PQxxxEH01Z 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: 1A)
- Low dissipation current
  (Dissipation current at no load: MAX. 2mA
  Output OFF-state dissipation current: MAX.5μA)
- Low power-loss
- Built-in overcurrent and overheat protection functions
- TO-263 package

■ Applications

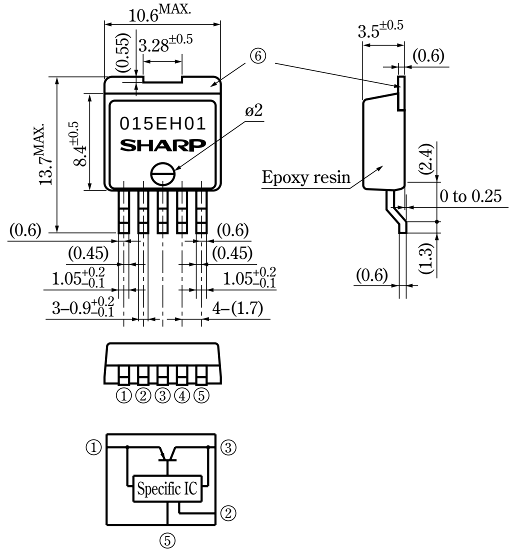
- Peripheral equipment of personal computers
- Power supplies for various electronic equipment such as DVD player or STB

■ Model Line-up

Output current (I_O)	Package type	Output voltage (V_O)		
		1.5V	1.8V	2.5V
1A	Taping	PQ015EH01ZP	PQ018EH01ZP	PQ025EH01ZP
	Sleeve	PQ015EH01ZZ	PQ018EH01ZZ	PQ025EH01ZZ

■ 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)

( ) : Typical dimensions

■ Absolute Maximum Ratings

(Ta=25°C)

Parameter	Symbol	Rating	Unit
Input voltage	V_{IN}	10	V
※1 ON/OFF control terminal voltage	V_C	10	V
Output current	I_O	1	A
※2 Power dissipation	P_D	35	W
※3 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 (10s)	˚C

※1 All are open except GND and applicable terminals.
※2 P_D:With infinite heat sink
※3 Overheat protection may operate at T_j=125˚C to 150˚C.

• Please refer to the chapter " Handling Precautions ".

Electrical Characteristics

(Unless otherwise specified, condition shall be $V_{IN}=V_O(TYP)+1V$, $I_O=0.5A$, $V_C=2.7V$, Ta=25˚C)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Input voltage	V_{IN}	–	Refer to below table			V
Output voltage	V_O	–	Refer to below table			V
Load regulation	$R_{eg}L$	I_O=5mA to 1A	–	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	T_j=0 to 125˚C, I_O=5mA	–	±0.01	–	%/˚C
Ripple rejection	RR	Refer to Fig.2	45	60	–	dB
※4 ON-state voltage for control	$V_{C\,(ON)}$	–	2	–	–	V
ON-state current for control	$I_{C\,(ON)}$	–	–	–	200	µA
OFF-state voltage for control	$V_{C\,(OFF)}$	–	–	–	0.8	V
OFF-state current for control	$I_{C\,(OFF)}$	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
PQ015EH01Z	V_{IN}	I_O=0.5A, V_C=2.7V, Ta=25˚C	2.35	–	10	V
PQ018EH01Z	V_{IN}		2.35	–	10	V
PQ025EH01Z	V_{IN}		3	–	10	V

Output Voltage Line-up

Model No.	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
PQ015EH01Z	V_O	$V_{IN}=V_O(TYP)+1V$, I_O=0.5A, V_C=2.7A, Ta=25˚C	1.45	1.5	1.55	V
PQ018EH01Z	V_O		1.75	1.8	1.85	V
PQ025EH01Z	V_O		2.438	2.5	2.562	V

