PQ070XZ1HZxH

Low Voltage Operation Low
Power-loss Voltage Regulator

■ Features

1.Low voltage operation
(Minimum operating voltage: 2.35V)
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

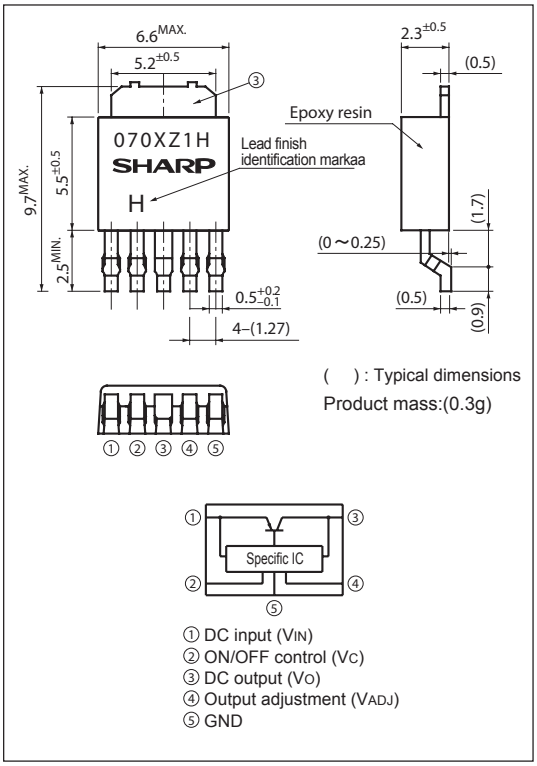
1.Power supplies for personal computers and peripheral equipment
2.Power supplies for various electronic equipment such as DVD player or STB

■ Model Line-up

Output current (I_O)	Package type	Model No.
1.5A	Taping	**PQ070XZ1HZPH**
	Sleeve	**PQ070XZ1HZZH**

■ 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	I_O	1.5	A
*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 PD:With infinite heat sink
*3 Overheat protection may operate at Tj:125°C to 150°C

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In the absence of confirmation by device specification sheets, SHARP takes no responsibility for any defects that may occur in equipment using any SHARP devices shown in catalogs, data books, etc. Contact SHARP in order to obtain the latest device specification sheets before using any SHARP device.

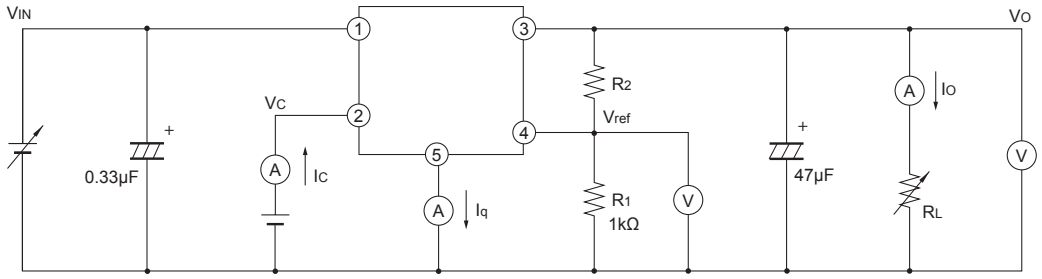
■ Electrical Characteristics

(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)

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 1.5A	-	0.2	2.0	%
Line regulation	RegI	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}=3.3V,I_O=1.25A	-	-	1.0	V
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	-	%
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

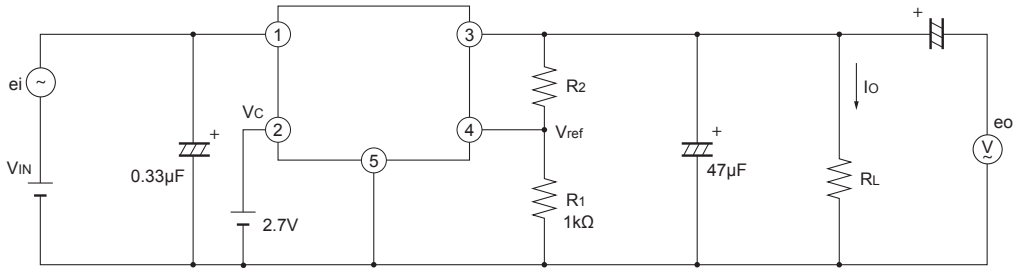
※4 In case of opening control terminal ② , output voltage turns off.

