PQ1CYxx3LZPH Series

To-263 Surface Mount Type
Chopper Regulator

■ Features

1.Maximum switching current: 3.5A
2.Built-in ON/OFF control function
3.High frequency oscillation
(Oscillation frequency: 150kHz)
4.Built-in overheat protection function, overcurrent shut-down function
5.Fixed output voltage type
(Output voltage is 3.3V/5.0V)
6.RoHS directive compliant

■ Applications

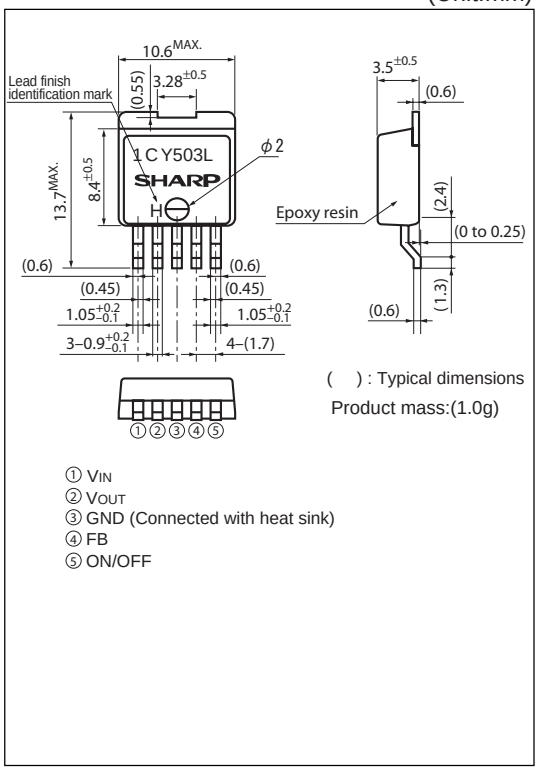
1.Digital AV equipment
2.OA equipment
3.CRT monitor/LCD monitor

■ Model Line-up

Output Voltage	Model No.
3.3V	**PQ1CY333LZPH**
5.0V	**PQ1CY503LZPH**

■ Outline Dimensions

(Unit:mm)



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

■ Absolute Maximum Ratings

(Ta=25°C)

Parameter	Symbol	Rating	Unit
*1 Input voltage	V_{IN}	40	V
FB pin voltage	V_{FB}	8	V
Input-output voltage	V_{I-O}	41	V
*2 Output-GND voltage	V_{OUT}	-1	V
*3 ON/OFF pin voltage	V_C	-0.3 to 40	V
Switching current	I_{SW}	3.5	A
*4 Power dissipation	P_D	35	W
*5 Junction temperature	T_j	150	°C
Operating temperature	T_{opr}	-20 to +85	°C
Storage temperature	T_{stg}	-40 to +150	°C
Soldering temperature	T_{sol}	260(10s)	°C

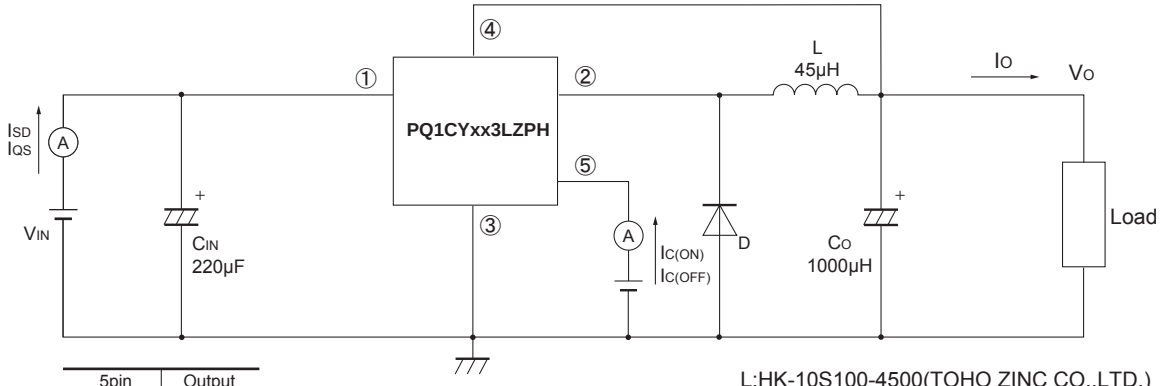
*1 Voltage between V_{IN} terminal and GND terminal.
*2 Voltage between V_{OUT} terminal and GND terminal.
*3 Voltage between ON/OFF terminal and GND terminal.
*4 P_D:With infinite heat sink
*5 There is case that over heat protection function operates at the temperature T_j=125°C to 150°C, so this item cannot be used in this temperature range.

