PQ1CG41H2FZ/PQ1CG41H2RZ

TO-220 Type Chopper Regulator built-in 300kHz oscillation circuit

■ Features

- Maximum switching current: 1.5A
- Built-in ON/OFF control function
- Built-in soft start function to suppress overshoot of output voltage in power on sequence or ON/OFF control sequence
- Built-in oscillation circuit
  (Oscillation frequency: TYP. 300kHz)
- Built-in overheat, overcurrent protection functions
- TO-220 package
- Variable output voltage
  (Output variable range: V_{ref} to 35V/-V_{ref} to -30V)
  [Possible to select step-down output/inversing output according to external connection circuit]
- PQ1CG41H2FZ: Zigzag forming
  PQ1CG41H2RZ: Self-stand forming

■ Applications

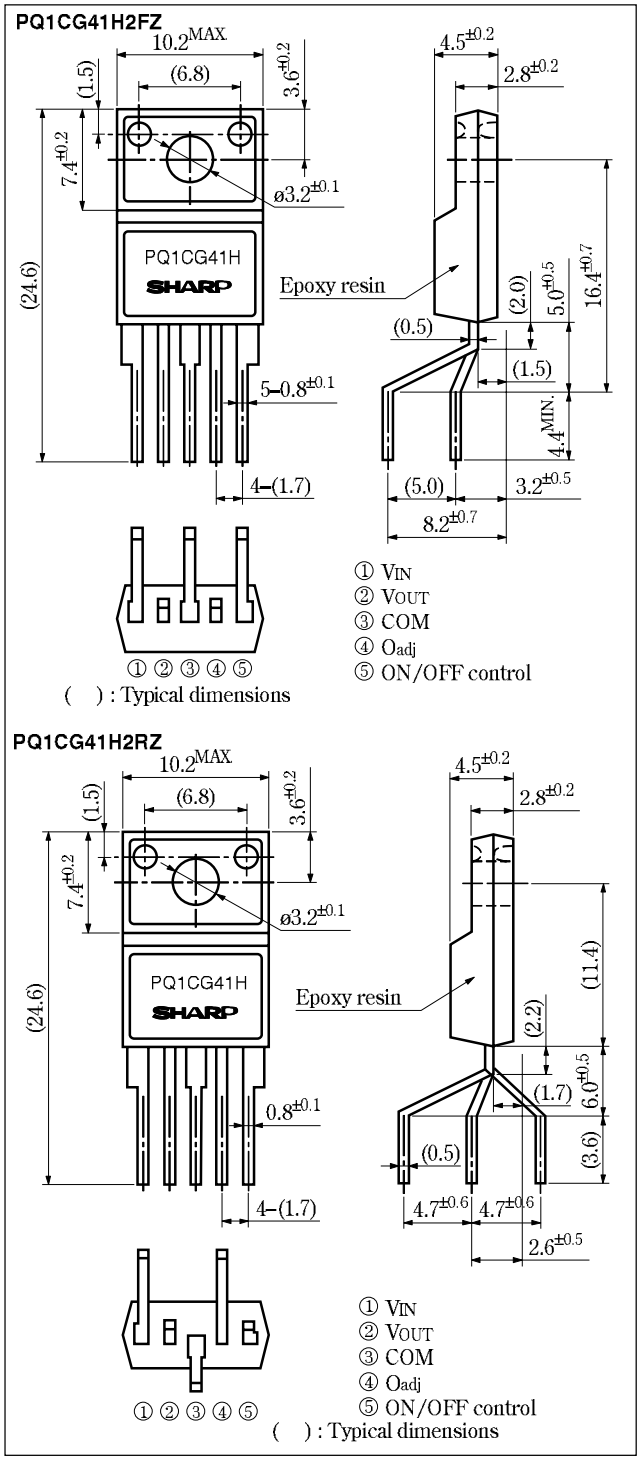
- CTV, CTB
- LCD monitors
- Facsimiles, printers and other OA equipment
- CD-ROM drives/DVD-ROM drives

■ Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Rating	Unit
*1Input voltage	V_{IN}	40	V
Error input voltage	V_{adj}	7	V
Input-output voltage	V_{I-O}	41	V
*2Output – COM voltage	V_{OUT}	−1	V
*3ON/OFF control voltage	V_C	−0.3 to +40	V
Switching current	I_{SW}	1.5	A
*4Power dissipation	P_{D1}	1.4	W
	P_{D2}	14	W
*5Junction 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 (10s)	°C

*1 Voltage between V_{IN} terminal and COM terminal
*2 Voltage between V_{OUT} terminal and COM terminal
*3 Voltage between ON/OFF control and COM terminal
*4 P_D:With infinite heat sink
*5 Overheat protection may operate at the condition T_j:125°C to 150°C.

■ Outline Dimensions (Unit : mm)



• Please refer to the chapter " Handling Precautions ".

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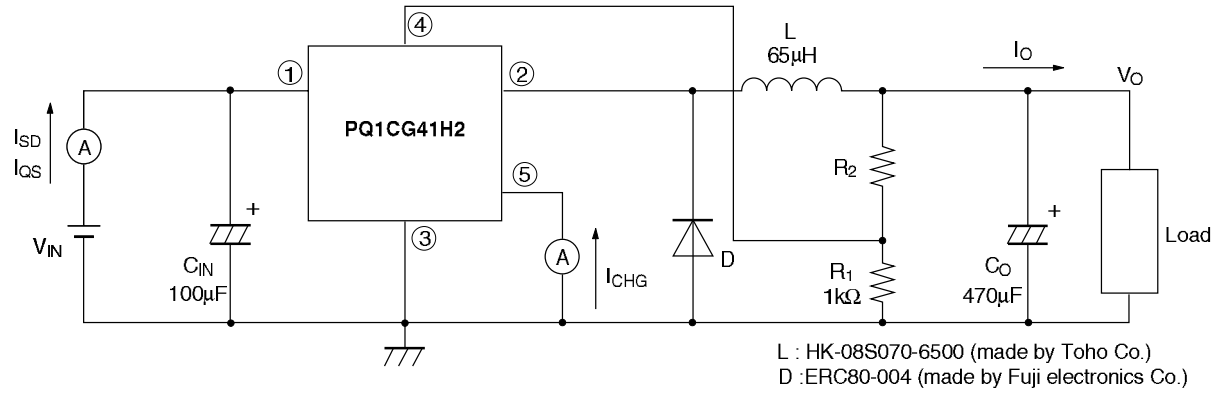
■ Electrical Characteristics

(Unless otherwise specified, condition shall be V_{IN}=12V, I_O=0.2A, V_O=5V, ON-OFF terminals is open, Ta=25°C)

