

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_o: 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

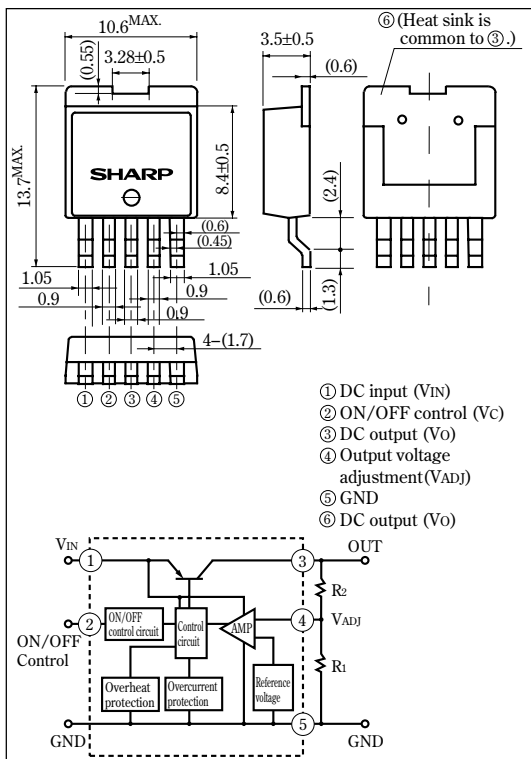
- Personal computers and peripheral equipment
- Power supplies for various digital electronic equipment such as DVD player or STB
- Power supplies for automotive equipment such as car navigation system.

Model Line-up

Output current(I _o)	Package type	Variable output type
2A	Taping	PQ070XH02ZP
	Sleeve	PQ070XH02ZZ

Outline Dimensions

(Unit : mm)



Absolute Maximum Ratings

(T_a=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	2	A
*#2 Power dissipation	P _D	35	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 125 ≤ T_j ≤ 150°C.

•Please refer to the chapter " Handling Precautions ".

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 Internet Internet address for Electronic Components Group <http://sharp-world.com/ecg/>

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	$RegL$	$I_O=5mA$ to $2A$	-	0.2	2.0	%
Line regulation	$RegI$	$V_{IN}=4$ to $8V, I_O=5mA$	-	0.2	1.0	%
Temperature coefficient of reference voltage	$T_C V_{REF}$	$T_j=0$ to $125^\circ C, I_O=5mA$	-	± 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	μA
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	μA
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	μA

