PQ200WN3MZPH

Compact Surface Mount type
Low Power-Loss Voltage Regulators

■ Features

1.Output current : 300mA
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.5μA)
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.FPD-TV
2.DVD-Recorder
3.Digital STB

■ Absolute Maximum Ratings

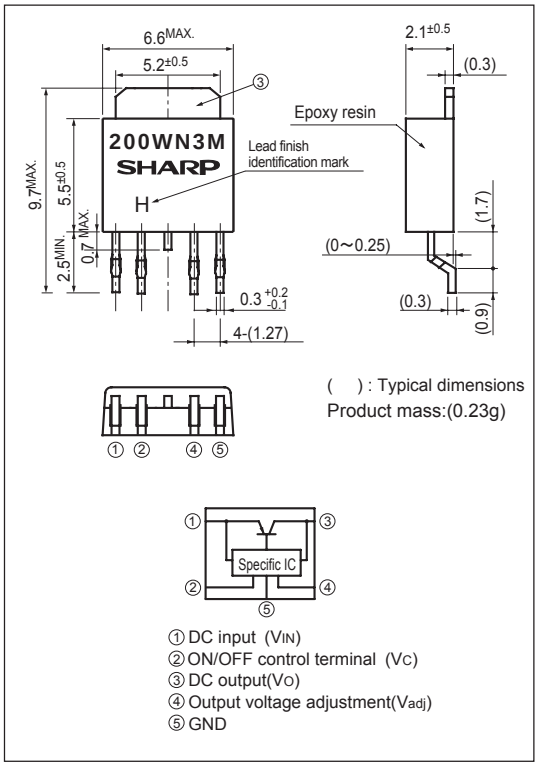
(Ta=25°C)

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
*2 Power dissipation	P_D	6.8	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 overheat protection function operates at the temperature Tj:110°C or more,so this item cannot be used in this temperature range.

■ Outline Dimensions

(Unit : mm)



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

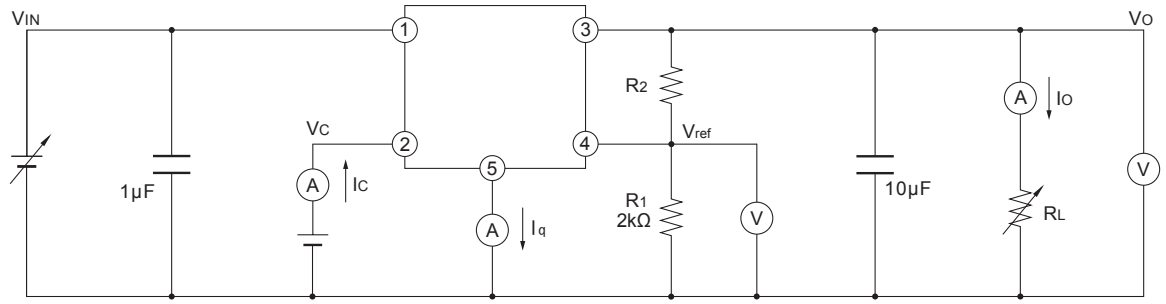
■ Electrical Characteristics

(Unless otherwise specified,condition shall be V_{IN}=17V,V_O=15V(R1=2kΩ),I_O=0.3A,V_C=2.7V,Ta=25°C)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Input voltage	V_{IN}	-	5.5	-	24	V
Output voltage	V_O	-	5.0	-	20	V
Load regulation	RegL	I_O=5mA to 0.3A	-	-	1.0	%
Line regulation	RegI	V_{IN}=16 to 24V,I_O=5mA	-	-	1.0	%
Ripple rejection	RR	Refer to Fig.2	-	55	-	dB
Dropout voltage	V_{I-O}	V_{IN}=14.25V	-	-	0.4	V
Reference voltage	V_{ref}	-	2.583	2.65	2.717	V
Output peak current	I_{OP}	※4	-	600	800	mA
Temperature coefficient of reference voltage	T_CV_{ref}	Tj=0 to +110°C, I_O=5mA	-	±1.0	-	%
ON-state voltage for control	$V_{C(ON)}$	※5	2.0	-	-	V
ON-state current for control	$I_{C(ON)}$	-	-	-	200	μA
OFF-state voltage for control	$V_{C(OFF)}$	I_O=0A	-	-	0.8	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	-	-	8	mA
Output OFF-state dissipation current	I_{qs}	V_C=0.4V	-	-	5	μA