Fig.1 Test Circuit



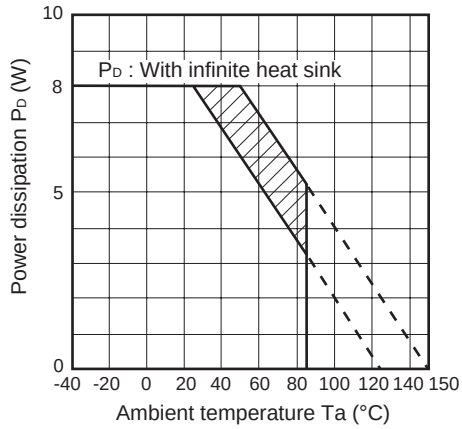
$V_O=V_{ref}\times(1+R_2/R_1)$
$[R_1=1k\Omega, V_{ref}\fallingdotseq 1.25V]$

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

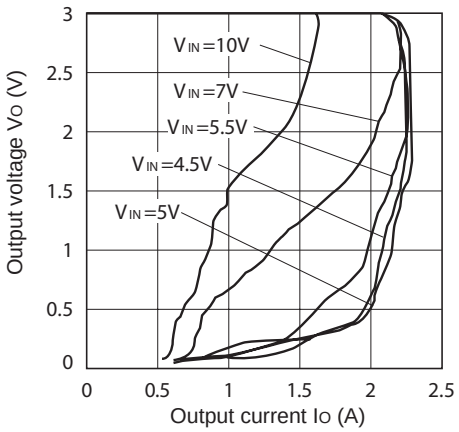


Fig.5 Reference Voltage vs. Junction Temperature

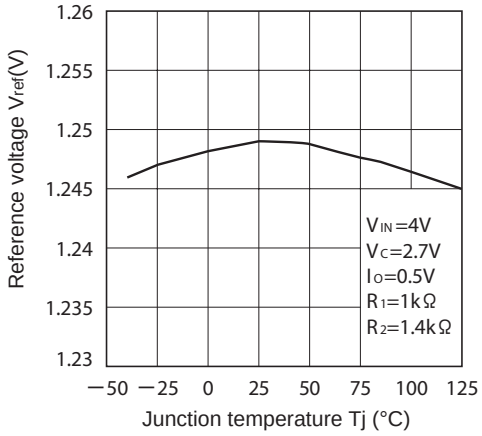


Fig.6 Output Voltage vs. Input Voltage

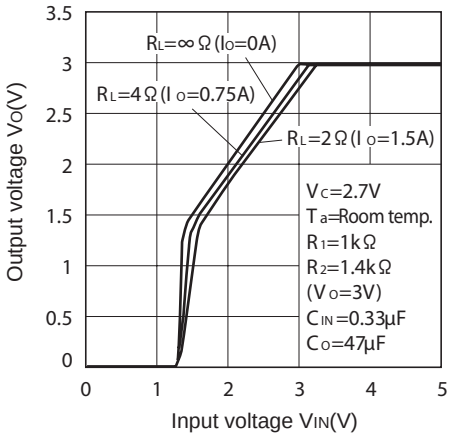


Fig.7 Circuit Operating Current vs. Input Voltage

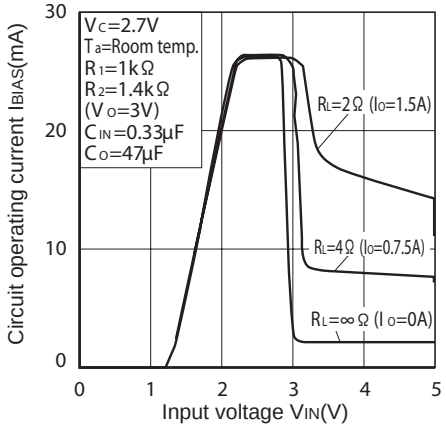


Fig.8 Dropout Voltage vs. Junction Temperature

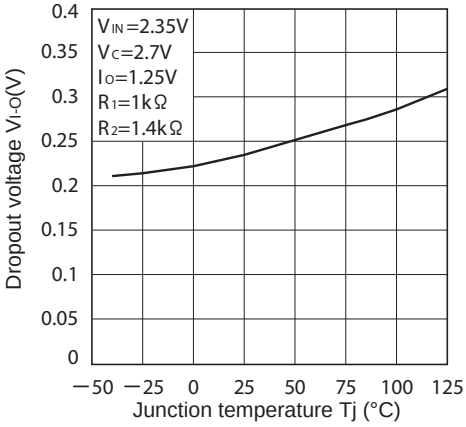


Fig.9 Quiescent Current vs. Junction Temperature

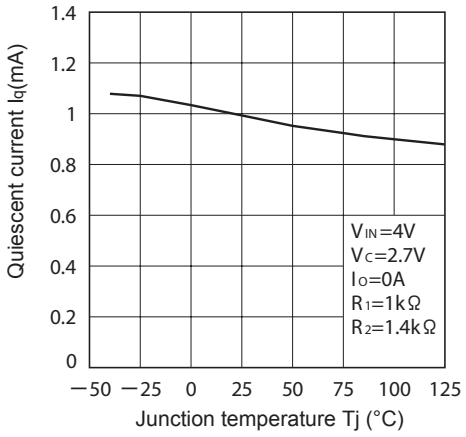


