

PQxxxEZ02Z Series

Low Voltage Operation Low Power-loss Voltage Regulator

Features

- Low voltage operation (Minimum operating voltage: 2.35V)
2.5V input → available 1.5 to 1.8V output
- 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

Applications

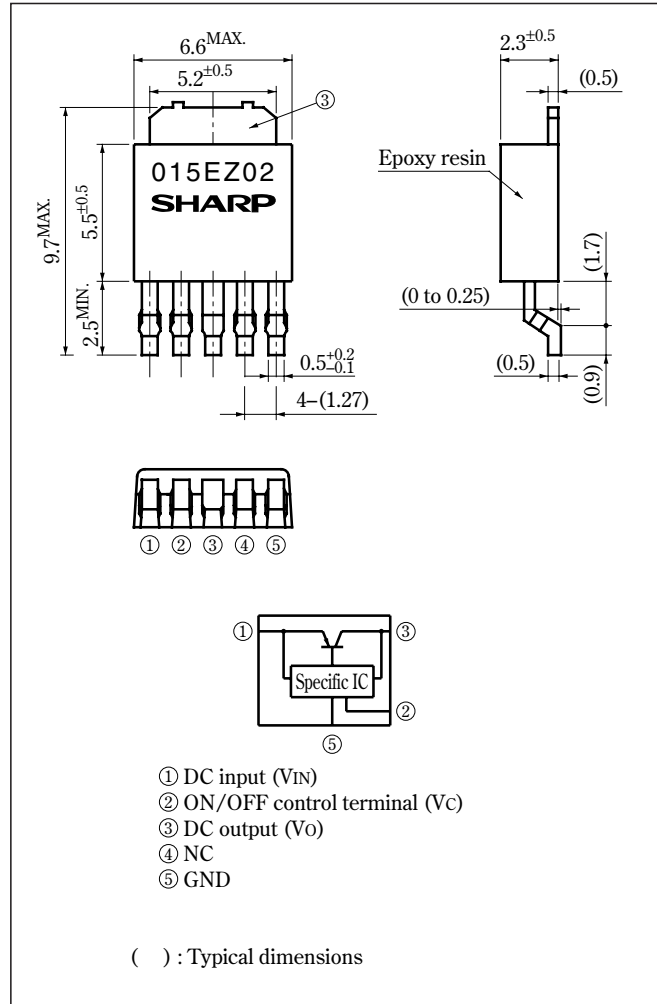
- Power supplies for personal computers and peripheral equipment
- Power supplies for various electronic equipment such as DVD player or STB

Model Line-up

Output current (I _o)	Output Voltage (V _o)		
	1.5V	1.8V	2.5V
2.0A	PQ015EZ02Z	PQ018EZ02Z	PQ025EZ02Z

Outline Dimensions

(Unit : mm)



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	8	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 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 $V_{IN}=V_{O(TYP.)}+1V$, $I_o=0.5A$, $V_C=2.7V$, $T_a=25^\circ C$)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Input voltage	V_{IN}	–	Refer to the table 1			V
Output voltage	V_O	–	Refer to the table 2			V
Load regulation	R_{egL}	$I_o=5mA$ to 2.0A	–	0.2	2	%
Line regulation	R_{egI}	$V_{IN}=V_{O(TYP.)}+1V$ to $V_{O(TYP.)}+6V$	–	0.1	1	%
Temperature coefficient of output voltage	TcV_O	$T_j=0$ to $125^\circ C$, $I_o=5mA$	–	± 0.01	–	%/ $^\circ C$
Ripple Rejection	RR	Refer to Fig.2	45	60	–	dB
Dropout voltage	V_{I-O}	*4 $I_o=1A$	–	–	0.5	V
*5 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 Input voltage shall be the value when output voltage is 95% in comparison with the initial value.

*5 In case of opening control terminal ②, output voltage turns off.