■ Electrical Characteristics

(Unless otherwise specified,condition shall be V_{IN}=12V,I_O=0.5A,ON-OFF terminals is open,T_a=25℃)

Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Input voltage range	**PQ1CY333LZPH**	V_{IN}	—	5.5	—	30	V
	PQ1CY503LZPH			7	—	40	
Output saturation voltage		V_{SAT}	I_{SW}=3A	—	1.4	1.8	V
Output voltage	**PQ1CY333LZPH**	V_O	—	3.218	3.3	3.382	V
	PQ1CY503LZPH			4.875	5	5.125	
Temperature change in reference voltage		ΔV_{REF}	Tj=0 to 125°C	—	±0.5	—	%
Load regulation		|RegL|	I_O=0.5 to 3A	—	0.2	1.5	%
Line regulation		|RegI|	PQ1CY333LZPH: V_{IN}=5.8 to 25V PQ1CY503LZPH: V_{IN}=8 to 35V	—	1.3	2.5	%
Efficiency	**PQ1CY333LZPH**	η	I_O=3A	—	77	—	%
	PQ1CY503LZPH			—	80	—	
Oscillation frequency		f_O	—	135	150	165	kHz
Temperature change in oscillator frequency		Δf_O	Tj=0～125°C	—	±2	—	%
Over current detector level		I_L	Switching current peak	3.6	4.7	5.8	A
Off-state current for control		$I_{C(OFF)}$	5pin=2.5V	—	5	—	μA
On-state current for control		$I_{C(ON)}$	5pin=0.5V	—	0.1	—	μA
ON threshold voltage		V_{THON}	4pin=0V,5pin	0.8	1.5	2	V
Stand-by current		I_{SD}	V_{IN}=40V,5pin=5V	—	150	400	μA
Output off-state consumption current		I_{QS}	V_{IN}=40V,4pin=V_O+10%	—	8	16	mA

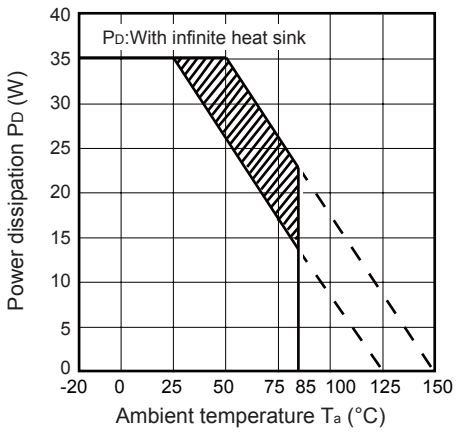
Fig.1 Standard measuring circuit



5pin	Output
LOW	ON
HIGH	OFF
OPEN	ON

L:HK-10S100-4500(TOHO ZINC CO.,LTD.)
D:ERC80-004(FUJI ELECTRONIC COMPONENTS,LTD)

Fig.2 Power Dissipation vs.Ambient Temperature



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

Fig.3 Overcurrent Protection Characteristics (**PQ1CY333LZPH**)

