PQ1CZ21H2Z

Low Dissipation Current at OFF-state Chopper Regulator

■ Features

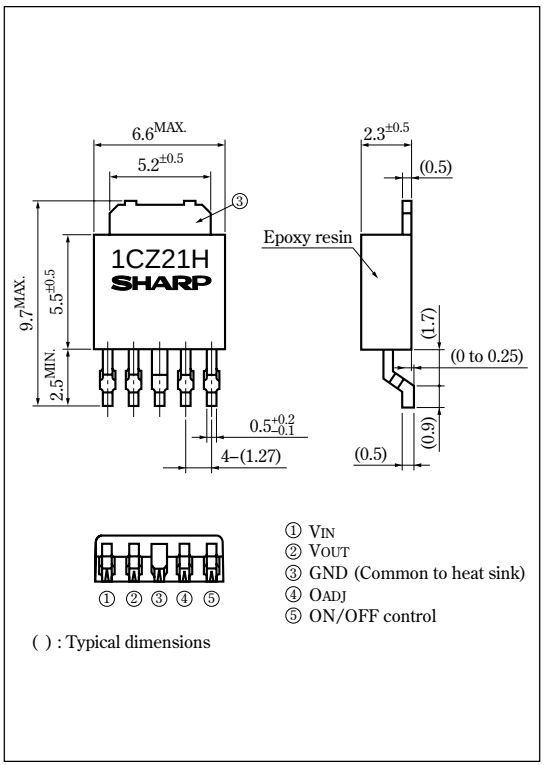
- Maximum switching current: 1.5A
- Low dissipation current at OFF-state (I_{qs}: Max. 1mA)
- Built-in oscillation circuit
  (Oscillation frequency: TYP. 100kHz)
- Built-in overheat, overcurrent protection functions
- Variable output voltage
  (Output variable range: V_{ref} to 35V/–V_{ref} to –30V)
  [Possible to select step-down output/inversing output according to external connection circuit]
- PQ1CZ21H2ZZ: sleeve-packaged product
  PQ1CZ21H2ZP: tape-packaged product

■ Applications

- Facsimiles
- Printers
- Switching power supplies

■ 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	I_{SW}	1.5	A
※4 Power dissipation	P_D	8	W
※5 Junction temperature	T_j	150	˚C
Operating temperature	T_{opr}	–40 to +85	˚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 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

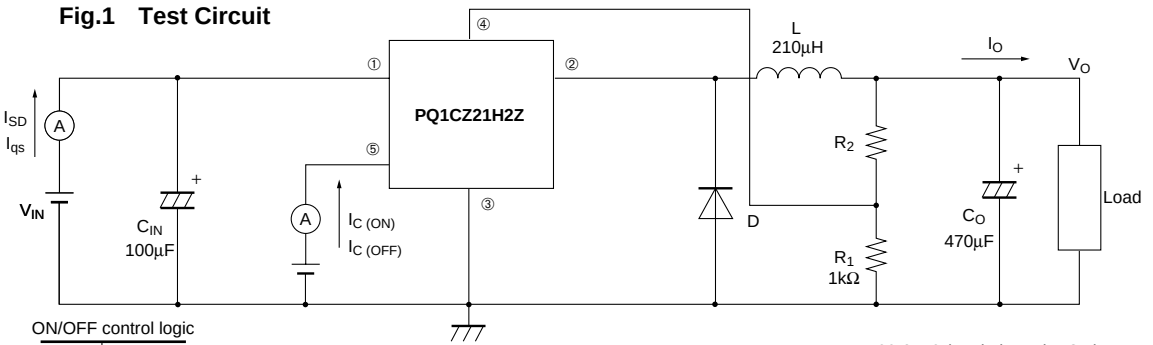
•Please refer to the chapter " Handling Precautions ".

■ Electrical Characteristics

(Unless otherwise specified, condition shall be V_{IN}=12V, I_O=0.2A, V_O=5V, ON-OFF terminal=2.7V, Ta=25˚C)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Output saturation voltage	V_{SAT}	I_{SW}=1A	–	0.9	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	$\|Reg_L\|$	I_O=0.2 to 1A	–	0.1	1.5	%
Line regulation	$\|Reg_I\|$	V_{IN}=8 to 35V	–	0.5	2.5	%
Efficiency	η	I_O=1A	–	82	–	%
Oscillation frequency	f_O	–	80	100	120	kHz
Oscillation frequency temperature fluctuation	Δf_O	T_j=0 to 125˚C	–	±3	–	%
Overcurrent detecting level	I_L	No L, C, D	1.55	2	2.6	A
ON threshold voltage	$V_{TH(ON)}$	④ terminal=0V, ⑤ terminal	0.8	1.5	2	V
ON-state current for control	$I_{C(ON)}$	⑤ terminal=2.7V	–	–	200	µA
OFF-state current for control	$I_{C(OFF)}$	⑤ terminal=0.4V	–	–	2	µA
Stand-by current	I_{SD}	V_{IN}=40V, ⑤ terminal=0V	–	–	1	µA
Output OFF-state dissipation current	I_{qs}	V_{IN}=40V, ④ terminal=3V	–	8	12	mA

