PQ20WZ51J00H
PQ20WZ11J00H

Variable Output,Surface Mount Type
Low Power-Loss Voltage Regulators

■ Features

1.Low power-loss
(Dropout voltage:MAX.0.5V)
2.Surface mount package
3.Output current (0.5A:PQ20WZ51J00H)
(1.0A:PQ20WZ11J00H)
4.Reference voltage precision:±2.0%
5.Variable output voltage(3 to 20V)
6.Built-in ON/OFF control function
7.Low dissipation current at OFF-state(Iqs:MAX.5μA)
8.Built-in overcurrent and overheat protection functions
9.RoHS directive compliant

■ Applications

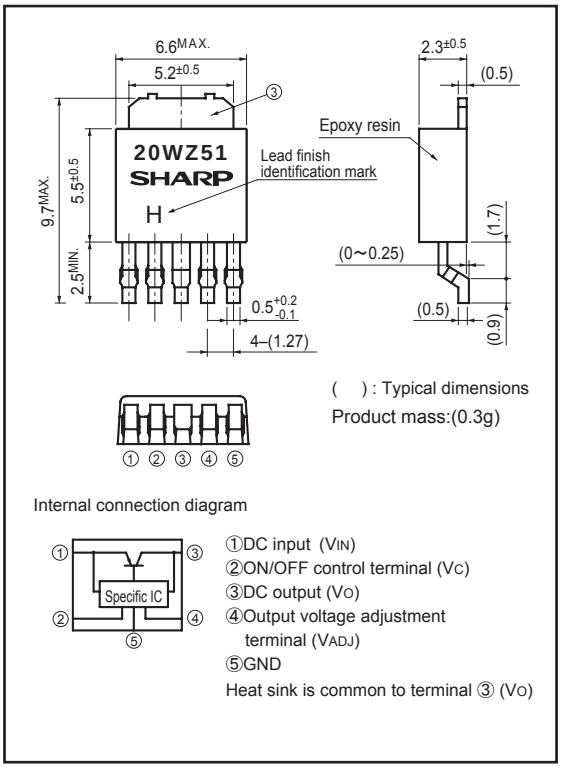
1.Personal computers
2.CD-ROM drives
3.Power supplies for various OA equipment

■ Model Line-up

Output current (I_O)	Package type	Variable output
0.5A	Taping	**PQ20WZ5UJ00H**
	Sleeve	**PQ20WZ51J00H**
1A	Taping	**PQ20WZ1UJ00H**
	Sleeve	**PQ20WZ11J00H**

■ Outline Dimensions

(Unit : mm)



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

■ Absolute Maximum Ratings

(Ta=25°C)

Parameter		Symbol	Rating	Unit
*1 Input voltage		V_{IN}	24	V
ON/OFF control terminal voltage		V_C	24	V
*1 Output adjustment terminal voltage		V_{ADJ}	5	V
Output current	**PQ20WZ51J00H**	I_O	0.5	A
	PQ20WZ11J00H		1	
*2 Power dissipation		P_D	8	W
*3 Junction temperature		T_j	150	˚C
Operating temperature		T_{opr}	-20 to +80	˚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 Overheat protection may operate at Tj:125°C to 150°C