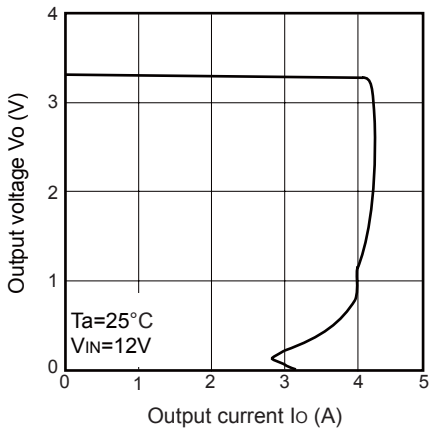


Fig.4 Overcurrent Protection Characteristics (**PQ1CY503LZPH**)

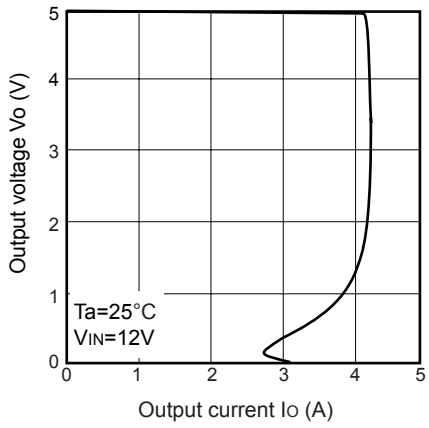


Fig.5 Efficiency vs. Input Voltage (**PQ1CY333LHZPH**)

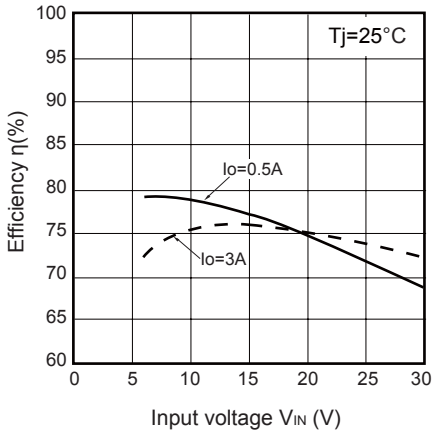


Fig.6 Efficiency vs. Input Voltage (**PQ1CY503LHZPH**)

