PQxxxEH02Z Series

Low Voltage Operation Low Power-Loss Voltage Regulators

Features

- Low voltage operation (Minimum operating voltage: 2.35V)
  2.5V input → available 1.5 to 1.8V output
- Large output current type (I_O: 2A)
- Low dissipation current
  (Quiescent current: MAX. 2mA
  Output OFF-state dissipation current: MAX. 5μA)
- Low power-loss
- Built-in overcurrent and overheat protection functions
- TO-263 surface mount package

Applications

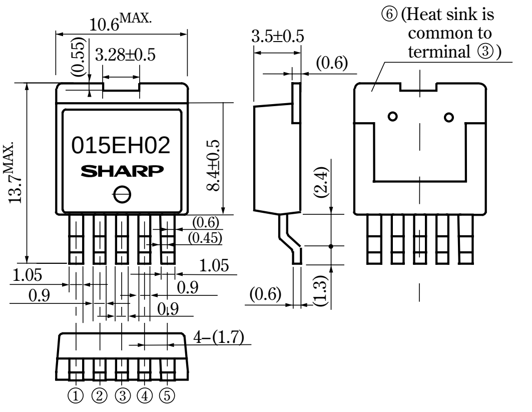
- Personal computers and peripheral equipment
- Power supplies for various digital electronic equipment such as DVD player or STB
- Power supplies for automotive equipment such as car navigation system

Model Line-up

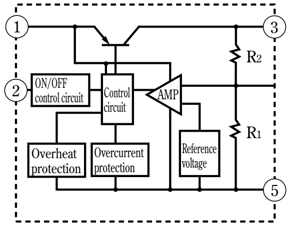
Output current(I_O)	Package type	Output voltage(V_O) 1.5V	1.8V	2.5V
2A	Taping	PQ015EH02ZP	PQ018EH02ZP	PQ025EH02ZP
	Sleeve	PQ015EH02ZZ	PQ018EH02ZZ	PQ025EH02ZZ

Outline Dimensions

(Unit : mm)



① DC input (V_{IN})
② ON/OFF control terminal (V_C)
③ DC output (V_O)
④ NC
⑤ GND
⑥ DC output (V_O)



Absolute Maximum Ratings

(T_a=25°C)

	Parameter	Symbol	Rating	Unit
※1	Input voltage	V_{IN}	10	V
※1	ON/OFF control terminal voltage	V_C	10	V
	Output current	I_O	2	A
※2	Power dissipation	P_D	35	W
※3	Junction temperature	T_j	150	°C
	Operating temperature	T_{opr}	-40to +85	°C
	Storage temperature	T_{stg}	-40to +150	°C
	Soldering temperature	T_{sol}	260(10s)	°C

※1 All are open except GND and applicable terminals
※2 P_D:With infinite heat sink
※3 Overheat protection may operate at 125 <=T_j<=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, condition shall be V_{IN}=V_O(TYP.)+1V, I_O=1A,V_C=2.7V,T_a=25°C)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Input voltage	V_{IN}	–	Refer to the table below			V
Output voltage	V_O	–	Refer to the table below			V
Load regulation	$R_{eg}L$	I_O=5mA to 2A	–	0.2	2.0	%
Line regulation	$R_{eg}I$	V_{IN}=V_O(TYP.)+1V to V_O(TYP.)+6V, I_O=5mA	–	0.1	1.0	%
Temperature coefficient of output voltage	T_CV_O	I_O=5mA, T_j=0 to 125°C	–	±0.01	–	%/°C
Ripple rejection	RR	Refer to Fig.2	45	60	–	dB
※4 ON-state voltage for control	$V_{C(ON)}$	–	2.0	–	–	V
ON-state current for control	$I_{C(ON)}$	–	–	–	200	μA
OFF-state voltage for control	$V_{C(OFF)}$	I_O=0A	–	–	0.8	V
OFF-state current for control	$I_{C(OFF)}$	I_O=0A, V_C=0.4V	–	–	2	μA
Quiescent current	I_q	I_O=0A	–	1	2	mA
Output OFF-state dissipation current	I_{qs}	I_O=0A, V_C=0.4V	–	–	5	μA

※4 In case of opening control terminal ②, output voltage turns off.

