PQ20VZ51J00H
PQ20VZ11J00H

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:PQ20VZ51J00H)
(1.0A:PQ20VZ11J00H)
4.Reference voltage precision:±2.0%
5.Variable output voltage(1.5 to 20V)
6.Built-in ON/OFF control function
7.Low dissipation current at OFF-state(Iqs:MAX.5μA)
8.RoHS directive compliant

■ Applications

1.Car audio
2.VTR

■ Model Line-up

Output current (I_O)	Package type	Variable output
0.5A	Taping	**PQ20VZ5UJ00H**
	Sleeve	**PQ20VZ51J00H**
1A	Taping	**PQ20VZ1UJ00H**
	Sleeve	**PQ20VZ11J00H**

■ Absolute Maximum Ratings

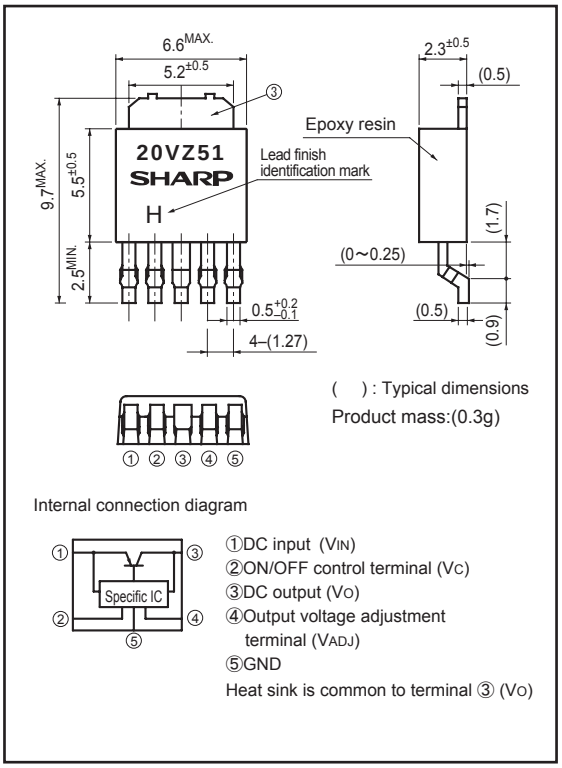
(Ta=25°C)

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}	7	V
Output current	**PQ20VZ51J00H**	I_O	0.5	A
	PQ20VZ11J00H		1	
*2 Power dissipation		P_D	8	W
*3 Junction temperature		T_j	150	˚C
Operating temperature		T_{opr}	-25 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

■ Outline Dimensions

(Unit : mm)