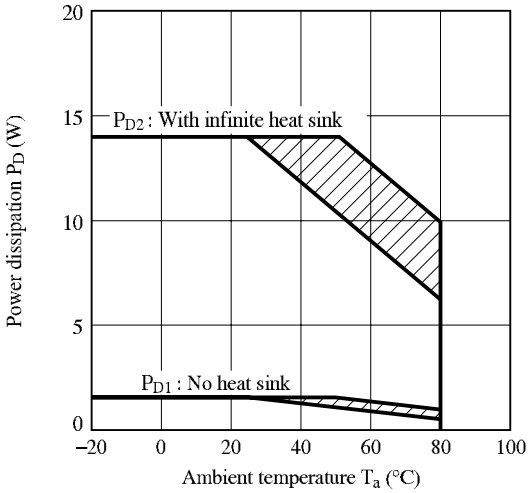
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Output saturation voltage	V_{SAT}	I_{SW}=1A	–	1.0	1.5	V
Reference voltage	V_{ref}	–	1.235	1.26	1.285	V
Reference voltage temperature fluctuation	ΔV_{ref}	T_J=0 to 125°C	–	±0.5	–	%
Load regulation	$\lvert Reg_L \rvert$	I_O=0.2 to 1A	–	0.2	1.5	%
Line regulation	$\lvert Reg_I \rvert$	V_{IN}=8 to 35V	–	0.5	2.5	%
Efficiency	η	I_O=1A	–	83	–	%
Oscillation frequency	f_O	–	270	300	330	kHz
Oscillation frequency temperature fluctuation	Δf_O	T_J=0 to 125°C	–	±3	–	%
Overcurrent detecting level	I_L	–	1.55	2.0	2.6	A
Charge current	I_{CHG}	②, ④ terminals is open, ⑤ terminal	–	−10	–	µA
Input threshold voltage	V_{THL}	Duty ratio=0%, ④ terminal=0V, ⑤ terminal	–	1.3	–	V
	V_{THH}	Duty ratio=100%, ④terminals=1.1V, ⑤terminal	–	2.3	–	V
ON threshold voltage	$V_{TH(ON)}$	④ terminal=0V, ⑤ terminal	0.7	0.8	0.9	V
Stand-by current	I_{SD}	V_{IN}=40V, ⑤ terminal=0V	–	140	400	µA
Output OFF-state dissipation current	I_{QS}	V_{IN}=40V, ④terminal=0V, ⑤terminal=0.9V	–	8	12	mA

Fig.1 Test Circuit



L : HK-08S070-6500 (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 Block Diagram

