

# PQ200WNA1ZPH

Compact Surface Mount type  
Low Power-Loss Voltage Regulators

## ■ Features

1. Output current : 1A
2. High isolation voltage  $V_{IN}$ : MAX. 24 V
3. Low dissipation current  
(Dissipation current at no load: MAX. 8mA  
Output OFF-state dissipation current: MAX. 5 $\mu$ A)
4. Built-in ON/OFF function
5. Built-in overcurrent and overheat protection functions
6. Built-in ASO protection function
7. Ceramic capacitor compatible
8. RoHS directive compliant

## ■ Applications

1. AV equipment
2. OA equipment

## ■ Absolute Maximum Ratings

( $T_a=25^{\circ}\text{C}$ )

Parameter	Symbol	Rating	Unit
*1 Input voltage	$V_{IN}$	24	V
*1 Output control voltage	$V_C$	24	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	$^{\circ}\text{C}$
Operating temperature	$T_{opr}$	-40 to +85	$^{\circ}\text{C}$
Storage temperature	$T_{stg}$	-40 to +150	$^{\circ}\text{C}$
Soldering temperature	$T_{sol}$	260(10s)	$^{\circ}\text{C}$

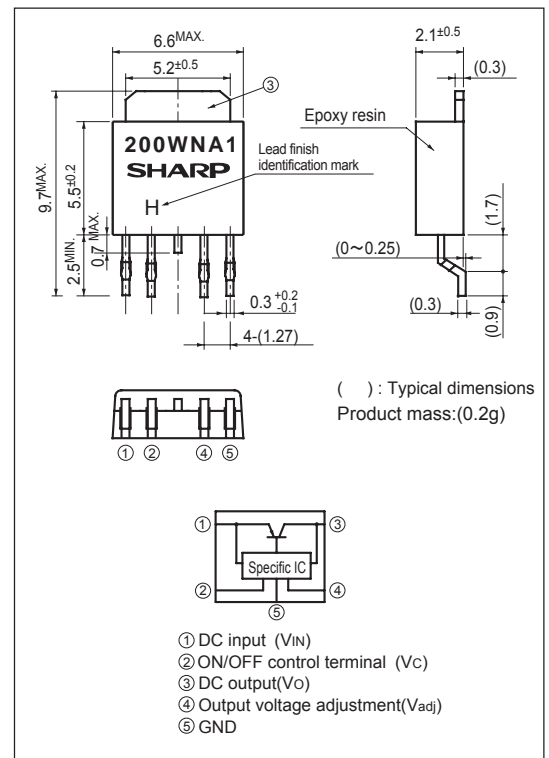
\*1 All are open except GND and applicable terminals.

\*2  $P_D$ : With infinite heat sink

\*3 There is case that over heat protection function operates at the temperature  $T_j$ : 125 $^{\circ}\text{C}$  to 150 $^{\circ}\text{C}$ , this item cannot be used in this temperature range.

## ■ Outline Dimensions

(Unit : mm)



( ) : Typical dimensions  
Product mass:(0.2g)

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

Notice The content of data sheet is subject to change without prior notice.

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  $V_{IN}=5V, V_O=3.3V(R1=2k\Omega), I_O=0.5A, V_C=2.7V, T_a=25^\circ C$ )

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Input voltage	$V_{IN}$	-	3.5	-	24	V
Output voltage	$V_O$	-	3.0	-	20	V
Load regulation	$Reg_L$	$I_O=5mA$ to 1A	-	-	1.0	%
Line regulation	$Reg_I$	$V_{IN}=4$ to 10V, $I_O=5mA$	-	-	1.0	%
Ripple rejection	RR	Refer to Fig.3	-	60	-	dB
Dropout voltage	$V_{I-O}$	$V_{IN}=3.5V$	-	-	0.5	V
Reference voltage	$V_{REF}$	-	2.583	2.65	2.717	V
Temperature coefficient of reference voltage	$TcV_{REF}$	$T_j=0$ to $+125^\circ C, I_O=5mA$	-	$\pm 1.0$	-	%
ON-state voltage for control	$V_{C(ON)}$	*4	2.0	-	-	V
ON-state current for control	$I_{C(ON)}$	-	-	-	200	$\mu A$
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	$\mu A$
Quiescent current	$I_q$	$I_O=0A$	-	-	8	mA
Output OFF-state dissipation current	$I_{qs}$	$V_C=0.4V$	-	-	5	$\mu A$