Fig.1 Test Circuit

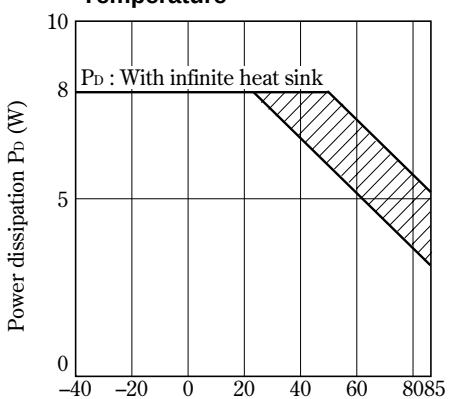


ON/OFF control logic

5 pin	Output
LOW	OFF
HIGH	ON
OPEN	OFF

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)

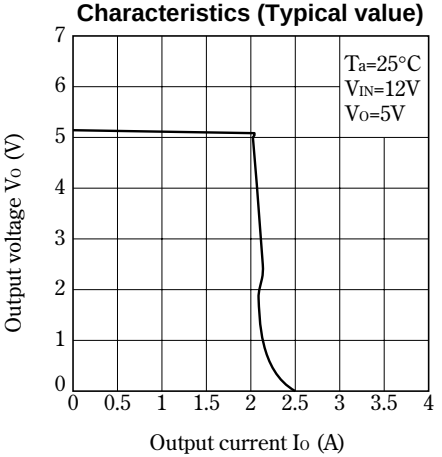


Fig.4 Efficiency vs. Input Voltage

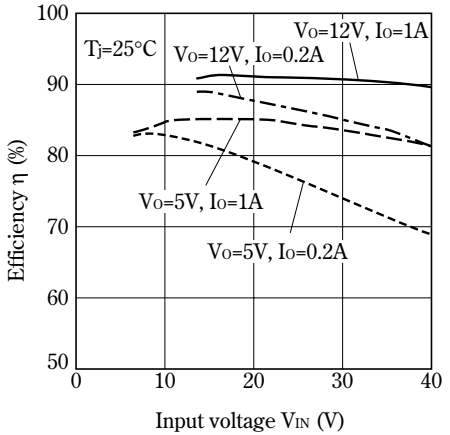


Fig.5 Output Saturation Voltage vs. Switching Current

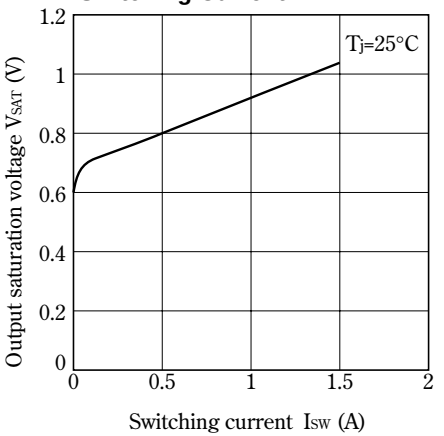


Fig.6 Reference Voltage Fluctuation vs. Junction Temperature

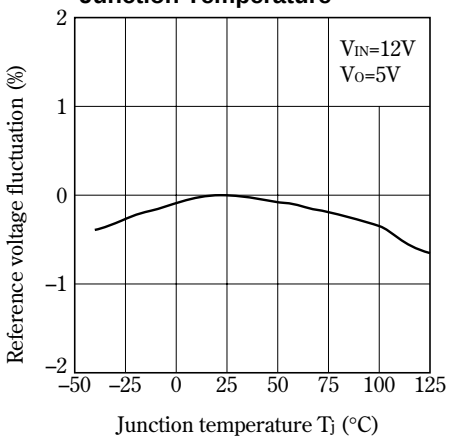


Fig.7 Load Regulation vs. Output Current

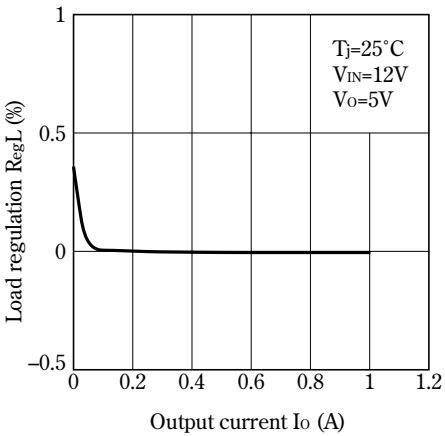


