

# PQ1CZ41H2Z

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 protection function, overcurrent protection function
- SC-63 Surface Mount Type package
- Variable output voltage  
(Output variable range:  $V_{ref}$  to  $35V$  /  $-V_{ref}$  to  $-30V$ )  
[Possible to select step-down output/inverting output according to external connection circuit]

## ■ Applications

- Color TV, STB
- LCD monitors
- Facsimiles, plinters and other OA equipment
- CD-ROM drives/DVD-ROM drives
- Air conditioners

## ■ Absolute Maximum Ratings

( $T_a=25^{\circ}\text{C}$ )

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
Switching current	$I_{SW}$	1.5	A
*2 Voltage between output and COM	$V_{OUT}$	-1	V
*3 ON/OFF control voltage	$V_C$	-0.3 to 40	V
*4 Power dissipation	$P_D$	8	W
*5 Junction temperature	$T_J$	150	$^{\circ}\text{C}$
Operating temperature	$T_{opr}$	-20 to +80	$^{\circ}\text{C}$
Storage temperature	$T_{stg}$	-40 to +150	$^{\circ}\text{C}$
Soldering temperature	$T_{sol}$	260 (10s)	$^{\circ}\text{C}$

\*1 Voltage between  $V_{IN}$  terminal and COM terminal

\*2 Voltage between  $V_{OUT}$  terminal and COM terminal

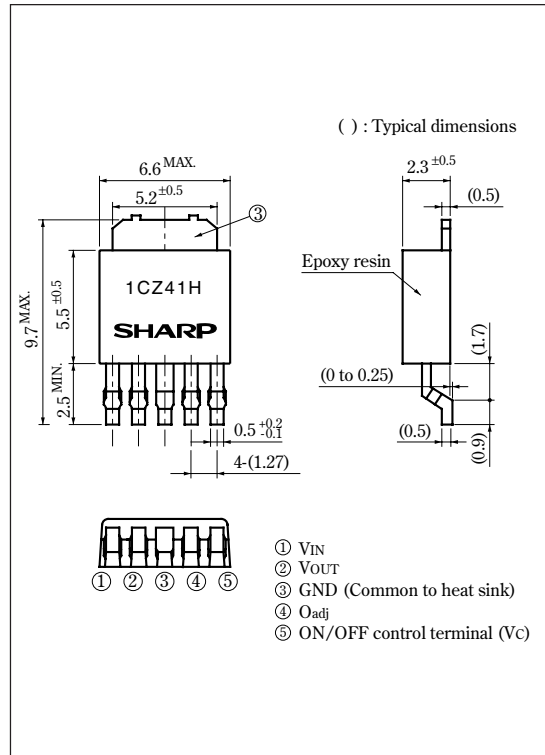
\*3 Voltage between ON/OFF control and COM terminal

\*4  $P_D$  : With infinite heat sink.

\*5 Overheat protection may operate at  $T_J=125^{\circ}\text{C}$  to  $150^{\circ}\text{C}$

## ■ Outline Dimensions

(Unit : mm)



•Please refer to the chapter " Handling Precautions ".

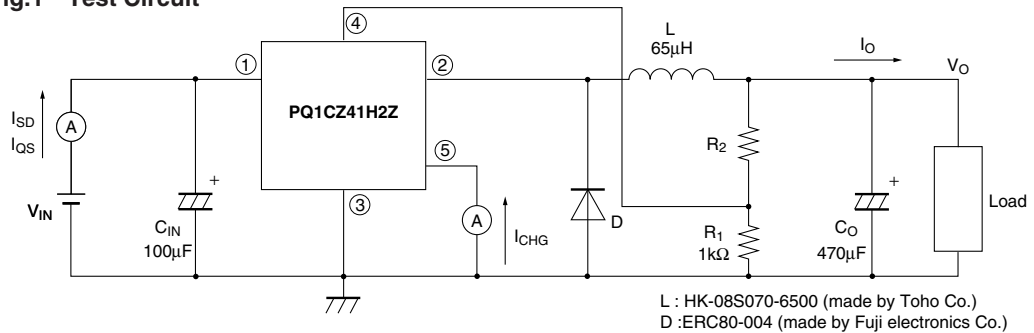
**SHARP**

**Electrical Characteristics**

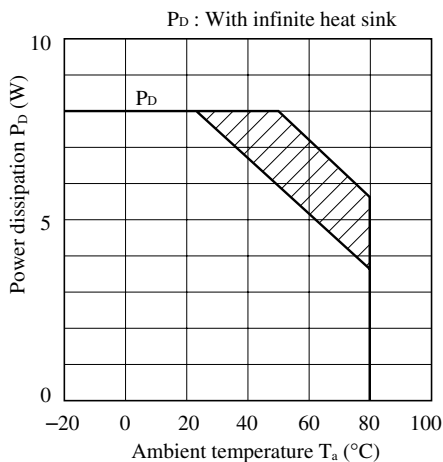
(Unless otherwise specified, condition shall be  $V_{IN}=12V$ ,  $I_o=0.2A$ ,  $V_o=5V$ , ON-OFF terminals is open,  $T_a=25^\circ C$ )