Input Voltage Line-up

Model No.	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
PQ015EH02Z	V_{IN}	I_O=1A,V_C=2.7V,T_a=25°C	2.35	–	10	V
PQ018EH02Z			2.35	–	10	
PQ025EH02Z			3.0	–	10	

Output Voltage Line-up

Model No.	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
PQ015EH02Z	V_O	V_{IN}=V_O(TYP.)+1V, I_O=1A,V_C=2.7V,T_a=25°C	1.45	1.5	1.55	V
PQ018EH02Z			1.75	1.8	1.85	
PQ025EH02Z			2.438	2.5	2.562	

Fig.1 Test Circuit

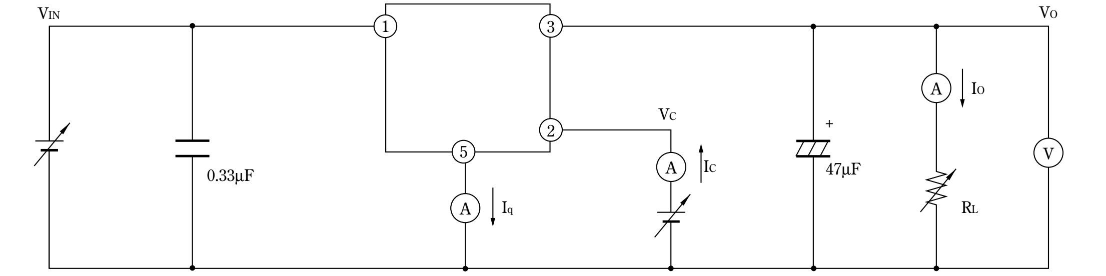
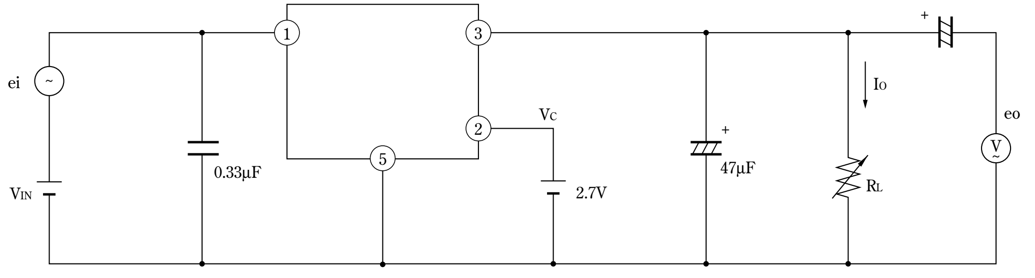
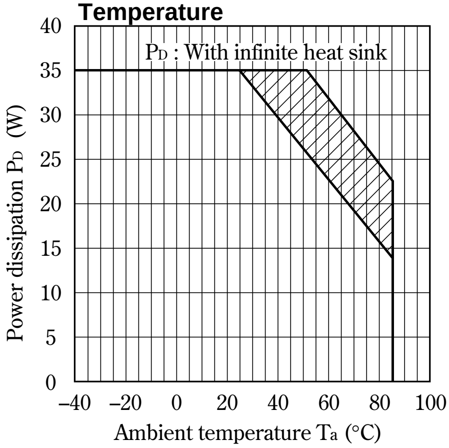


Fig.2 Test circuit of Ripple Rejection



f=120Hz(sine wave)
$e_{i(rms)}$=0.5V
V_{IN}=V_O(TYP)+2V
I_O=0.3A
RR=20log($e_{i(rms)}$/$e_{o(rms)}$)

Fig.3 Power Dissipation vs. Ambient Temperature



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

Fig.4 Overcurrent Protection Characteristics (PQ015EH02Z)

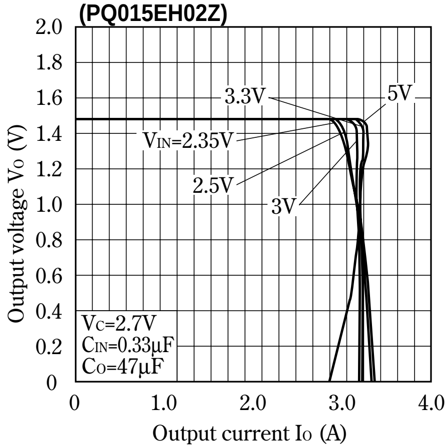


Fig.5 Overcurrent Protection Characteristics (PQ018EH02Z)

