

# PQ05VY3H3Z/PQ05VY053Z

Surface Mount, Large Output Current Type Low Power-Loss Voltage Regulators

## Features

- Low power-loss  
(Dropout voltage: MAX. 0.5V)
- Surface mount type (10.6×13.7×3.5mm)
- Large output current
- Low voltage operation (minimum operating voltage: 2.35V)
- High-precision reference voltage type  
(Reference voltage precision: ±1.0%)
- Overcurrent, overheat protection functions

## Applications

- Peripheral equipment of personal computers
- Power supplies for various electronic equipment such as AV or OA equipment

## Model Line-up

Output current (I <sub>O</sub> )	Package type	Variable output
3.5A	Taping	<b>PQ05VY3H3ZP</b>
	Sleeve	<b>PQ05VY3H3ZZ</b>
5A	Taping	<b>PQ05VY053ZP</b>
	Sleeve	<b>PQ05VY053ZZ</b>

## Absolute Maximum Ratings

(T<sub>a</sub>=25°C)

Parameter	Symbol	Rating	Unit
Input voltage	V <sub>IN</sub>	7	V
Dropout voltage	V <sub>LO</sub>	4	V
*1 ON/OFF control terminal voltage	V <sub>C</sub>	7	V
*1 Output adjustment terminal voltage	V <sub>ADJ</sub>	5	V
Output current	<b>PQ05VY3H3Z</b>	3.5	A
	<b>PQ05VY053Z</b>	5	
*2 Power dissipation	P <sub>D</sub>	35	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 (10s)	°C

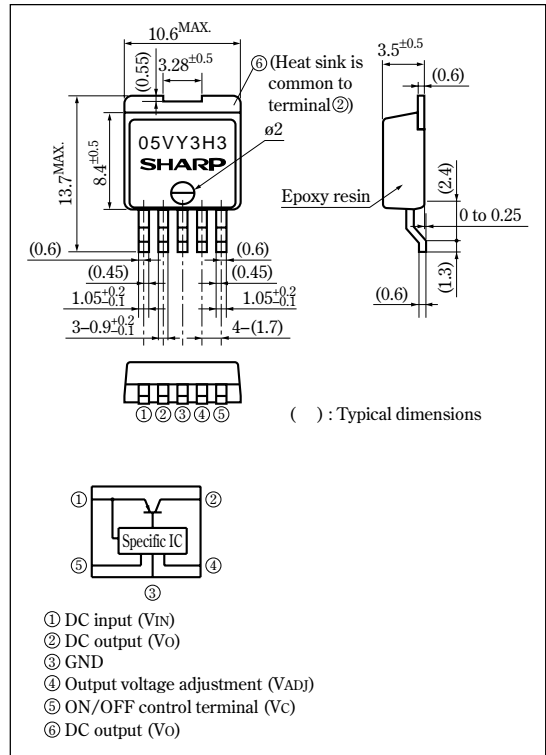
\*1 All are open except GND and applicable terminals.

\*2 P<sub>D</sub>: With infinite heat sink

\*3 Overheat protection may operate at T<sub>j</sub>=125°C to 150°C

## Outline Dimensions

(Unit : mm)



•Please refer to the chapter " Handling Precautions ".

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**Electrical Characteristics**

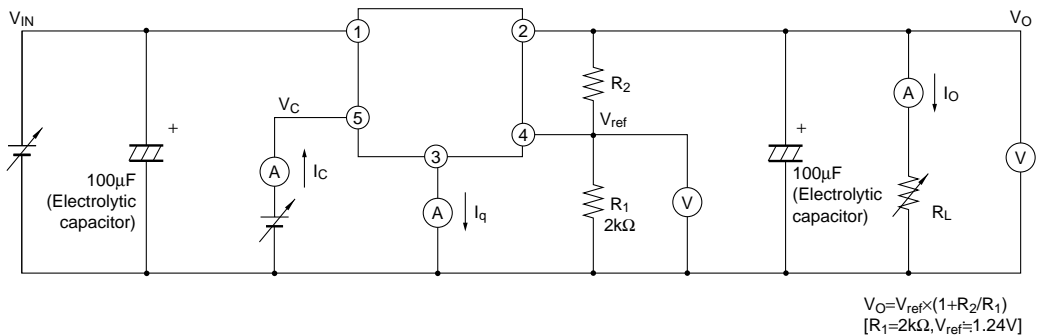
(Unless otherwise specified, condition shall be  $V_{IN}=5V$ ,  $I_o=1.75A$ (PQ05VY3H3Z),  $I_o=2.5A$ (PQ05VY053Z),  $V_o=3V$ ( $R_l=2k\Omega$ ),  $T_a=25^\circ C$ )

