PQxxxEH02ZxH Series

Low Voltage Operation
Low Power-Loss Voltage Regulators

■ Features

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

■ Applications

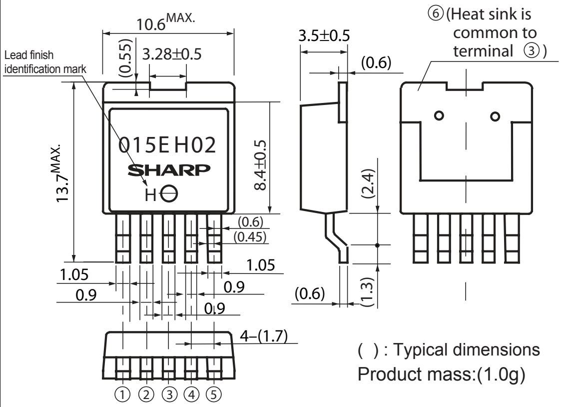
1.Personal computers and peripheral equipment
2.Power supplies for various digital electronic equipment such as DVD player or STB
3.Power supplies for automotive equipment such as car navigation system

■ Model Line-up

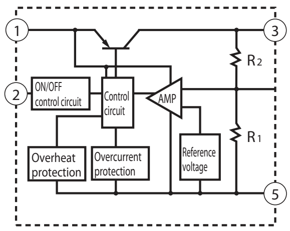
Output current (I_O)	Package type	Output voltage (V_O)		
		1.5V	1.8V	2.5V
2A	Taping	PQ015EH02ZPH	PQ018EH02ZPH	PQ025EH02ZPH
	Sleeve	PQ015EH02ZZH	PQ018EH02ZZH	PQ025EH02ZZH

■ 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)



Lead finish:Lead-free solder plating
(Composition: Sn2Cu)

■ Absolute Maximum Ratings

(Ta=25°C)

Parameter	Symbol	Rating	Unit
*1 Input voltage	V_{IN}	10	V
*1 Output control 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}	-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 Tj:125°C to 150°C

■ 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	RegL	I_O=5mA to 2A	-	0.2	2.0	%
Line regulation	RegI	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	Tj=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	$V_{C(ON)}$	-	2.0	-	-	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 range

Model No.	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
PQ015EH02ZxH	V_{IN}	I_O=2A, V_C=2.7V, Ta=25°C	2.35	-	10	V
PQ018EH02ZxH			2.35	-	10	
PQ025EH02ZxH			3.0	-	10	

■ Output Voltage

Model No.	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
PQ015EH02ZxH	V_O	V_{IN}=V_O(TYP)+1V, I_O=1A, V_C=2.7V, Ta=25°C	1.45	1.5	1.55	V
PQ018EH02ZxH			1.75	1.8	1.85	
PQ025EH02ZxH			2.438	2.5	2.562	

Fig.1 Test Circuit

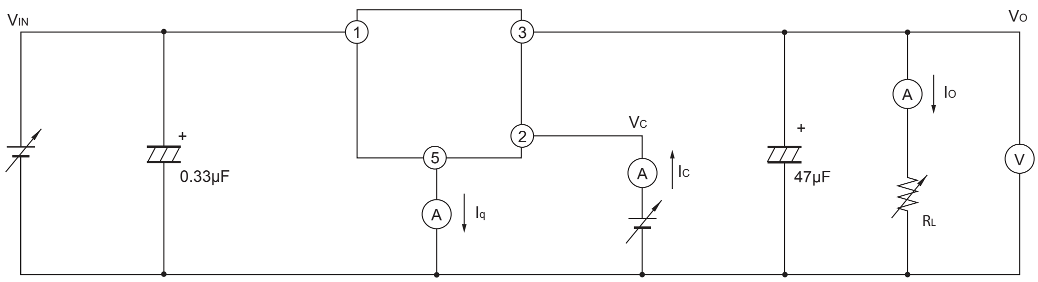
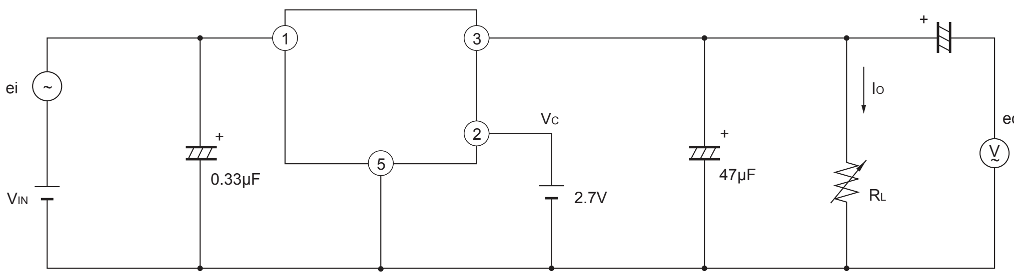
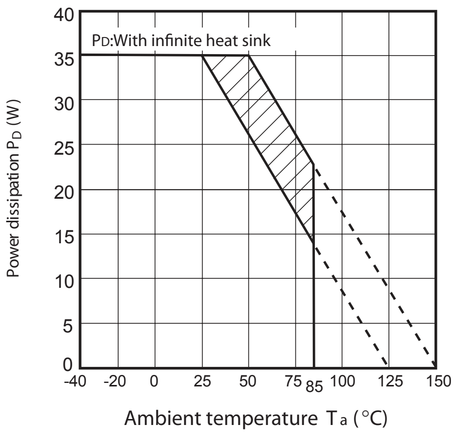