Fig.1 Test Circuit

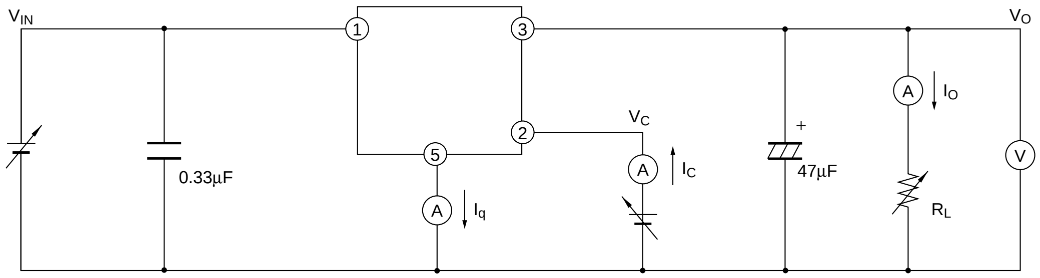
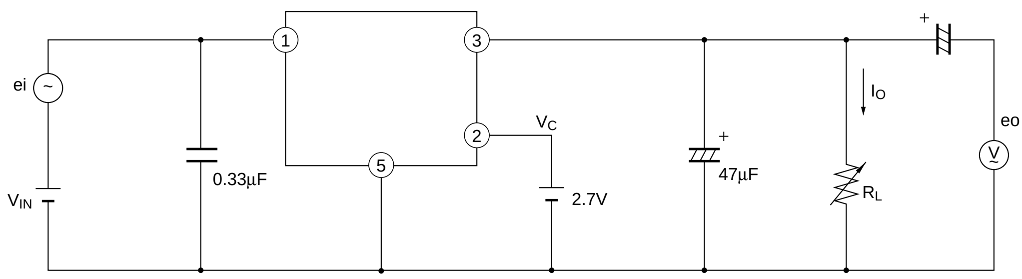
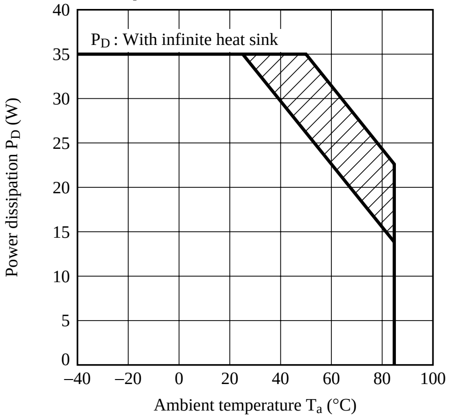


Fig.2 Test Circuit for Ripple Rejection



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

Fig.3 Power Dissipation vs. Ambient Temperature



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

Fig.4 Overcurrent Protection Characteristics (Typical Value, PQ015EH01Z)

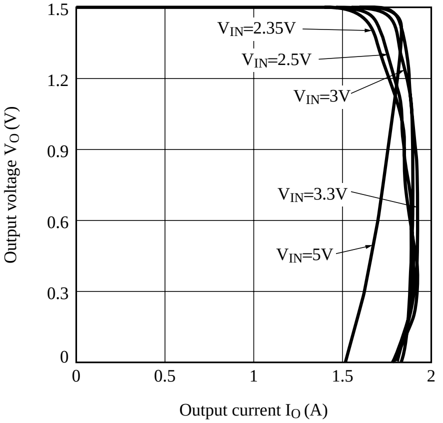


Fig.5 Overcurrent Protection Characteristics (Typical Value, PQ018EH01Z)

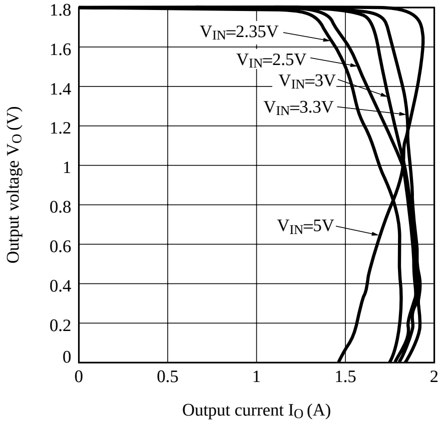


Fig.6 Overcurrent Protection Characteristics (Typical Value, PQ025EH01Z)

