# 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

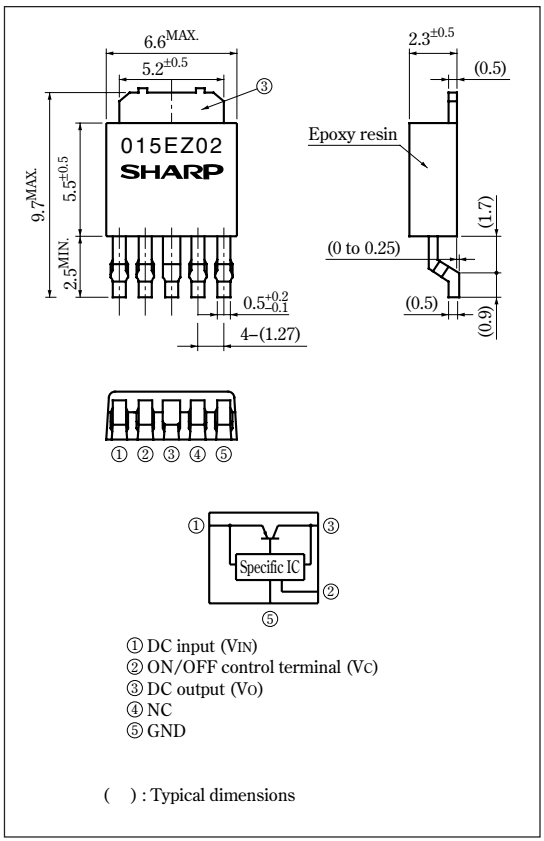
## ■ Model Line-up

| 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 ".

## ■ 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 the table 1 | | | V |
| | Output voltage | $V_O$ | – | Refer to the table 2 | | | V |
| | Load regulation | $R_{eg}L$ | $I_O$=5mA to 2.0A | – | 0.2 | 2 | % |
| | Line regulation | $R_{eg}I$ | $V_{IN}$=$V_O$(TYP.)+1V to $V_O$(TYP.)+6V | – | 0.1 | 1 | % |
| | 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 |
| | 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, Ta=25˚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, Ta=25˚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**

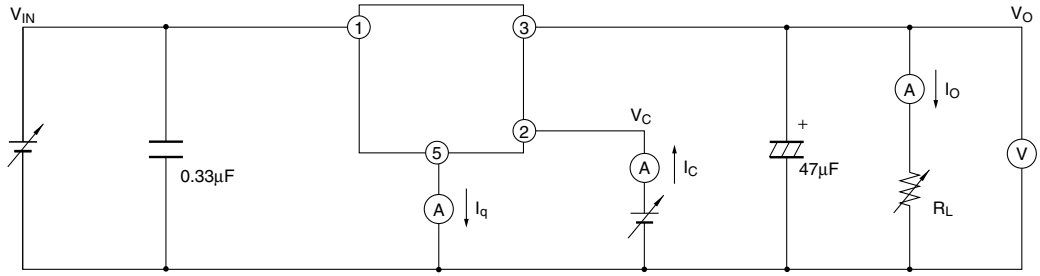
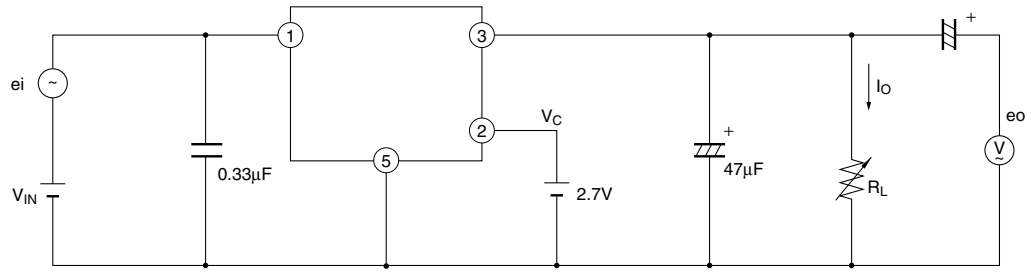


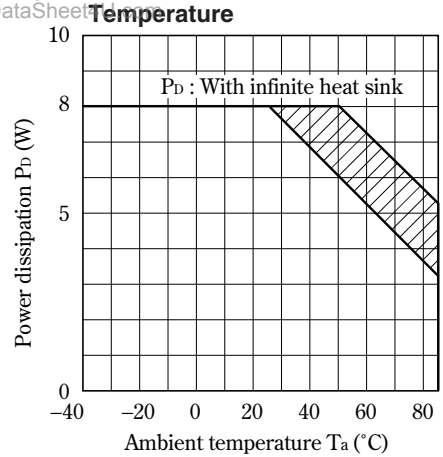

**Fig.2 Test Circuit for Ripple Rejection**




f=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.

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