# PQ3TZ50/PQ3TZ53

3.0V/3.3V Output Surface Mount Type Low Power-Loss Voltage Regulators

## ■ Features

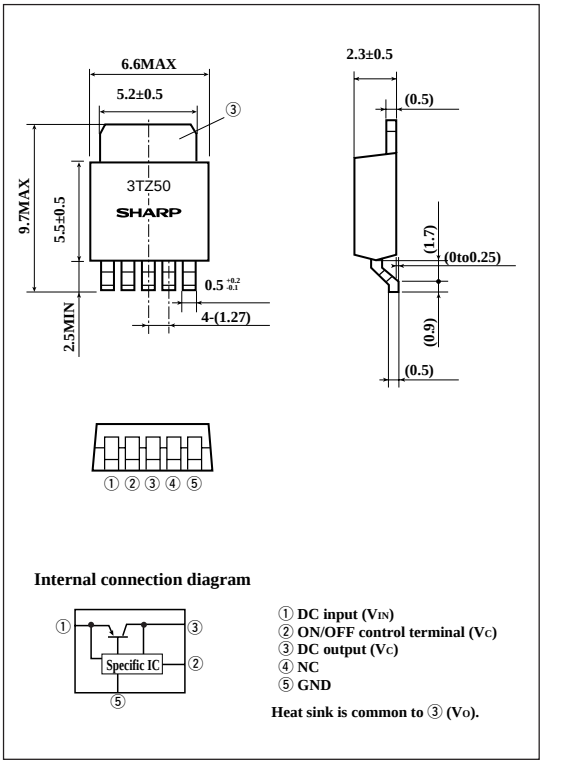
- Low power-loss (Dropout voltage : MAX. 0.5V)
- Surface mount type package (equivalent to EIAJ SC-63)
- Output current : MAX.0.5A
- Low dissipation current at OFF-state (Iqs : MAX.5μA)
- Built-in ON/OFF cotrol function
- Output voltage precision : ±2.5%
- Output voltage : (3.0V : PQ3TZ50)
  (3.3V : PQ3TZ53)
- Tape packaged type is also available. (Reel : 3 000pcs.)

## ■ Applications

- Personal computers
- Personal information tools (PDA)
- Various OA equipment

## ■ 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 | $I_O$ | 0.5 | A |
| *2 Power dissipation | $P_D$ | 8 | W |
| *3 Junction temperature | $T_j$ | 150 | ˚C |
| Operating temperature | $T_{opr}$ | -20 to +80 | ˚C |
| Storage temperature | $T_{stg}$ | -40 to +150 | ˚C |
| Soldering temperature | $T_{sol}$ | 260 (For 10s) | ˚C |

*1 All are open except GND and applicable terminals.

*2 $P_D$:With infinte heat sink.

*3 Overheat protection may operate at 125=<$T_j$=<150˚C

· Please refer to the chapter“ Handling Precautions ”.

## ■ Electrical Characteristics

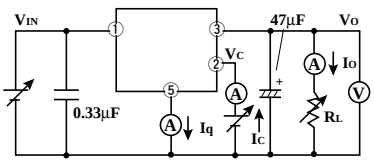
($V_C$=2.7V, $T_a$=25˚C)