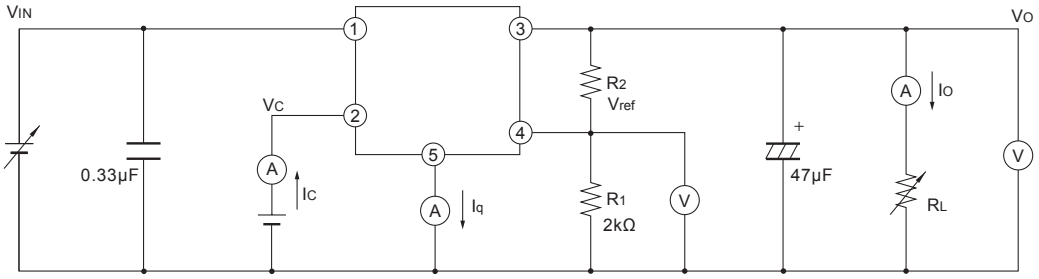
■ Electrical Characteristics

(Unless otherwise specified,condition shall be V_{IN}=5V,V_O=3.3, ※4,R_1=2kΩ,R2=500Ω,V_C=2.7V,Ta=25°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	RegL	※5	-	-	2.0	%
Line regulation	RegI	V_{IN}=4 to 10V , I_O=5mA	-	-	2.5	%
Ripple rejection	RR	Refer to Fig.2	45	60	-	dB
Reference voltage	V_{ref}	※4	2.574	2.64	2.706	V
Temperature coefficient of reference voltage	T_CV_{ref}	Tj=0 to +125°C, I_O=5mA	-	±1.0	-	%
Dropout voltage	V_{I-O}	※4,※6	-	-	0.5	V
Quiescent current	I_q	I_O=0A	-	-	8	mA
※7 ON-state voltage for control	$V_{C(ON)}$	-	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	-	-	2.0	μA
Output OFF-state consumption current	I_{qs}	I_O=0A,V_C=0.4V	-	-	5.0	μA

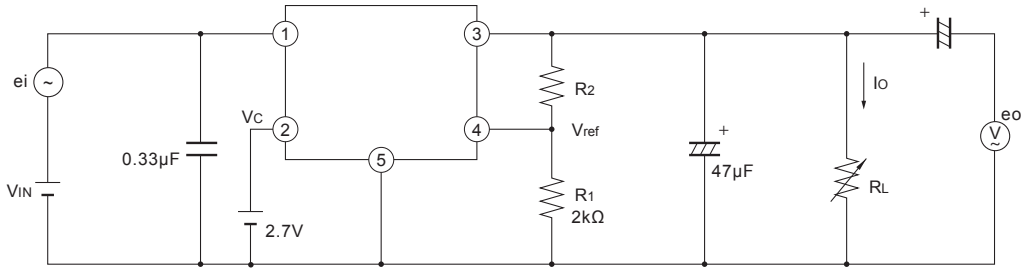
※4 **PQ20WZ51J00H**:I_O=0.3A,**PQ20WZ11J00H**:I_O=0.5A
※5 **PQ20WZ51J00H**:I_O=5mA to 0.5A,**PQ20WZ11J00H**:I_O=5mA to 1.0A
※6 Input voltage shall be the value when output voltage is 95% in comparison with the initial value.
※7 In case of opening control terminal ② , output voltage turns off.

Fig.1 Test Circuit



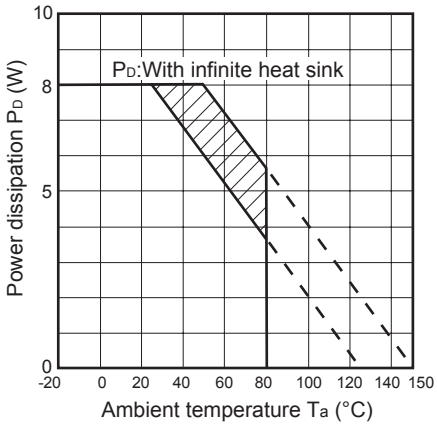
$V_O=V_{ref}\times(1+R_2/R_1)$
$[R_1=2k\Omega,\ V_{REF} \fallingdotseq 2.64V]$

Fig.2 Test Circuit for Ripple Rejection



f=120Hz (sine wave)
ei(rms)=0.5V
V_{IN}=5V
V_O=3.3V(R1=2kΩ)
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 (Typical Value)(**PQ20WZ51J00H**)