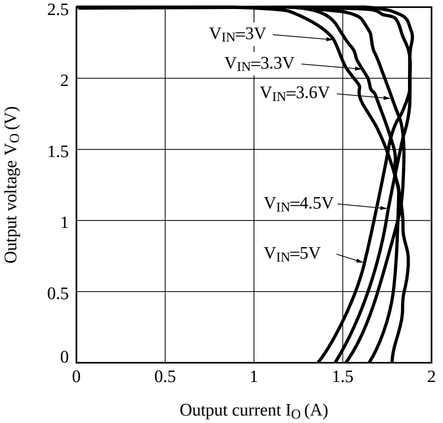


Fig.7 Output Voltage vs. Ambient Temperature (PQ015EH01Z)

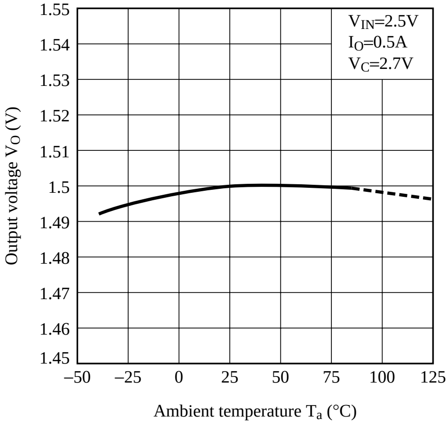


Fig.8 Output Voltage vs. Ambient Temperature (PQ018EH01Z)

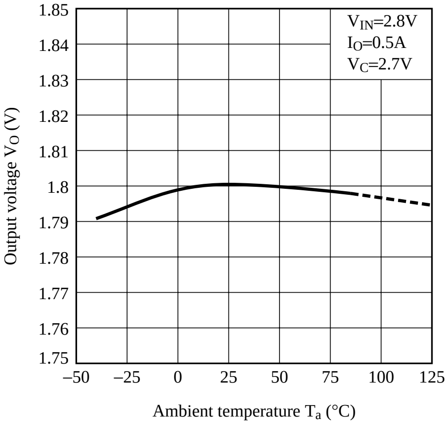


Fig.9 Output Voltage vs. Ambient Temperature (PQ025EH01Z)

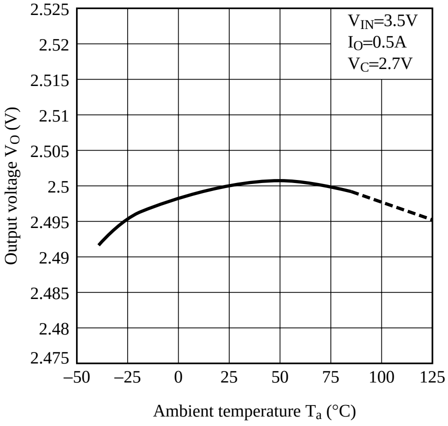


Fig.10 Output Voltage vs. Input Voltage (PQ015EH01Z)

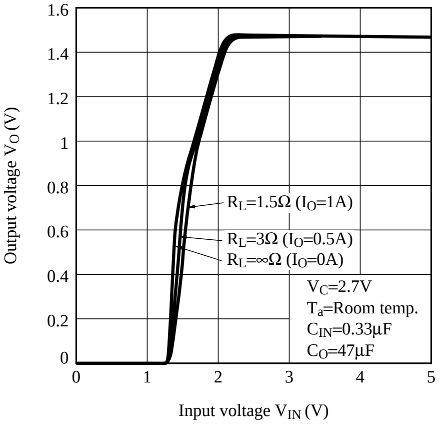


Fig.11 Output Voltage vs. Input Voltage (PQ018EH01Z)

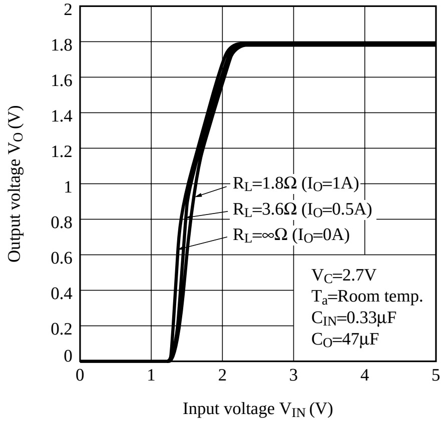


Fig.12 Output Voltage vs. Input Voltage (PQ025EH01Z)