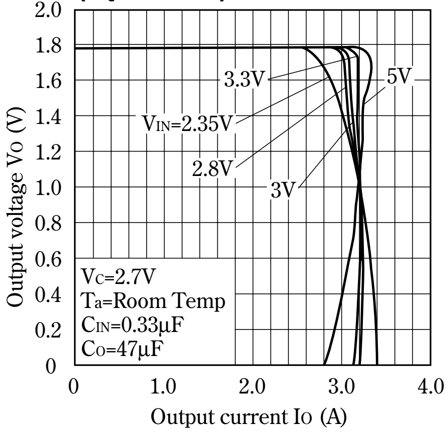


Fig.6 Overcurrent Protection Characteristics (PQ025EH02Z)

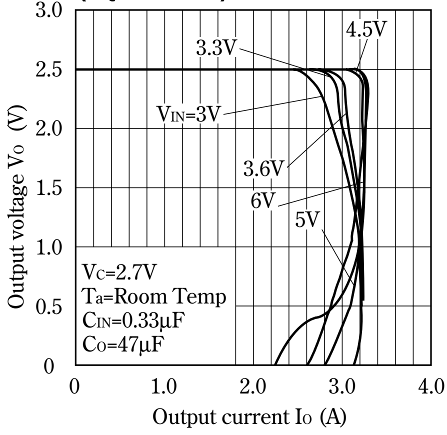


Fig.7 Output Voltage Fluctuation vs. Junction Temperature (PQ015EH02Z)

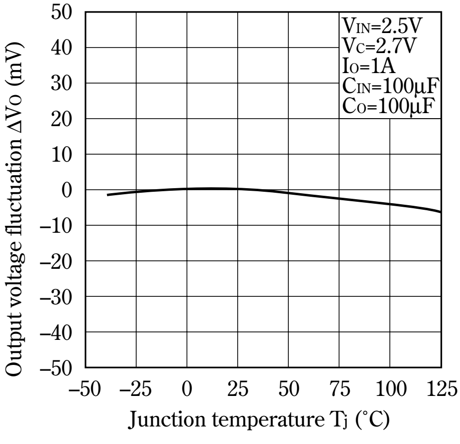


Fig.8 Output Voltage Fluctuation vs. Junction Temperature (PQ018EH02Z)

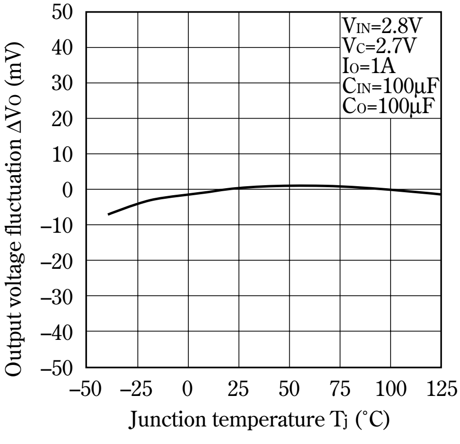


Fig.9 Output Voltage Fluctuation vs. Junction Temperature (PQ025EH02Z)

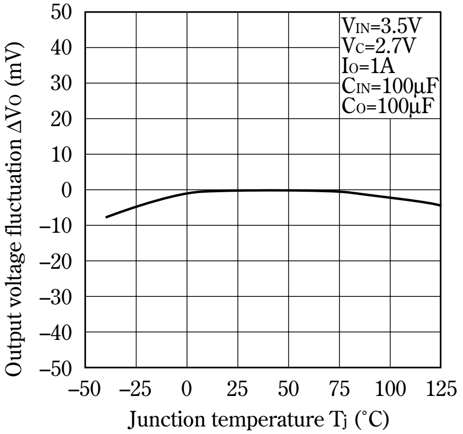


Fig.10 Output Voltage vs. Input Voltage (PQ015EH02Z)

