PQ070XNA1ZPH

Low Voltage Operation,Compact Surface Mount type Low Power-Loss Voltage Regulators

■ Features

1.Low voltage operation
(Minimum operating voltage: 2.35V)
2.Output current : 1A
3.Low dissipation current
(Dissipation current at no load: MAX. 2mA
Output OFF-state dissipation current: MAX.5μA)
4.Compliant Ceramic capacitors
5.Built-in ON/OFF function
6.Built-in overcurrent and overheat protection functions
7.Correspond to flow soldering
8.RoHS directive compliant

■ Applications

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

■ Absolute Maximum Ratings

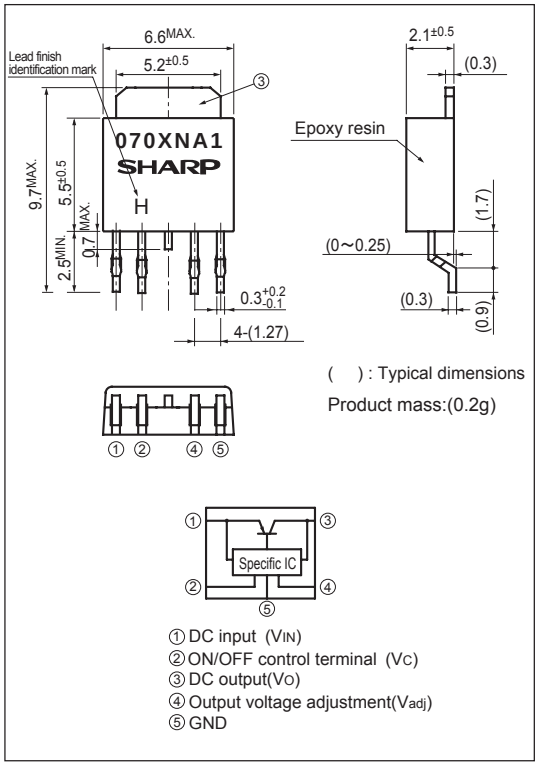
(Ta=25°C)

Parameter	Symbol	Rating	Unit
*1 Input voltage	V_{IN}	10	V
*1 Output control voltage	V_C	10	V
*1 Output adjustment pin voltage	V_{adj}	5	V
Output current	I_O	1	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 P_D:With infinite heat sink
*3 There is case that over heat protection operates at the temperature Tj:125°C to 150°C, so this item cannot be used in this temperature range.

■ Outline Dimensions

(Unit : mm)



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

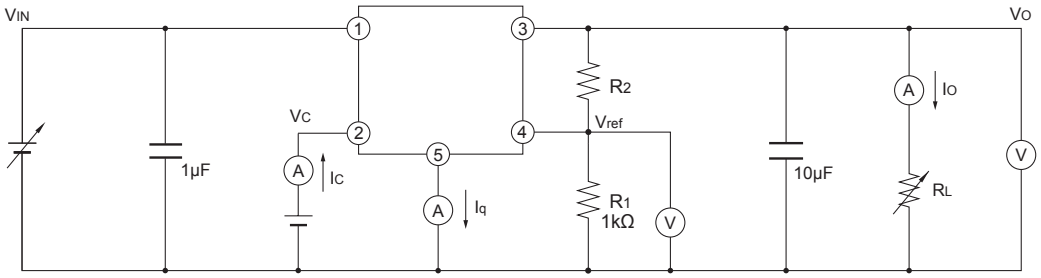
■ Electrical Characteristics

(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 1A	-	0.2	1.0	%
Line regulation	RegI	V_{IN}=4 to 8V,I_O=5mA	-	0.2	1.0	%
Ripple rejection	RR	Refer to Fig.2	-	60	-	dB
Dropout voltage	V_{I-O}	V_{IN}=2.85V, I_O=0.5A	-	-	0.5	V
Reference voltage	V_{REF}	-	1.206	1.23	1.254	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=0A	-	-	0.6	V
OFF-state current for control	$I_{C(OFF)}$	I_O=0A, V_C=0.4V	-	-	5	μA
Quiescent current	I_q	I_O=0A	-	1	2	mA
Output OFF-state dissipation current	I_{qs}	V_C=0.4V	-	-	5	μA

