

# PQ7VZ5

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

## Features

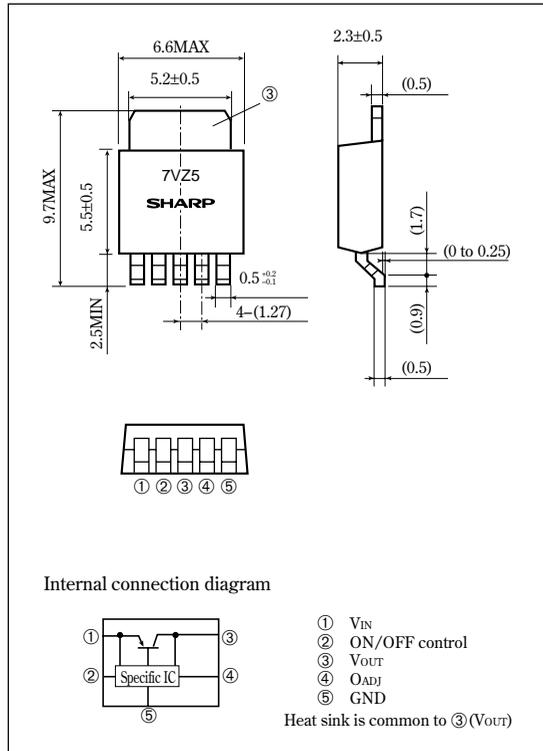
- Low power-loss (Dropout voltage: MAX. 0.5V)
- Variable output type (1.5V to 7V)
- Surface mount type package (equivalent to EIAJ SC-63)
- Output current: MAX.0.5A
- Low dissipation current at OFF-state (I<sub>qs</sub>: MAX. 5μA)
- Built-in ON/OFF control function
- Reference voltage precision: ±2.0%
- Tape packaged type is also available. (Reel: 3 000pcs.)

## Applications

- Personal computers
- Word processors
- Printers
- Camcoders
- Personal Information Tools (PDA)

## Outline Dimensions

(Unit : mm)



## Absolute Maximum Ratings

(T<sub>a</sub>=25°C)

Parameter	Symbol	Rating	Unit
#1 Input voltage	V <sub>IN</sub>	10	V
#1 ON/OFF control terminal voltage	V <sub>C</sub>	10	V
#1 Output adjustment terminal voltage	V <sub>ADJ</sub>	7	V
Output current	I <sub>O</sub>	0.5	A
#2 Power dissipation	P <sub>D</sub>	8	W
#3 Junction temperature	T <sub>j</sub>	150	°C
Operating temperature	T <sub>opr</sub>	-20 to +80	°C
Storage temperature	T <sub>stg</sub>	-40 to +150	°C
Soldering temperature	T <sub>sol</sub>	260(For 10s)	°C

#1 All are open except GND and applicable terminals.

#2 P<sub>D</sub> : With infinite heat sink.

#3 Overheat protection may operate at 125<-T<sub>j</sub><=150°C

•Please refer to the chapter " Handling Precautions ".

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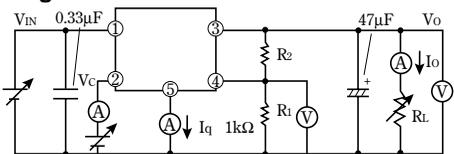
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**Electrical Characteristics** (Unless otherwise specified, conditions shall be  $V_{IN}=5V$ ,  $V_O=3V(R_1=1k\Omega)$ ,  $I_O=0.3A$ ,  $V_C=2.7V$ ,  $T_a=25^\circ C$ )