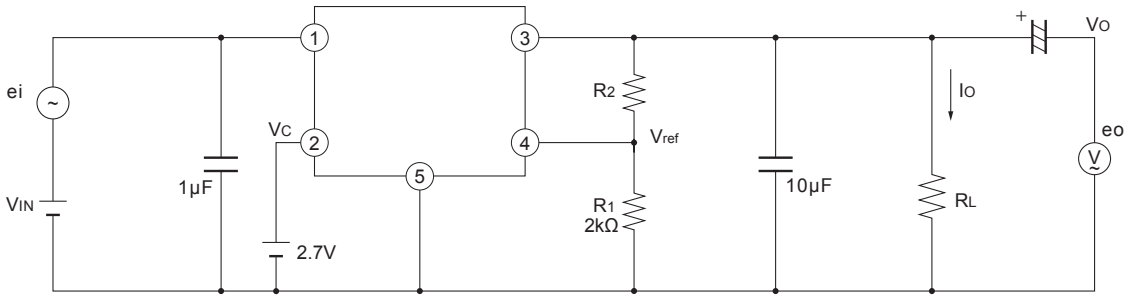
※4 Output voltage when output voltage falls to 95 V_O by decreasing input voltage.
※5 In case of opening control terminal ②, output voltage turns off

Fig.1 Test Circuit



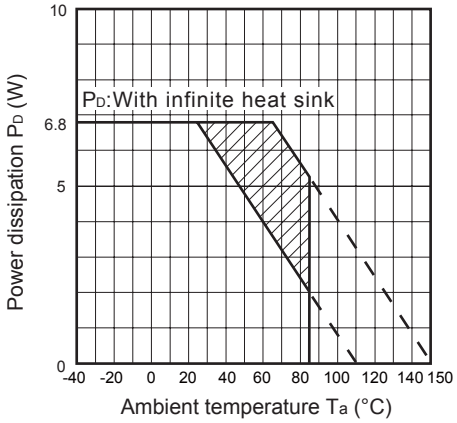
$V_O=V_{ref}\times(1+R2/R1)$
[R1=2kΩ,V_{ref}≒2.65V]

Fig.2 Test Circuit for Ripple Rejection



f=120Hz(sine wave)
ei(rms)=0.5V
V_O=15V(R1=2kΩ)
V_{IN}=17V
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