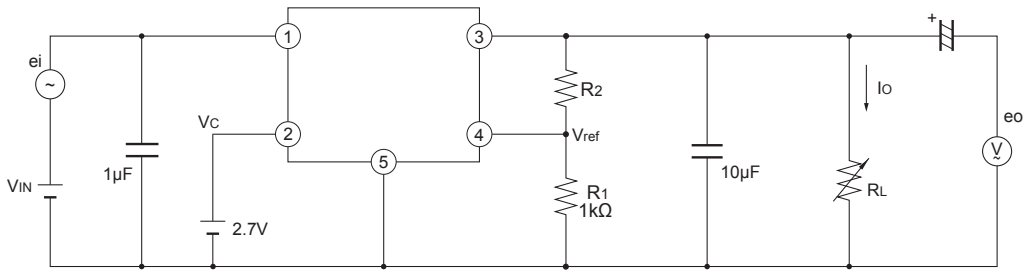
※4 In case of opening control terminal ②, output voltage turns off

Fig.1 Test Circuit



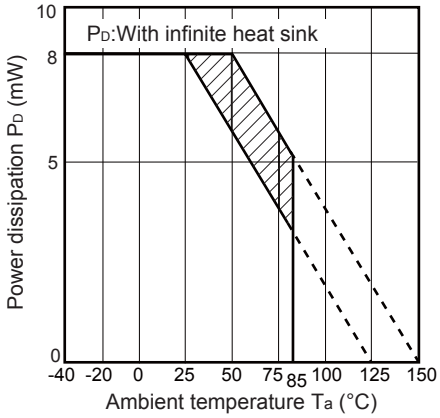
$V_O=V_{ref}\times(1+R_2/R_1)$
$[R_1=1k\Omega, V_{ref}\fallingdotseq 1.23V]$

Fig.2 Test Circuit for Ripple Rejection



f=120Hz(sine wave)
ei(rms)=0.5V
V_{IN}=5V
V_O=3V(R1=1kΩ)
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