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

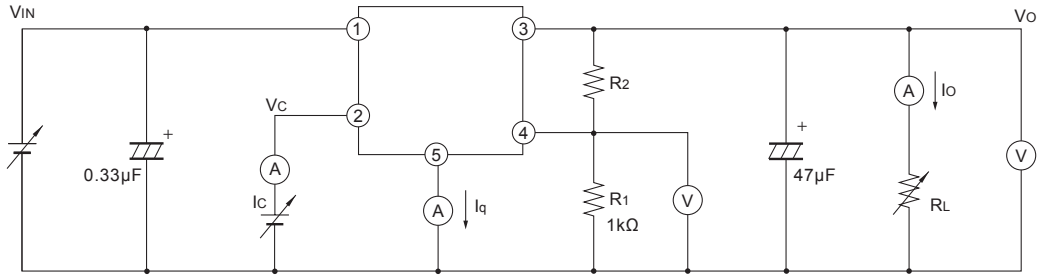
■ Electrical Characteristics

(Unless otherwise specified,condition shall be V_{IN}=12V,V_O=10V,※4,R_1=1kΩ,V_C=2.7V,Ta=25°C)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Input voltage	V_{IN}	V_O=1.5V	4.5	-	24	V
Output voltage	V_O	-	1.5	-	20	V
Load regulation	RegL	※5	-	0.2	2.0	%
Line regulation	RegI	V_{IN}=11 to 21V , I_O=5mA	-	0.2	2.5	%
Ripple rejection	RR	Refer to Fig.2	45	60	-	dB
Reference voltage	V_{ref}	※4	1.225	1.25	1.275	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	-	0.2	0.5	V
Quiescent current	I_q	I_O=0A	-	4	7	mA
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	$I_{C(OFF)}$	V_C=0.4V,I_O=0A	-	-	2.0	μA
Output OFF-state consumption current	I_{qs}	V_C=0.4V	-	-	5.0	μA

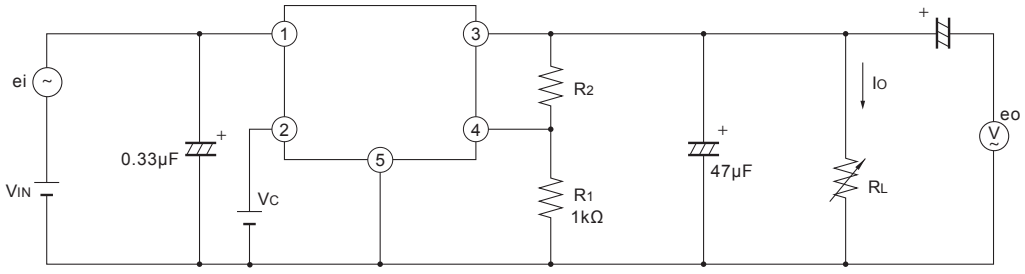
※4 **PQ20VZ51J00H**:I_O=0.3A,**PQ20VZ11J00H**:I_O=0.5A
※5 **PQ20VZ51J00H**:I_O=5mA to 0.5A,**PQ20VZ11J00H**:I_O=5mA to 1.0A
※6 Input voltage shall be the value when output voltage is 95% in comparison with the initial value.

Fig.1 Test Circuit



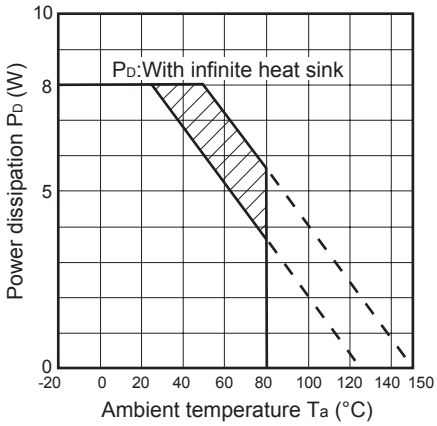
$V_O=V_{REF}\times(1+R_2/R_1)$
$[R_1=1k\Omega,\ V_{REF} \fallingdotseq 1.25V]$

Fig.2 Test Circuit for Ripple Rejection



f=120Hz (sine wave)
ei(rms)=0.5V
V_{IN}=12V
V_O=10V(R_1=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 (Typical Value)