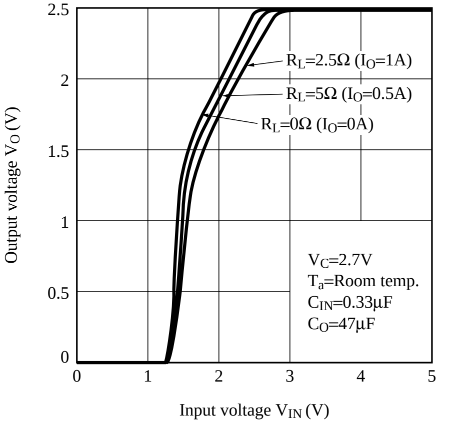


Fig.13 Circuit Operating Current vs. Input Voltage (PQ015EH01Z)

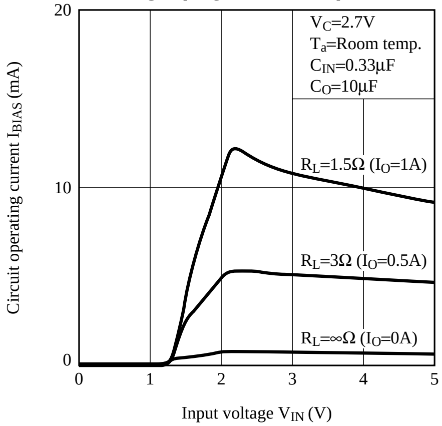


Fig.14 Circuit Operating Current vs. Input Voltage (PQ018EH01Z)

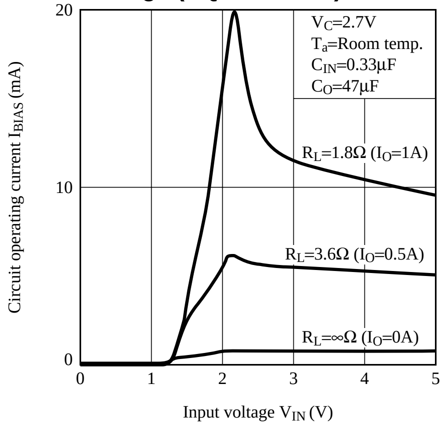


Fig.15 Circuit Operating Current vs. Input Voltage (PQ025EH01Z)

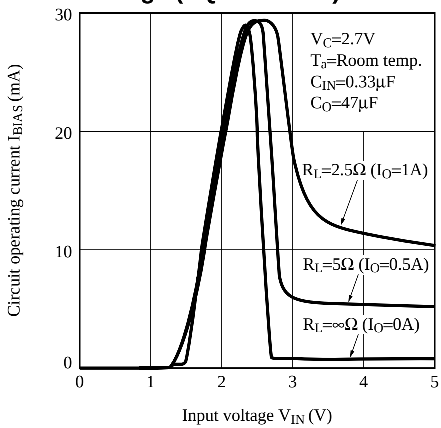


Fig.16 Quiescent Current vs. Junction Temperature

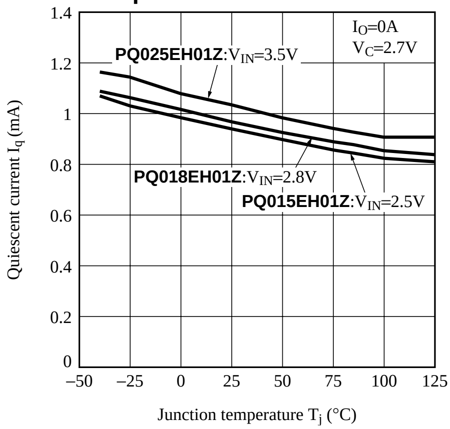


Fig.17 ON-OFF Threshold Voltage vs. Ambient Temperature (PQ018EH01Z)

