

PQ2CF1

TO-220 Package, Step Up Output Chopper Regulator

Features

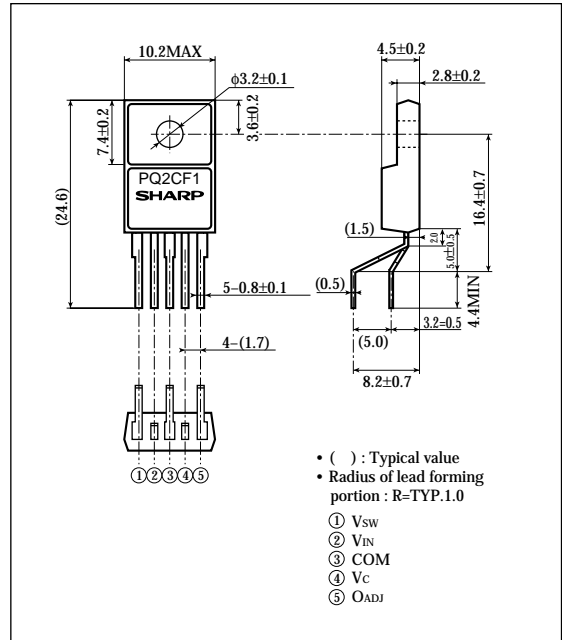
- Maximum switching current:2.5A
- Built-in soft start function
- Built-in oscillation circuit
(oscillation frequency:TYP.50kHz)
- Built-in overheat protection,overcurrent protection function
- Variable output voltage(4.5 to 35V)
[Possible to choose step up output / flyback method according to external connection circuit]

Applications

- Personal computers / Word processors
- Printers
- Switching power supplies
- Facsimiles

Outline Dimensions

(Unit : mm)



Absolute Maximum Ratings

(T_a=25°C)

Parameter	Symbol	Rating	Unit
*1 Input voltage	V _{IN}	35	V
*2 Switching voltage	V _{SW}	35	V
Error input voltage	V _{ADJ}	7	V
*3 ON/OFF control voltage	V _C	7	V
Switching current	I _{SW}	2.5	A
Power dissipation (No heat sink)	P _{D1}	1.5	W
Power dissipation (With infinite heat sink)	P _{D2}	15	W
*4 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 Voltage between V_{IN} terminal and COM terminal
 *2 Voltage between V_{SW} terminal and COM terminal
 *3 Voltage between V_C terminal and COM terminal
 *4 Overheat protection may operate at 125<=T_J<=150°C.

• Please refer to the chapter " Handling Precautions ".

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Electrical Characteristics

(Unless otherwise specified, conditions shall be $V_{IN}=5V, I_O=0.2A, V_C=12V, T_a=25^{\circ}C$)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Output saturation voltage	V_{SAT}	$I_{SW}=2A$	—	0.6	1.2	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	R_{egL}	$I_O=70$ to $570mA$	—	0.1	1.5	%
Line regulation	R_{egI}	$V_{IN}=3.5$ to $10V$	—	0.2	1.5	%
Efficiency	η	$I_O=0.5A$	—	85	—	%
Oscillation frequency	f_o	—	40	50	60	kHz
Oscillation frequency temperature fluctuation	Δf_o	$T_j=0$ to $125^{\circ}C$	—	± 5	—	%
Maximum duty	D_{MAX}	⑤ terminal is open	90	—	—	%
Over current detecting level	I_L	Duty=50%,	2.7	4.4	5.8	A
Charge current 1	I_{CHG1}	④ terminal=0V, ④ terminal	-80	-50	-20	μA
Charge current 2	I_{CHG2}	④ terminal=0.5V, ④ terminal	-150	-100	-50	μA
Input threshold voltage	V_{THL}	Duty=0%, ④ terminal	0.55	0.75	0.95	V
Vc terminal low level voltage	V_{CH}	① terminal is open, ⑤ terminal=1.1V	1.65	1.85	2.05	V
Vc terminal high level voltage	V_{CL}	① terminal is open, ⑤ terminal=1.4V	0.3	0.45	0.6	V
On threshold voltage	V_{THON}	① terminal is open, ④ terminal	0.1	0.2	0.3	V
Stand-by current	I_{SD}	$V_{IN}=35V$, ④ terminal=0V, No L, Co, D, R1, R2	—	270	400	μA
Output OFF-state consumption current	I_{QS}	$V_{IN}=35V$, ④ terminal=0.5V, No L, Co, D, R1, R2	—	4.0	12	mA

