

PQ1CF1

TO-220 Package Chopper Regulator

■ Features

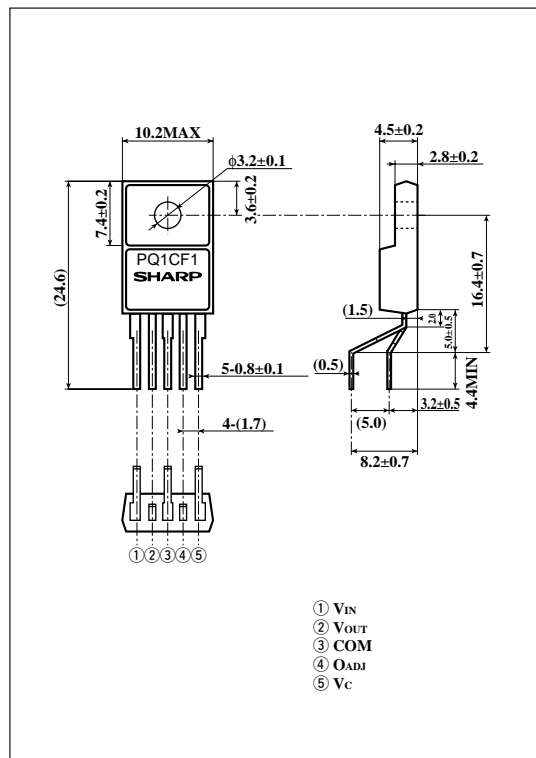
- Maximum switching current : 3.5A
- With ON/OFF control function
- Built-in oscillation circuit
(oscillation frequency : TYP.70kHz)
- Built-in overheat protection, overcurrent protection function
- Variable output voltage (1.26 to 35V /-1.26 to -30V)
[Possible to choose step down output/inverting output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

■ Applications

- Facsimiles
- Printers
- Switching power supplies
- Personal computers

■ Outline Dimensions

(Unit : mm)



■ Absolute Maximum Ratings

(Ta=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 _{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_{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".

SHARP

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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_{egL} $	$I_o=0.5$ to $3A$	-	0.2	1.5	%
Line regulation	$ R_{egI} $	$V_{IN}=8$ 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}	④terminal is open	90	-	-	%
Overcurrent detecting level	I_L	-	3.9	5.1	6.3	A
Charge current1	I_{CHG1}	②④terminal is open, ⑤terminal	-50	-30	-10	μA
Charge current2	I_{CHG2}	②④terminal is open, ⑤terminal=0.7V	-150	-100	-50	μA
Input threshold voltage	V_{THL}	Duty=0%, ④terminal=0V, ⑤terminal	0.75	0.9	1.2	V
	V_{THH}	Duty= D_{MAX} , ④terminal is open, ⑤terminal	1.55	1.8	2.05	V
On threshold voltage	$V_{TH(ON)}$	④terminal=0V, ⑤terminal	0.5	0.6	0.7	V
Stand-by current	I_{SD}	$V_{IN}=40V$, ⑤terminal=0V	-	140	400	μA
Output OFF-state consumption current	I_{qS}	$V_{IN}=40V$, ⑤terminal=0.7V	-	8	16	mA

Block Diagram

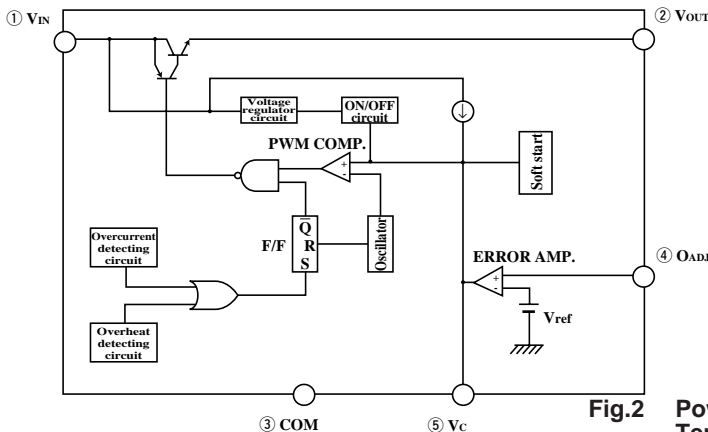
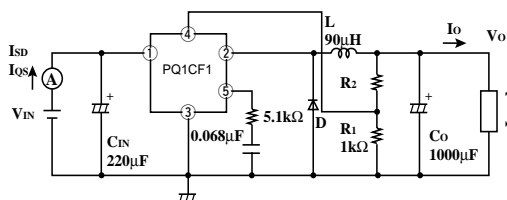
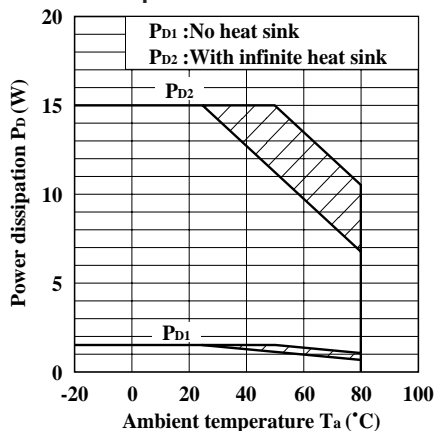


Fig.2 Power Dissipation vs. Ambient Temperature

Fig.1 Test Circuit

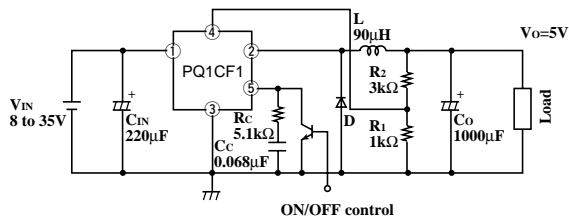


L : HK-12S120-9000R (made by Toho Co.)
 D : ERC80-004 (made by Fuji electronics Co.)



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

■ Step Down Type Circuit Diagram (5V output)



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