Fig.8 Line Regulation vs. Input Voltage

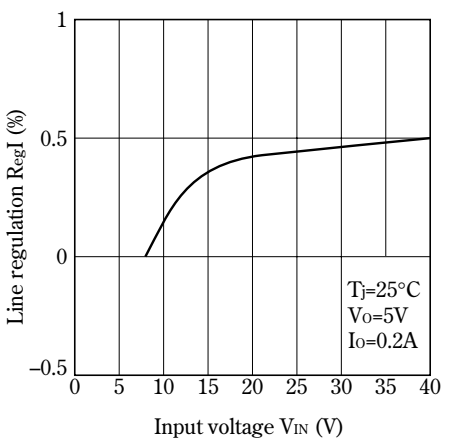


Fig.9 Oscillation Frequency Fluctuation vs. Junction Temperature

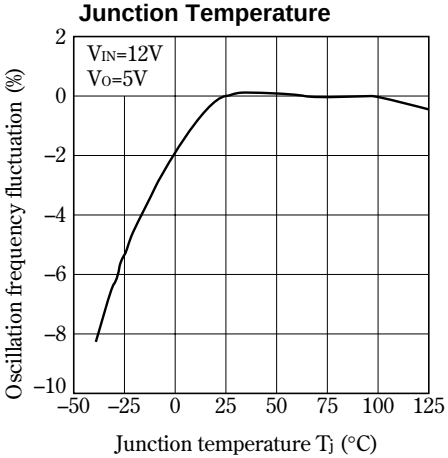


Fig.10 Overcurrent Detecting Level Fluctuation vs. Junction Temperature

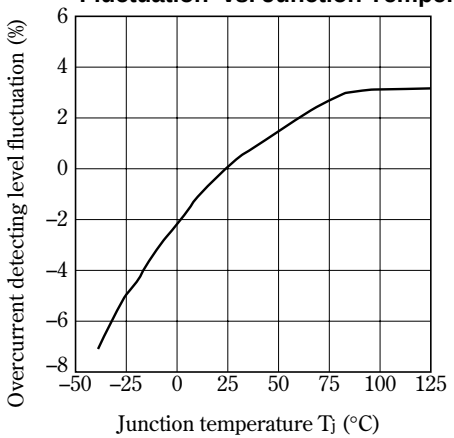


Fig.11 ON Threshold Voltage vs. Junction Temperature

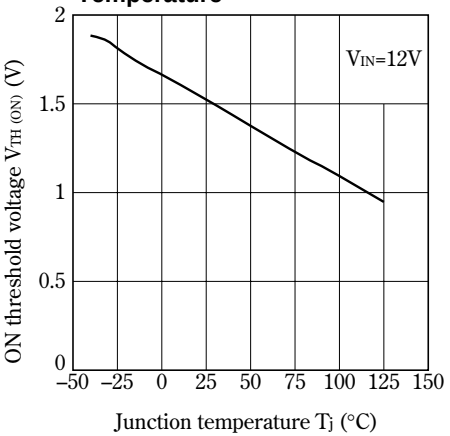


Fig.12 Operating Dissipation Current vs. Input Voltage

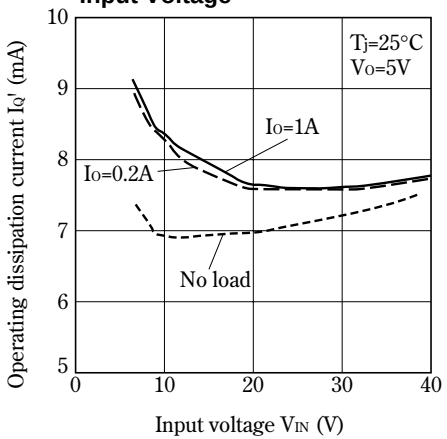
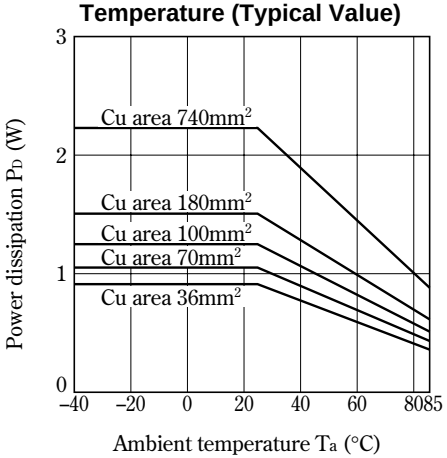
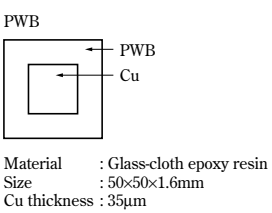


