refer to Fig.2	45	60	-	dB
Dropout voltage	**PQ070XZ5MZxH**	V_{I-O}	V_{IN}=2.85V,I_O=0.3A	-	-	0.5	V
	PQ070XZ01ZxH		V_{IN}=2.85V,I_O=0.5A				
Reference voltage		V_{ref}	-	1.225	1.25	1.275	V
Temperature coefficient of reference voltage		T_CV_{ref}	Tj=0 to 125°C, I_O=5mA	-	±1.0	-	%
※4 ON-state voltage for control		$V_{C(ON)}$	※4	2.0	-	-	V
ON-state current for control		$I_{C(ON)}$	-	-	-	200	μA
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	μA
Quiescent current		Iq	I_O=0A	-	1	2	mA
Output OFF-state consumption current		Iqs	V_C=0.4V	-	-	5	μA

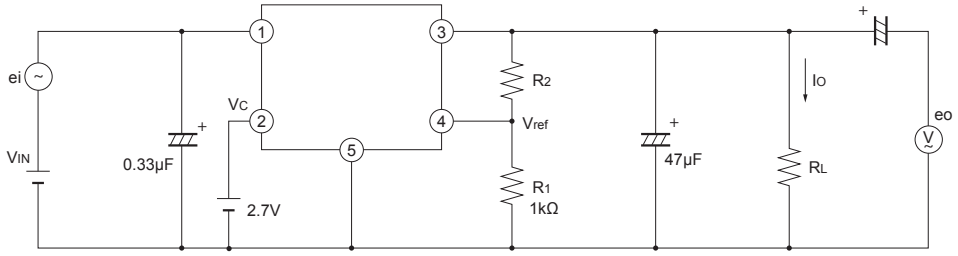
※4 In case of opening control terminal ② , output voltage turns off.

Fig.1 Test Circuit



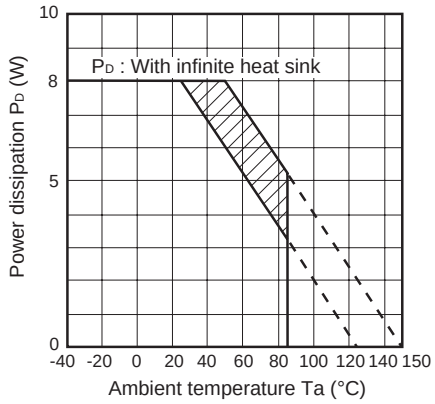
$V_O=V_{ref}\times(1+R_2/R_1)$
$[R_1=1k\Omega, V_{ref}\fallingdotseq 1.25V]$

Fig.2 Test Circuit for Ripple Rejection



f=120Hz sine wave
ei(rms)=0.5V
V_O=3V(R1=1kΩ)
V_{IN}=5V
I_O=0.3A
RR=20log(ei(rms)/eo(rms))

Fig.3 Power Dissipation vs. Ambient Temperature



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

Fig.4 Overcurrent Protection Characteristics (**PQ070XZ01ZxH**)

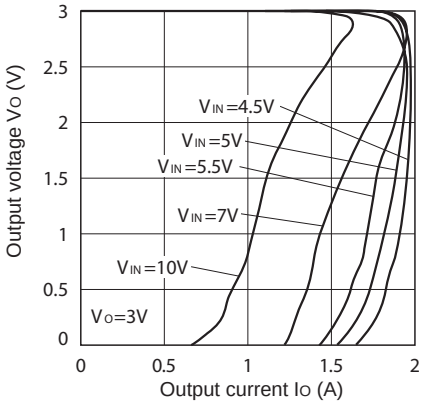


Fig.5 Overcurrent Protection Characteristics (**PQ070XZ5MZxH**)

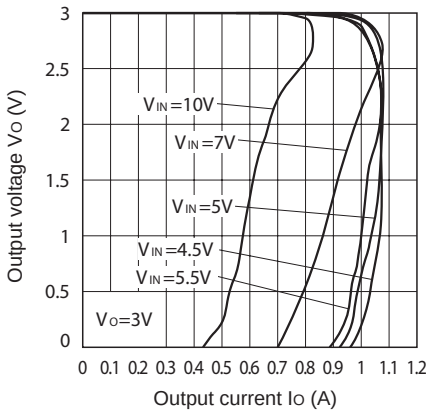


Fig.6 Reference Voltage vs. Ambient Temperature

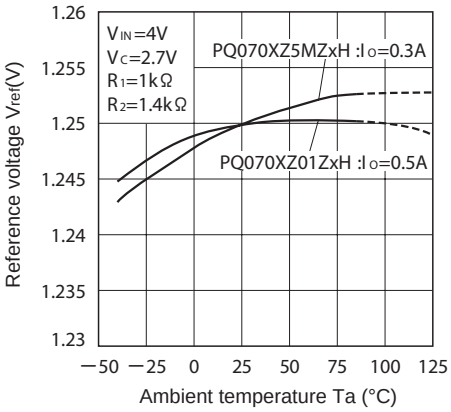


Fig.7 Output Voltage vs. Input Voltage (**PQ070XZ5MZxH**)