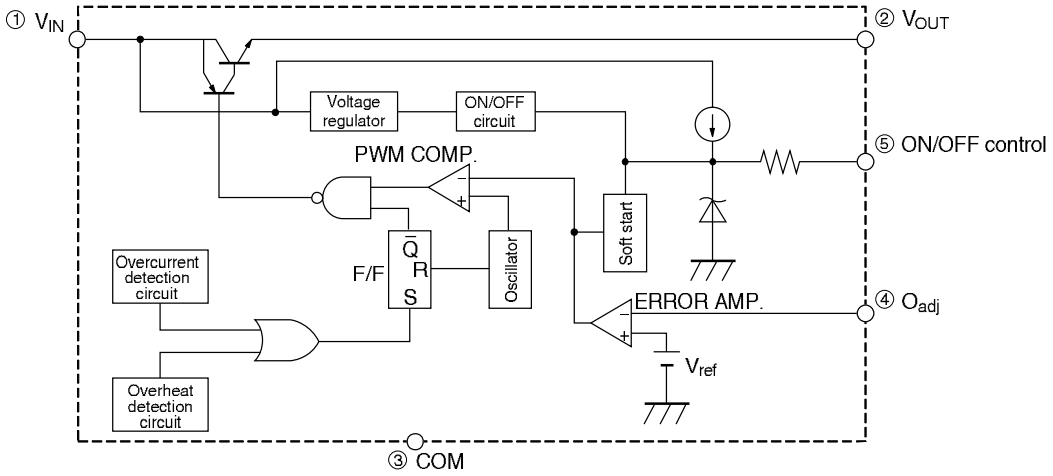


Fig.4 Step Down Type Circuit Diagram

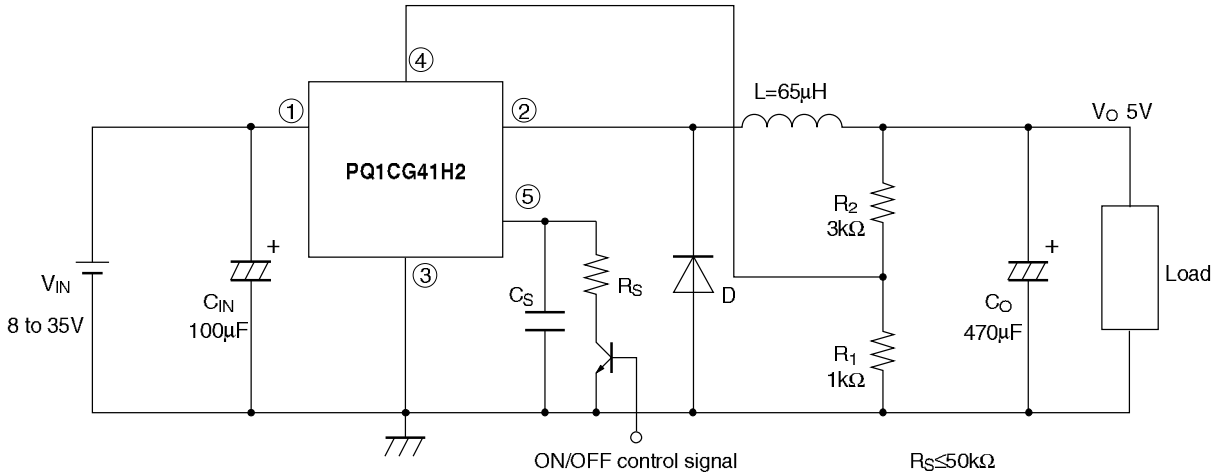
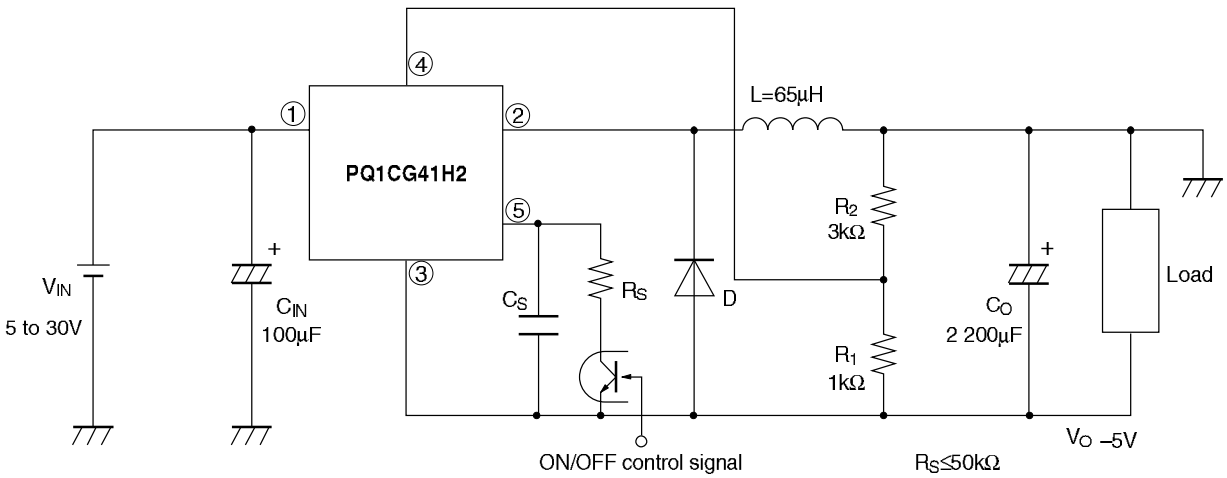


Fig.5 Polarity Inversion Type Circuit Diagram



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  (i) The devices in this publication are designed for use in general electronic equipment designs such as:
  --- Personal computers
  --- Office automation equipment
  --- Telecommunication equipment [terminal]
  --- Test and measurement equipment
  --- Industrial control
  --- Audio visual equipment
  --- Consumer electronics

  (ii) Measures such as fail-safe function and redundant design should be taken to ensure reliability and safety when SHARP devices are used for or in connection with equipment that requires higher reliability such as:
  --- Transportation control and safety equipment (i.e., aircraft, trains, automobiles, etc.)
  --- Traffic signals
  --- Gas leakage sensor breakers
  --- Alarm equipment
  --- Various safety devices, etc.

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  --- Space applications
  --- Telecommunication equipment [trunk lines]
  --- Nuclear power control equipment
  --- Medical and other life support equipment (e.g., scuba).

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