Block Diagram

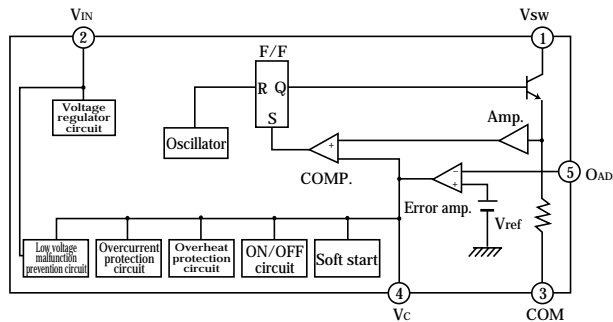
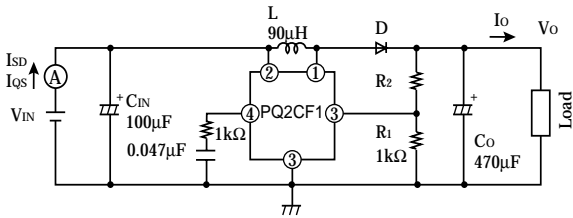
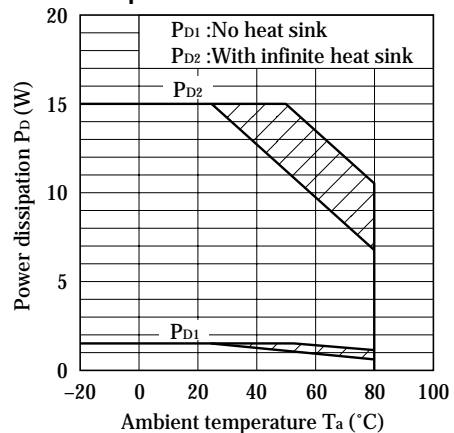


Fig. 1 Test Circuit



L : HK-12S100-9000 (made by Toho Co.)
 D : ERC80-004 (made by Fuji electronics Co.)