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit		
Input voltage	$V_{IN}$	—	2.35	—	7	V		
Output voltage	$V_o$	—	1.5	—	5	V		
Reference voltage	$V_{ref}$	—	1.2276	1.24	1.2524	V		
Load regulation	<b>PQ05VY3H3Z</b> <b>PQ05VY053Z</b>	$R_{egL}$	$I_o=5mA$ to 3.5A		—	0.1	0.5	%
			$I_o=5mA$ to 5A					
Line regulation	$R_{egI}$	$V_{IN}=4$ to 7V, $I_o=5mA$	—	0.05	0.1	%		
Temperature coefficient of reference voltage	$TcV_{ref}$	$T_j=0$ to $125^\circ C$ , $I_o=5mA$	—	$\pm 1$	—	%		
Ripple rejection	RR	Refer to Fig.2	60	70	—	dB		
Dropout voltage	<b>PQ05VY3H3Z</b> <b>PQ05VY053Z</b>	$V_{L-O}$	*4 $I_o=3.5A$		—	—	0.5	V
			*4 $I_o=5A$					
*5 ON-state voltage for control	$V_{C(ON)}$	—	2	—	—	V		
ON-state current for control	$I_{C(ON)}$	$V_C=2.7V$	—	—	20	$\mu A$		
OFF-state voltage for control	$V_{C(OFF)}$	—	—	—	0.8	V		
OFF-state current for control	$I_{C(OFF)}$	$V_C=0.4V$	—	—	-0.4	mA		
Quiescent current	$I_q$	$I_o=0A$	—	5	10	mA		

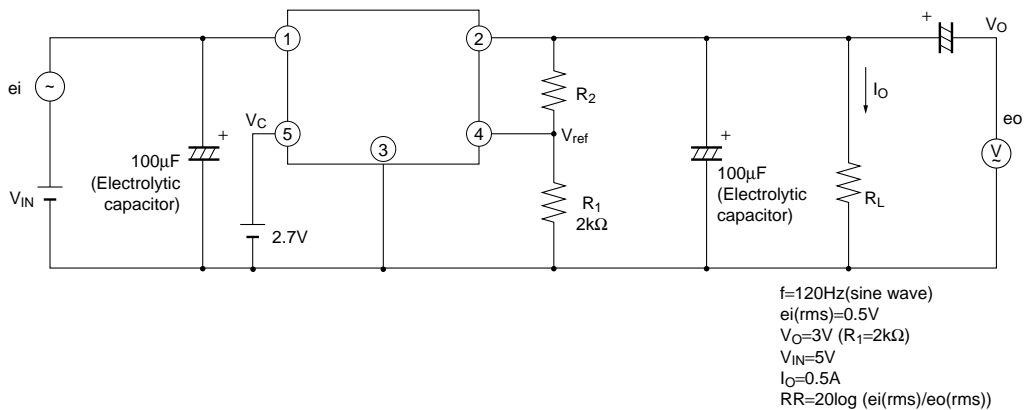
\*4 The values of input voltage when output voltage is 0.95V.

\*5 In case of opening control terminal ⑤, output voltage turns on.