Parameter	Symbol	Condition	NIN.	TYP.	MAX.	Unit
Input voltage	$V_{IN}$	—	3.4	—	10.0	V
Output voltage variable range	$V_O$	—	1.5	—	7.0	V
Load regulation	$R_{egL}$	$I_O=5mA$ to $0.5A$	—	0.2	2.0	%
Line regulation	$R_{egI}$	$V_{IN}=4$ to $10V$ , $I_O=5mA$	—	0.2	2.5	%
Ripple rejection	RR	Refer to Fig. 2	45	60	—	dB
Dropout voltage	$V_{i-o}$	$V_{IN}=3.4$ , $I_O=0.3A$	—	—	0.5	V
Reference voltage	$V_{ref}$	—	1.225	1.25	1.275	V
Temperature coefficient of reference voltage	$T_C V_{ref}$	$I_O=5mA$ , $T_j=0$ to $125^\circ C$	—	$\pm 1.0$	—	%
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	$V_{C(OFF)}$	$I_C=0A$	—	—	0.8	V
OFF-state current for control	$I_{C(OFF)}$	$V_C=0.4V$ , $I_C=0A$	—	—	2	$\mu A$
Quiescent current	$I_q$	$I_C=0A$	—	4	7	mA
Output OFF-state consumption current	$I_{qs}$	$V_C=0.4V$	—	—	5	$\mu A$

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

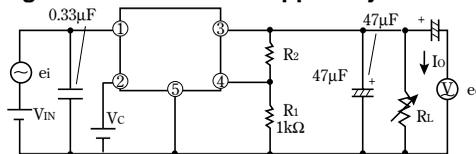
**Fig. 1 Test Circuit**



$$V_O = V_{ref} \times \left( 1 + \frac{R_2}{R_1} \right)$$

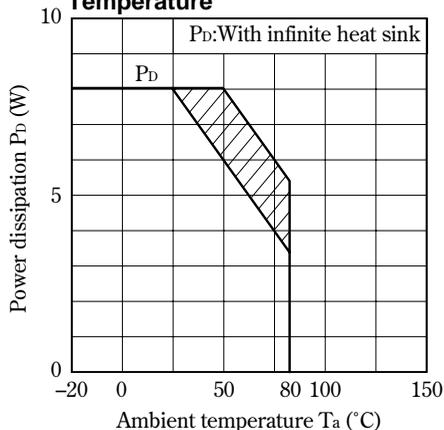
[ $R_1=1k\Omega$ ,  $V_{ref}$  Nearly=1.25V]

**Fig. 2 Test Circuit for Ripple Rejection**



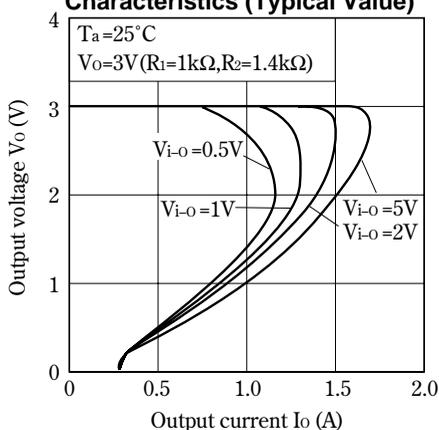
$f=120Hz$ (sine wave)  
 $e_i(rms)=0.5V$   
 $I_O=0.3A$   
 $RR=20 \log(e_i(rms)/e_o(rms))$   
 $V_{IN}=5V$   
 $V_O=3V(R_1=1k\Omega)$

**Fig. 3 Power Dissipation vs. Ambient Temperature**

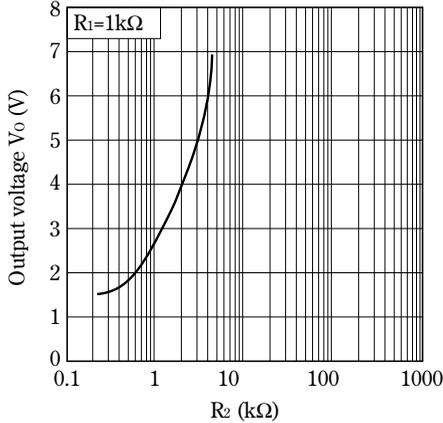


Note) Oblique line portion : Overheat protection may operate in this area.