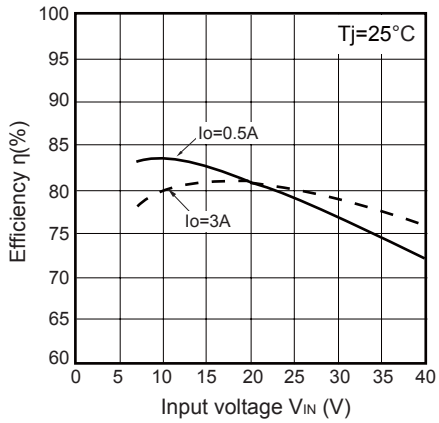


Fig.7 Output Saturation Voltage vs. Switching Current

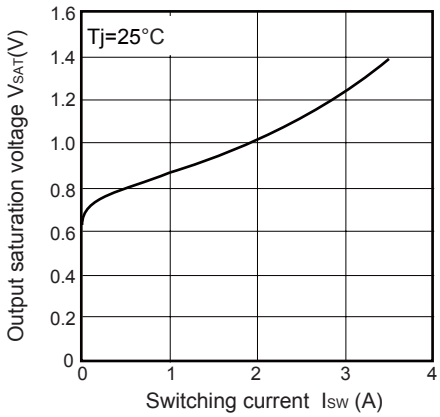


Fig.8 Stand-by Current vs. Input Voltage

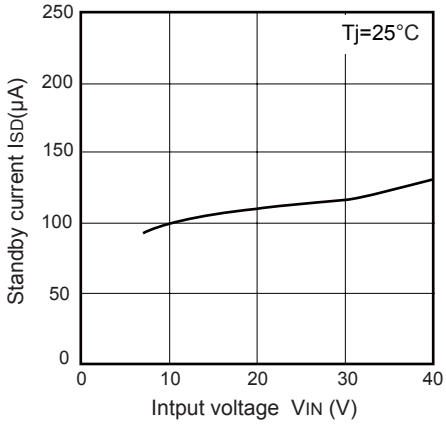


Fig.9 Output Voltage Fluctuation vs. Junction Temperature

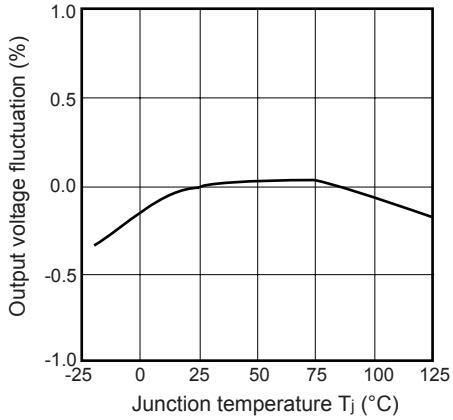


Fig.10 Load Regulation vs. Output Current(**PQ1CY333LZPH**)

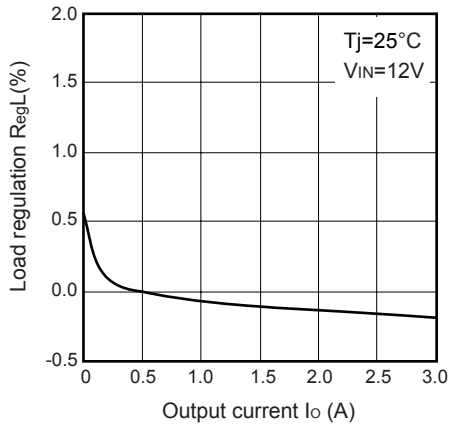


Fig.11 Load Regulation vs. Output Current(**PQ1CY503LZPH**)