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

Fig.1 Test Circuit

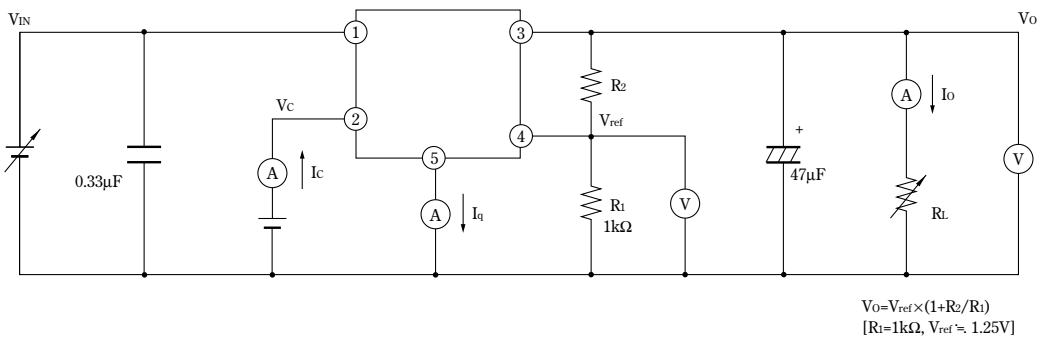


Fig.2 Test Circuit of Ripple Rejection

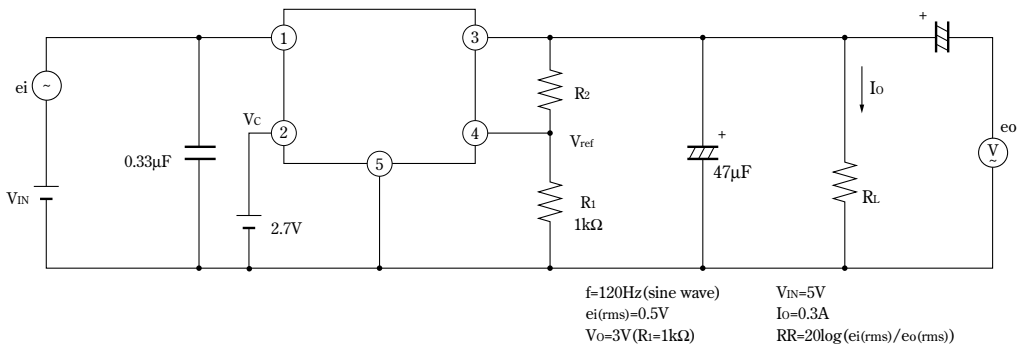
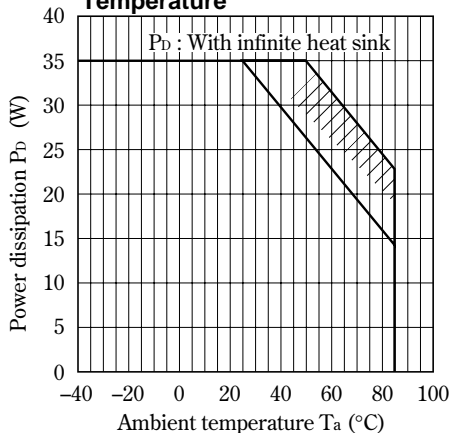


