

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. 5 μ A)
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

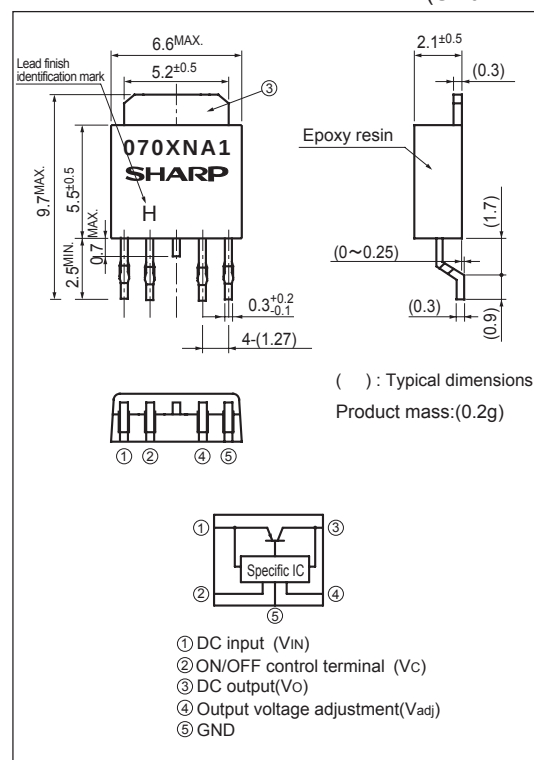
*1 All are open except GND and applicable terminals.

*2 P_D: With infinite heat sink

*3 There is case that over heat protection operates at the temperature T_J: 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)

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

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	Reg_L	$I_O=5mA$ to $1A$	-	0.2	1.0	%
Line regulation	Reg_I	$V_{IN}=4$ 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	$T_C V_{REF}$	$T_J=0$ to $+125^\circ C$, $I_O=5mA$	-	± 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

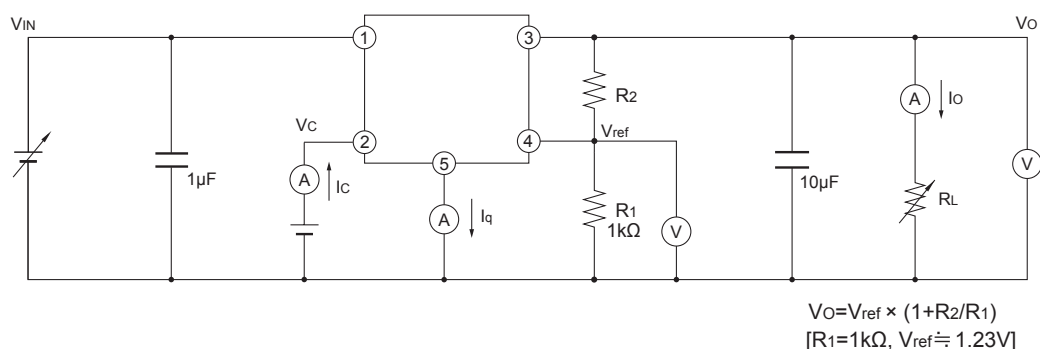


Fig.2 Test Circuit for Ripple Rejection

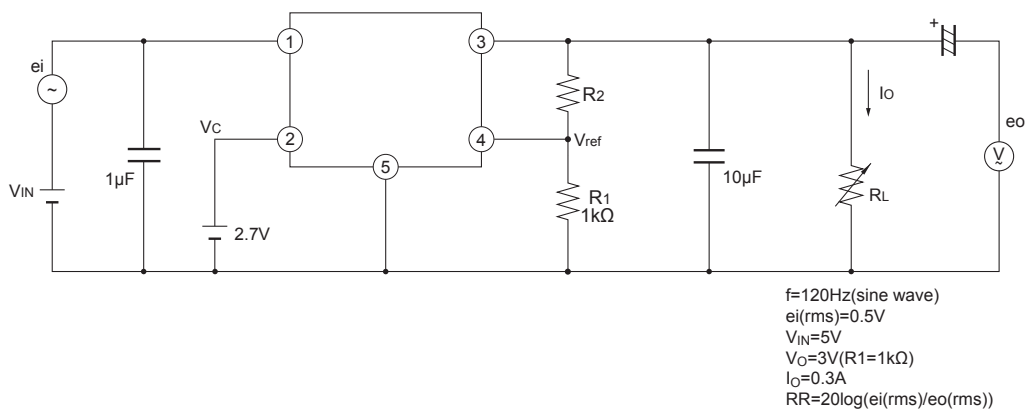
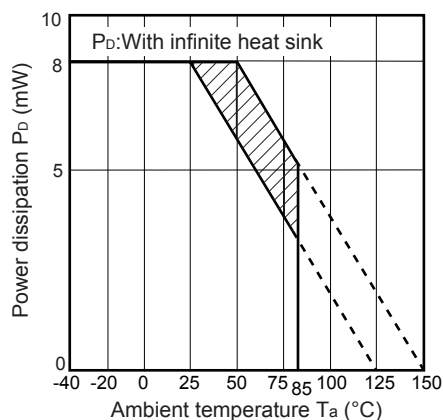


