PQ1CG1

TO-220 Type Chopper Regulator

■ Features

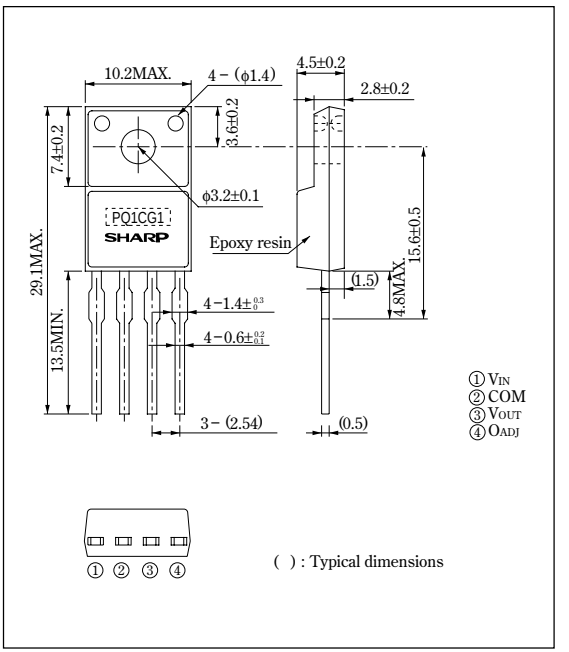
- Maximum switching current: 1.5A
- Built-in oscillation circuit
  (Oscillation frequency: TYP.100kHz)
- Built-in overheat protection, overcurrent protection function
- Variable output voltage (V_{ref} to 35V/-V_{ref} to -30V)
  [Possible to select step-down output / porality inversion output according to external connection circuit]

■ Applications

- Personal computers
- Printers

■ Outline Dimensions

(Unit : mm)



■ Absolute Maximum Ratings

(T_a=25˚C)

Parameter	Symbol	Rating	Unit
※1 Input voltage	V_{IN}	40	V
Output adjustment terminal voltage	V_{ADJ}	7	V
Dropout voltage	V_{i-O}	41	V
※2 Output-COM voltage	V_{OUT}	–1	V
Switching current	I_{SW}	1.5	A
※3 Power dissipation	P_{D1}	1.4	W
	P_{D2}	14	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} and COM

※2 Voltage between V_{OUT} and COM

※3 P_{D1}: No heat sink, P_{D2}: With infinite heat sink

※4 Overheat protection may operate at 125 <=Tj <=150˚C.

• Please refer to the chapter " Handling Precautions ".

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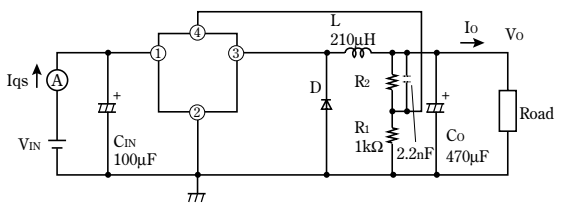
Internet Internet address for Electronic Components Group http://sharp-world.com/ecg/

■ Electrical Characteristics

(Unless otherwise specified, V_{IN}=12V, Io=0.2A,Vo=5V, T_a=25˚C)

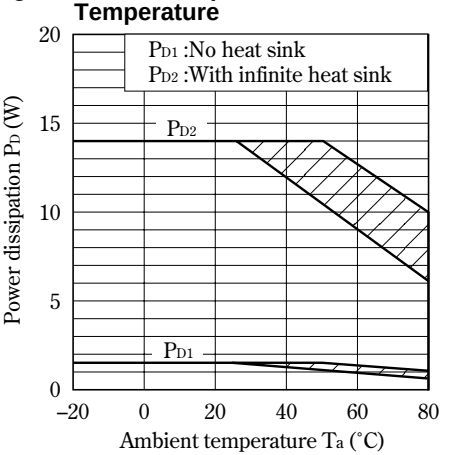
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Output saturation voltage	V_{SAT}	Io=1A, No L, D, Co	—	1	1.5	V
Reference voltage	V_{ref}	—	1.235	1.26	1.285	V
Reference voltage temperature fluctuation	ΔV_{ref}	Tj=0 to 125˚C	—	±0.5	—	%
Load regulation	$\|R_{eg}L\|$	Io=0.2 to 1A	—	0.1	1.5	%
Line regulation	$\|R_{eg}I\|$	V_{IN}=8 to 35V	—	0.5	2.5	%
Efficiency	η	Io=1A	—	82	—	%
Oscillation frequency	fo	—	80	100	120	kHz
Oscillation frequency temperature fluctuation	Δfo	Tj=0 to 125˚C	—	±2	—	%
Maximum duty	D_{MAX}	④ terminal=open	90	—	—	%
Overcurrent detection level	I_L	No L, D, Co	1.55	2	2.6	A
OFF-state dissipation current	I_{qs}	V_{IN}=40V, No.4 pin=3V	—	8	12	mA