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	$\Delta V_{ref}$	$T_j=0$ to $125^\circ C$	-	$\pm 0.5$	-	%
Load regulation	$ R_{egL} $	$I_o=0.2$ to $1A$	-	0.2	1.5	%
Line regulation	$ R_{egI} $	$V_{IN}=8$ to $35V$	-	1.2	2.5	%
Efficiency	$\eta$	$I_o=1A$	-	84	-	%
Oscillation frequency	$f_o$	-	270	300	330	kHz
Oscillation frequency temperature fluctuation	$\Delta f_o$	$T_j=0$ to $125^\circ C$	-	$\pm 3$	-	%
Overcurrent detecting level	$I_L$	-	1.55	2.0	2.6	A
Charge current	$I_{CHG}$	②,④ terminals is open,⑤ terminal	-	-10	-	$\mu A$
Input threshold voltage	$V_{THL}$	Duty ratio=0%,④ terminal=0V,⑤ terminal	-	1.3	-	V
	$V_{THH}$	Duty ratio=100%,④ terminal=1.1V,⑤ terminal	-	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	$\mu A$
Output OFF-state dissipation current	$I_{QS}$	$V_{IN}=40V$ ,④ terminal=0V,⑤ terminal=0.9V	-	8	12	mA

**Fig.1 Test Circuit**



**Fig.2 Power Dissipation vs. Ambient Temperature**



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

Fig.3 Block Diagram

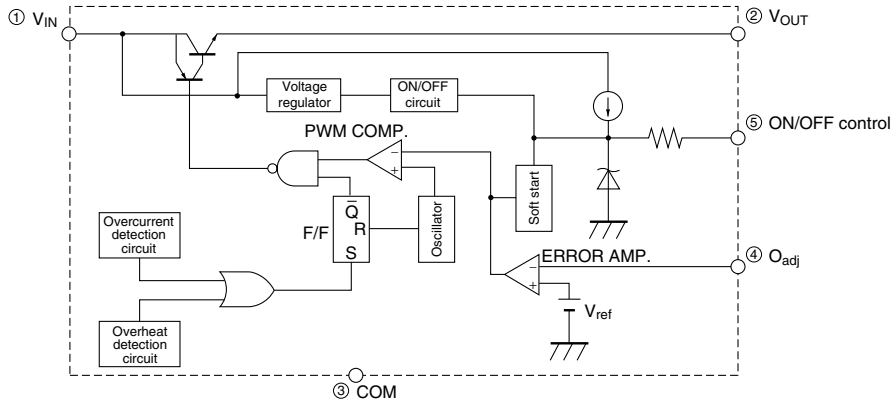


Fig.4 Step Down Type Circuit Diagram

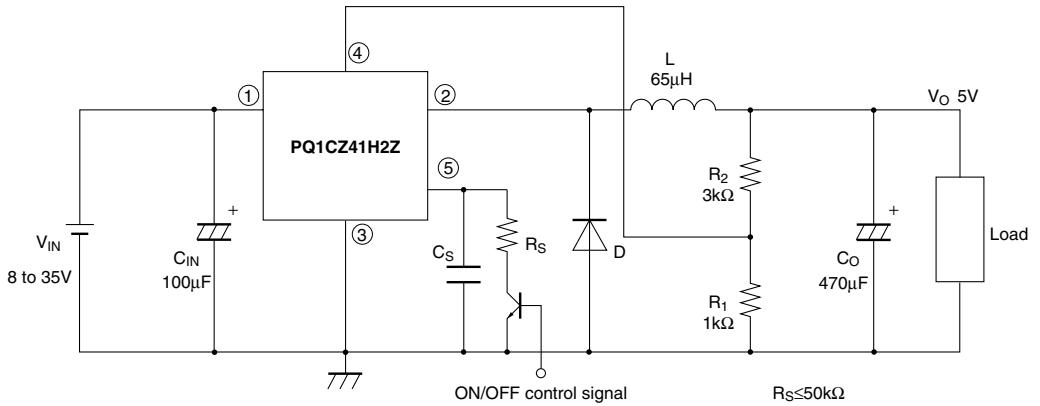
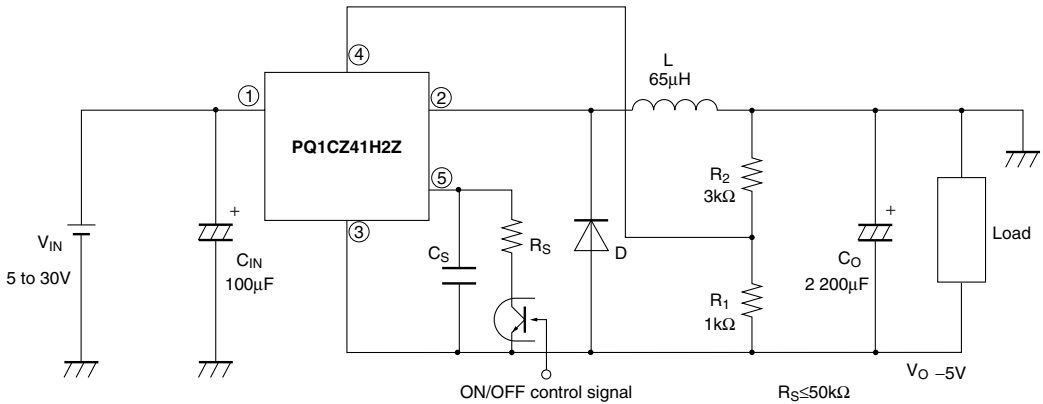


Fig.5 Polarity Inversion Type Circuit Diagram



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