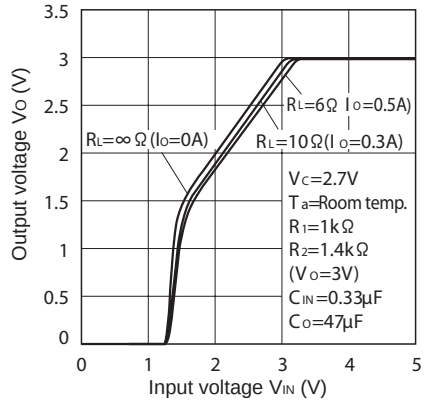


Fig.8 Output Voltage vs. Input Voltage (**PQ070XZ01ZxH**)

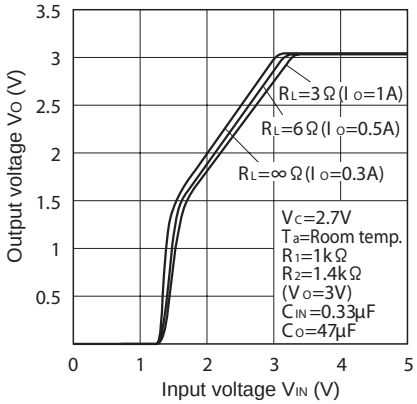


Fig.9 Circuit Operating Current vs. Input Voltage **(PQ070XZ5MZxH)**

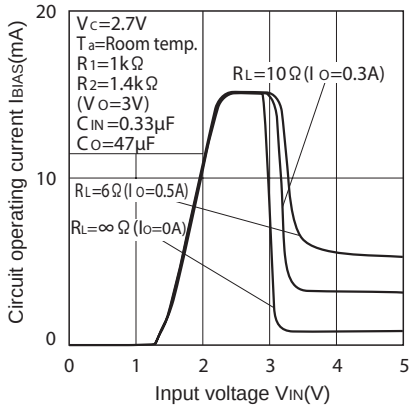


Fig.10 Circuit Operating Current vs. Input Voltage **(PQ070XZ01ZxH)**

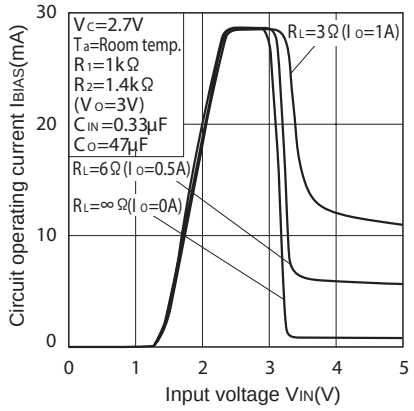


Fig.11 Dropout Voltage vs. Junction Temperature

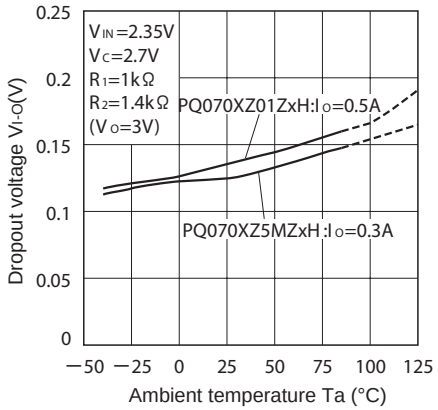


Fig.12 Quiescent Current vs. Junction Temperature

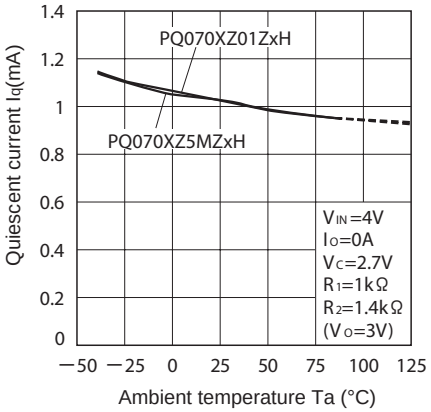


Fig.13 Ripple Rejection vs. Input Ripple Frequency

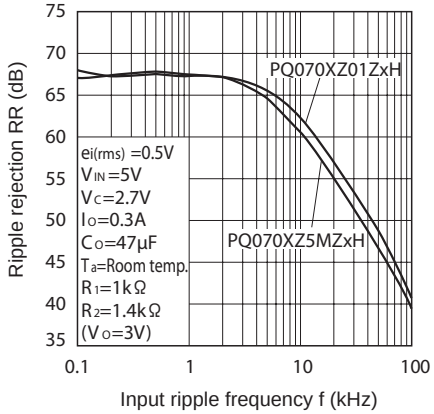


Fig.14 Ripple Rejection vs. Output Current