| Parameter | | Symbol | Conditions | MIN. | TYP. | MAX. | Unit |
|---|---|---|---|---|---|---|---|
| Input voltage | PQ3TZ50 | $V_{IN}$ | - | 3.4 | - | 10.0 | V |
| | PQ3TZ53 | | | 3.7 | - | 10.0 | |
| Output voltage | PQ3TZ50 | $V_O$ | $V_{IN}$=5V, $I_O$=0.3A | 2.925 | 3.0 | 3.075 | V |
| | PQ3TZ53 | | | 3.218 | 3.3 | 3.382 | |
| Load regulation | | $R_{egL}$ | $V_{IN}$=5V, $I_O$=5mA to 0.5A | - | 0.2 | 2.0 | % |
| Line regulation | | $R_{egI}$ | $V_{IN}$=4V to 10V, $I_O$=5mA | - | 0.1 | 2.5 | % |
| Temperature coefficient of output voltage | | $T_CV_O$ | $V_{IN}$=5V, $I_O$=5mA, $T_j$=0 to125˚C | - | ±0.01 | - | %/˚C |
| Ripple rejection | | RR | Refer to Fig. 2 | 45 | 60 | - | dB |
| Dropout voltage | | $V_{i-O}$ | *4, $I_O$=0.3A | - | - | 0.5 | V |
| ON-state voltage for control | | $V_{C\ (ON)}$ | $V_{IN}$=5V, $I_O$=0.3A, *5 | 2.0 | - | - | V |
| ON-state current for control | | $I_{C\ (ON)}$ | $V_{IN}$=5V, $I_O$=0.3A | - | - | 200 | µA |
| OFF-state voltage for control | | $V_{C\ (OFF)}$ | $V_{IN}$=5V | - | - | 0.8 | V |
| OFF-state current for control | | $I_{C\ (OFF)}$ | $V_{IN}$=5V, $I_O$=0.4V | - | - | 2 | µA |
| Quiescent current | | $I_q$ | $V_{IN}$=5V, $I_O$=0A | - | - | 10 | mA |
| Output OFF-state consumption current | | $I_{qs}$ | $V_{IN}$=5V, $V_C$=0.4V, $I_O$=0.3A, | - | - | 5 | µA |

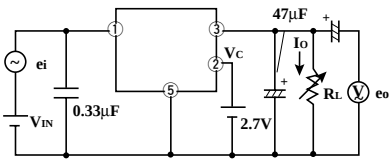
*4 PQ3TZ50:$V_{IN}$=3.4V
PQ3TZ53:$V_{IN}$=3.7V

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

### Fig.1 Test Circuit

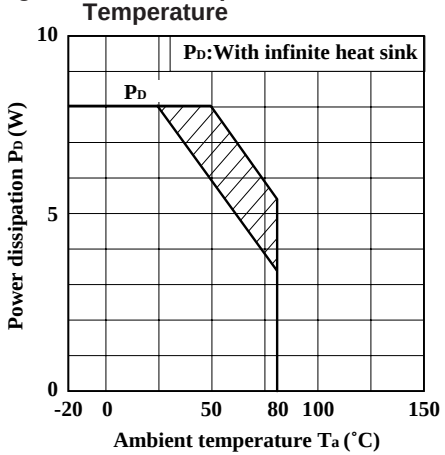



### Fig.2 Test Circuit for Ripple Rejection




f=120Hz (sine wave)
ei=0.5Vrms
$V_{IN}$=5V
$I_O$=0.3A
RR=20 log (ei/eo)

### 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)

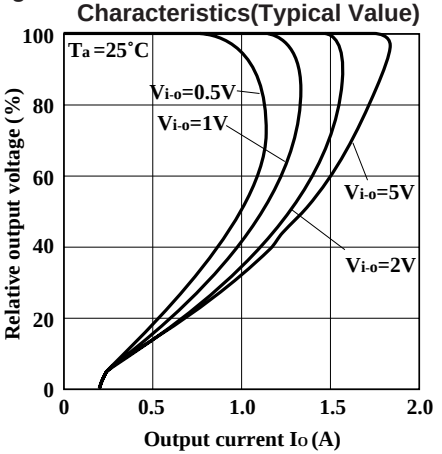


Fig.5 Output Voltage Deviation vs. Junction Temperature (PQ3TZ50/PQ3TZ53)

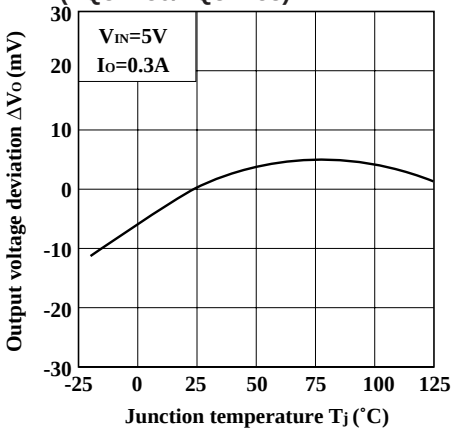



Fig.6 Output Voltage vs. Input Voltage (PQ3TZ50)