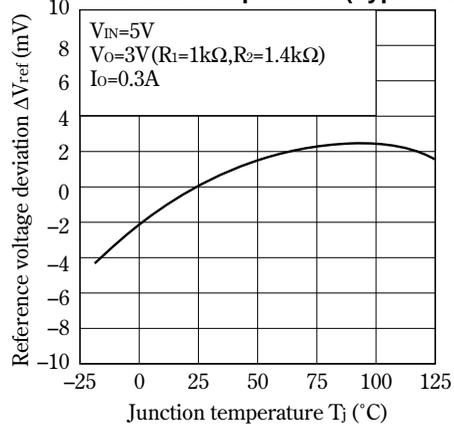
**Fig. 4 Overcurrent Protection Characteristics (Typical Value)**



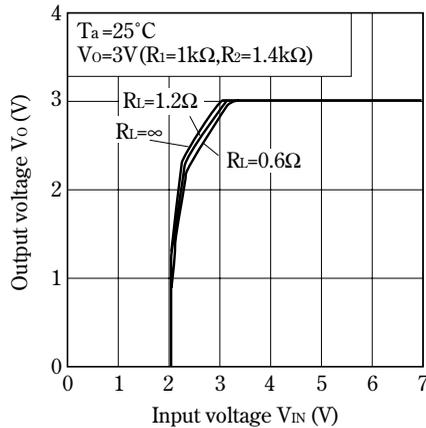
**Fig. 5 Output Voltage Adjustment Characteristics**



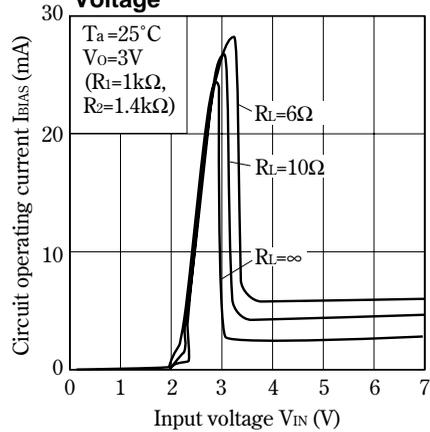
**Fig. 6 Reference Voltage Deviation vs. Junction Temperature (Typical Value)**



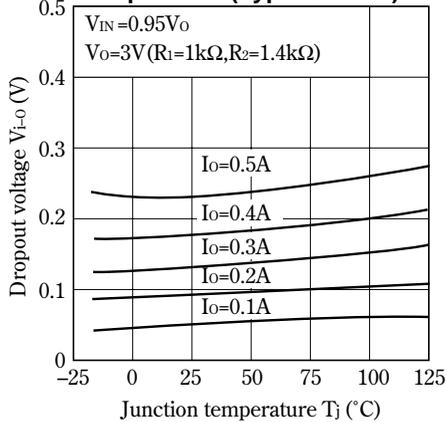
**Fig. 7 Output Voltage vs. Input Voltage**



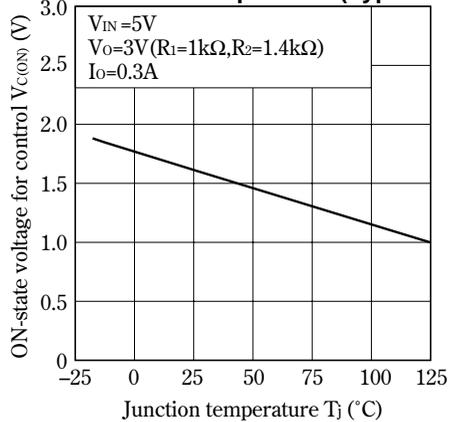
**Fig. 8 Circuit Operating Current vs. Input Voltage**



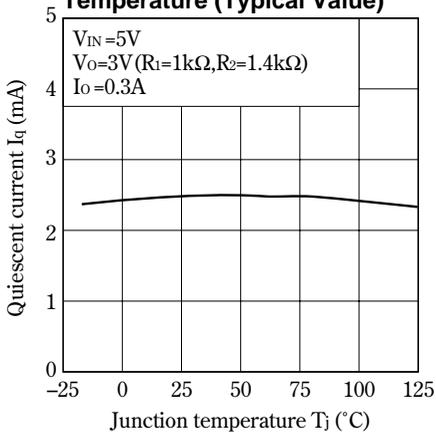
**Fig. 9 Dropout Voltage vs. Junction Temperature (Typical Value)**