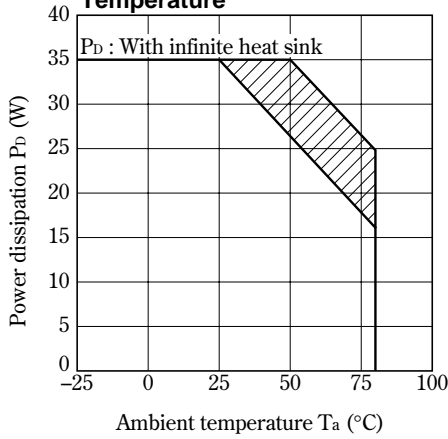
**Fig.1 Test Circuit**



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

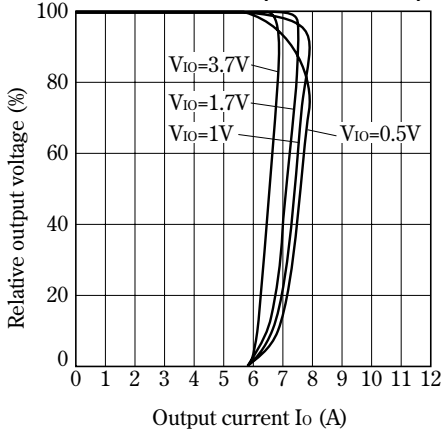


**Fig.3 Power Dissipation vs. Ambient Temperature**

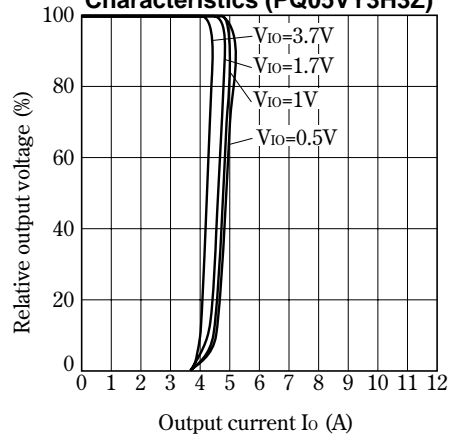


Note) Oblique line portion: Overheat protection may operate in this area.

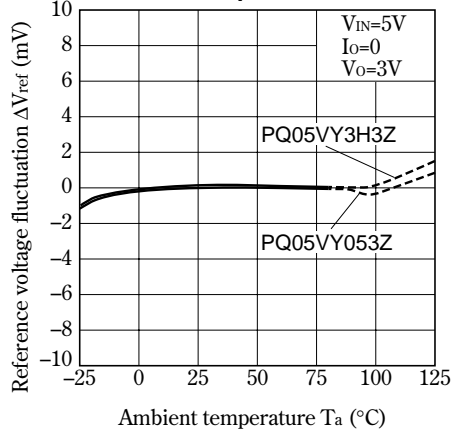
**Fig.5 Overcurrent Protection Characteristics (PQ05VY053Z)**



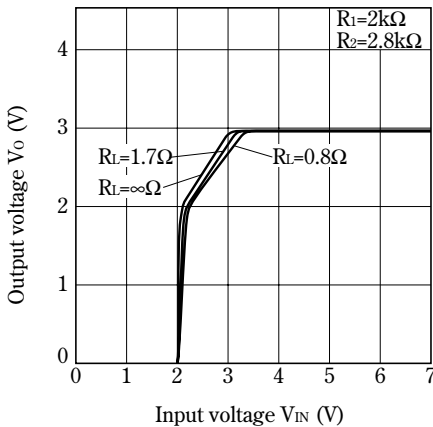
**Fig.4 Overcurrent Protection Characteristics (PQ05VY3H3Z)**



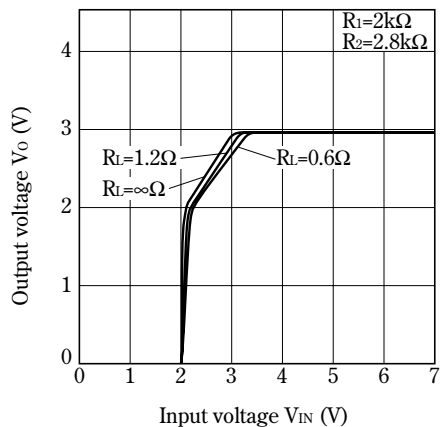
**Fig.6 Reference Voltage Fluctuation vs. Ambient Temperature**