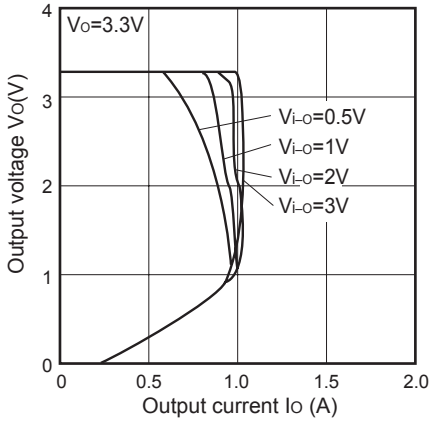


Fig.5 Overcurrent Protection Characteristics (Typical Value)(**PQ20WZ11J00H**)

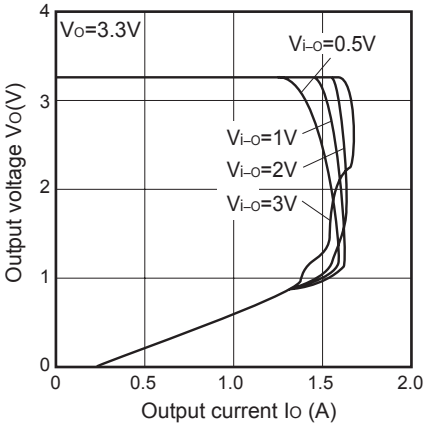


Fig.6 Output Voltage Adjustment Characteristics

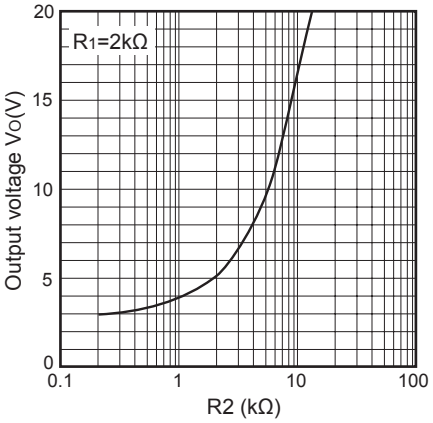


Fig.7 Reference Voltage Deviation vs. Junction Temperature (Typical Value)

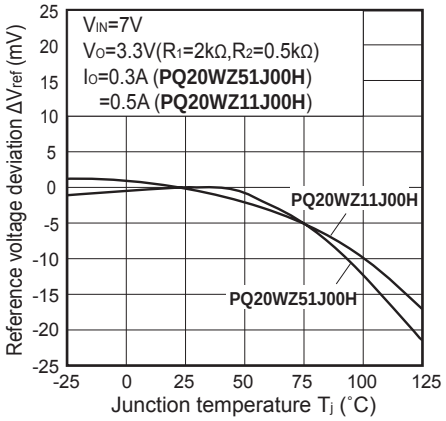


Fig.8 Output Voltage vs. Input Voltage (**PQ20WZ51J00H**)

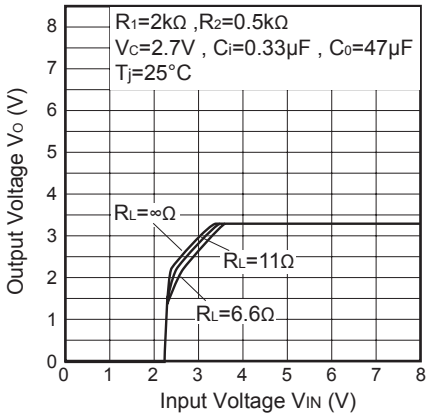


Fig.9 Output Voltage vs. Input Voltage (**PQ20WZ11J00H**)

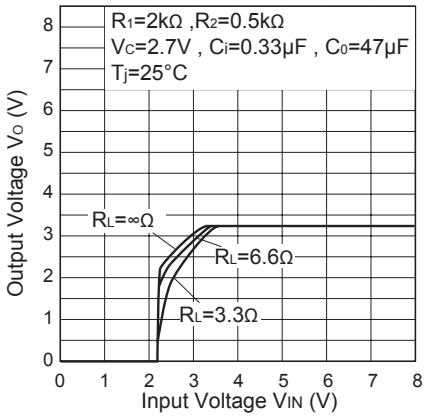


Fig.10 Dropout Voltage vs. Junction Temperature(**PQ20WZ51J00H**)