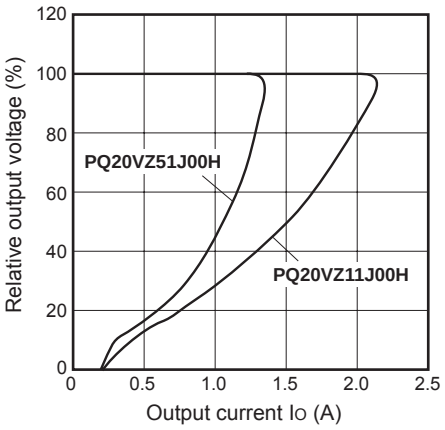


Fig.5 Output Voltage Adjustment Characteristics

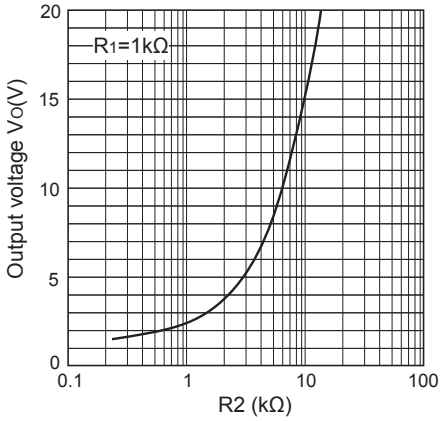


Fig.6 Reference Voltage Deviation vs. Junction Temperature

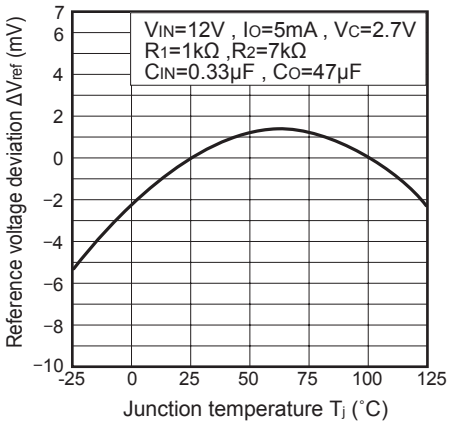


Fig.7 Output Voltage vs. Input Voltage (**PQ20VZ51J00H**)

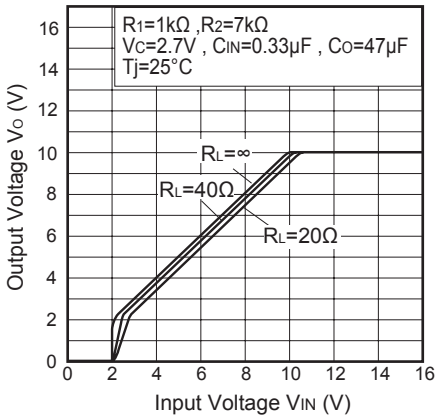


Fig.8 Output Voltage vs. Input Voltage (**PQ20VZ11J00H**)

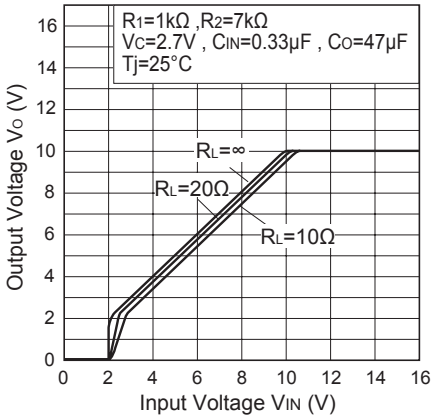


Fig.9 Dropout Voltage vs. Junction Temperature(**PQ20VZ51J00H**)

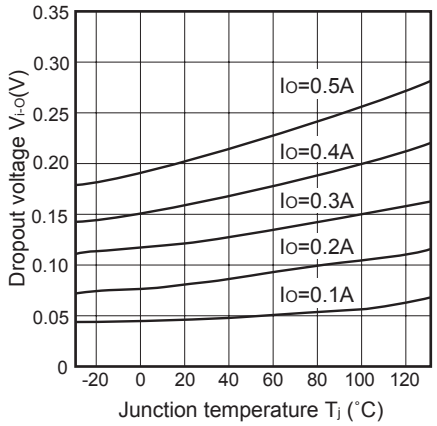


Fig.10 Dropout Voltage vs. Junction Temperature(**PQ20VZ11J00H**)