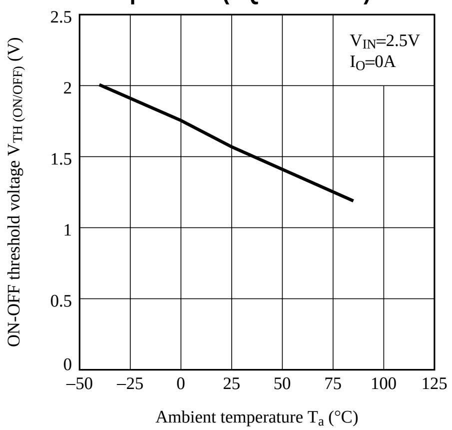


Fig.18 Ripple Rejection vs. Input Ripple Frequency

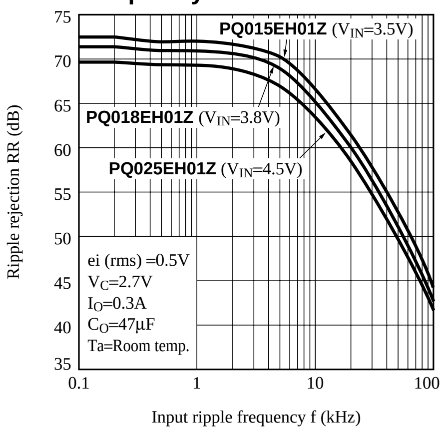


Fig.19 Ripple Rejection vs. Output Current

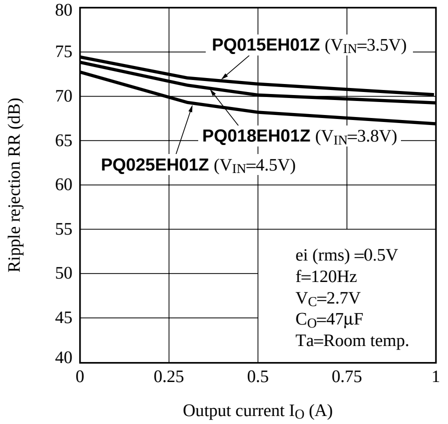
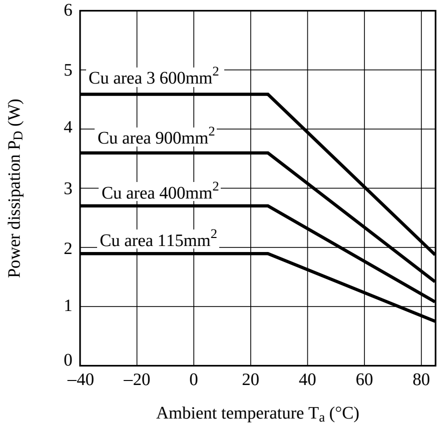
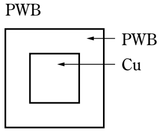


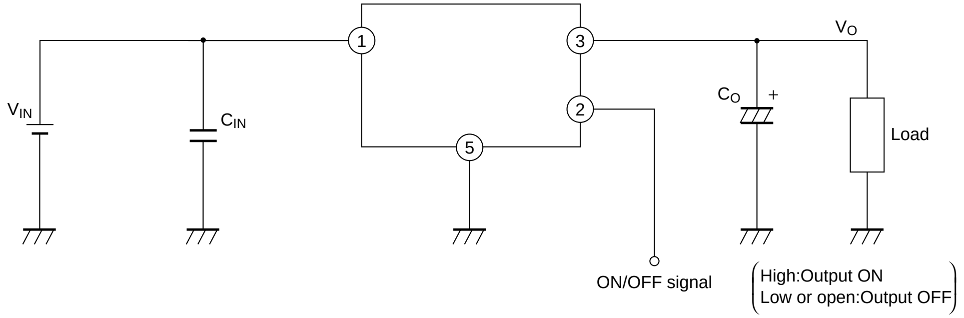
Fig.20 Power Dissipation vs. Ambient Temperature (Typical Value)





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

Fig.21 Typical Application



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

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