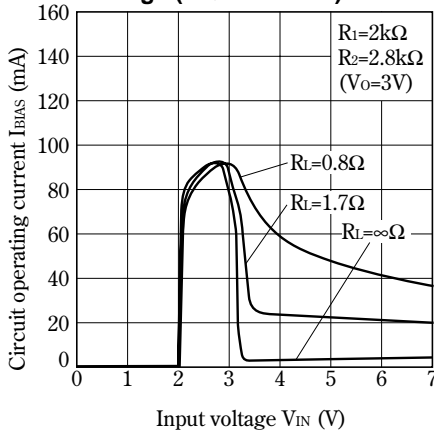
**Fig.7 Output Voltage vs. Input Voltage (PQ05VY3H3Z)**



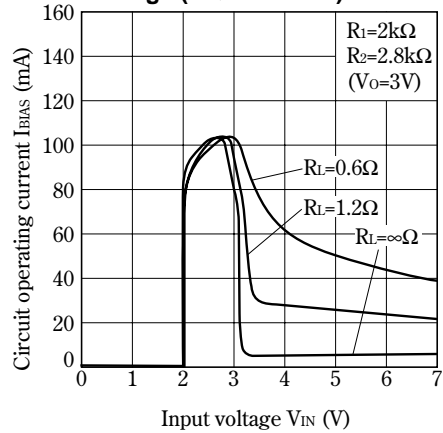
**Fig.8 Output Voltage vs. Input Voltage (PQ05VY053Z)**



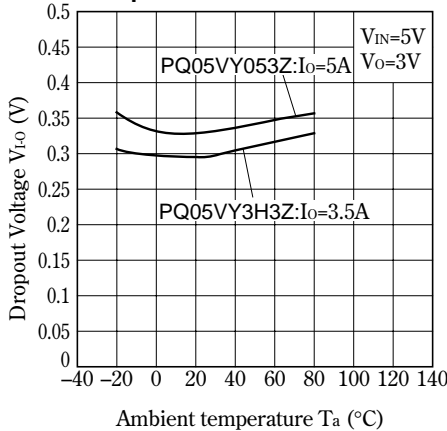
**Fig.9 Circuit Operating Current vs. Input Voltage (PQ05VY3H3Z)**



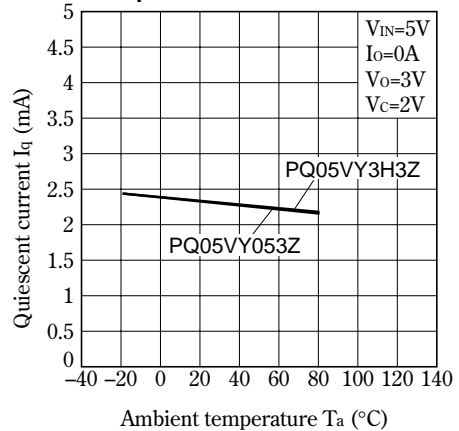
**Fig.10 Circuit Operating Current vs. Input Voltage (PQ05VY053Z)**



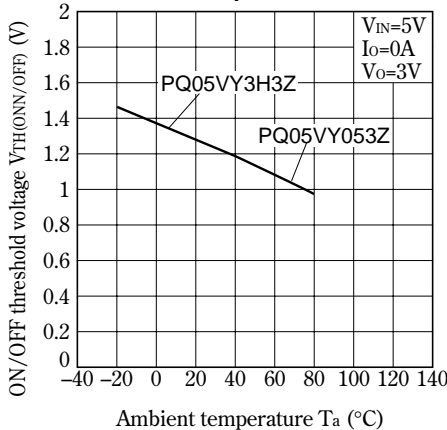
**Fig.11 Dropout Voltage vs. Ambient Temperature**



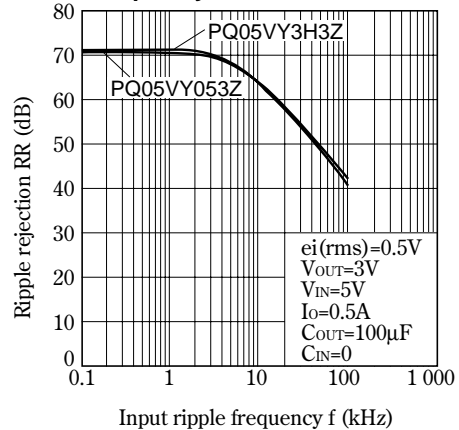
**Fig.12 Quiescent Current vs. Ambient Temperature**