Fig. 1 Test Circuit



L : HK-14D100-2110 (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 (Typical Value)

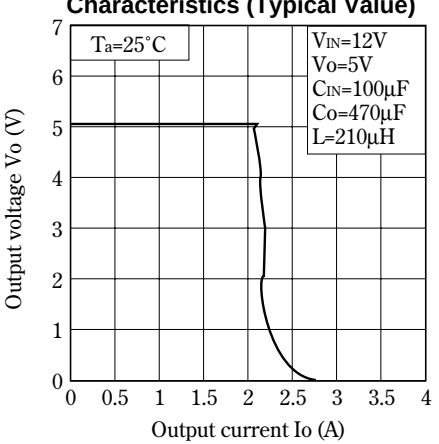


Fig. 4 Efficiency vs. Input Voltage

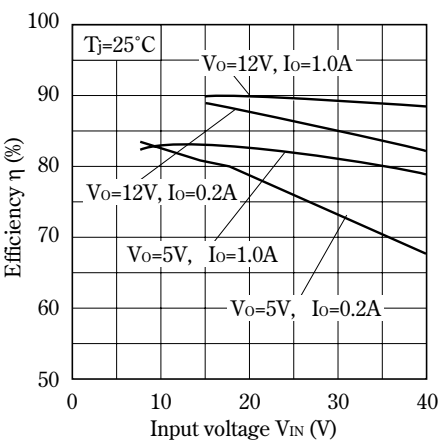


Fig. 5 Switching Current vs. Output Saturation Voltage

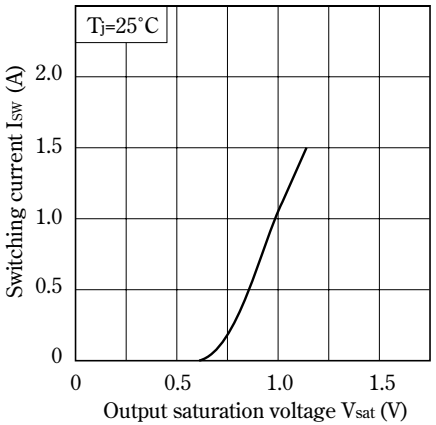


Fig. 6 Reference Voltage Fluctuation vs. Junction Temperature

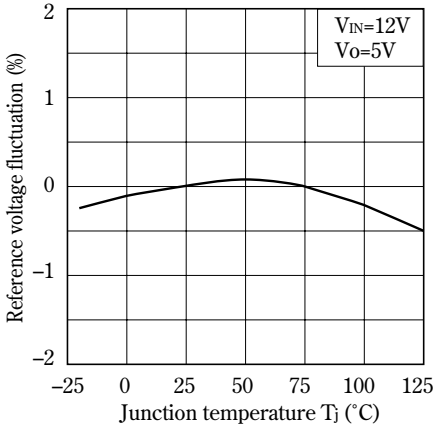


Fig. 7 Load Regulation vs. Output Current

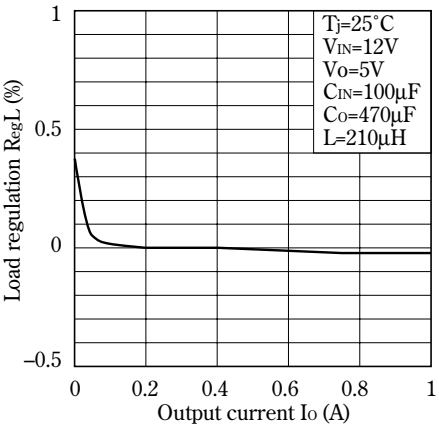


Fig. 8 Line Regulation vs. Input Voltage

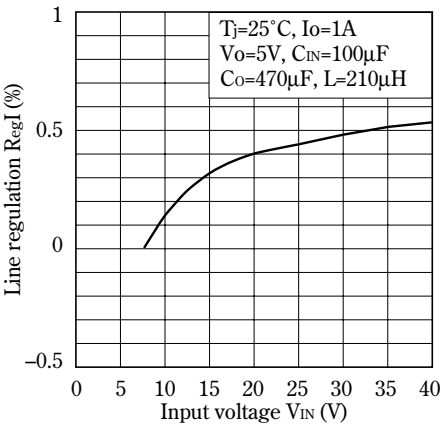


Fig. 9 Oscillation Frequency Fluctuation vs. Junction Temperature

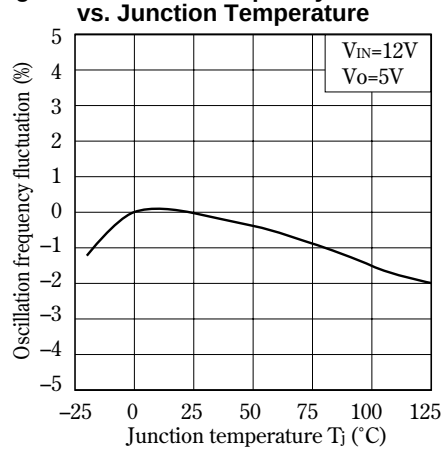


