PQ7VZ5

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

Features

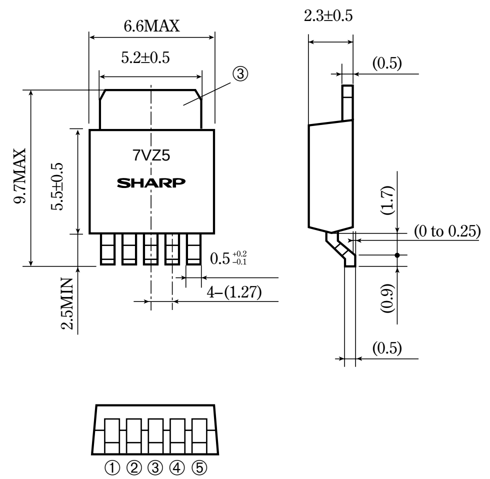
- Low power-loss (Dropout voltage: MAX. 0.5V)
- Variable output type (1.5V to 7V)
- Surface mount type package (equivalent to EIAJ SC-63)
- Output current: MAX.0.5A
- Low dissipation current at OFF-state (Iqs: MAX. 5µA)
- Built-in ON/OFF control function
- Reference voltage precision: ±2.0%
- Tape packaged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

Applications

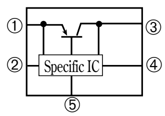
- Personal computers
- Word processors
- Printers
- Camcoders
- Personal Information Tools(PDA)

Outline Dimensions

(Unit : mm)



Internal connection diagram



① V_{IN}
② ON/OFF control
③ V_{OUT}
④ O_{ADJ}
⑤ GND

Heat sink is common to ③(V_{OUT})

Absolute Maximum Ratings

(T_a=25˚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	˚C
Operating temperature	T_{opr}	−20 to +80	˚C
Storage temperature	T_{stg}	−40 to +150	˚C
Soldering temperature	T_{sol}	260(For 10s)	˚C

※1 All are open except GND and applicable terminals.
※2 P_D : With infinite heat sink.
※3 Overheat protection may operate at 125<=T_j<=150˚C

• Please refer to the chapter " Handling Precautions ".

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Internet Internet address for Electronic Components Group http://sharp-world.com/ecg/

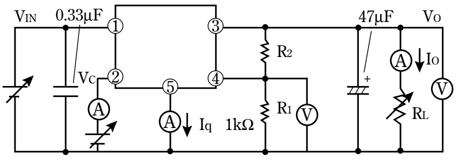
Electrical Characteristics

(Unless otherwise specified, conditions shall be V_{IN}=5V, V_O=3V(R_1=1kΩ), I_O=0.3A, V_C=2.7V, T_a=25˚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_CV_{ref}	I_O=5mA, T_j=0 to 125˚C	–	±1.0	–	%
ON-state voltage for control	$V_{C(ON)}$	※4	2.0	–	–	V
ON-state current for control	$I_{C(ON)}$	–	–	–	200	µA
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	µA
Quiescent current	I_q	I_C=0A	–	4	7	mA
Output OFF-state consumption current	I_{qs}	V_C=0.4V	–	–	5	µA

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

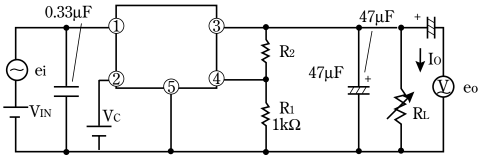
Fig. 1 Test Circuit



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

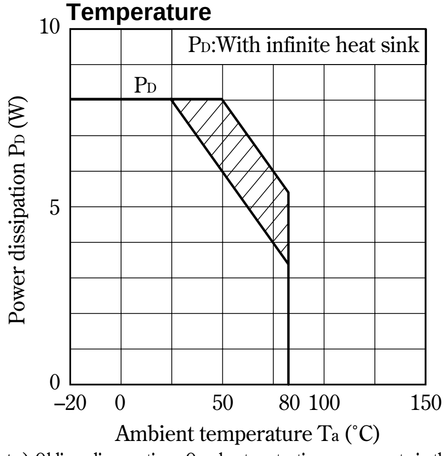
[R_1=1kΩ, V_{ref} Nearly=1.25V]

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=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)