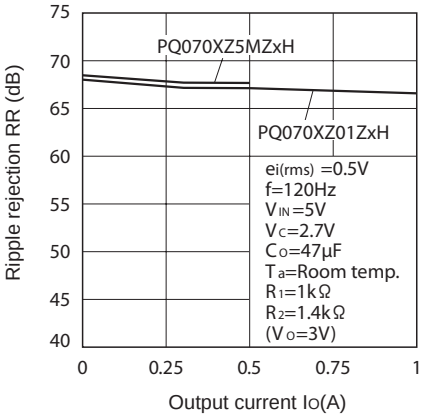


Fig.15 Typical Application

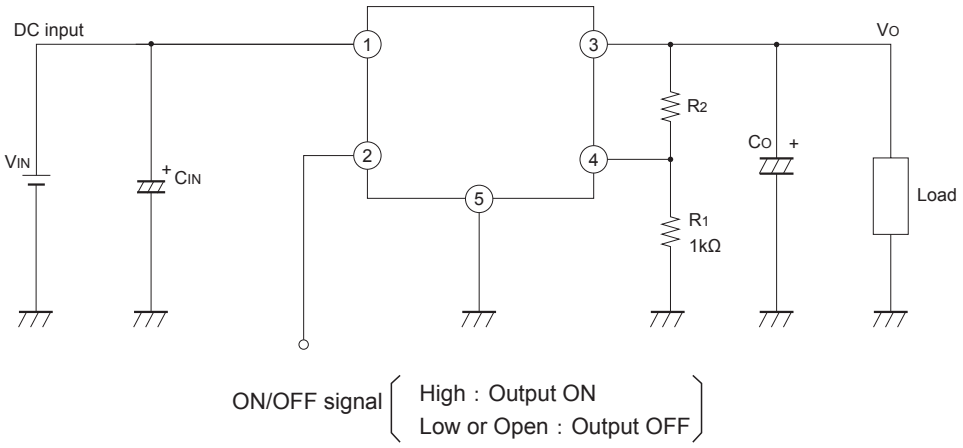
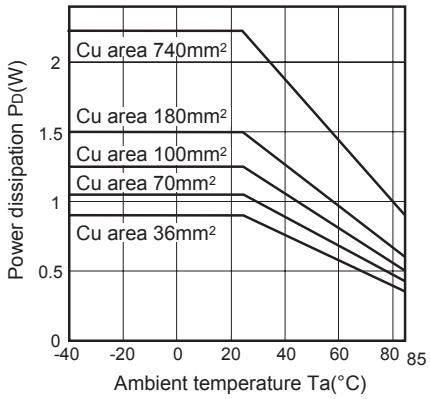


Fig.16 Power Dissipation vs. Ambient Temperature (Typical Value)



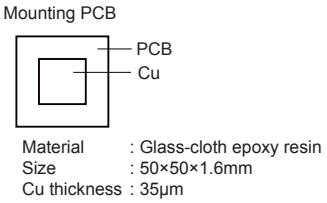
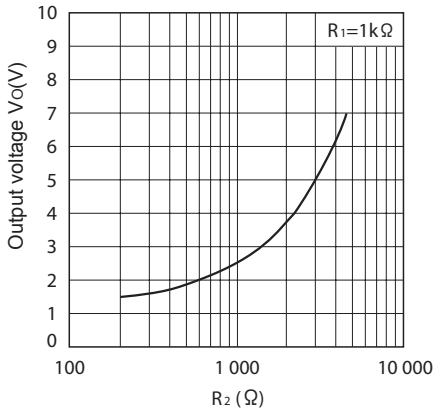
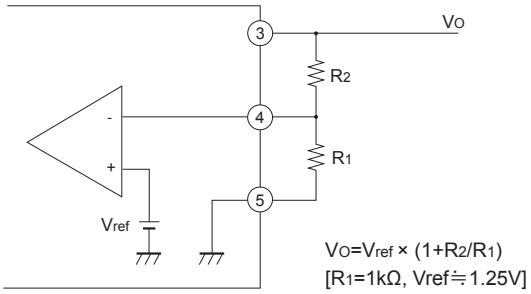


Fig.17 Output Voltage Adjustment Characteristics



■ Setting of Output Voltage

Output voltage is able to set from 1.5V to 7V when resistors R_1 and R_2 are attached to ③,④,⑤ terminals. As for the external resistors to set output voltage, refer to the figure below and Fig.17.



$V_O = V_{ref} \times (1 + R_2/R_1)$
$[R_1 = 1k\Omega, V_{ref} \fallingdotseq 1.25V]$