Fig.10 Overcurrent Detecting Level Fluctuation vs. Junction Temperature

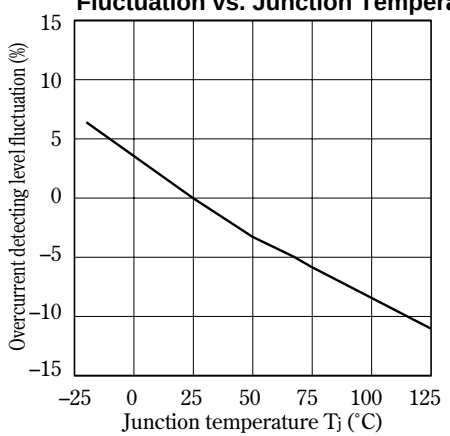
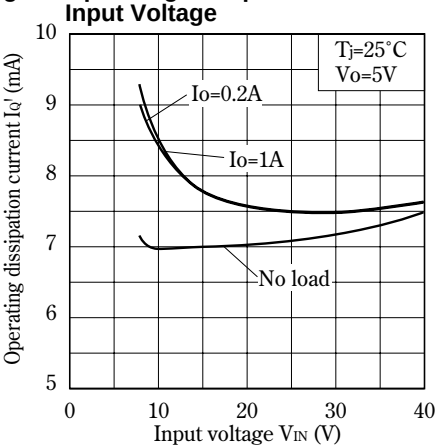
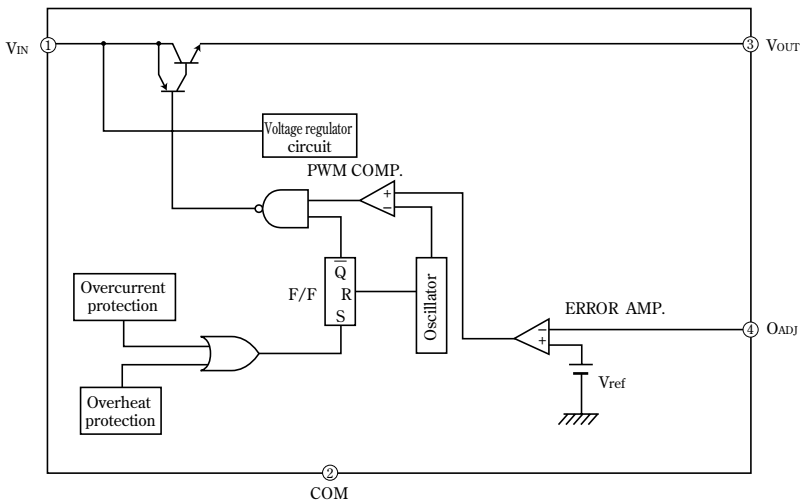


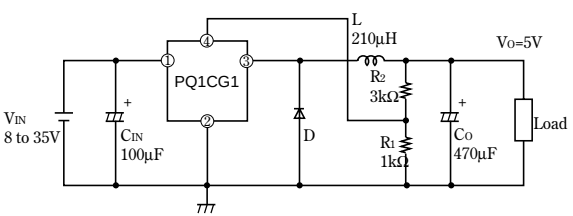
Fig.11 Operating Dissipation Current vs. Input Voltage



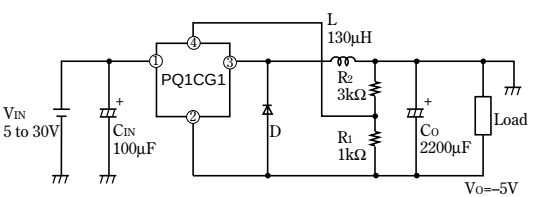
■ Block Diagram



■ Step-down Output Type Circuit Diagram(5V Output)



■ Inversion Output Type Circuit Diagram(-5V Output)



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  --- Test and measurement equipment
  --- Industrial control
  --- Audio visual equipment
  --- Consumer electronics

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  --- Alarm equipment
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