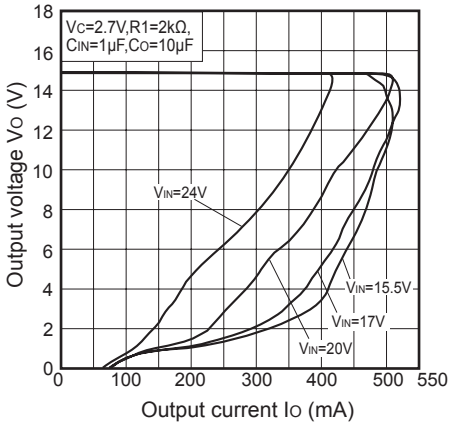


Fig.5 Reference Voltage vs. Ambient Temperature

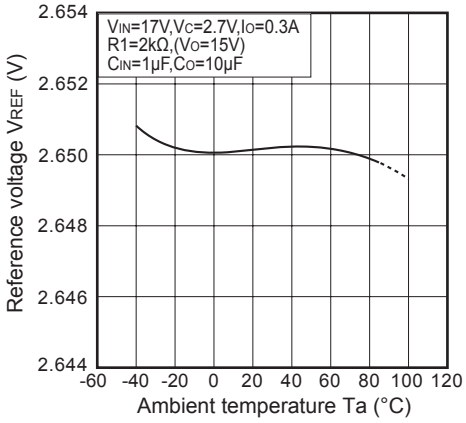


Fig.6 Circuit Operating Current vs. Input Voltage

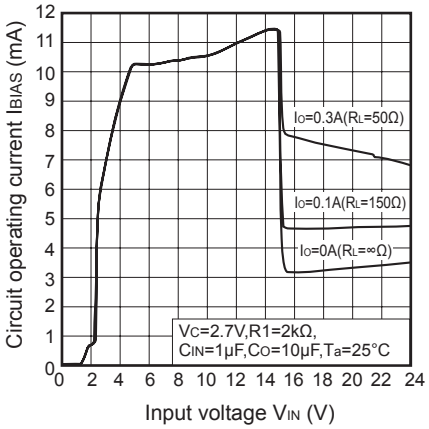


Fig.7 Output Voltage vs. Input Voltage

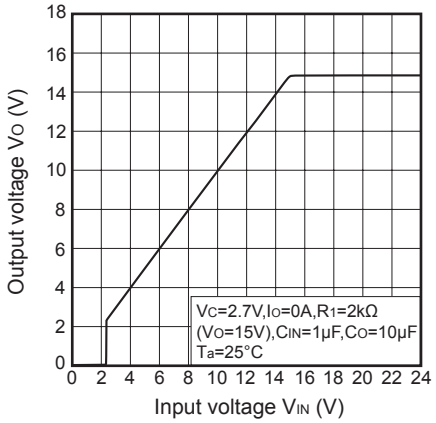


Fig.8 Quiescent Current vs. Ambient Temperature

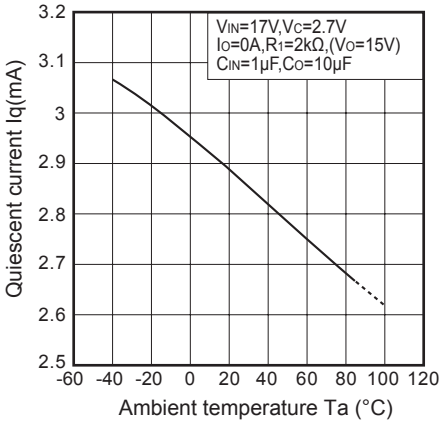


Fig.9 Dropout Voltage vs. Ambient Temperature

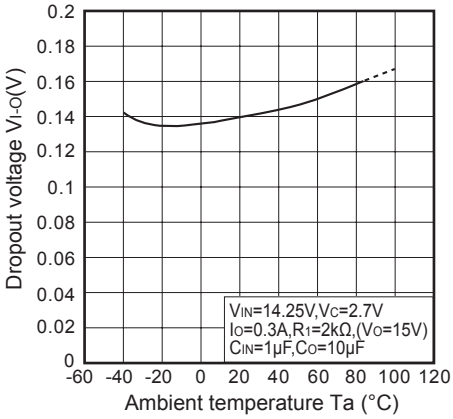


Fig.10 Dropout Voltage vs. Output Current

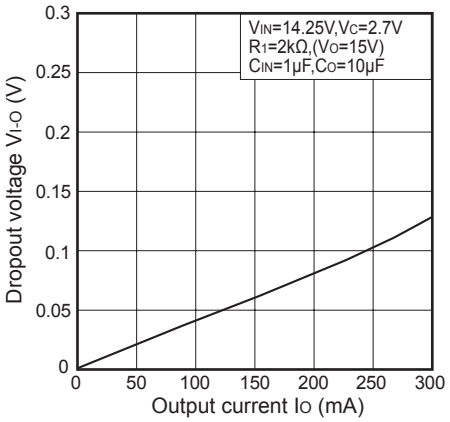


Fig.11 Output Peak Current vs. Ambient Temperature

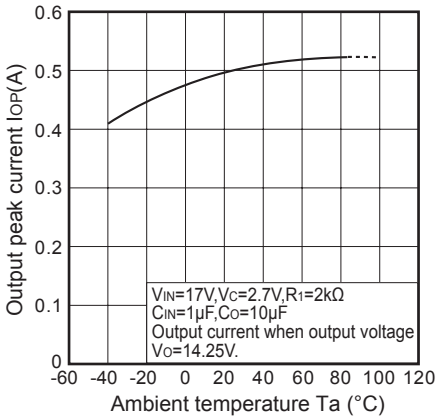


Fig.12 Ripple Rejection vs. Input Ripple Frequency

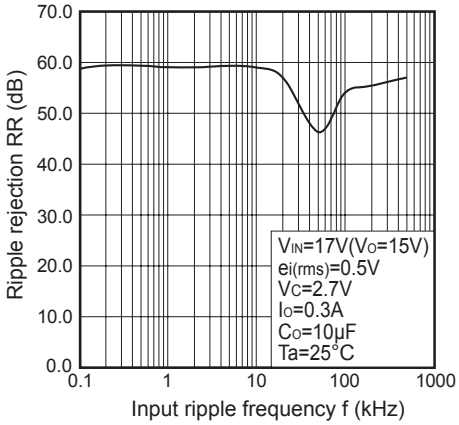


Fig.13 Ripple Rejection vs. Output Current