Fig.3 Power Dissipation vs. Ambient Temperature



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

Fig.5 Output Voltage Fluctuation vs. Junction Temperature

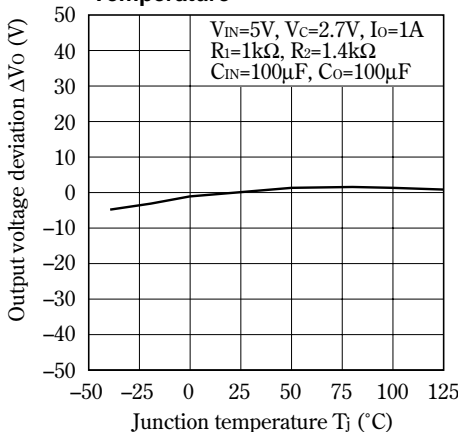


Fig.7 Circuit Operating Current vs. Input Voltage

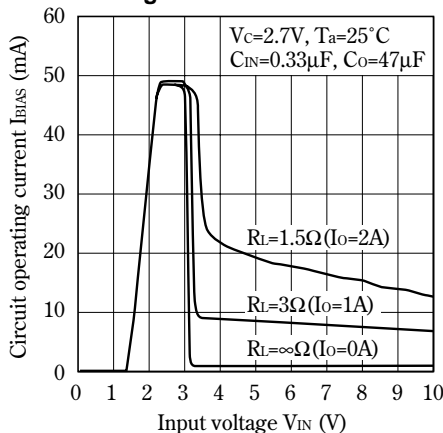


Fig.4 Overcurrent Protection Characteristics

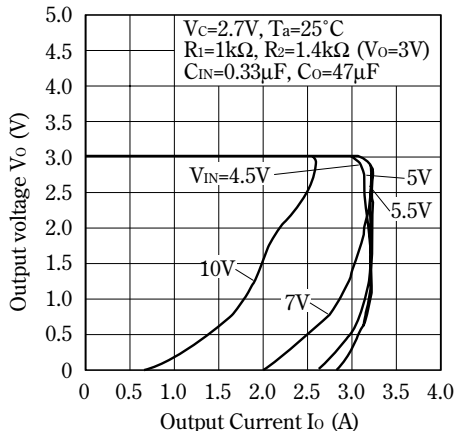


Fig.6 Output Voltage vs. Input Voltage

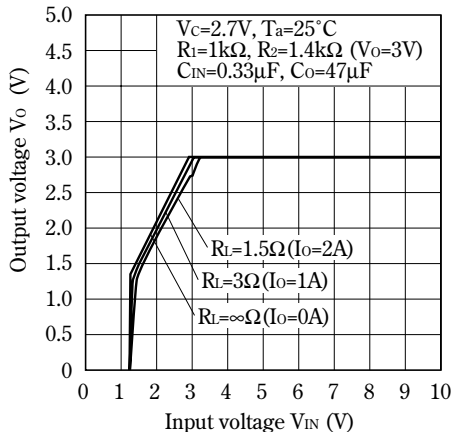


Fig.8 Dropout Voltage vs. Junction Temperature

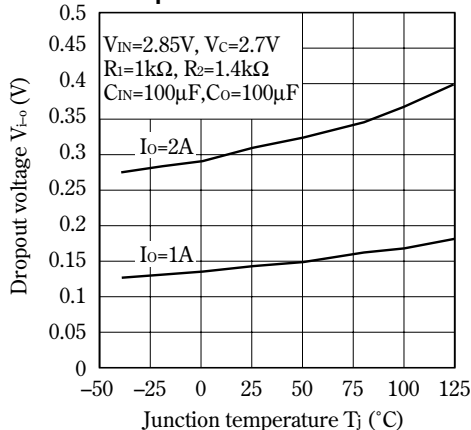


Fig.9 ON-OFF Control Voltage vs. junction Temperature

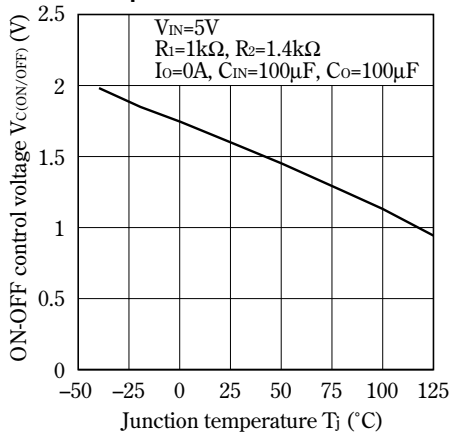


Fig.10 Quiescent Current vs. Junction Temperature

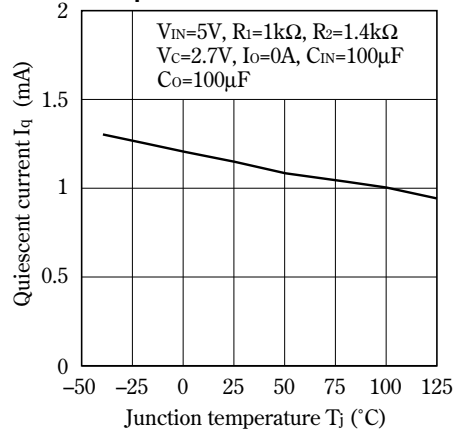