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

Fig.1 Test Circuit

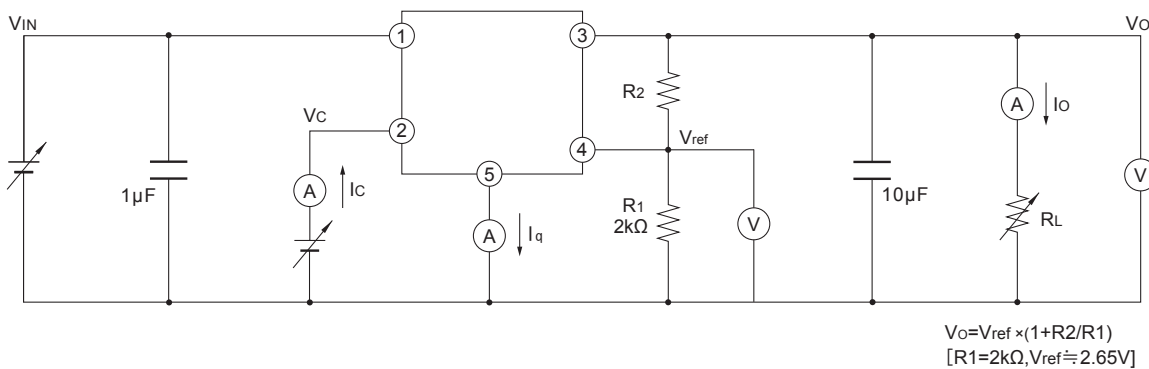


Fig.2 Test Circuit for Ripple Rejection

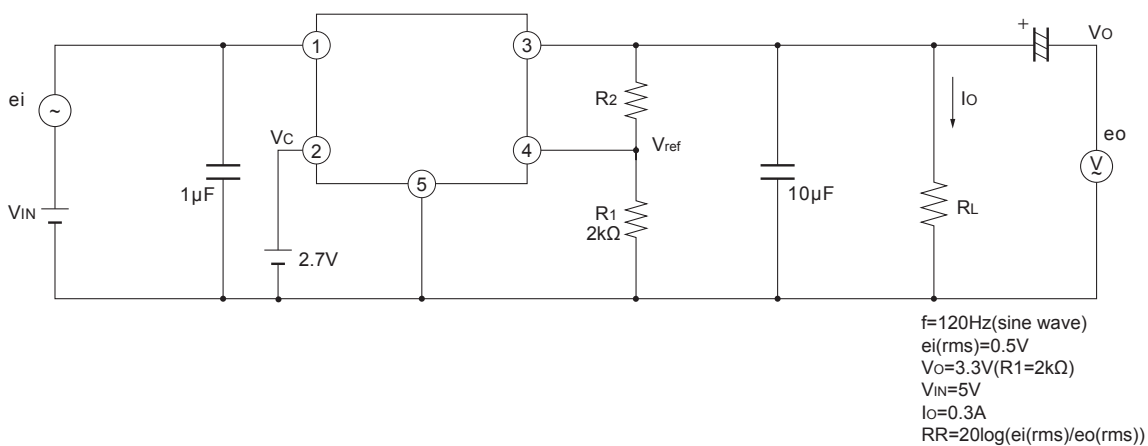
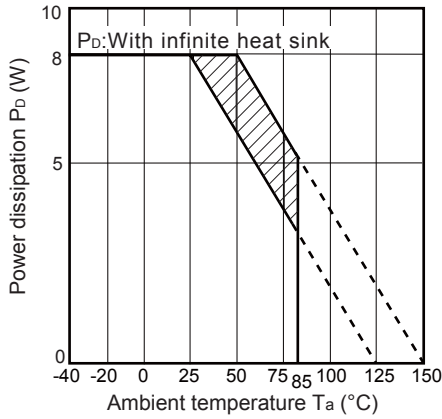


