# PQ1CG1

TO-220 Type Chopper Regulator

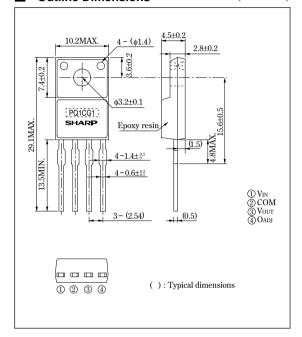
#### Features

- Maximum switching current: 1.5A
- Built-in oscillation circuit (Oscillation frequency: TYP.100kHz)
- Built-in overheat protection, overcurrent protection function
- Variable output voltage (V<sub>ref</sub> to 35V/-V<sub>ref</sub> 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

m	Γ.	O	- 0	2
	a=	= //.:	)	(C)

Parameter	Symbol	Rating	Unit
*1 Input voltage	Vin	40	V
Output adjustment terminal voltage	Vadj	7	V
Dropout voltage	V <sub>i-O</sub>	41	V
*2 Output-COM voltage	Vout	-1	V
Switching current	Isw	1.5	A
*3 Power dissipation	P <sub>D1</sub>	1.4	W
Fower dissipation	P <sub>D2</sub>	14	W
*4 Junction temperature	T <sub>j</sub>	150	°C
Operating temperature	Topr	-20 to +80	°C
Storage temperature	Tstg	-40 to +150	°C
Soldering temperature	Tsol	260(For 10s)	°C

<sup>\*1</sup> Voltage between VIN and COM

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<sup>\*2</sup> Voltage between Vout and COM

<sup>\*3</sup> PD1: No heat sink, PD2: With infinite heat sink

<sup>\*\*4</sup> Overheat protection may operate at 125 <= Tj <= 150°C.

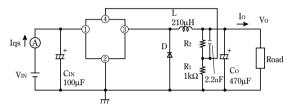
<sup>•</sup> Please refer to the chapter " Handling Precautions ".

### ■ Electrical Characteristics

(Unless otherwise specified, V<sub>IN</sub>=12V, Io=0.2A,Vo=5V, T<sub>a</sub>=25°C)

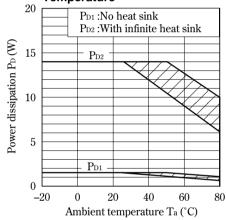
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Output saturation voltage	VSAT	Io=1A, No L, D, Co	_	1	1.5	V
Reference voltage	Vref	_	1.235	1.26	1.285	V
Reference voltage temperature fluctuation	$\Delta V_{ref}$	Tj=0 to 125°C	_	±0.5	_	%
Load regulation	RegL	Io=0.2 to 1A	_	0.1	1.5	%
Line regulation	RegI	V <sub>IN</sub> =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	DMAX	4 terminal=open	90	_	_	%
Overcurrent detection level	IL	No L, D, Co	1.55	2	2.6	A
OFF-state dissipation current	$I_{qs}$	V <sub>IN</sub> =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)

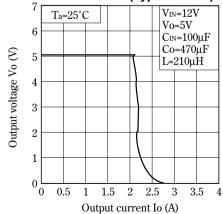


Fig. 4 Efficiency vs. Input Voltage

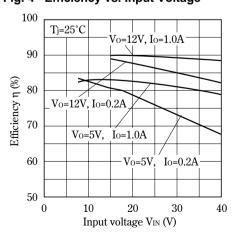


Fig. 5 Switching Current vs. Output Saturation Voltage

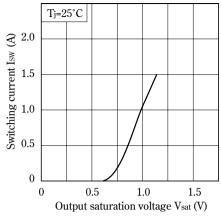


Fig. 7 Load Regulation vs. Output Current

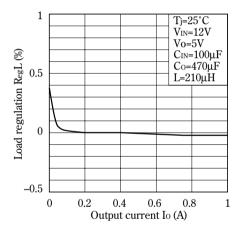


Fig. 9 Oscillation Frequency Fluctuation vs. Junction Temperature

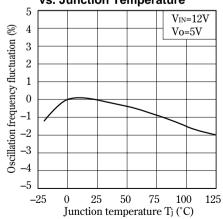


Fig. 6 Reference Voltage Fluctuation vs. Junction Temperature

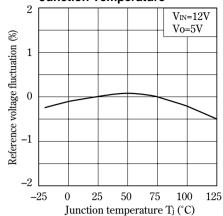


Fig. 8 Line Regulation vs. Input Voltage

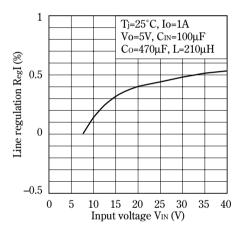


Fig.10 Overcurrent Detecting Level Fluctuation vs. Junction Temperature

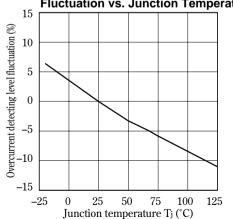
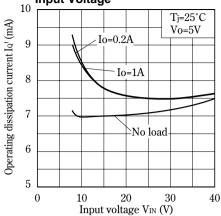
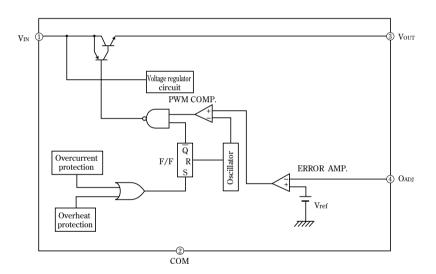


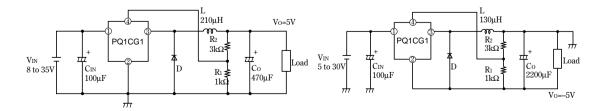
Fig.11 Operating Dissipation Current vs. Input Voltage



# **■** Block Diagram



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



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