Fig.11 Ripple Rejection vs. Input Ripple Frequency

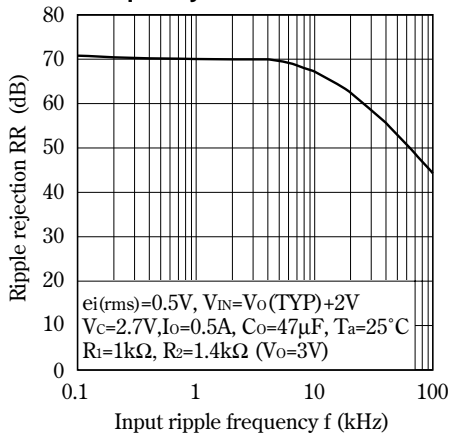


Fig.12 Ripple Rejection vs. Output Current

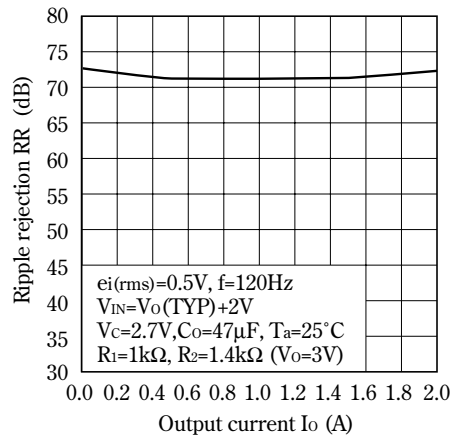
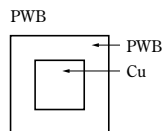
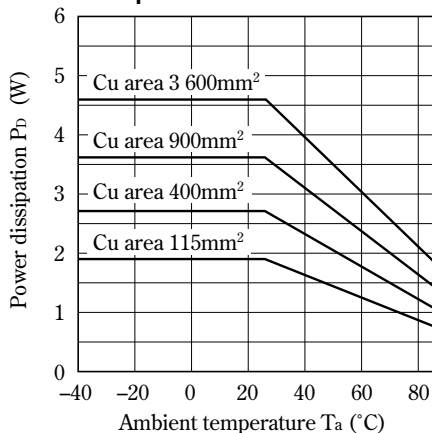


Fig.13 Power Dissipation vs. Ambient Temperature



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

Fig.19 Output Voltage Adjustment Characteristics (Typical Value)

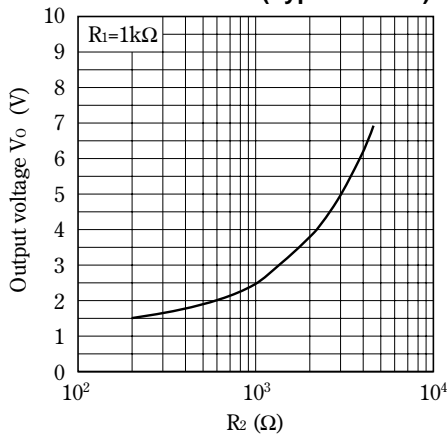
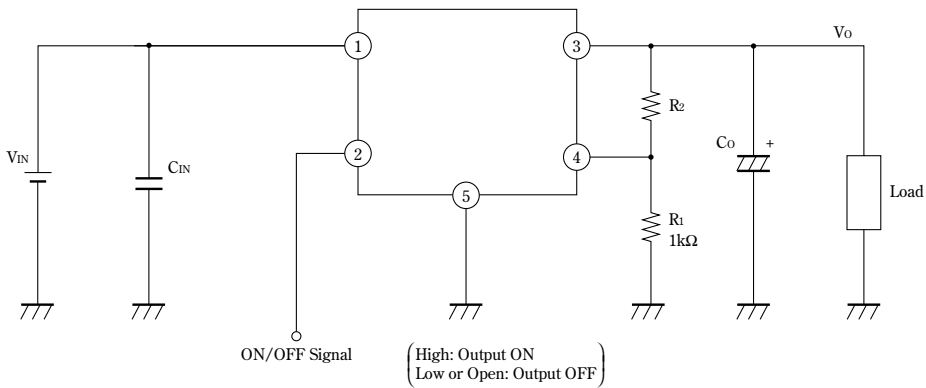
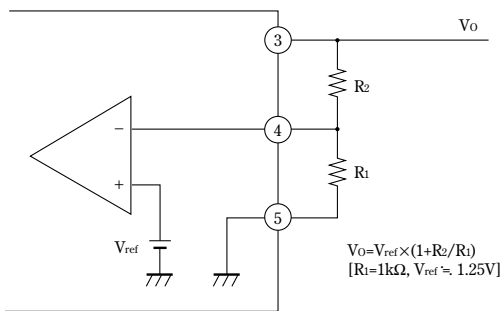


Fig.21 Typical Application



Setting of Output Voltage

Output voltage is able to set from 1.5V to 7V when resistors R₁, R₂ 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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