Fig.3 Power Dissipation vs. Ambient Temperature



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

Fig.5 Output Voltage vs. Ambient Temperature

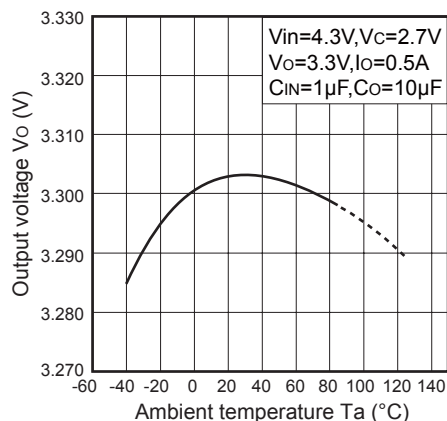


Fig.4 Overcurrent Protection Characteristics

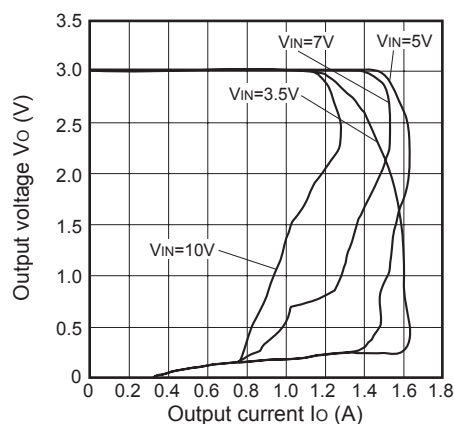


Fig.6 Dropout Voltage vs. Ambient Temperature

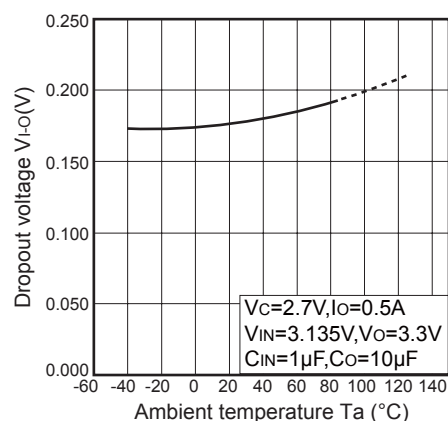


Fig.7 Quiescent Current vs. Ambient Temperature

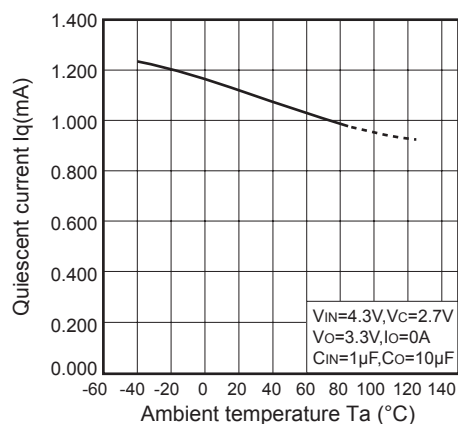


Fig.8 Output Voltage vs. Input Voltage

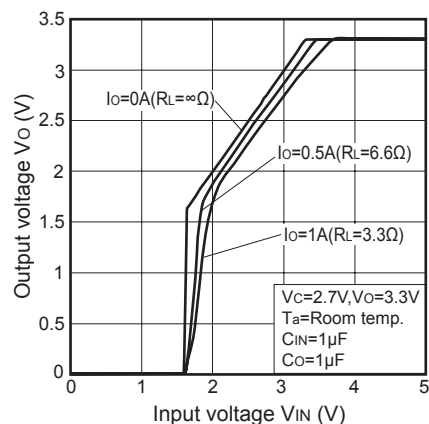


Fig.9 Circuit Operating Current vs. Input Voltage

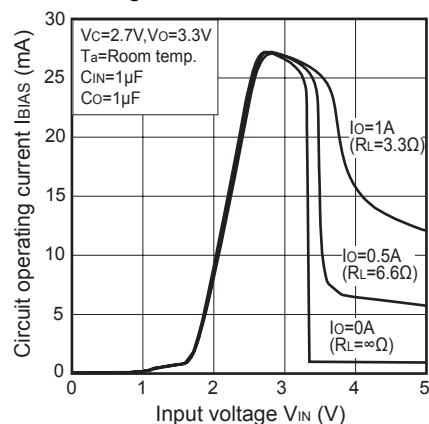


Fig.10 Dropout Voltage vs. Output Current