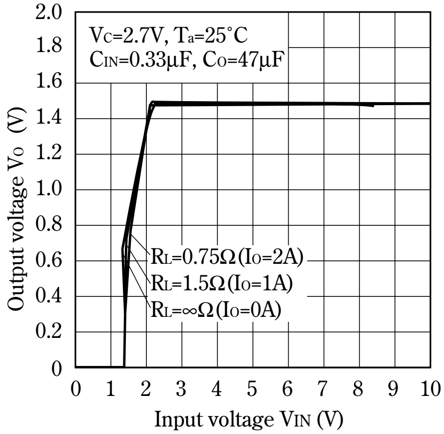


Fig.11 Output Voltage vs. Input Voltage (PQ018EH02Z)

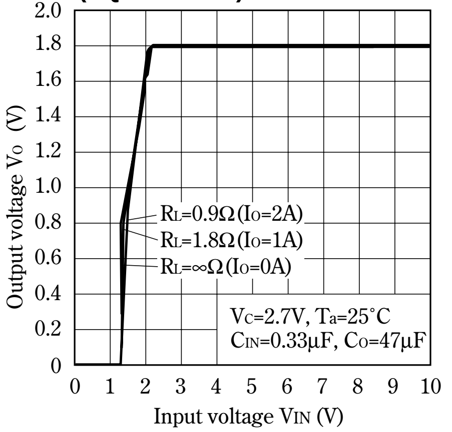


Fig.12 Output Voltage vs. Input Voltage (PQ025EH02Z)

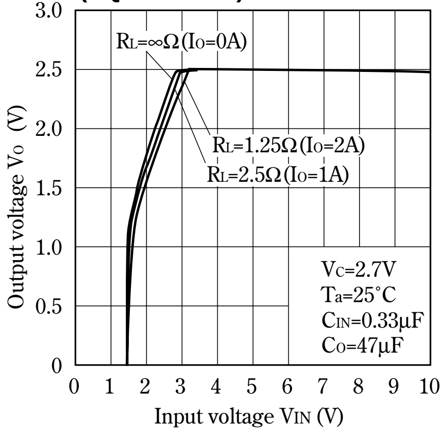


Fig.13 Circuit Operating Current vs. Input Voltage (PQ015EH02Z)

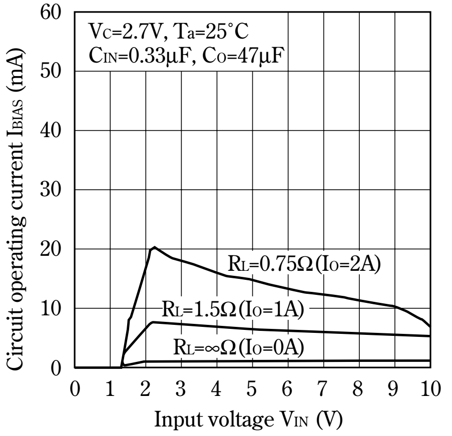


Fig.14 Circuit Operating Current vs. Input Voltage (PQ018EH02Z)

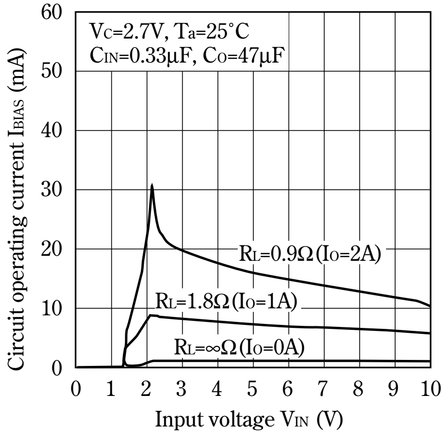


Fig.15 Circuit Operating Current vs. Input Voltage (PQ025EH02Z)