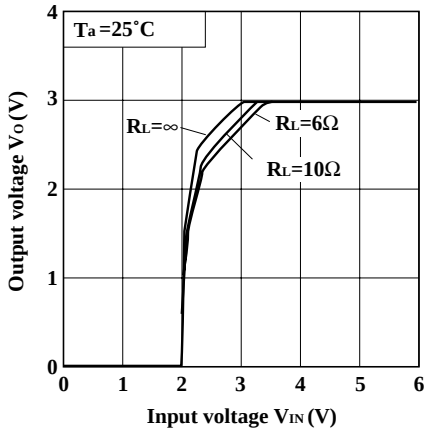



Fig.7 Output Voltage vs. Input Voltage (PQ3TZ53)

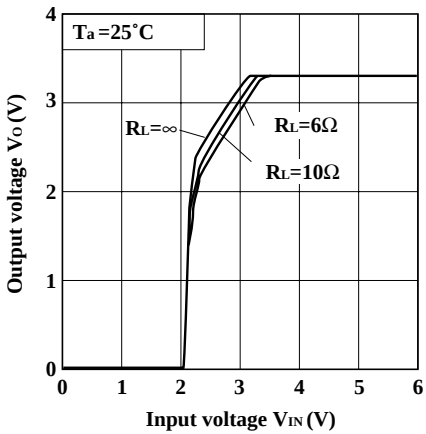



Fig.8 Circuit Operating Current vs. Input Voltage (PQ3TZ50)

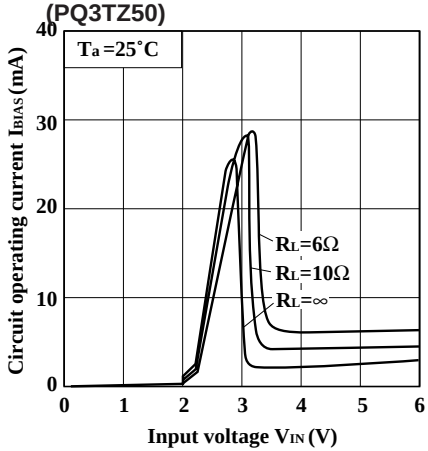



Fig.9 Circuit Operating Current vs. Input Voltage (PQ3TZ53)

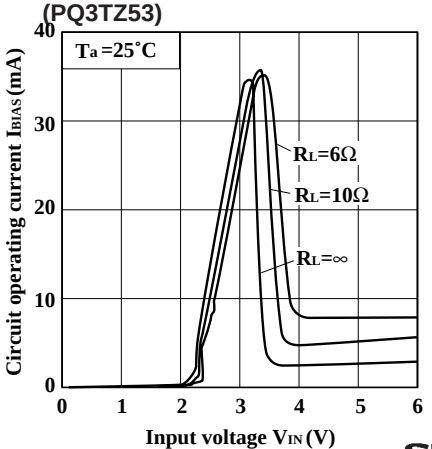



Fig.10 Dropout Voltage vs. Junction Temperature (PQ3TZ50/PQ3TZ53)

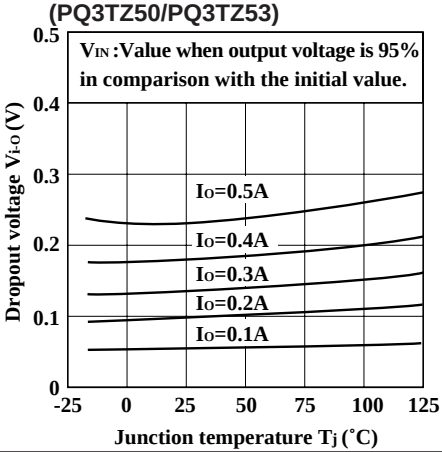


Fig.11 ON-state Voltage for Control vs. Junction Temperature(Typical Value) (PQ3TZ50/PQ3TZ53)

