

PQ7VZ5

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

Features

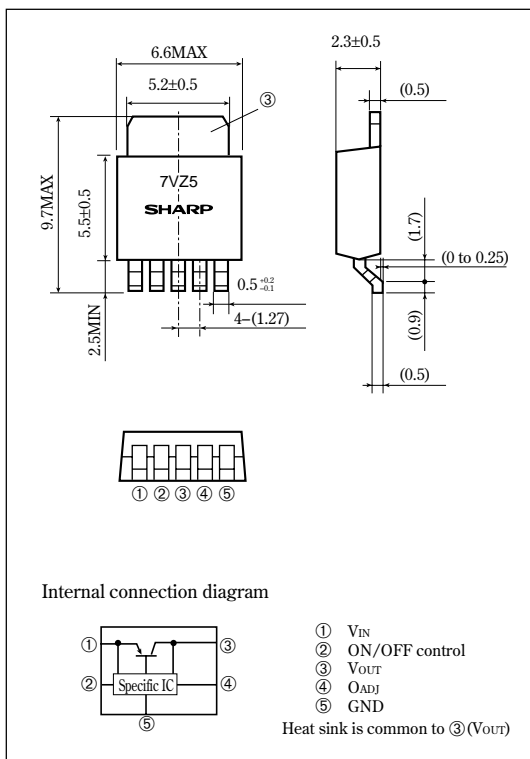
- Low power-loss (Dropout voltage: MAX. 0.5V)
- Variable output type (1.5V to 7V)
- Surface mount type package (equivalent to EIAJ SC-63)
- Output current: MAX.0.5A
- Low dissipation current at OFF-state (I_{qs} : MAX. 5 μ A)
- Built-in ON/OFF control function
- Reference voltage precision: $\pm 2.0\%$
- 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

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

Parameter	Symbol	Rating	Unit
① Input voltage	V_{IN}	10	V
① ON/OFF control terminal voltage	V_C	10	V
① Output adjustment terminal voltage	V_{ADJ}	7	V
Output current	I_O	0.5	A
② Power dissipation	P_D	8	W
③ Junction temperature	T_j	150	$^\circ\text{C}$
Operating temperature	T_{opr}	-20 to +80	$^\circ\text{C}$
Storage temperature	T_{stg}	-40 to +150	$^\circ\text{C}$
Soldering temperature	T_{sol}	260(For 10s)	$^\circ\text{C}$

① All are open except GND and applicable terminals.

② P_D : With infinite heat sink.

③ Overheat protection may operate at $125 \leq T_j < 150^\circ\text{C}$

•Please refer to the chapter " Handling Precautions ".

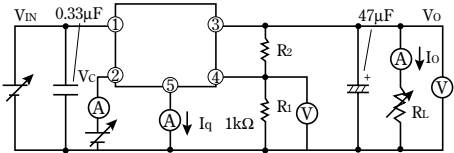
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■ Electrical Characteristics (Unless otherwise specified, conditions shall be VIN=5V, VO=3V(R1=1kΩ), IO=0.3A, VC=2.7V, TA=25°C)

Parameter	Symbol	Condition	NIN.	TYP.	MAX.	Unit
Input voltage	VIN	—	3.4	—	10.0	V
Output voltage variable range	VO	—	1.5	—	7.0	V
Load regulation	RegL	IO=5mA to 0.5A	—	0.2	2.0	%
Line regulation	RegI	VIN=4 to 10V, IO=5mA	—	0.2	2.5	%
Ripple rejection	RR	Refer to Fig. 2	45	60	—	dB
Dropout voltage	Vi-o	VIN=3.4, IO=0.3A	—	—	0.5	V
Reference voltage	Vref	—	1.225	1.25	1.275	V
Temperature coefficient of reference voltage	TcVref	IO=5mA, Tj=0 to 125°C	—	±1.0	—	%
ON-state voltage for control	VC(ON)	※4	2.0	—	—	V
ON-state current for control	IC(ON)	—	—	—	200	μA
OFF-state voltage for control	VC(OFF)	IC=0A	—	—	0.8	V
OFF-state current for control	IC(OFF)	VC=0.4V, IC=0A	—	—	2	μA
Quiescent current	Iq	IC=0A	—	4	7	mA
Output OFF-state consumption current	Iqs	VC=0.4V	—	—	5	μA