Fig.2 Test circuit of Ripple Rejection



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 (**PQ015EH02ZxH**)

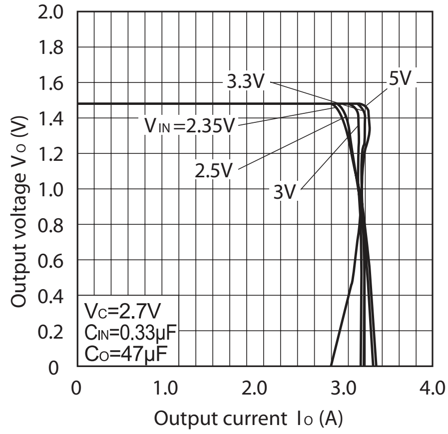


Fig.5 Overcurrent Protection Characteristics (**PQ018EH02ZxH**)

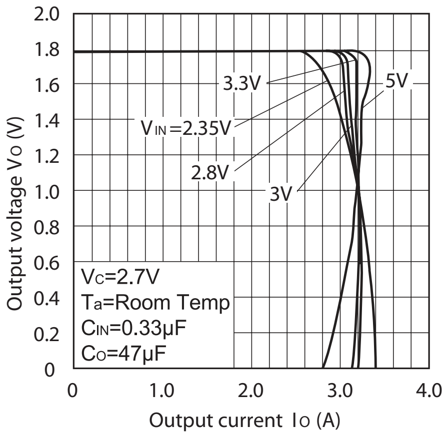


Fig.6 Overcurrent Protection Characteristics (**PQ025EH02ZxH**)

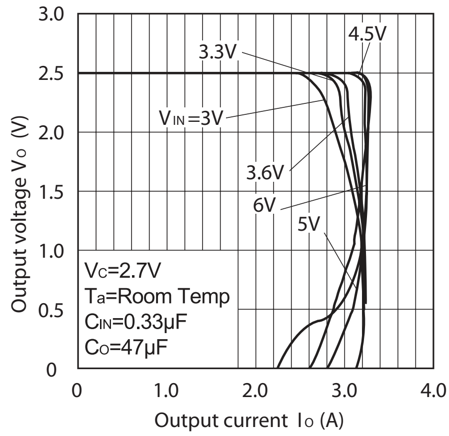


Fig.7 Output Voltage Fluctuation vs. Junction Temperature (**PQ015EH02ZxH**)

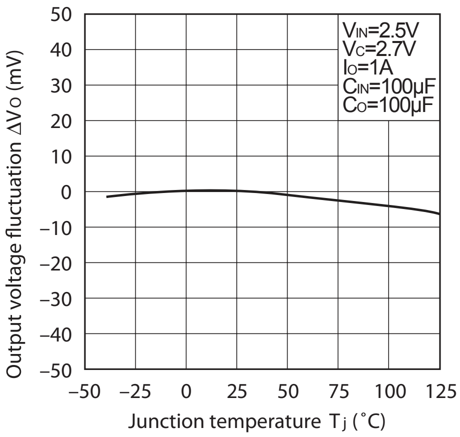


Fig.8 Output Voltage Fluctuation vs. Junction Temperature (**PQ018EH02ZxH**)

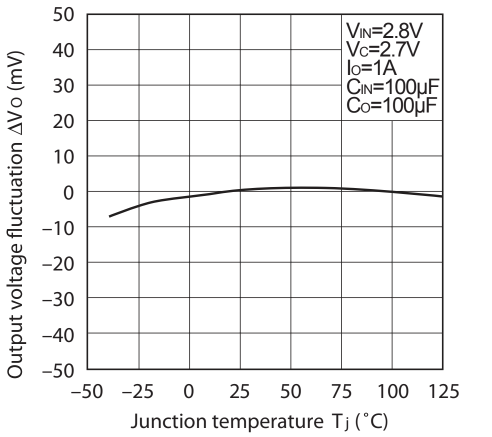


Fig.9 Output Voltage Fluctuation vs. Junction Temperature (**PQ025EH02ZxH**)