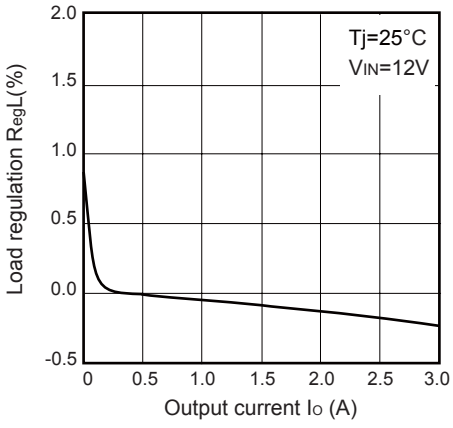


Fig.12 Line Regulation vs. Input Voltage

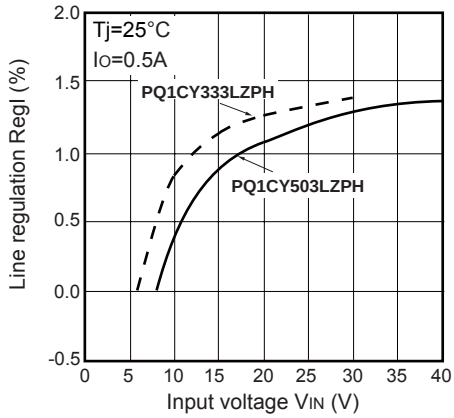


Fig.13 Oscillation Frequency Fluctuation vs. Junction Temperature

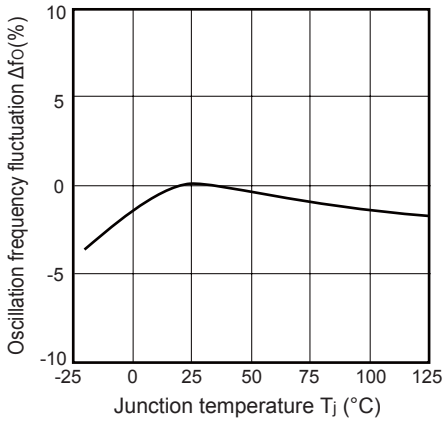


Fig.14 Overcurrent Detecting Level Fluctuation vs. Junction Temperature

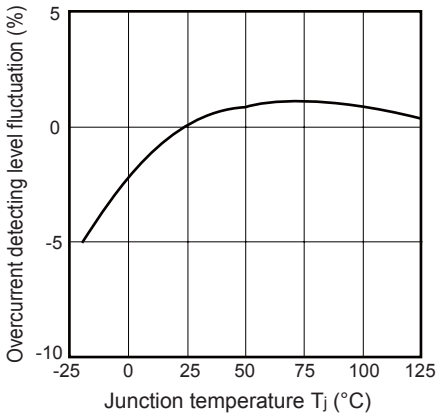


Fig.15 ON Threshold Voltage vs. Junction Temperature

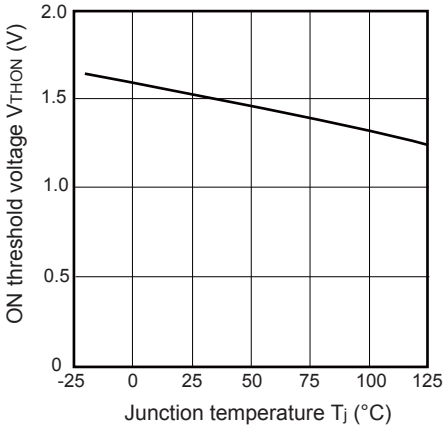


Fig.16 Operating Dissipation Current vs. Input Voltage (**PQ1CY333LZPH**)

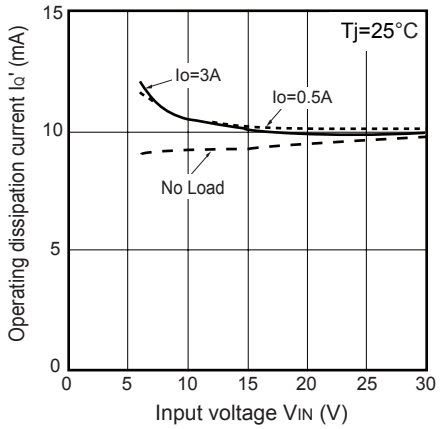


Fig.17 Operating Dissipation Current vs. Input Voltage (**PQ1CY503LZPH**)

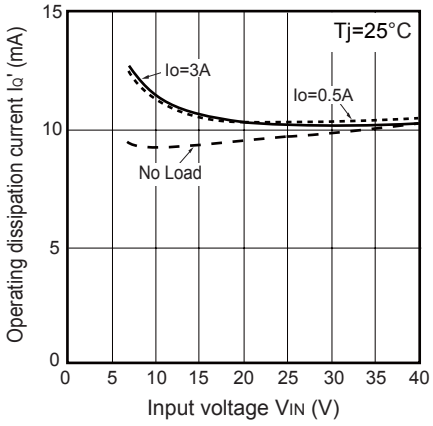
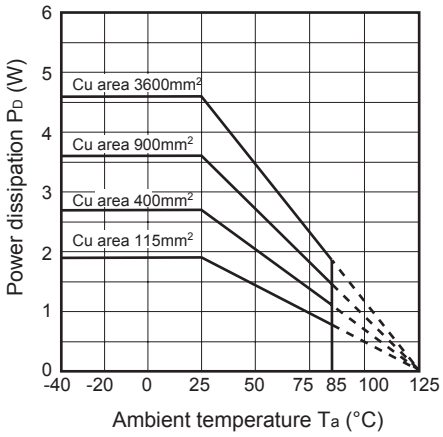


Fig.18 Power Dissipation vs. Ambient Temperature (Typical Value)



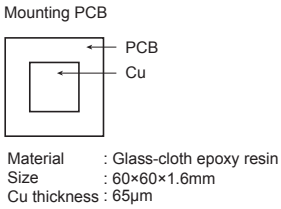


Fig.19 Block diagram