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

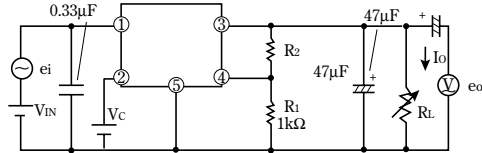
Fig. 1 Test Circuit



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

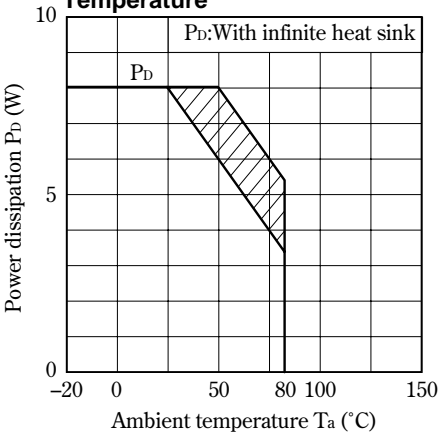
[R1=1kΩ, Vref Nearly=1.25V]

Fig. 2 Test Circuit for Ripple Rejection



f=120Hz(sine wave)
ei(rms)=0.5V
IO=0.3A
RR=20 log(ei(rms)/eo(rms))
VIN=5V
VO=3V(R1=1kΩ)

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)