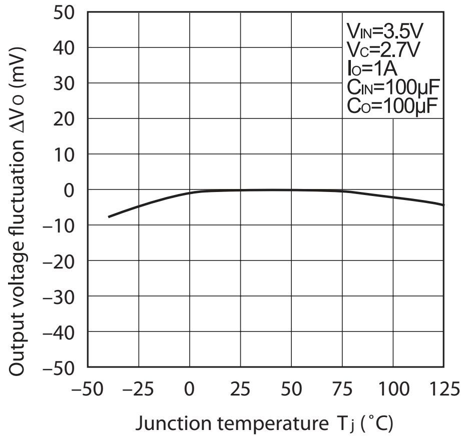


Fig.10 Output Voltage vs. Input Voltage (**PQ015EH02ZxH**)

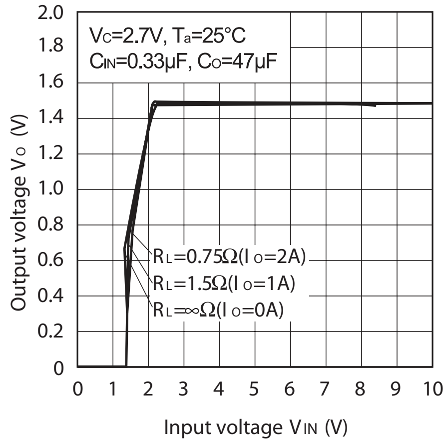


Fig.11 Output Voltage vs. Input Voltage (**PQ018EH02ZxH**)

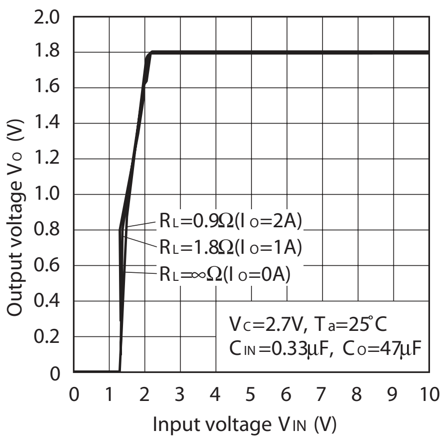


Fig.12 Output Voltage vs. Input Voltage (**PQ025EH02ZxH**)

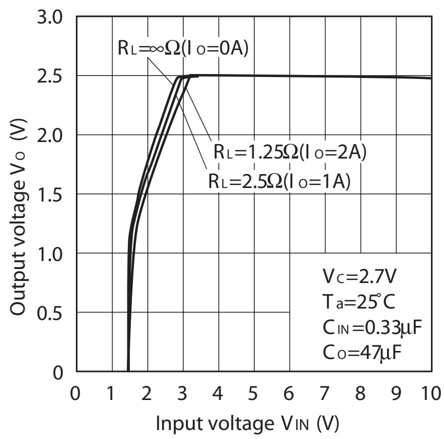


Fig.13 Circuit Operating Current vs. Input Voltage (**PQ015EH02ZxH**)

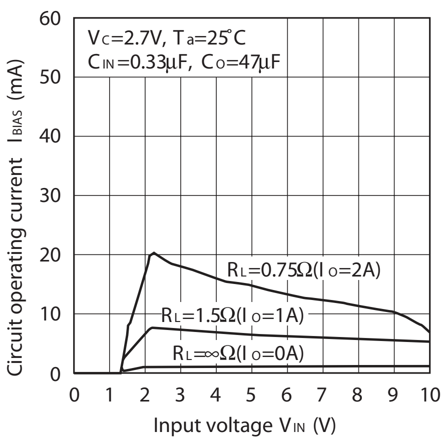


Fig.14 Circuit Operating Current vs. Input Voltage (**PQ018EH02ZxH**)

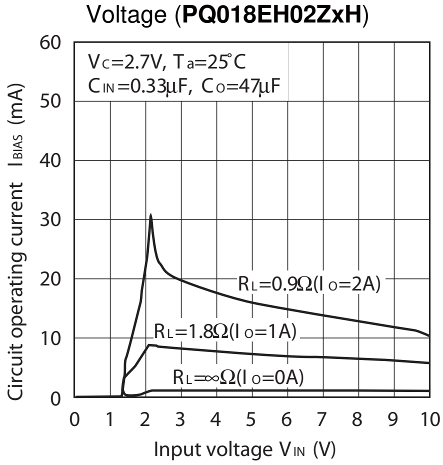


Fig.15 Circuit Operating Current vs. Input Voltage (**PQ025EH02ZxH**)