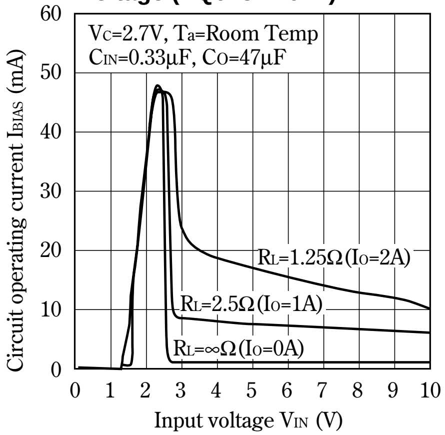


Fig.16 Quiescent Current vs. Junction Temperature

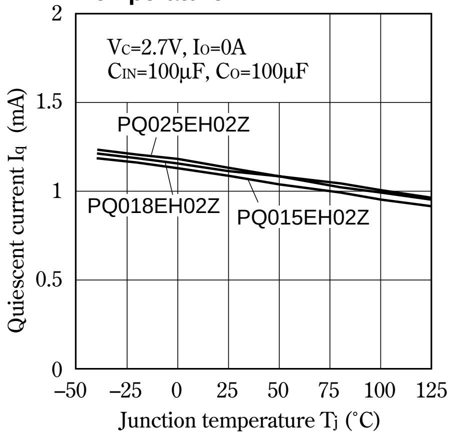


Fig.17 ON-OFF Control Voltage vs. Junction Temperature

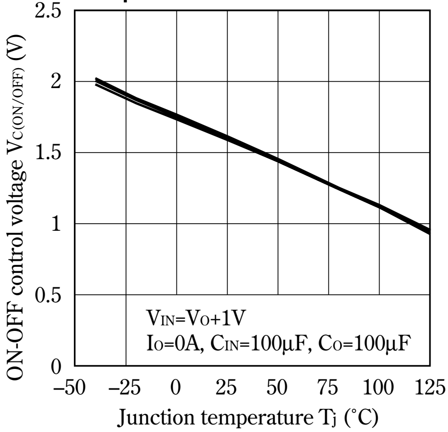


Fig.18 Ripple Rejection vs. Input Ripple Frequency

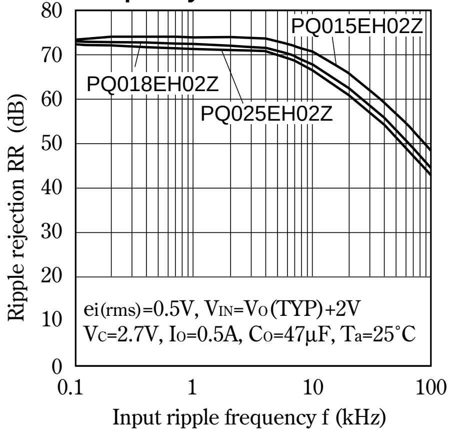


Fig.19 Ripple Rejection vs. Output Current

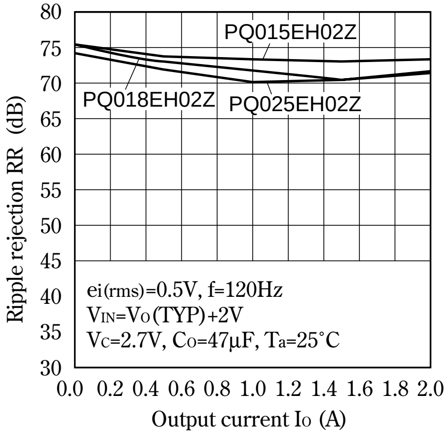
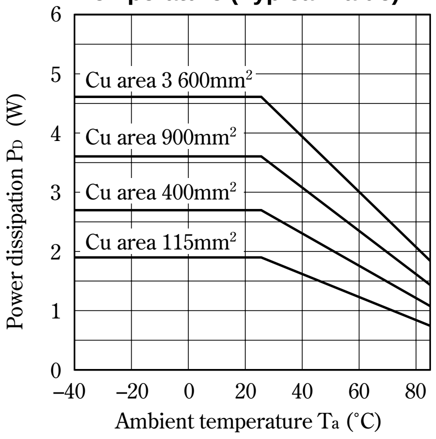
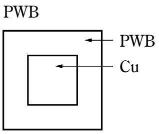


Fig.20 Power Dissipation vs. Ambient Temperature (Typical Value)





Material : Glass-cloth epoxy resin
Size : 60×60×1.6mm
Cu thickness : 65μm

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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
  --- Gas leakage sensor breakers
  --- Alarm equipment
  --- Various safety devices, etc.

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  --- Telecommunication equipment [trunk lines]
  --- Nuclear power control equipment
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