

PQ1CG3032FZH PQ1CG3032RZH

TO-220 Type Chopper Regulator

■ Features

1. Maximum switching current: 3.5A
2. Built-in ON/OFF control function
3. Built-in soft start function to suppress overshoot of output voltage in power on sequence or ON/OFF control sequence
4. Built-in oscillation circuit
(Oscillation frequency: TYP. 150kHz)
5. Built-in overheat, overcurrent protection functions
6. TO-220 package
7. Variable output voltage
(Output variable range: V_{ref} to $35V/-V_{ref}$ to $-30V$)
[Possible to select step-down output/inverting output according to external connection circuit]
8. **PQ1CG3032FZH**: Zigzag forming
PQ1CG3032RZH: Self-stand forming
9. RoHS directive compliant

■ Applications

1. Color TV
2. Digital OA equipment
3. Facsimiles, printers and OA equipment
4. Personal computers and amusement equipment

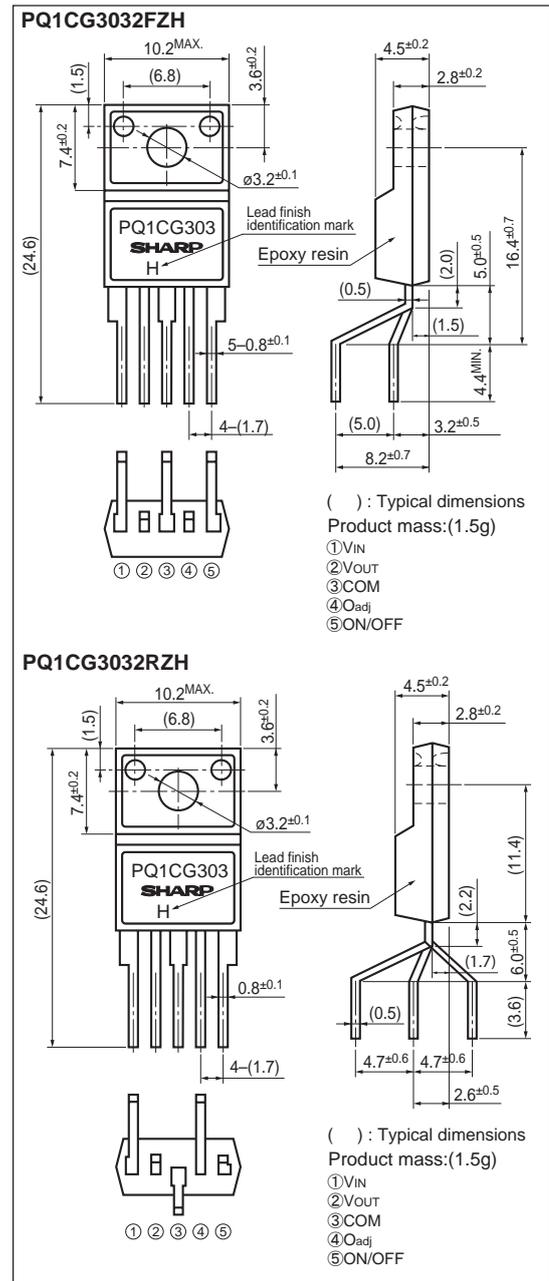
■ Absolute Maximum Ratings

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

Parameter	Symbol	Rating	Unit
*1 Input voltage	V_{IN}	40	V
Error input voltage	V_{adj}	7	V
Input - output voltage	V_{I-O}	41	V
*2 Output - COM voltage	V_{OUT}	-1	V
*3 ON/OFF control voltage	V_C	-0.3 to +40	V
*4 Power dissipation	PD_1	1.4	W
	PD_2	14	
*5 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(10s)	$^\circ\text{C}$

- *1 Voltage between V_{IN} terminal and COM terminal
 *2 Voltage between V_{OUT} terminal and COM terminal
 *3 Voltage between ON/OFF control and COM terminal
 *4 PD_1 : No heat sink, PD_2 : With infinite heat sink
 *5 There is case that over heat protection function operates at the temperature $T_j=125^\circ\text{C}$ to 150°C , so this item cannot be used in this temperature range.