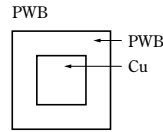
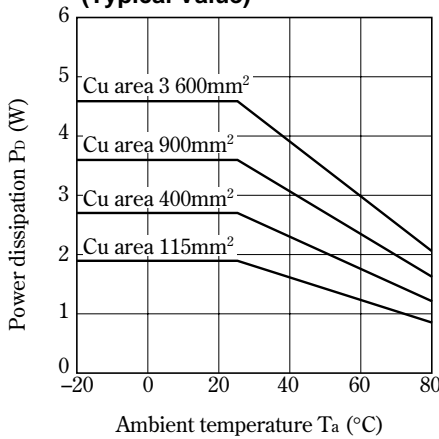
**Fig.13 ON-OFF Threshold Voltage vs. Ambient Temperature**



**Fig.14 Ripple Rejection vs. Input Ripple Frequency**

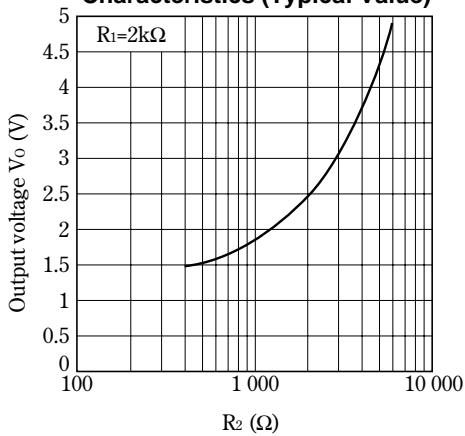


**Fig.15 Power Dissipation vs. Ambient Temperature (Typical Value)**

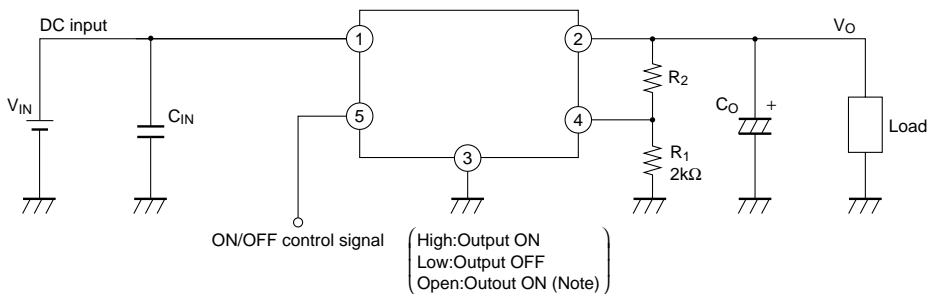


Material : Glass-cloth epoxy resin  
 Size : 60×60×1.6mm  
 Cu thickness : 65μm

**Fig.16 Output Voltage Adjustment Characteristics (Typical Value)**



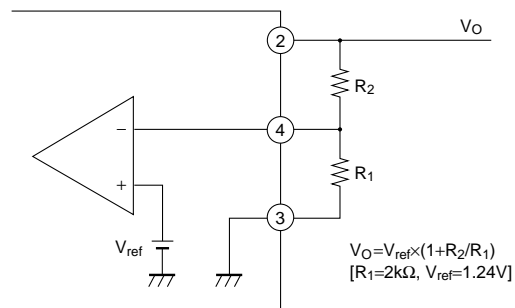
**Fig.17 Typical Application**



\* Please make sure to use this device, pulling up to the power supply with less than 7V at the resistor less than 50kΩ in switching ON/OFF with open collector output or in not using ON/OFF function (in keeping "ON"), because input impedance is high in ON/OFF terminals.

**Setting of Output Voltage**

Output voltage is able to set from 1.5V to 5V when resistors  $R_1$  and  $R_2$  are attached to ②, ③, ④ terminals. As for the external resistors to set output voltage, refer to the figure below and Fig.16.



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