Fig.13 Power Dissipation vs. Ambient Temperature (Typical Value)





Material : Glass-cloth epoxy resin
Size : 50×50×1.6mm
Cu thickness : 35µm

Fig.14 Block Diagram

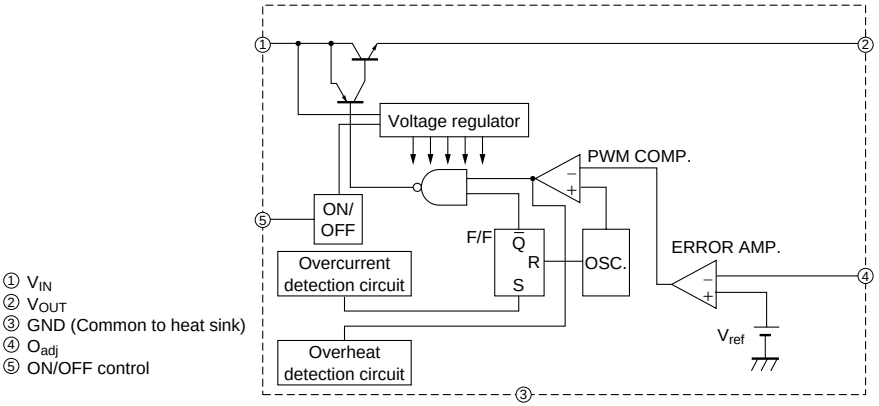


Fig.15 Step Down Type Circuit Diagram (5V output)

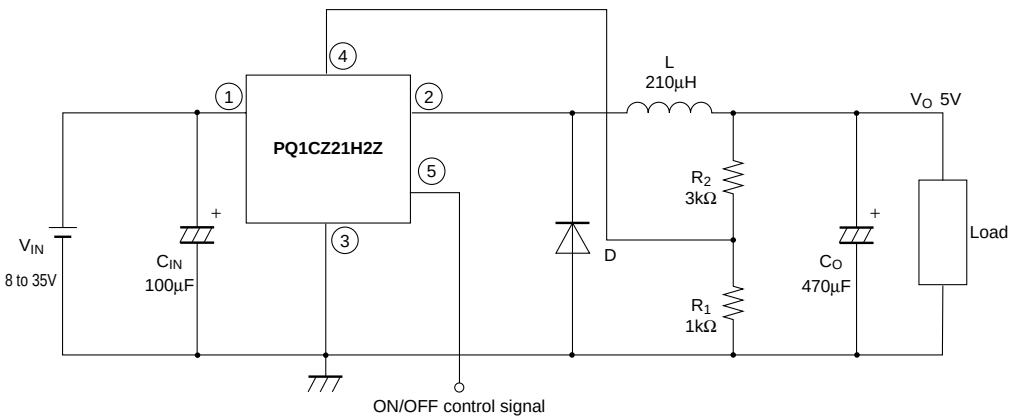
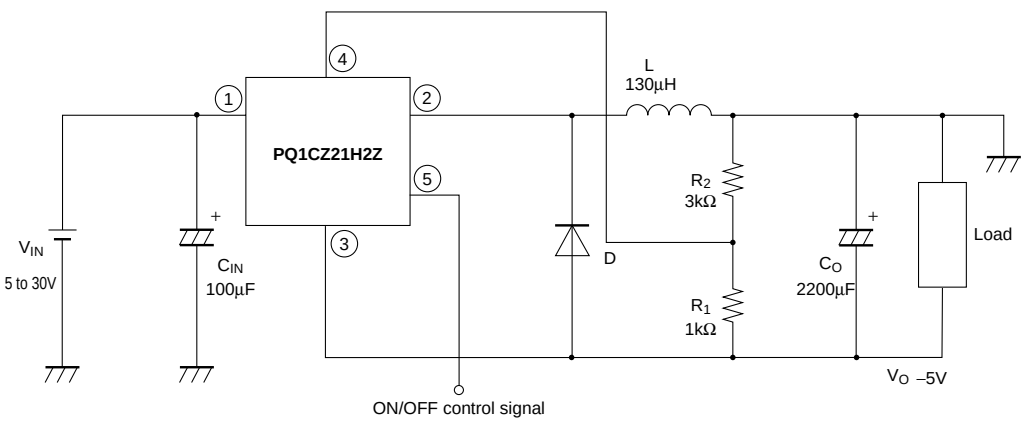


Fig.16 Polarity Inversion Type Circuit Diagram (-5V output)



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  --- Office automation equipment
  --- Telecommunication equipment [terminal]
  --- Test and measurement equipment
  --- Industrial control
  --- Audio visual equipment
  --- Consumer electronics

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  --- Traffic signals
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  --- Alarm equipment
  --- Various safety devices, etc.

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