■ Outline Dimensions



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

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Electrical Characteristics

(Unless otherwise specified, condition shall be $V_{IN}=12V, I_O=0.5A, V_O=5V$, ON-OFF terminals is open, $T_a=25^\circ C$)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Output saturation voltage	V_{SAT}	$I_{SW}=3A$	—	1.4	1.8	V
Reference voltage	V_{ref}	—	1.235	1.26	1.285	V
Reference voltage temperature fluctuation	ΔV_{ref}	$T_j=0$ to $125^\circ C$	—	± 0.5	—	%
Load regulation	$ Reg_L $	$I_O=0.5$ to $3A$	—	0.2	1.5	%
Line regulation	$ Reg_V $	$V_{IN}=8$ to $35V$	—	1	2.5	%
Efficiency	η	$I_O=3A$	—	80	—	%
Oscillation frequency	f_o	—	135	150	165	kHz
Oscillation frequency temperature fluctuation	Δf_o	$T_j=0$ to $125^\circ C$	—	± 2	—	%
Overcurrent detecting level	I_L	—	3.6	4.7	5.8	A
Charge current	I_{CHG}	②,④ terminals is open, ⑤ terminal	—	-10	—	μA
Input threshold voltage	V_{THL}	Duty ratio=0%, ④ terminal=0V, ⑤ terminal	—	1.3	—	V
	V_{THH}	Duty ratio=100%, ④ terminal is open, ⑤ terminal	—	2.3	—	V
ON threshold voltage	V_{THON}	④ terminal=0V, ⑤ terminal	0.7	0.8	0.9	V
Stand-by current	I_{SD}	$V_{IN}=40V$, ⑤ terminal=0V	—	140	400	μA
Output OFF-state dissipation current	I_{QS}	$V_{IN}=40V$, ⑤ terminal =0.9V	—	8	16	mA

Fig.1 Test Circuit

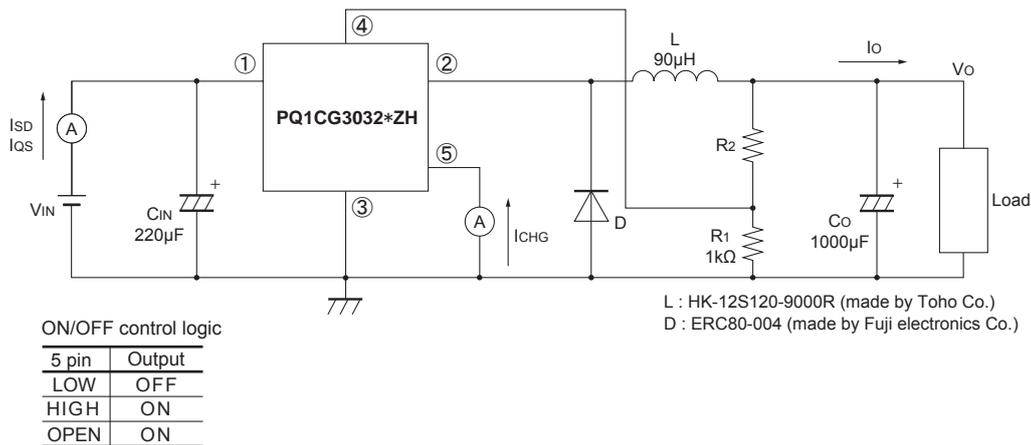
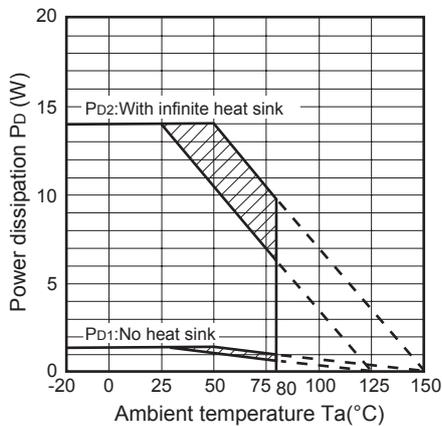


Fig.2 Power Dissipation vs.Ambient Temperature



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

Fig.3 Overcurrent Protection Characteristics (Typical Value)