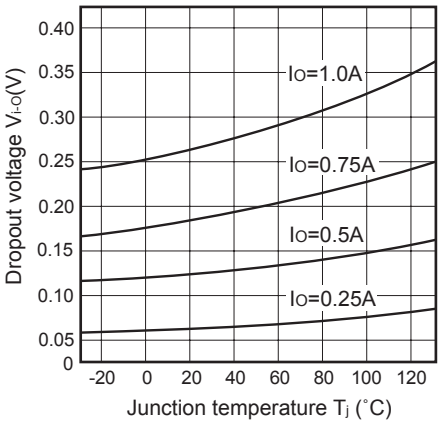


Fig.11 Quiescent Current vs. Junction Temperature

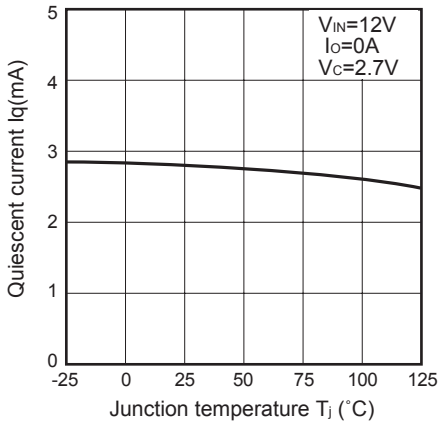


Fig.12 Ripple Rejection vs. Input Ripple Frequency

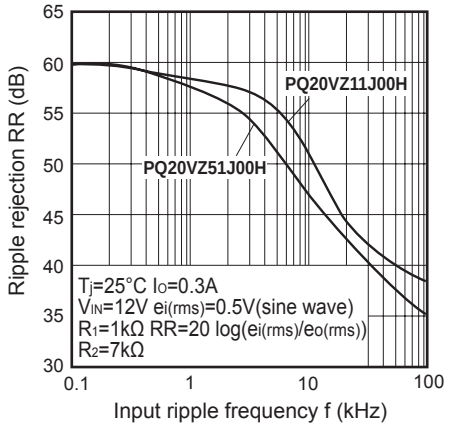


Fig.13 Ripple Rejection vs. Output Current (**PQ20VZ51J00H**)

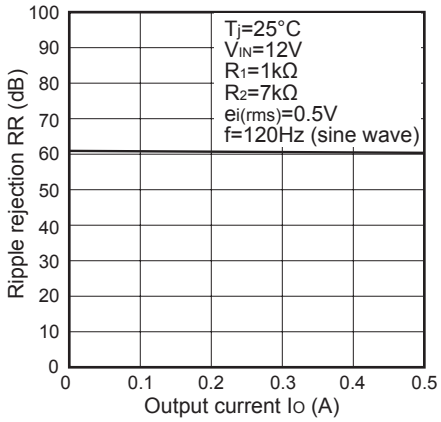


Fig.14 Ripple Rejection vs. Output Current (**PQ20VZ11J00H**)

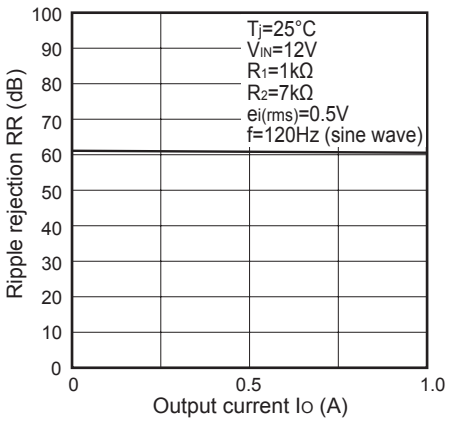


Fig.15 Output Peak Current vs. Dropout Voltage (**PQ20VZ51J00H**)

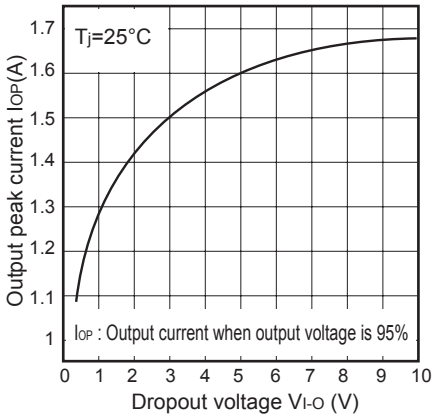


Fig.16 Output Peak Current vs. Dropout Voltage (**PQ20VZ11J00H**)