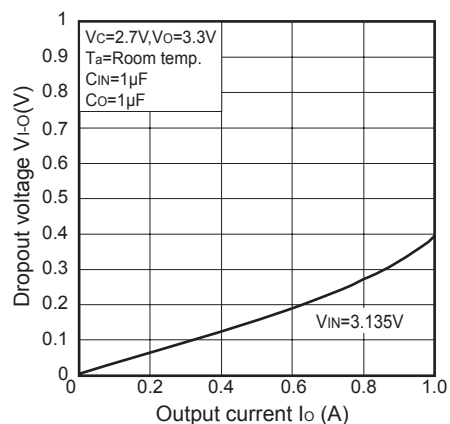


Fig.11 Ripple Rejection vs. Input Ripple Frequency

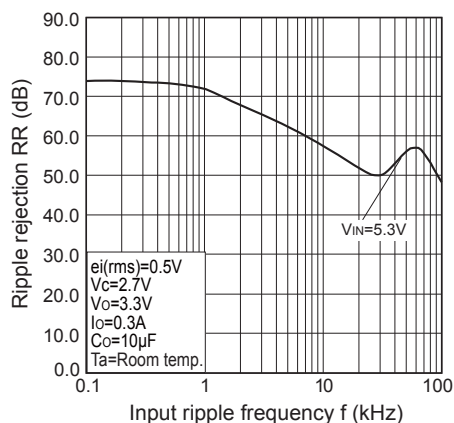


Fig.12 Ripple Rejection vs. Output Current

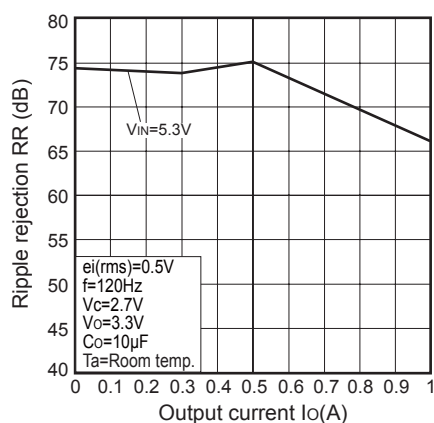
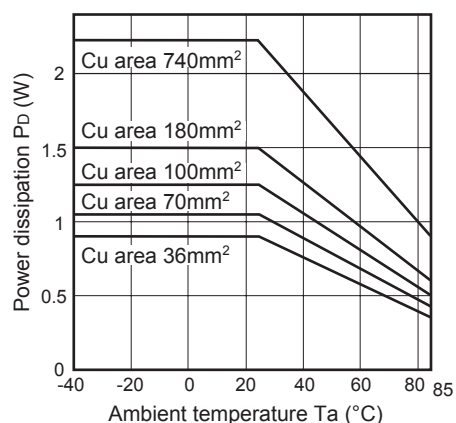
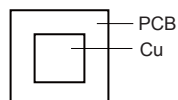


Fig.13 Power Dissipation vs. Ambient Temperature (Typical Value)

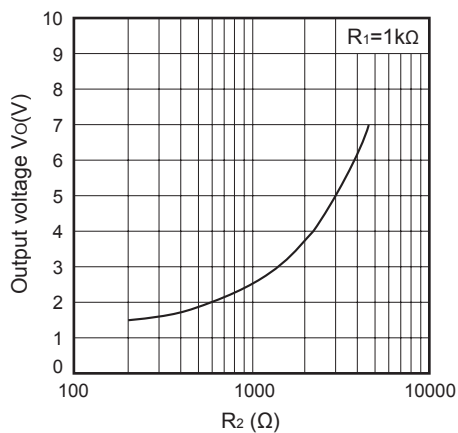


Mounting PCB

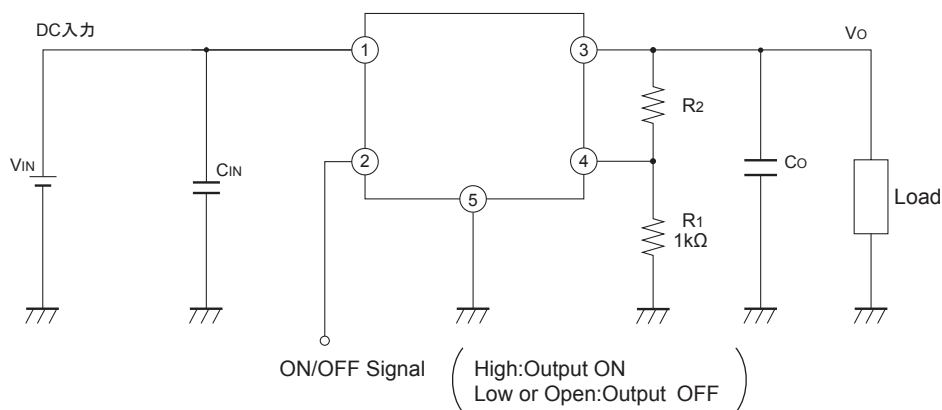


Material : Glass-cloth epoxy resin
 Size : $50 \times 50 \times 1.6\text{mm}$
 Cu thickness : $35\mu\text{m}$

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 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.14.

