

PQ1CF1

TO-220 Package Chopper Regulator

■ Features

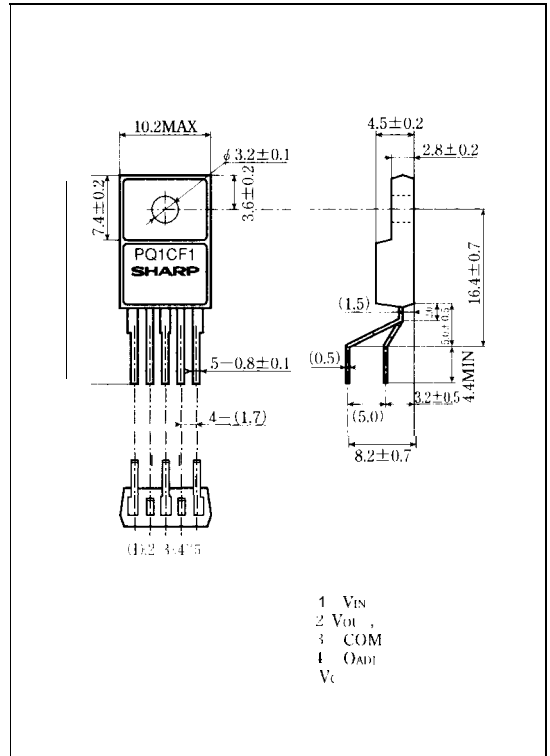
- . Maximum switching current : 3.5A
- . With ON/OFF control function
- Built-in oscillation circuit
(oscillation frequency: TYP.70kHz)
- . Built-in overheat protection, overcurrent protection function
- Variable output voltage (1.26 to 35V /- 1.26 to 30V)
[Possible to choose step down output/inversing output according to external connection circuit]

■ Applications

- . Facsimiles
- Printers
- Switching power supplies
- Personal computers

■ Outline Dimensions

(Unit : mm)



■ Absolute Maximum Ratings

(T_a=25°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
Switching current terminal voltage	I _{SW}	3.5	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 _{OP}	-20 to +80	°C
Storage temperature	T _{STG}	-40 to +150	°C
Soldering temperature	T _{SO}	260 (For 10s)	°C

- *1 Voltage between V_{IN} terminal and COM terminal.
- *2 Voltage between V_{OUT} 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"

■ Electrical Characteristics

(Unless otherwise specified, conditions shall be $V_{IN}=12V, I_o=0.5A, V_o=5V, T_a=25^{\circ}C$)

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
Temperature coefficient in reference voltage	ΔV_{ref}	$T_j=0$ to $125^{\circ}C$		± 0.6		%
Load regulation	R_{rgL}	$I_o=0.5$ to $3A$		0.2	1.5	%
Line regulation	R_{rgI}	$V_{IN}=8$ to $35V$		0.6	2.5	%
Efficiency	η	$I_o=3A$		80		%
oscillation frequency	f_o		60	70	80	kHz
oscillation frequency temperature fluctuation	Δf_o	$T_j=0$ to $125^{\circ}C$		± 5		%
Maximum duty	D_{MAX}	4 terminal is open	90			%
Overcurrentdetecting level	I_i		3.9	5.1	6.3	A
Charge current 1	I_{CHG1}	2) 4 terminal is open, 5 terminal	-50	-30	-10	μA
Charge current 2	I_{CHG2}	2) 4 terminal is open, 5 terminal=0.7V	-150	-100	50	μA
Input threshold voltage	V_{THL}	Duty=0%, 4 terminal=0V, 5 terminal	0.75	0.9	1.2	v
	V_{THH}	Duty= D_{MAX} , 4 terminal is open, 5 terminal	1.55	1.8	2.05	v
On threshold voltage	$V_{TH(ON)}$	4 terminal=0V, 5 terminal	0.5	0.6	0.7	v
Stand-by current	I_{SD}	$V_{IN}=40V, 5$ terminal=0V		140	400	μA
Output OFF-state consumption current	I_{QS}	$V_{IN}=40V, 5$ terminal=0.7V		8	16	mA

■ Block Diagram

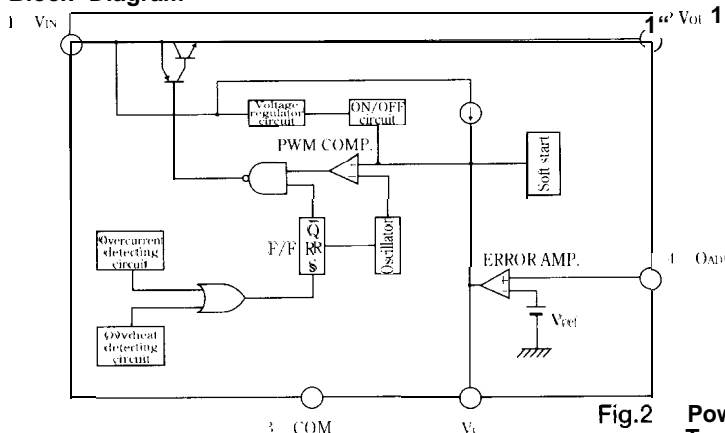
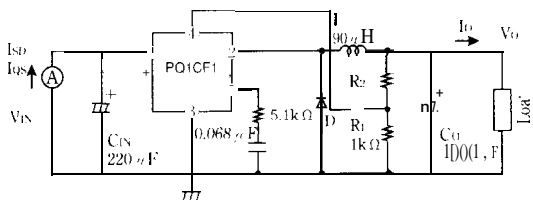
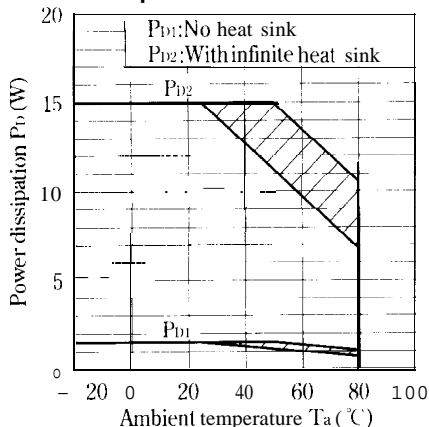


Fig.1 Test Circuit



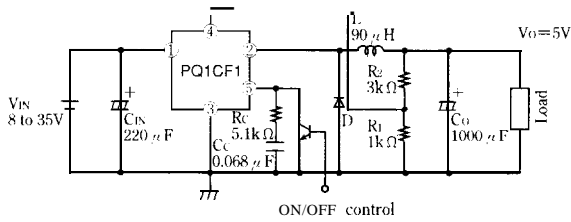
L : HK-12S120-9000R (made by Toho Co.)
 I) ERC80-004 (made by Fuji Electronics Co.)

Fig.2 Power Dissipation vs. Ambient Temperature



Note) oblique fine portion : overheat protection may operate in this area.

■ Step Down Type Circuit Diagram (5V output)



■ Polarity Inversion Type Circuit Diagram (-5V output)