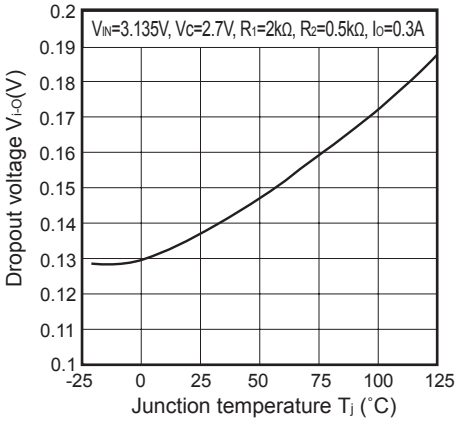


Fig.11 Dropout Voltage vs. Junction Temperature(**PQ20WZ11J00H**)

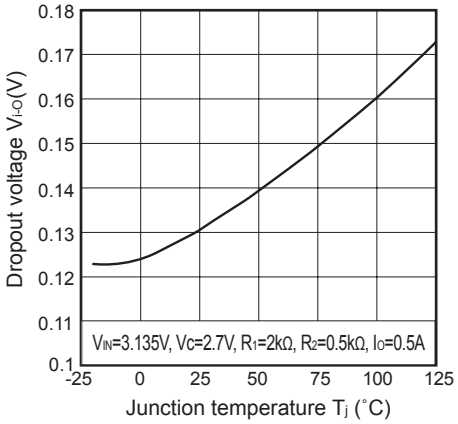


Fig.12 Quiescent Current vs. Junction Temperature

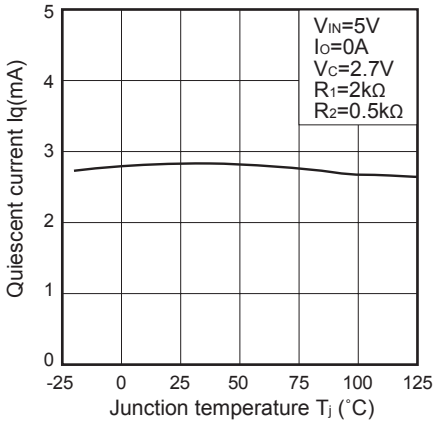


Fig.13 Ripple Rejection vs. Input Ripple Frequency

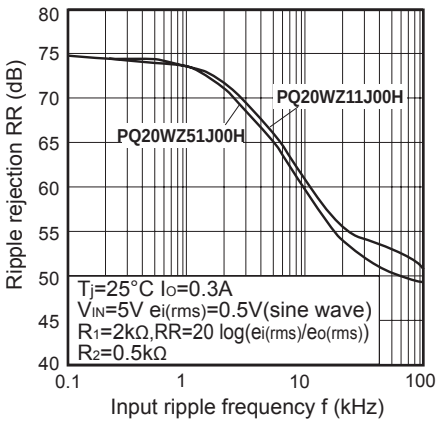


Fig.14 Ripple Rejection vs. Output Current (**PQ20WZ51J00H**)

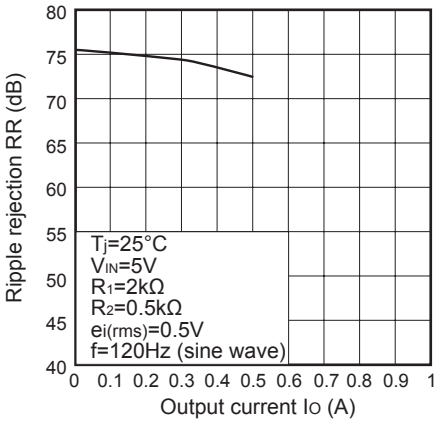


Fig.15 Ripple Rejection vs. Output Current (**PQ20WZ11J00H**)