Fig. 2 Power Dissipation vs. Ambient Temperature



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

Fig. 3 Overcurrent Protection Characteristics

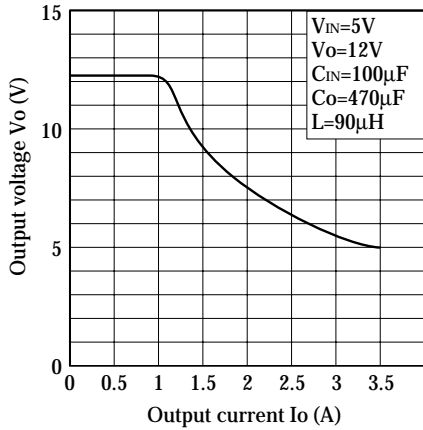


Fig. 4 Efficiency vs. Input Voltage

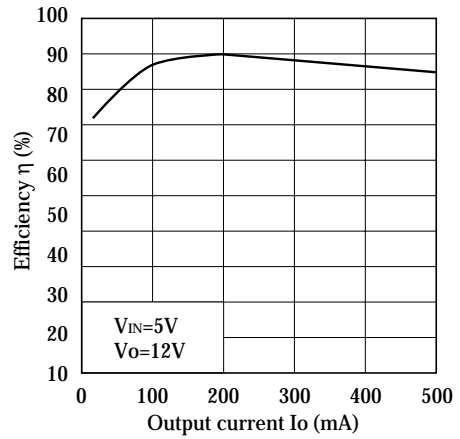


Fig. 5 Reference Voltage Fluctuation vs. Junction Temperature

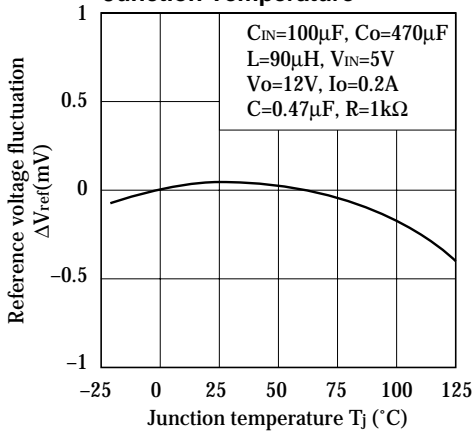


Fig. 6 Load Regulation vs. Output current

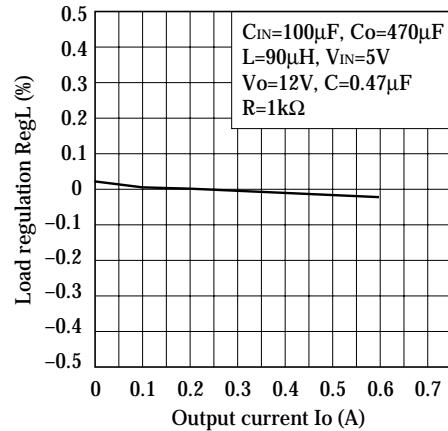


Fig. 7 Line Regulation vs. Input Voltage

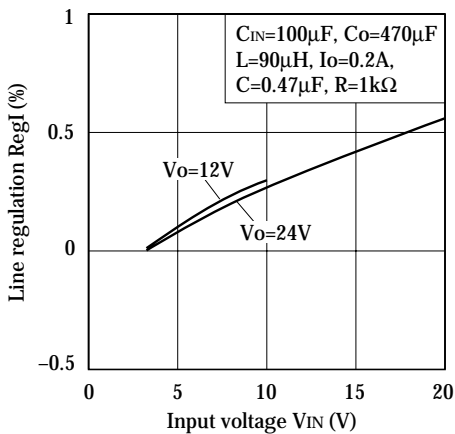


Fig. 8 Oscillation Frequency Fluctuation vs. Junction Temperature

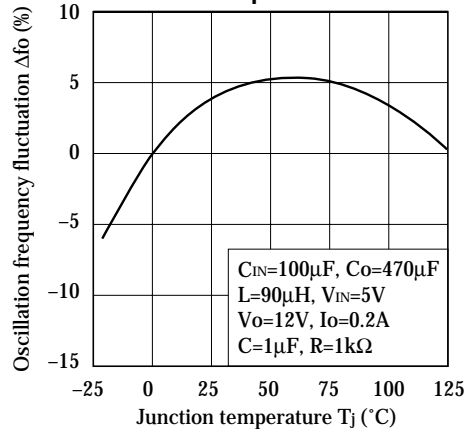
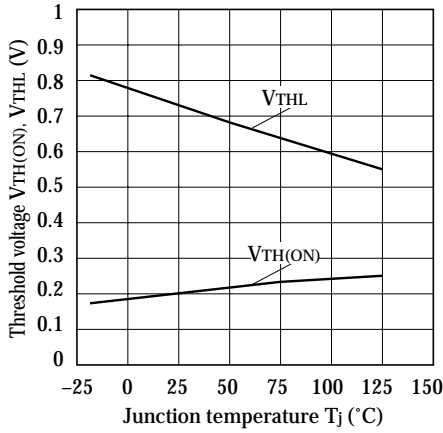
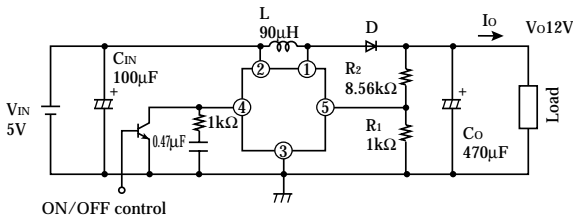


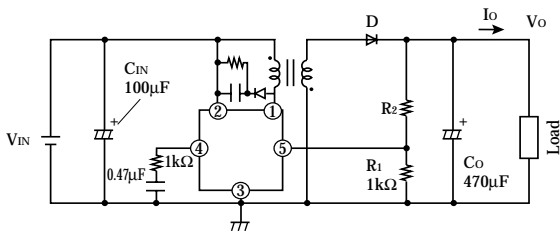
Fig. 9 Threshold Voltage vs. Junction Temperature



■ Step - Up Type Circuit Diagram (12V Output)



■ Flyback Method Circuit Diagram



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 - Alarm equipment
 - Various safety devices, etc.
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