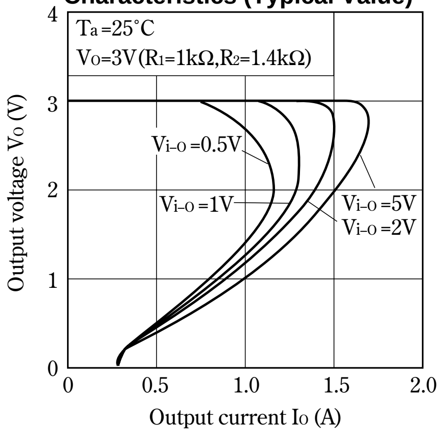


Fig. 5 Output Voltage Adjustment Characteristics

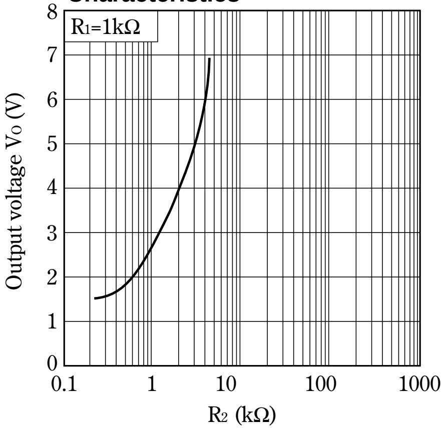


Fig. 6 Reference Voltage Deviation vs. Junction Temperature (Typical Value)

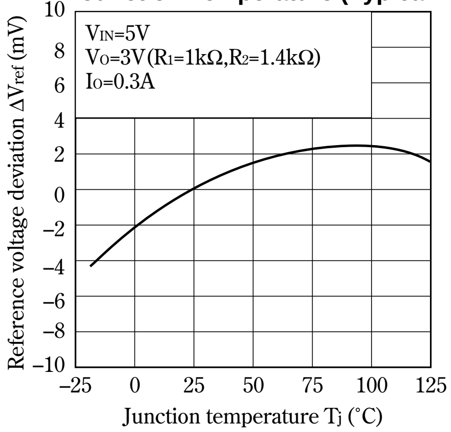


Fig. 7 Output Voltage vs. Input Voltage

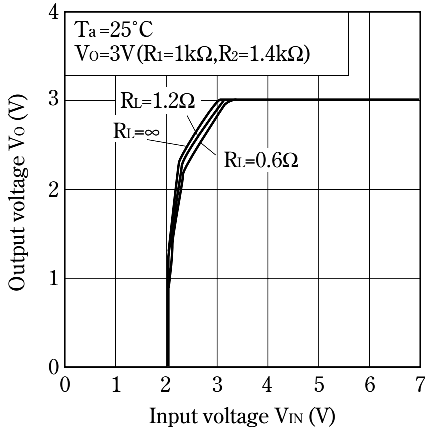


Fig. 8 Circuit Operating Current vs. Input Voltage

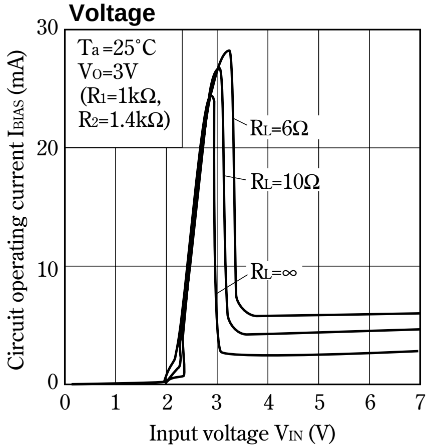


Fig. 9 Dropout Voltage vs. Junction Temperature (Typical Value)

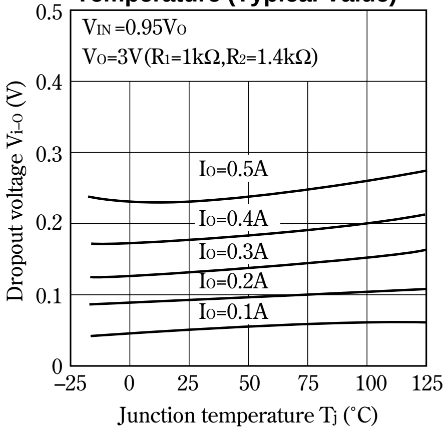


Fig.10 ON-state Voltage for Control vs. Junction Temperature (Typical Value)