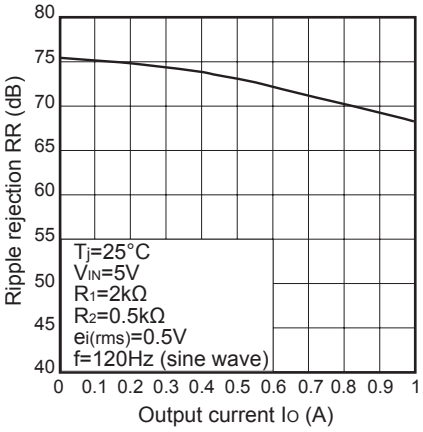


Fig.16 Circuit Operating Current vs. Input Voltage (**PQ20WZ51J00H**)

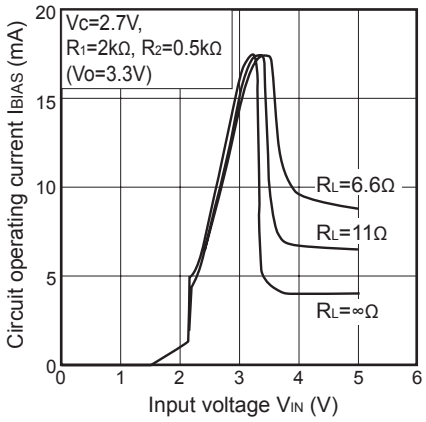


Fig.17 Circuit Operating Current vs. Input Voltage (**PQ20WZ11J00H**)

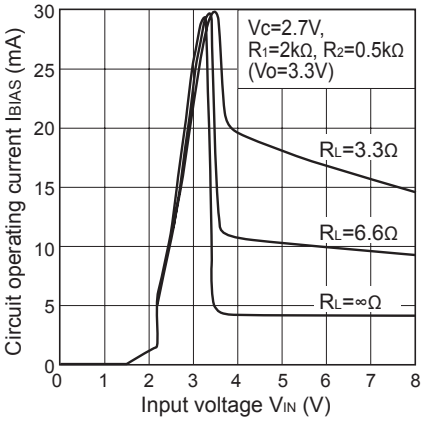
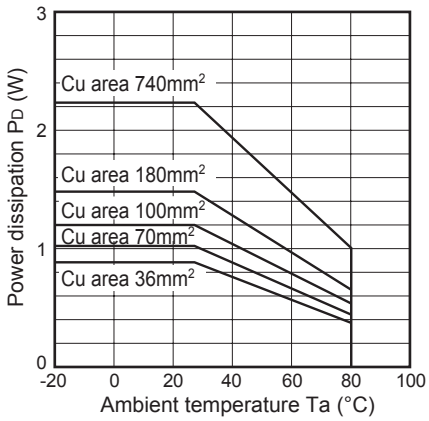
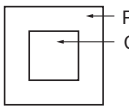


Fig.18 Power Dissipation vs. Ambient Temperature



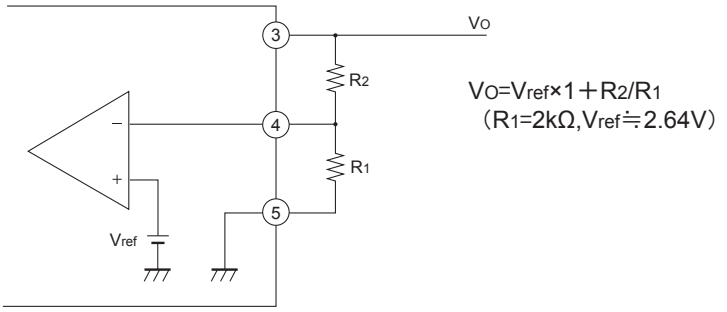
Mounting PCB



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

■ Setting of Output Voltage

Output voltage is able to set from 3V to 20V 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.6.



■ Typical Application