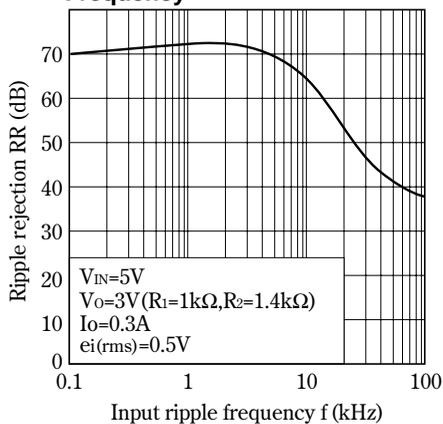
**Fig. 10 ON-state Voltage for Control vs. Junction Temperature (Typical Value)**



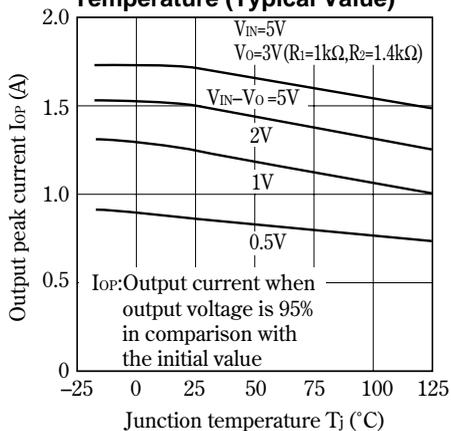
**Fig.11 Quiescent Current vs. Junction Temperature (Typical Value)**



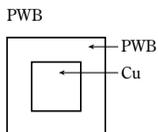
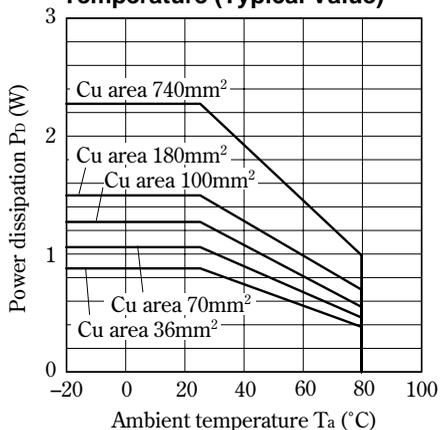
**Fig.12 Ripple Rejection vs. Input Ripple Frequency**



**Fig.13 Output Peak Current vs. Junction Temperature (Typical Value)**



**Fig.14 Power Dissipation vs. Ambient Temperature (Typical Value)**



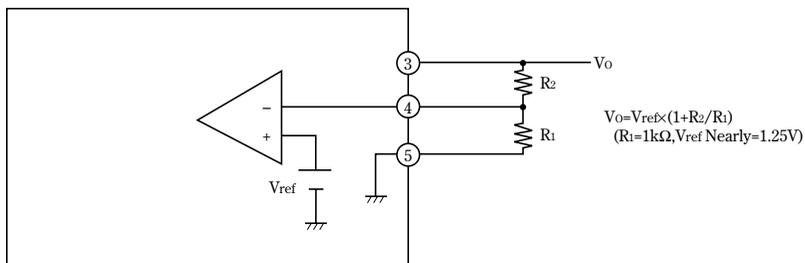
Material : Glass-cloth epoxy resin  
 Size : 50×50×1.6mm  
 Cu thickness : 35μm

■ Model Line-ups for Tape-packaged Products

	Sleeve-packaged products	Tape-packaged products
Output current	High-precision output type	High-precision output type
0.5A output	PQ7VZ5	PQ7VZ5U

■ Setting of Output Voltage

Output voltage is able to be set from 1.5V to 7V 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 figure below or Fig.5.



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    - Gas leakage sensor breakers
    - Alarm equipment
    - Various safety devices, etc.
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