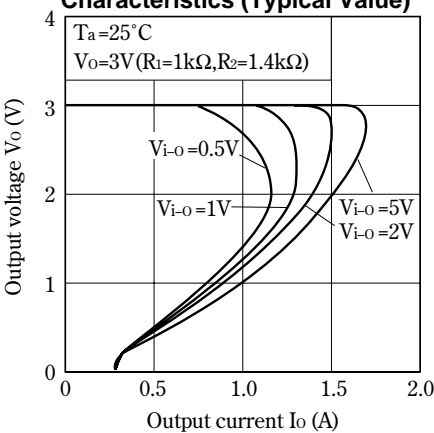


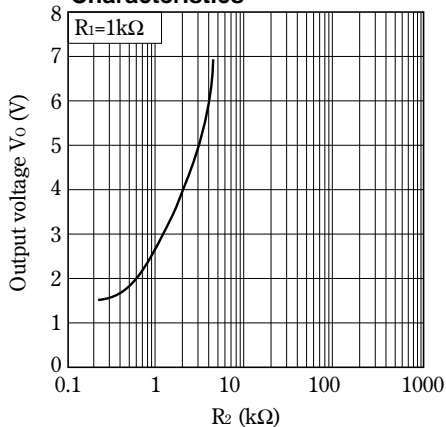
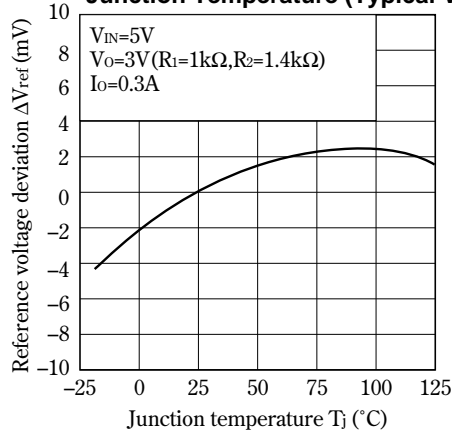
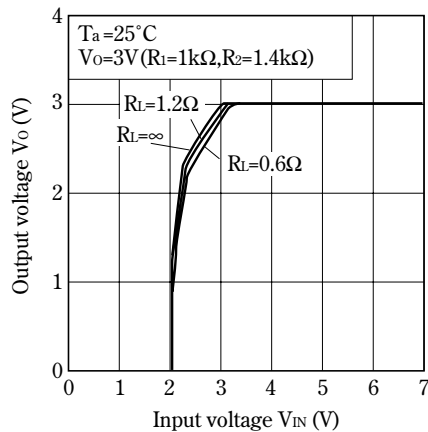
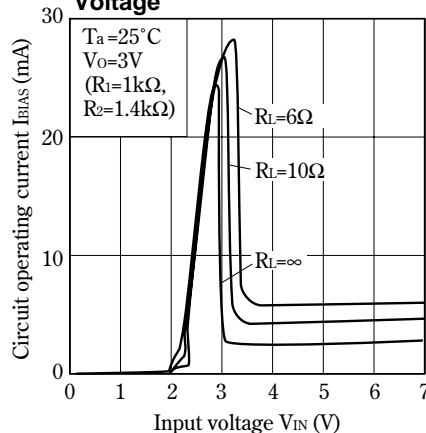
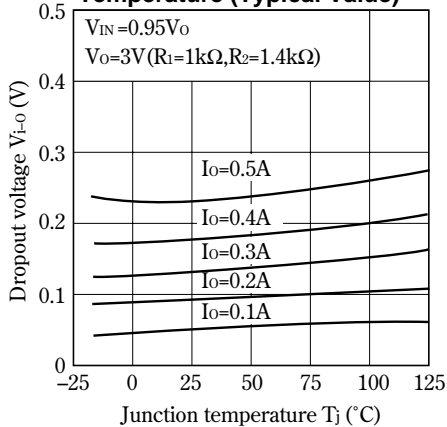
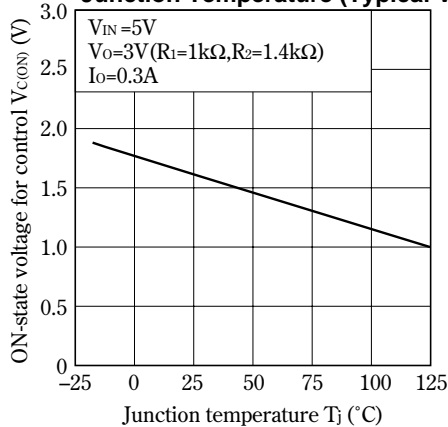
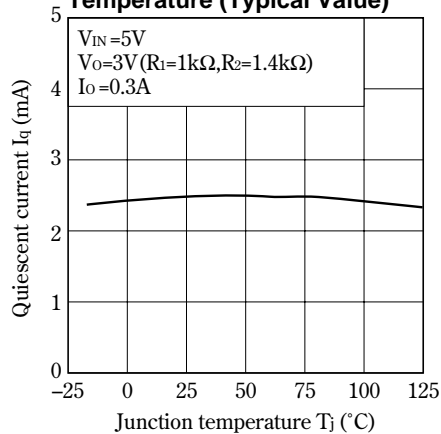
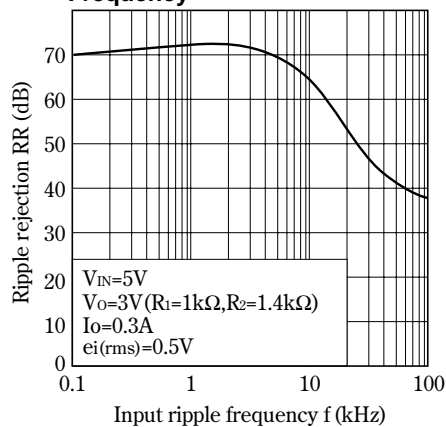
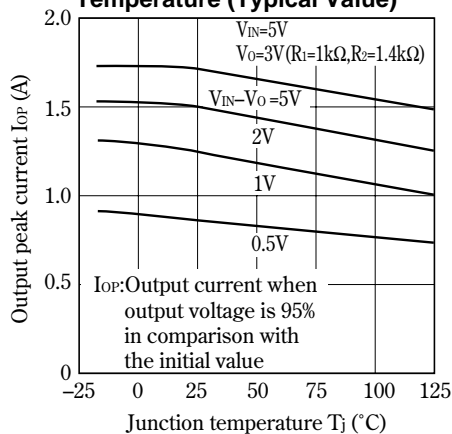
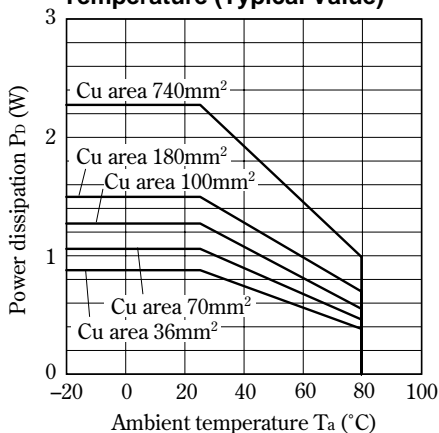
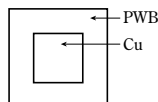
Fig. 5 Output Voltage Adjustment Characteristics**Fig. 6 Reference Voltage Deviation vs. Junction Temperature (Typical Value)****Fig. 7 Output Voltage vs. Input Voltage****Fig. 8 Circuit Operating Current vs. Input Voltage****Fig. 9 Dropout Voltage vs. Junction Temperature (Typical Value)****Fig.10 ON-state 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)**

PWB



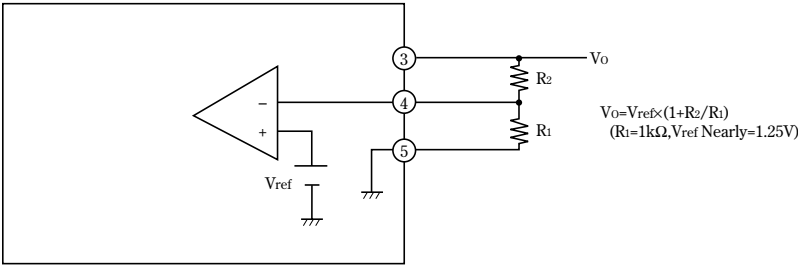
Material : Glass-cloth epoxy resin
 Size : 50×50×1.6mm
 Cu thickness : 35μm

■ 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 R₁, R₂ 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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