Fig.3 Power Dissipation vs. Ambient Temperature



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

Fig.4 Overcurrent Protection Characteristics

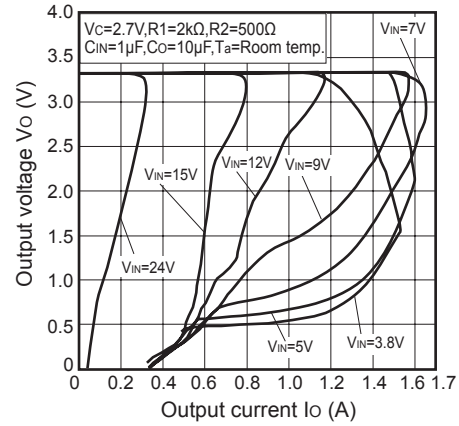


Fig.5 Reference Voltage vs. Ambient Temperature

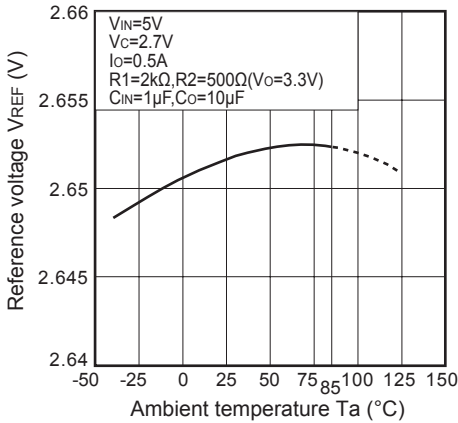


Fig.6 Circuit Operating Current vs. Input Voltage

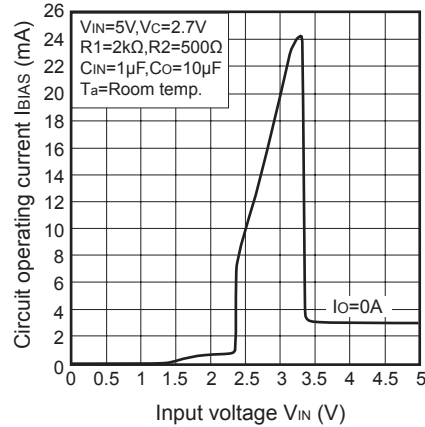


Fig.7 Output Voltage vs. Input Voltage

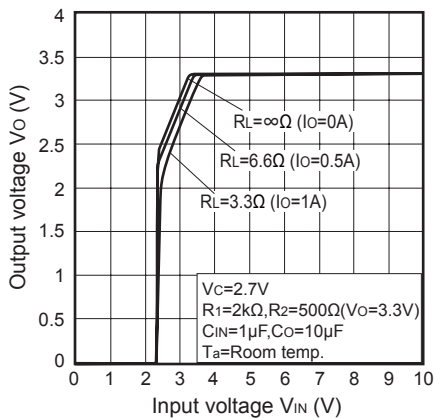


Fig.8 Quiescent Current vs. Ambient Temperature

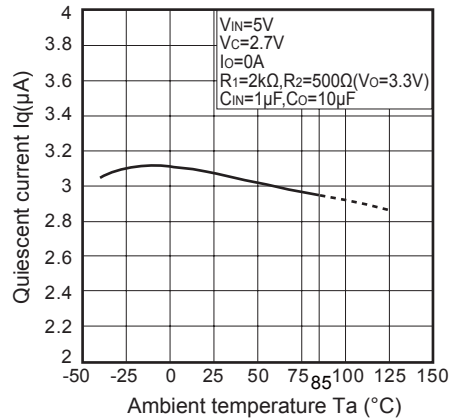


Fig.9 Dropout Voltage vs. Ambient Temperature

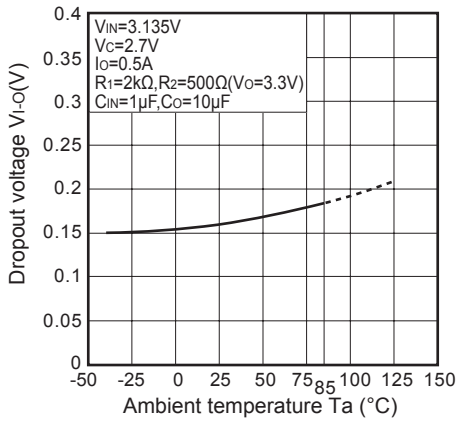


Fig.10 Ripple Rejection vs. Input Ripple Frequency

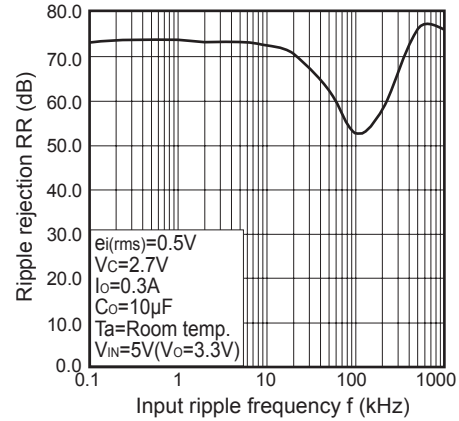


Fig.11 Ripple Rejection vs. Output Current

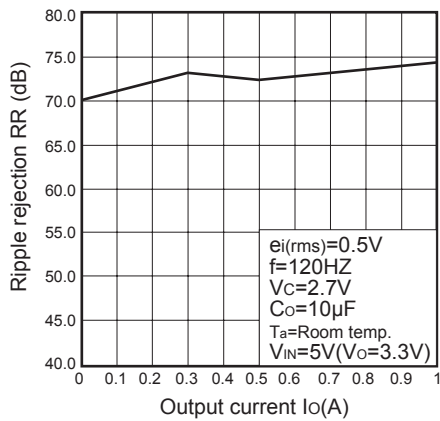