Fig.10 Ripple Rejection vs. Input Ripple Frequency

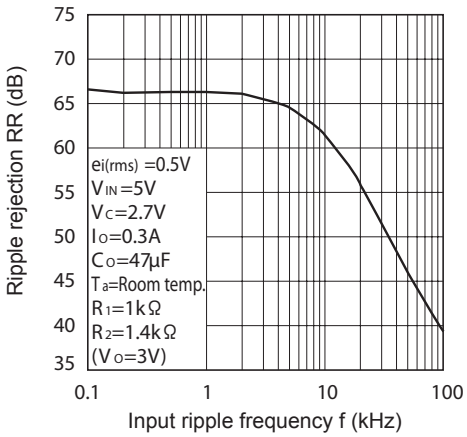


Fig.11 Ripple Rejection vs. Output Current

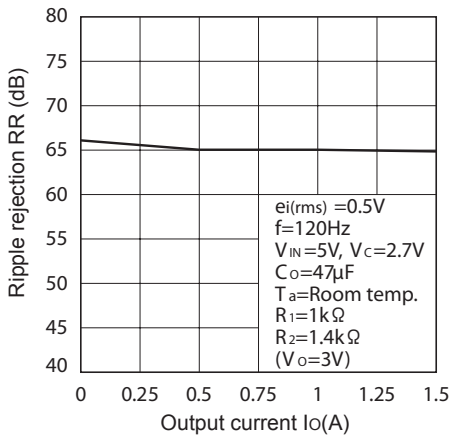
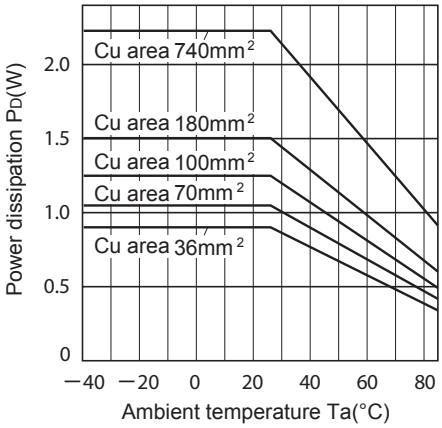
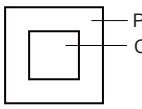


Fig.12 Power Dissipation vs. Ambient Temperature (Typical Value)

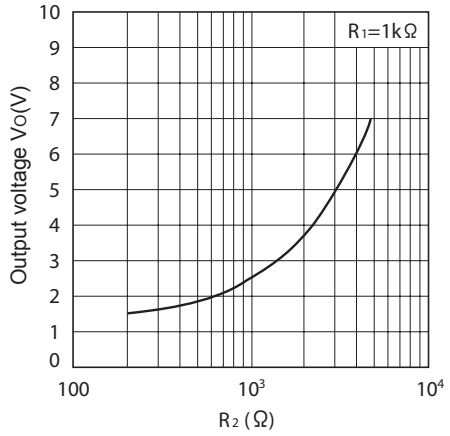


Mounting PCB

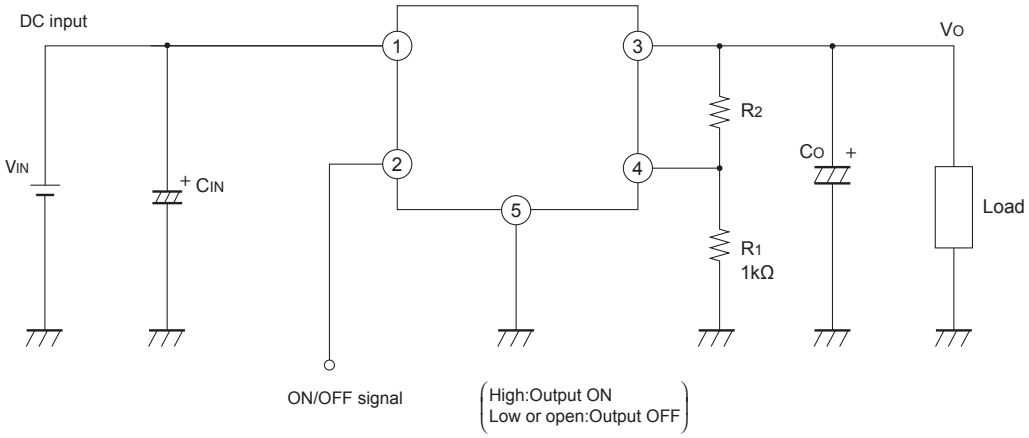


Material : Glass-cloth epoxy resin
Size : 50×50×1.6mm
Cu thickness : 35µm

Fig.13 Output Voltage Adjustment Characteristics (Typical Value)



■ Typical Application



■ 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.13.