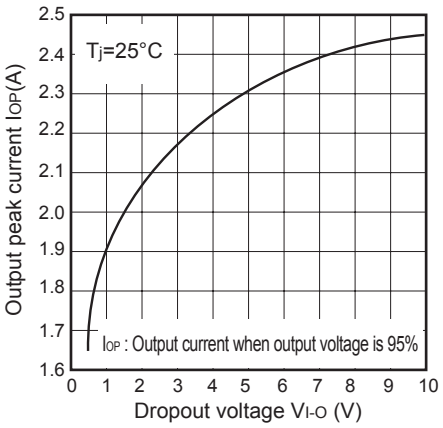


Fig.17 Output Peak Current vs. Junction Temperature (**PQ20VZ51J00H**)

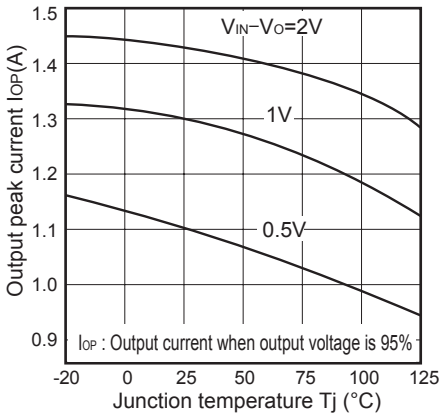


Fig.18 Output Peak Current vs. Junction Temperature (**PQ20VZ11J00H**)

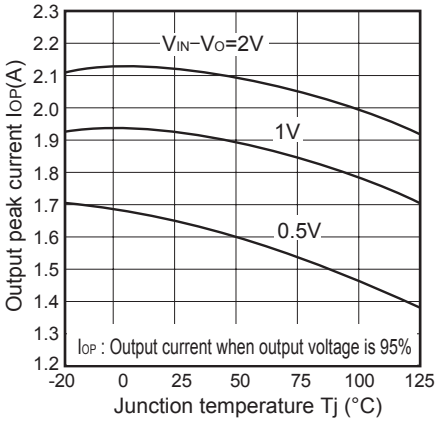
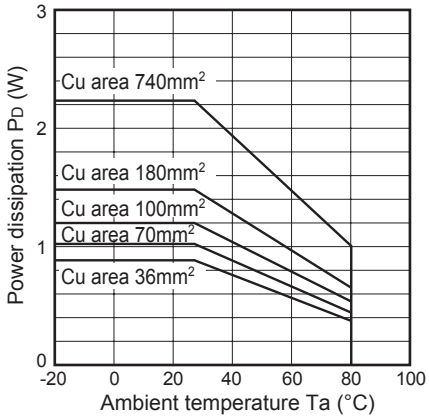
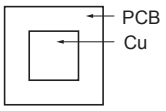


Fig.19 Power Dissipation vs. Ambient Temperature



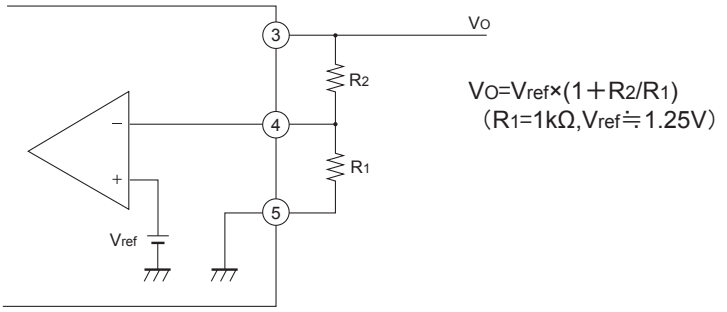
Mounting PCB



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

■ Setting of Output Voltage

Output voltage is able to set from 1.5V 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.5.



■ Typical Application