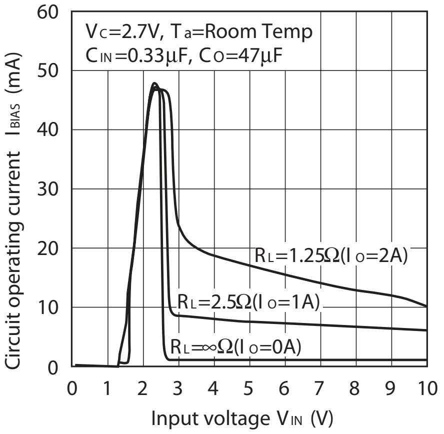


Fig.16 Quiescent Current vs. Junction Temperature

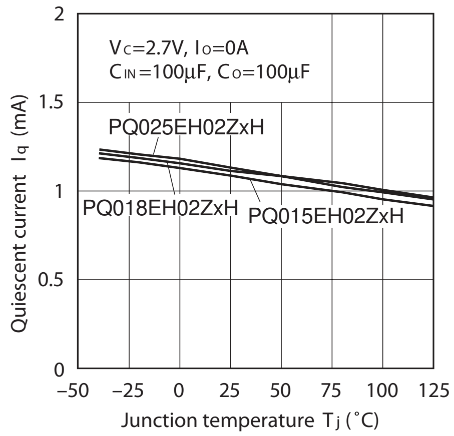


Fig.17 ON-OFF Control Voltage vs. Junction Temperature

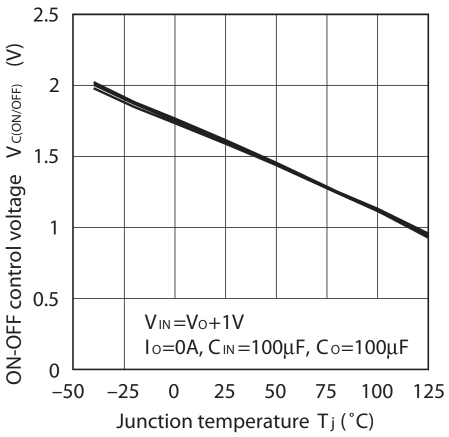


Fig.18 Ripple Rejection vs. Input Ripple Frequency

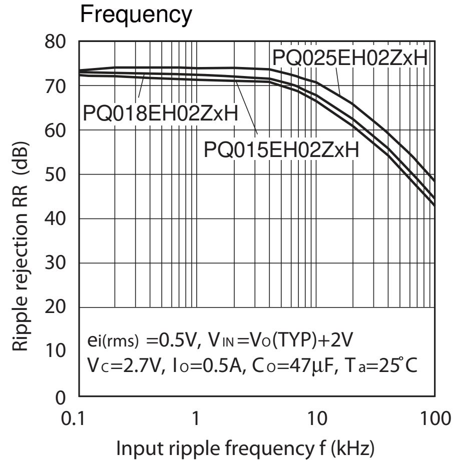


Fig.19 Ripple Rejection vs. Output Current

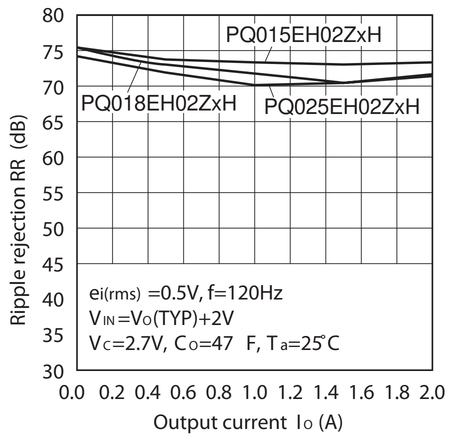
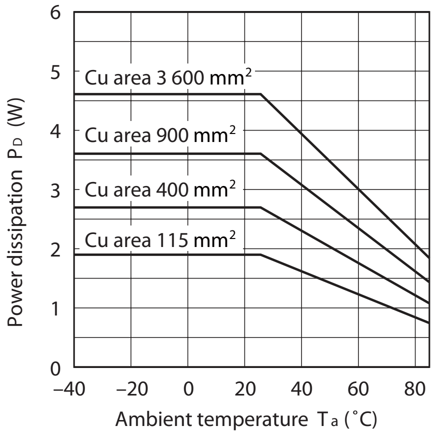
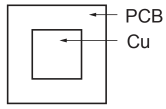


Fig.20 Power Dissipation vs. Ambient Temperature (Typical Value)



Mounting PCB



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

Fig.21 Typical Application