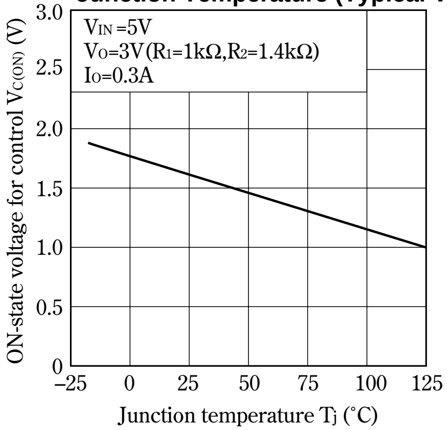


Fig.11 Quiescent Current vs. Junction Temperature (Typical Value)

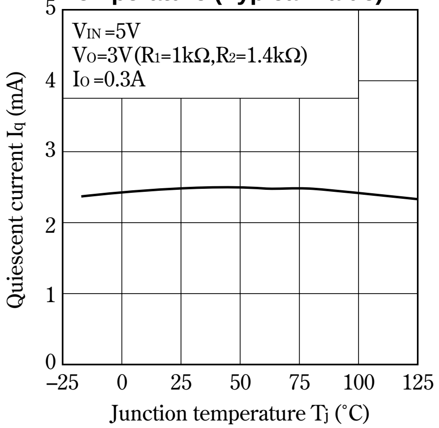


Fig.12 Ripple Rejection vs. Input Ripple Frequency

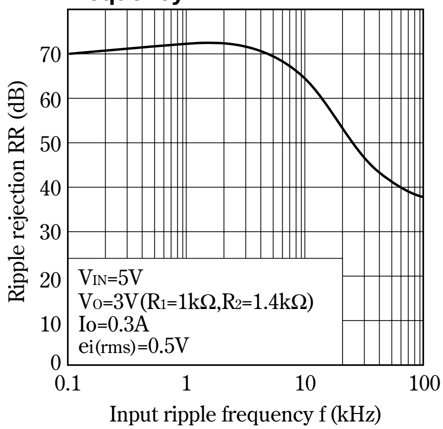


Fig.13 Output Peak Current vs. Junction Temperature (Typical Value)

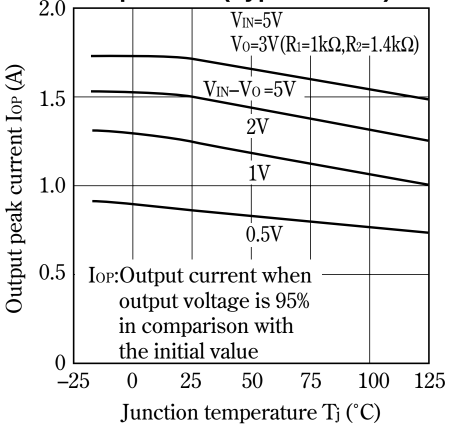
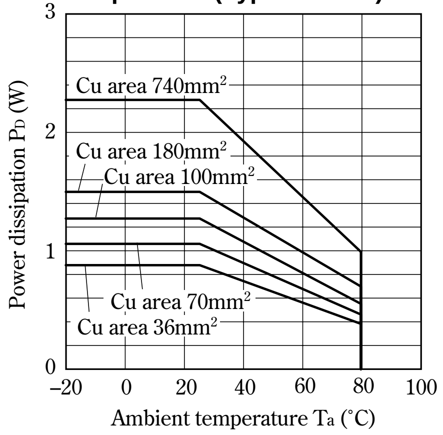
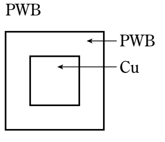


Fig.14 Power Dissipation vs. Ambient Temperature (Typical Value)





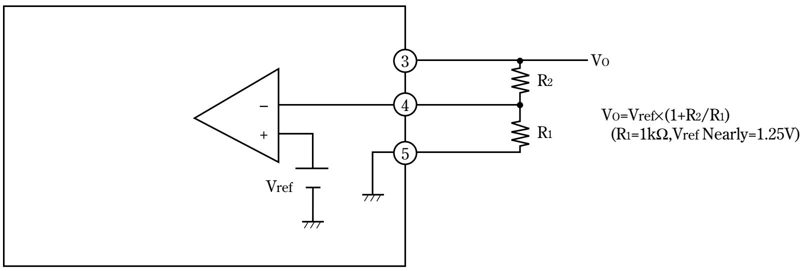
Material : Glass-cloth epoxy resin
Size : 50×50×1.6mm
Cu thickness : 35µm

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_1, R_2 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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  --- Office automation equipment
  --- Telecommunication equipment [terminal]
  --- Test and measurement equipment
  --- Industrial control
  --- Audio visual equipment
  --- Consumer electronics

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  --- Alarm equipment
  --- Various safety devices, etc.

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