Fig.12 Typical Application

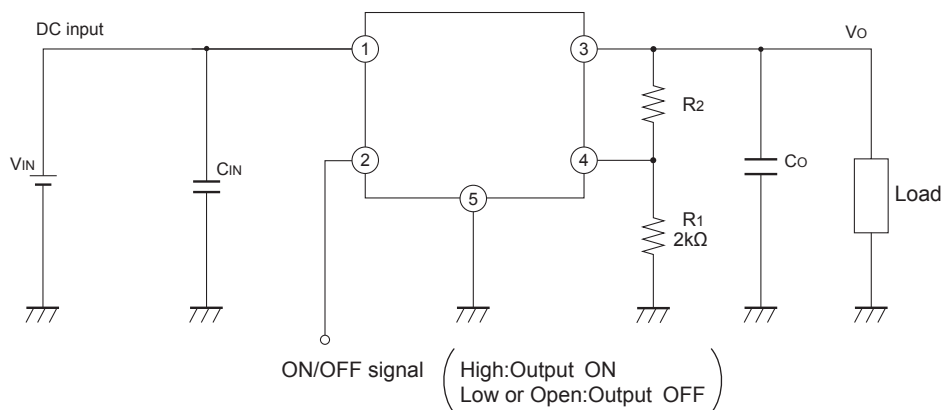
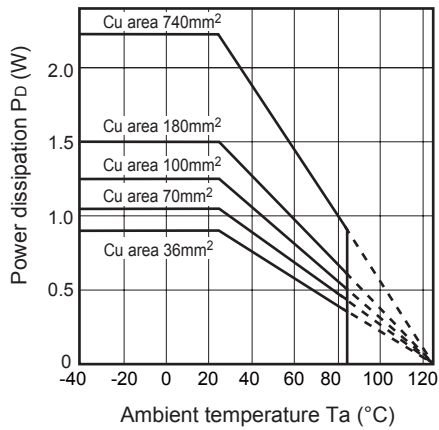
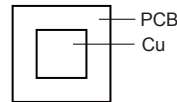


Fig.13 Dropout Voltage vs. Ambient Temperature

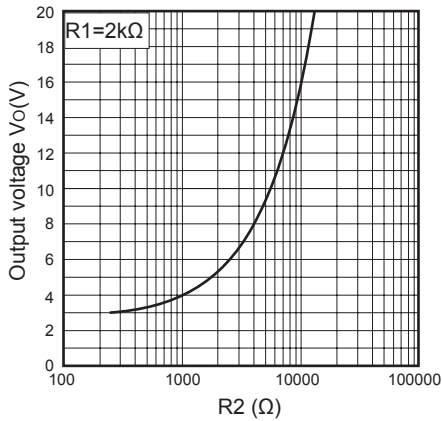


Mounting PCB



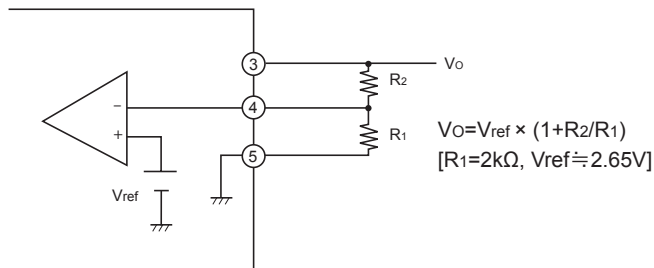
Material : Glass-cloth epoxy resin  
 Size : 50×50×1.6mm  
 Cu thickness : 35μm

Fig.14 Output Voltage Adjustment Characteristics (Typical Value)



■ Setting of Output Voltage

Output voltage is able to set (3V to 20V) when resistors R<sub>1</sub>, R<sub>2</sub> are attached to ③,④,⑤ terminals. As for the external resistors to set output voltage, refer to the following figure and Fig.14.



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

[R<sub>1</sub>=2kΩ, V<sub>ref</sub>≒2.65V]