

PQ070XZ1HZ

Low Voltage Operation Low Power-loss Voltage Regulator

■ Features

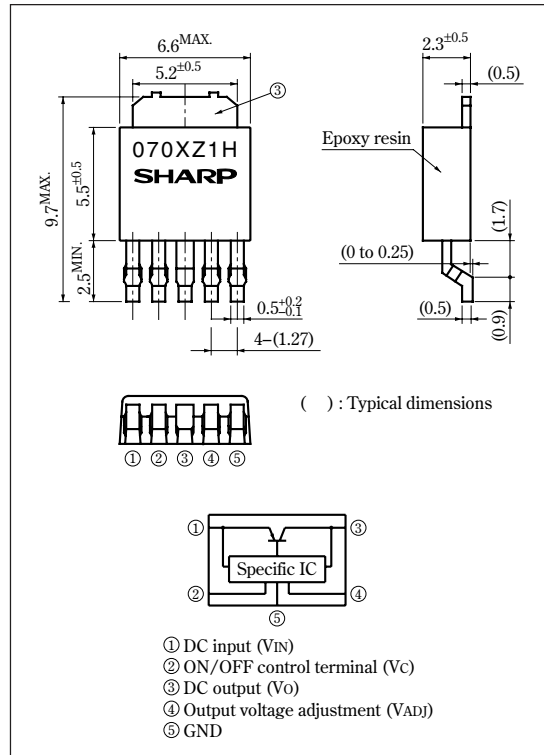
- Low voltage operation (Minimum operating voltage: 2.35V)
- Low dissipation current
 Dissipation current at no load: MAX.2mA
 Output OFF-state dissipation current: MAX.5μA
- Low power-loss (Dropout voltage: MAX.0.5V)
- Built-in overcurrent and overheat protection functions

■ Applications

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

■ Outline Dimensions

(Unit : mm)



■ 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 _{sig}	-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 T_J=125°C to 150°C

•Please refer to the chapter " Handling Precautions ".

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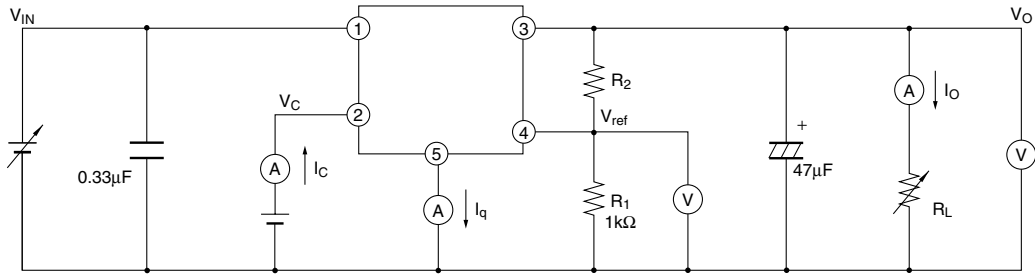
■ Electrical Characteristics

(Unless otherwise specified, condition shall be $V_{IN}=5V$, $V_O=3V(R_1=1k\Omega)$, $I_O=0.5A$, $V_C=2.7V$, $T_a=25^\circ C$)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Input voltage	V_{IN}	—	2.35	—	10	V
Output voltage	V_O	—	1.5	—	7	V
Load regulation	R_{egL}	$I_O=5mA$ to 1.5A	—	0.2	2	%
Line regulation	R_{egI}	$V_{IN}=4$ to 8V, $I_O=5mA$	—	0.2	1	%
Ripple rejection	RR	Refer to Fig.2	45	60	—	dB
Dropout voltage	V_{L-O}	$V_{IN}=3.3V$, $I_O=1.25A$	—	—	1	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 $125^\circ C$, $I_O=5mA$	—	± 1.0	—	%
*4 ON-state voltage for control	$V_{C(ON)}$	*4	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}	$V_C=0.4V$	—	—	5	μA