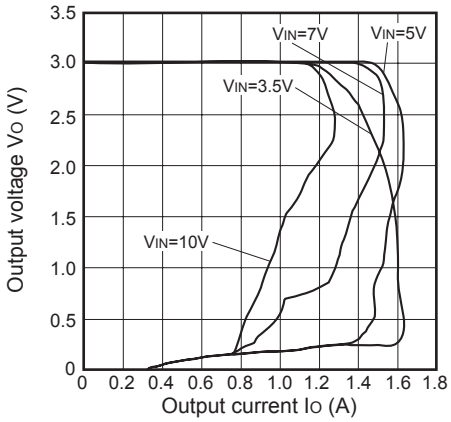


Fig.5 Output Voltage vs. Ambient Temperature

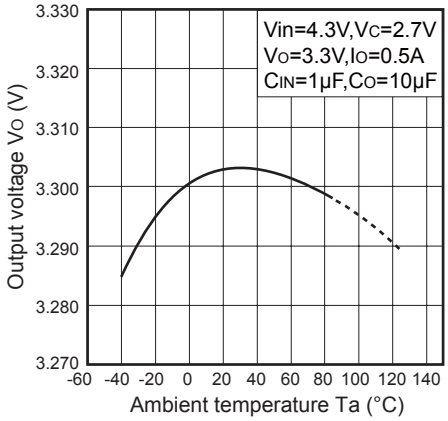


Fig.6 Dropout Voltage vs. Ambient Temperature

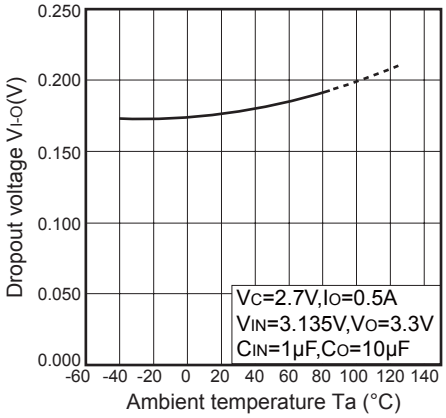


Fig.7 Quiescent Current vs. Ambient Temperature

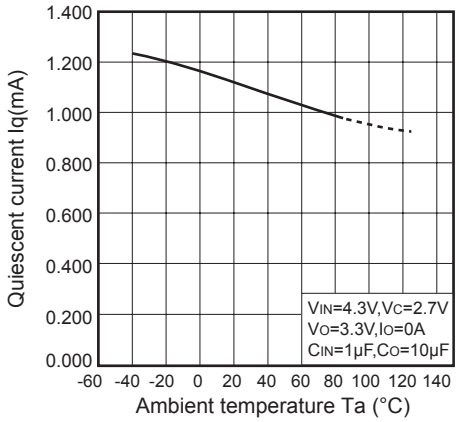


Fig.8 Output Voltage vs. Input Voltage

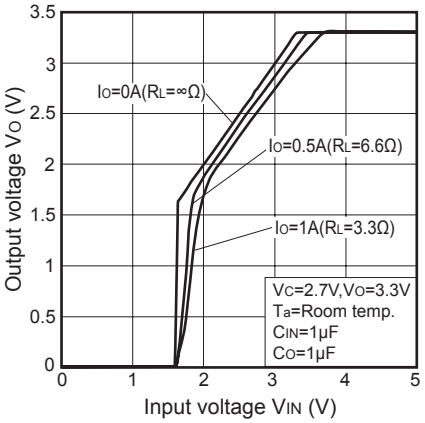


Fig.9 Circuit Operating Current vs. Input Voltage

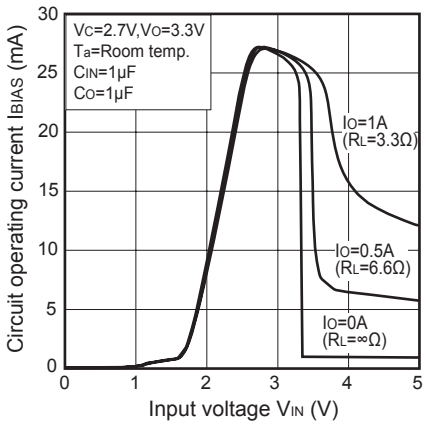


Fig.10 Dropout Voltage vs. Output Current

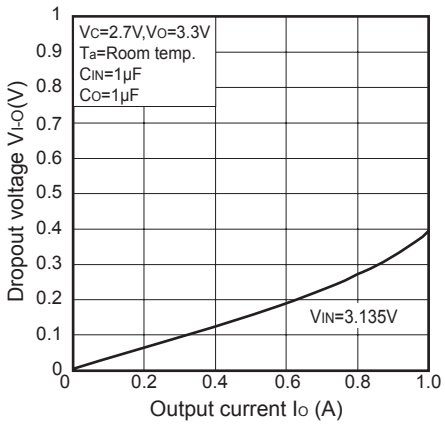