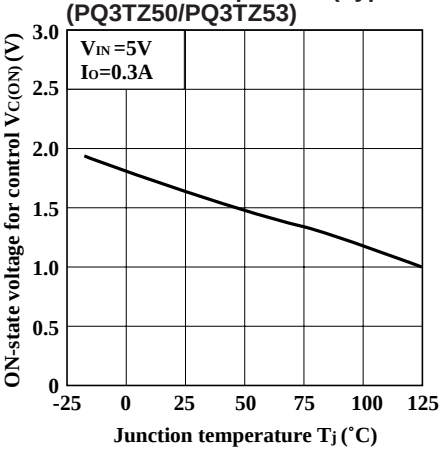



Fig.12 Quiescent Current vs. Junction Temperature(Typical Value) (PQ3TZ50/PQ3TZ53)

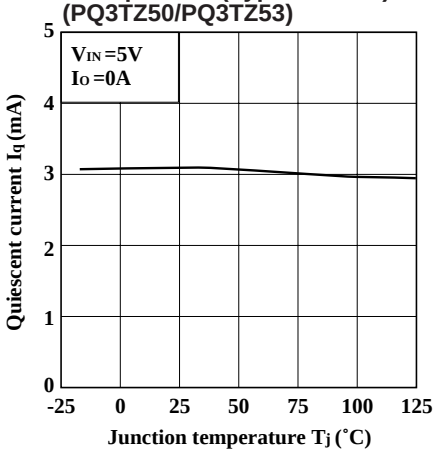



Fig.13 Ripple Rejection vs. Input Ripple Frequency (PQ3TZ50/PQ3TZ53)

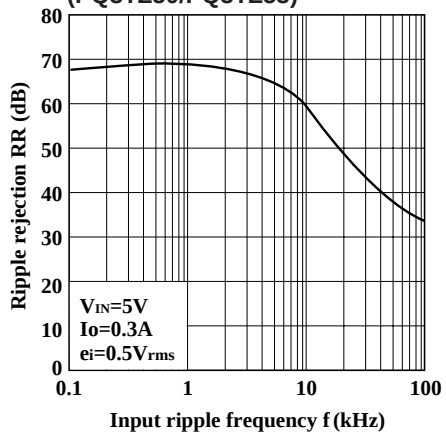



Fig.14 Output Peak Current vs. Junction Temperature(Typical Value) (PQ3TZ50/PQ3TZ53)

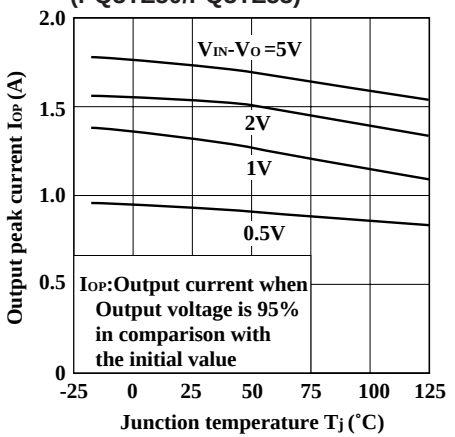
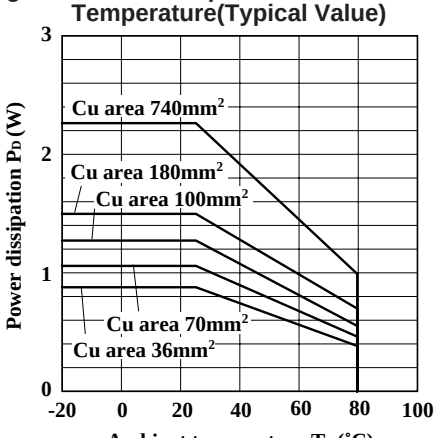
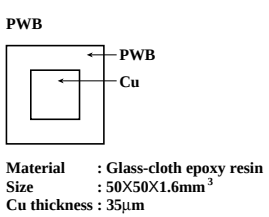



Fig.15 Power Dissipation vs. Ambient Temperature(Typical Value)




Material : Glass-cloth epoxy resin
Size : 50X50X1.6mm 3
Cu thickness : 35μm

## ■ Model Line-ups for Tape-packaged Products

| | Sleeve-packaged products | | Tape-packaged products | |
|---|---|---|---|---|
| **Output current** | **Standard type** | **High-precision output type** | **Standard type** | **High-precision output type** |
| **0.5A output** | - | PQ3TZ50 | - | PQ3TZ50U |
| **1.0A output** | - | PQ3TZ53 | - | PQ3TZ53U |