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

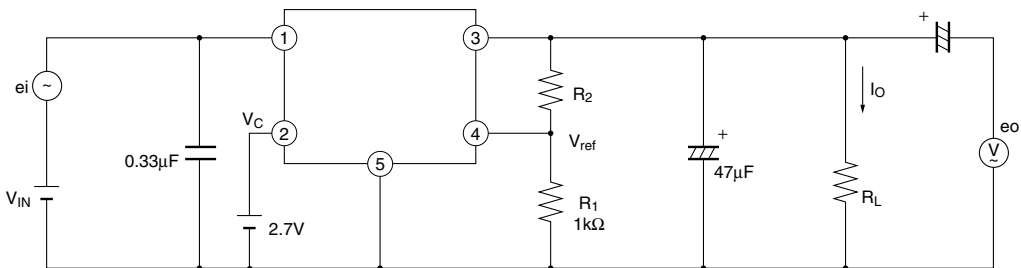
Fig.1 Test Circuit



$$V_O = V_{ref} \times (1 + R_2/R_1)$$

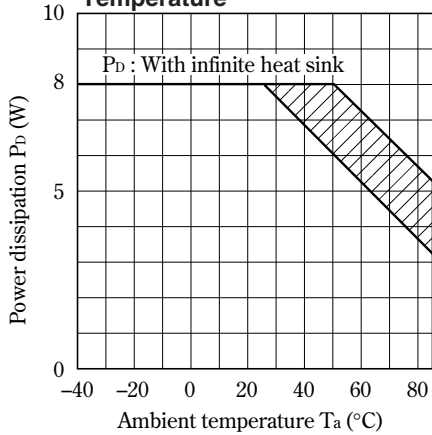
[$R_1=1k\Omega$, $V_{ref}=1.25V$]

Fig.2 Test Circuit for Ripple Rejection



$f=120Hz$ (sine wave) $V_{IN}=5V$
 $e_i(rms)=0.5V$ $I_O=0.3A$
 $V_O=3V(R_1=1k\Omega)$ $RR=20\log(e_i(rms)/e_o(rms))$