Fig.11 Ripple Rejection vs. Input Ripple Frequency

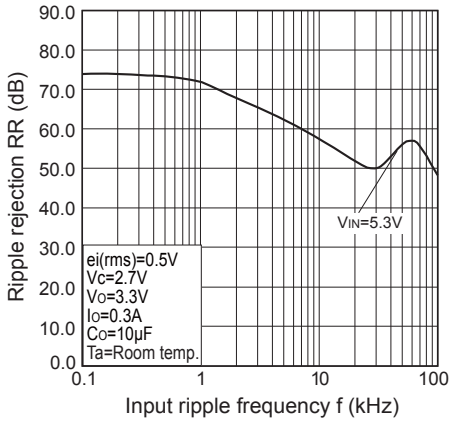


Fig.12 Ripple Rejection vs. Output Current

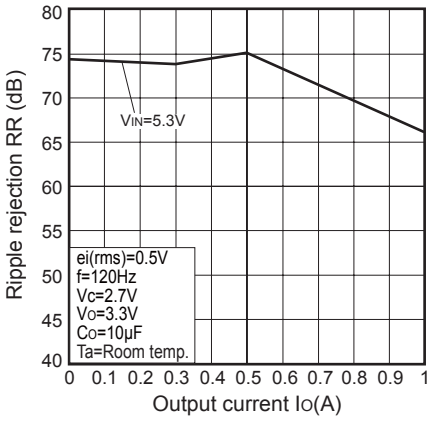
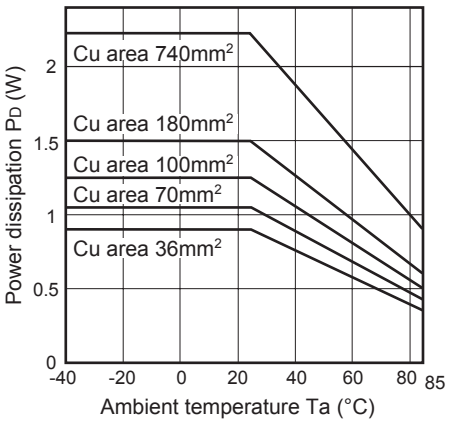
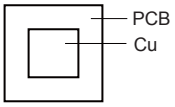


Fig.13 Power Dissipation vs. Ambient Temperature (Typical Value)

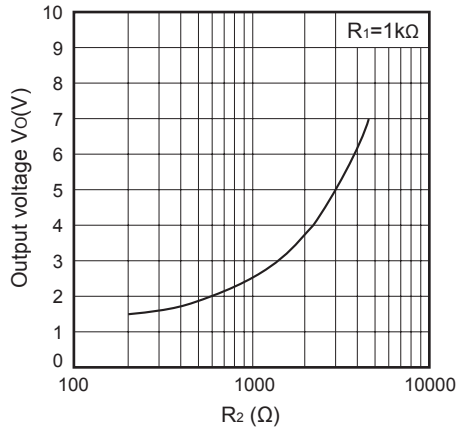


Mounting PCB

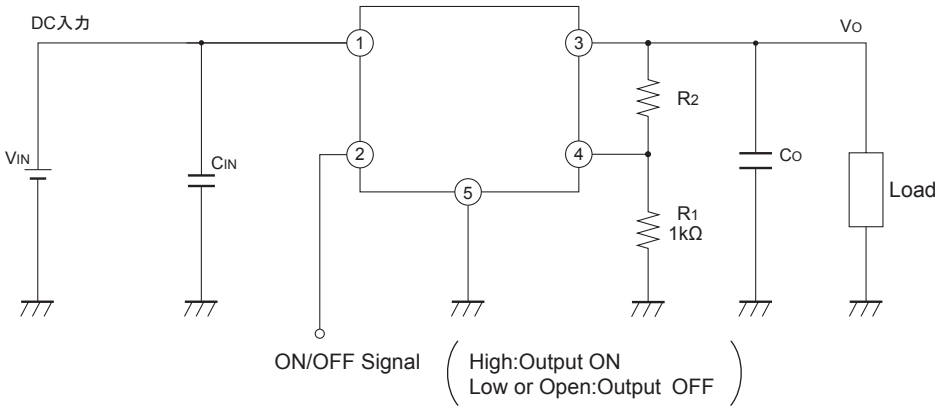


Material : Glass-cloth epoxy resin
Size : 50×50×1.6mm
Cu thickness : 35µm

Fig.14 Output Voltage Adjustment Characteristics



■ 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.14.