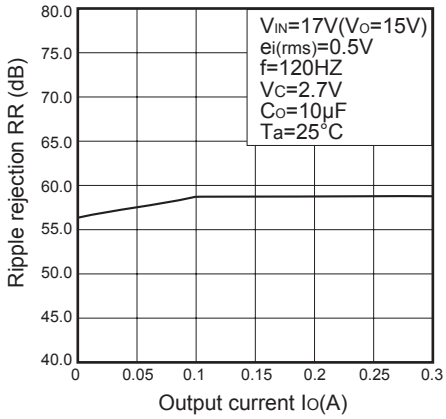


Fig.14 Typical Application

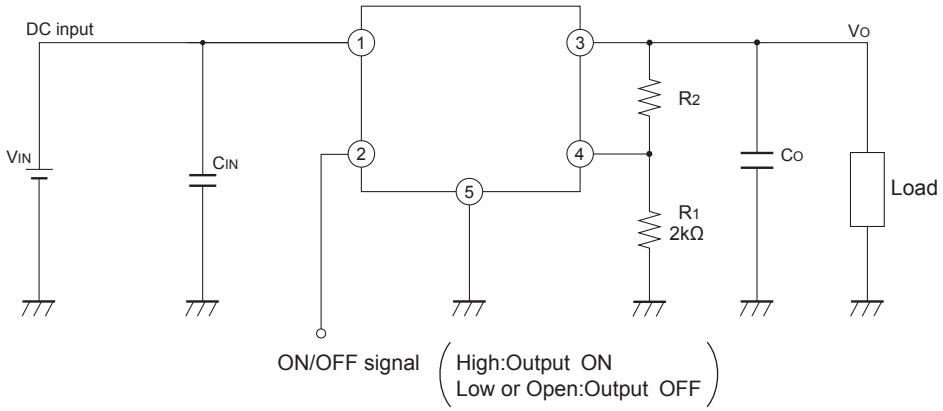
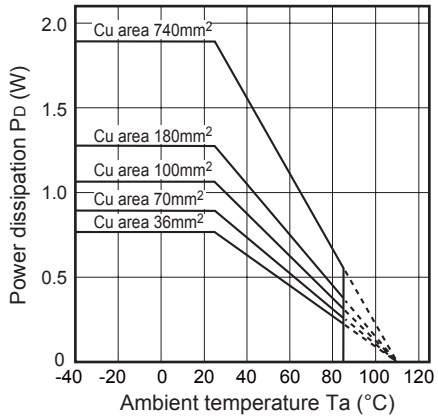
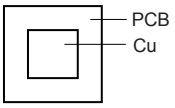


Fig.15 Dropout Voltage vs. Ambient Temperature (Typical Value)

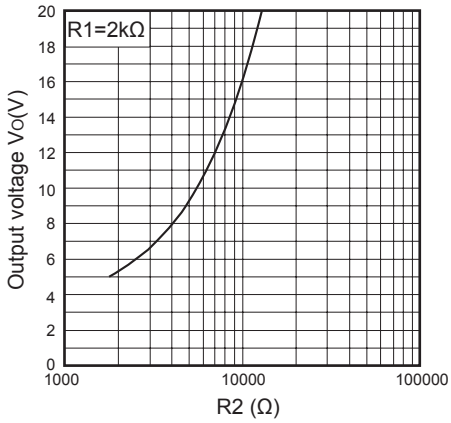


Mounting PCB



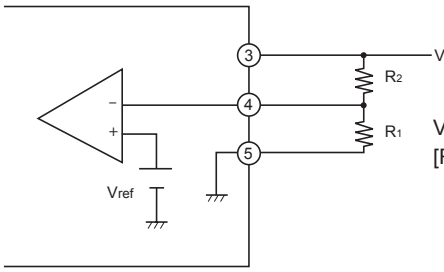
Material : Glass-cloth epoxy resin
Size : 50×50×1.6mm
Cu thickness : 35μm

Fig.16 Output Voltage Adjustment Characteristics (Typical Value)



Setting of Output Voltage

Output voltage is able to set (5V to 20V) when resistors R_1, R_2 are attached to ③,④,⑤ terminals. As for the external resistors to set output voltage, refer to the following figure and Fig.16.



$V_O = V_{ref} \times (1 + R_2/R_1)$
[R_1=2kΩ, Vref≒2.65V]