Fig.3 Power Dissipation vs. Ambient Temperature



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

Fig.5 Reference Voltage vs. Junction Temperature

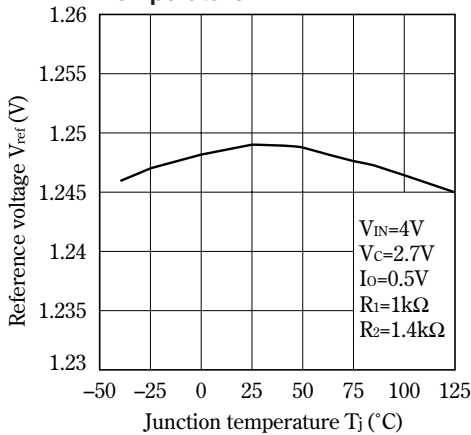


Fig.4 Overcurrent Protection Characteristics

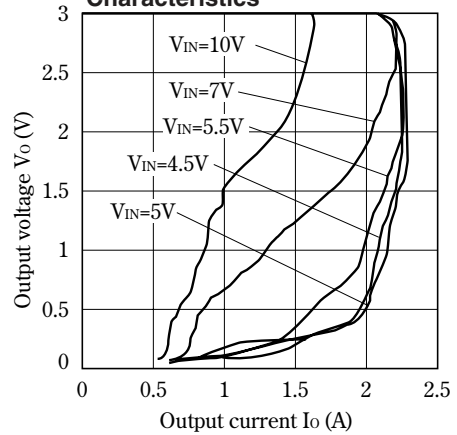


Fig.6 Output Voltage vs. Input Voltage

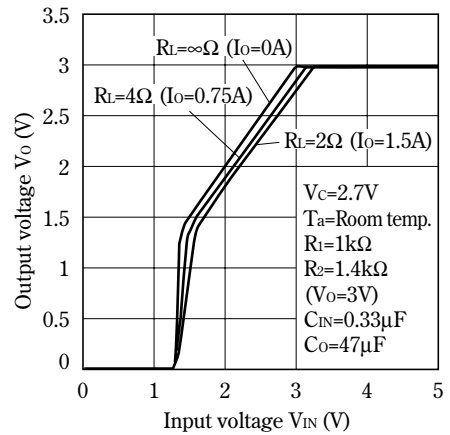


Fig.7 Circuit Operating Current vs. Input Voltage

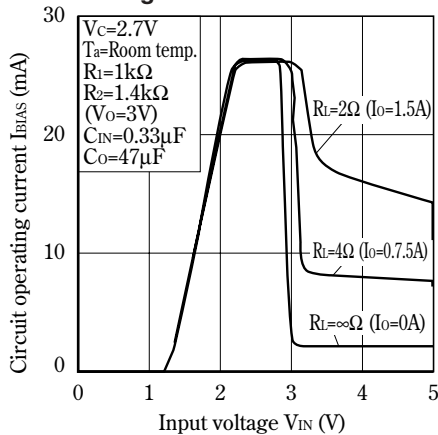


Fig.8 Dropout Voltage vs. Junction Temperature

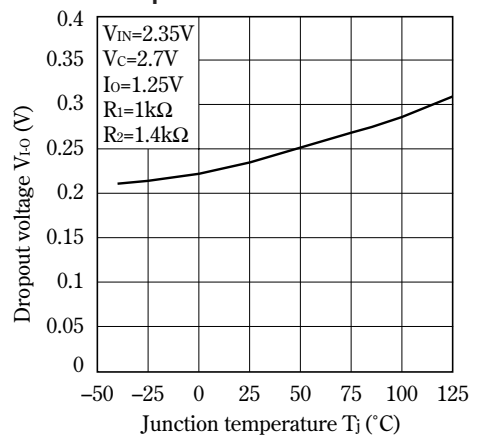


Fig.9 Quiescent Current vs. Junction Temperature

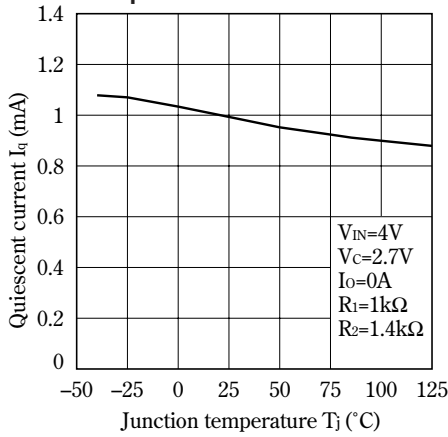


Fig.10 Ripple Rejection vs. Input Ripple Frequency

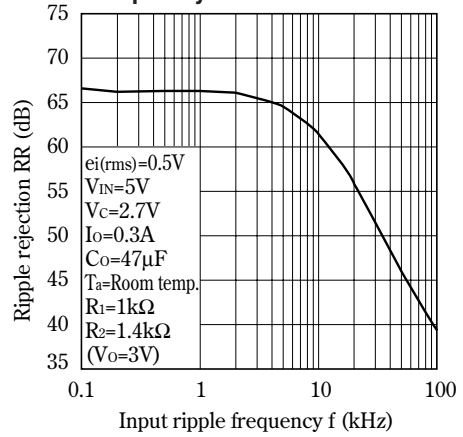


Fig.11 Ripple Rejection vs. Output Current