Table.1 Input Voltage Line-up

(Unless otherwise specified, condition shall be $I_o=0.5A$, $V_C=2.7V$, $T_a=25^\circ C$)

Model No.	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
PQ015EZ02Z	V_{IN}	–	2.35	–	10	V
PQ018EZ02Z	V_{IN}	–	2.35	–	10	V
PQ025EZ02Z	V_{IN}	–	3.0	–	10	V

Table.2 Output Voltage Line-up

(Unless otherwise specified, condition shall be $V_{IN}=V_{O(TYP.)}+1V$, $I_o=1A$, $V_C=2.7V$, $T_a=25^\circ C$)

Model No.	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
PQ015EZ02Z	V_O	–	1.45	1.5	1.55	V
PQ018EZ02Z	V_O	–	1.75	1.8	1.85	V
PQ025EZ02Z	V_O	–	2.438	2.5	2.562	V

Fig.1 Test Circuit

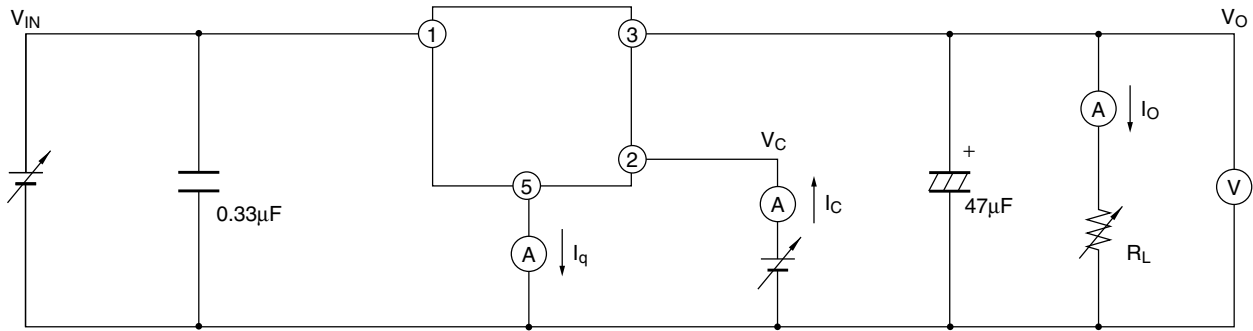
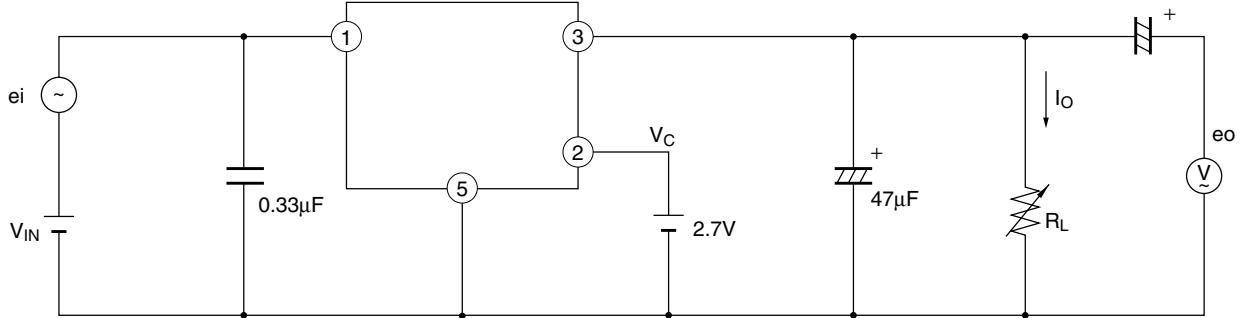
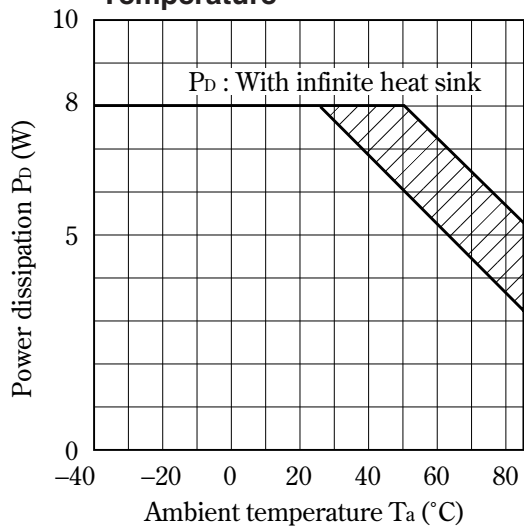


Fig.2 Test Circuit for Ripple Rejection



$f=120\text{Hz}$ (sine wave)
 $e_i(\text{rms})=0.5\text{V}$
 $V_{IN}=V_O(\text{TYP})+2\text{V}$
 $I_o=0.3\text{A}$
 $RR=20\log(e_i(\text{rms})/e_o(\text{rms}))$

Fig.3 Power Dissipation vs. Ambient Temperature



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

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