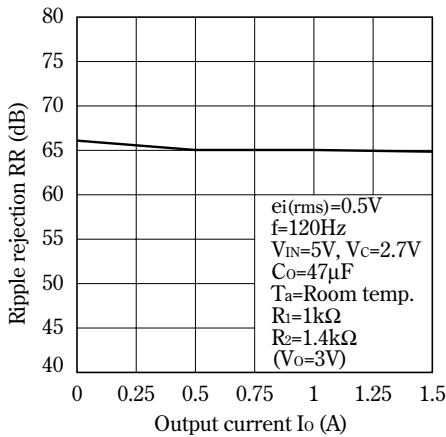
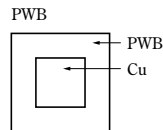
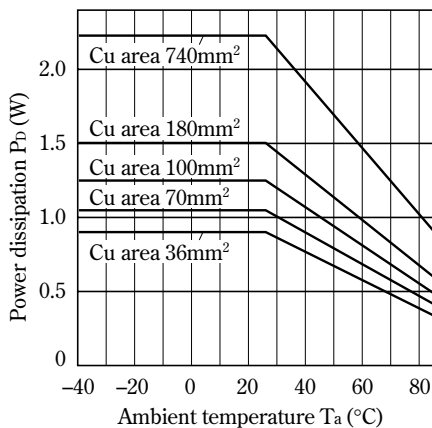
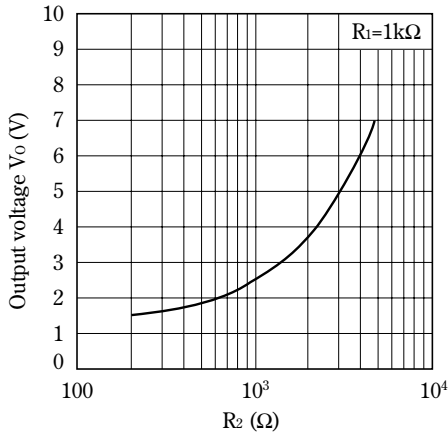


Fig.12 Power Dissipation vs. Ambient Temperature (Typical Value)

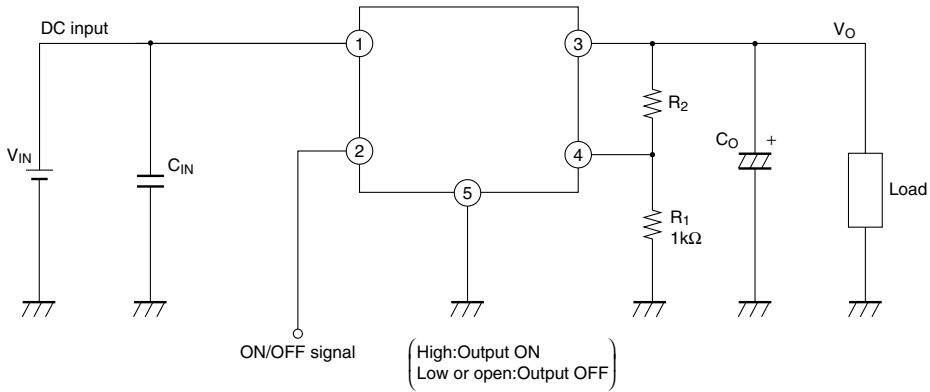


Material : Glass-cloth epoxy resin
 Size : 50×50×1.6mm
 Cu thickness : 35μm

Fig.13 Output Voltage Adjustment Characteristics (Typical Value)

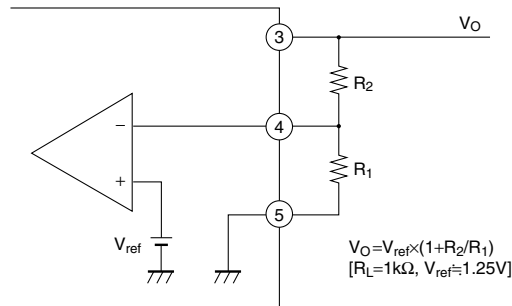


■ Typical Application



■ Setting of Output Voltage

Output voltage is able to set from 1.5V to 7V when resistors R₁ and R₂ are attached to ③, ④, ⑤ terminals. As for the external resistors to set output voltage, refer to the figure below and Fig.13.



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