# PQ3TZ50/PQ3TZ53

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

## ■ Features

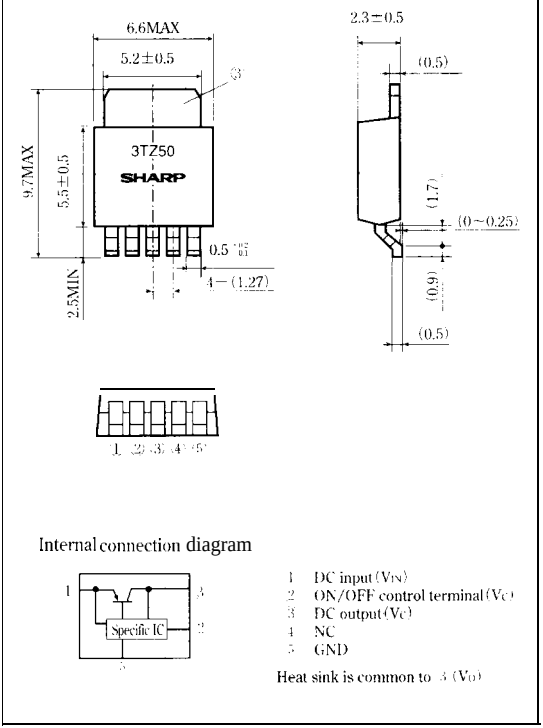
- **Low** power-loss (Dropout voltage : MAX. 0.5V)
- Surface mount type package (equivalent to EIAJ SC-63)
- . output current: MAX.0.5A
- . Low dissipation current at OFF-state (Iqs : MAX.5 μA)
- . Built-in ON/OFF cotrol function
- Output voltage precision : ± 2.5%
- Output voltage: (3.0V : PQ3TZ50)
  (3.3V : PQ3TZ53)
- Tape packaged type is also available. (Reel :1; 000pcs.)

## ■ Applications

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

## ■ Outline Dimensions

(Unit : mm)




## ■ Absolute Maximum Ratings

(Ta=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≦Tj≦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 | | RegL | $V_{IN}$=5V, $I_O$=5mA to 0.5A | | 0.2 | 2.0 | % |
| Line regulation | | RegI | $V_{IN}$=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 to 125°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 | | $I_{(-)}$ | $V_{IN}$=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**

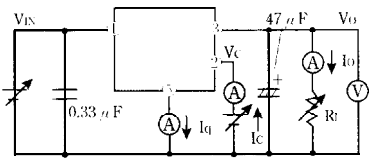
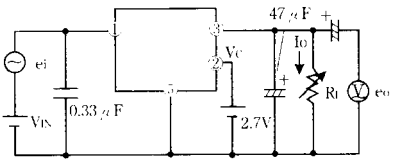
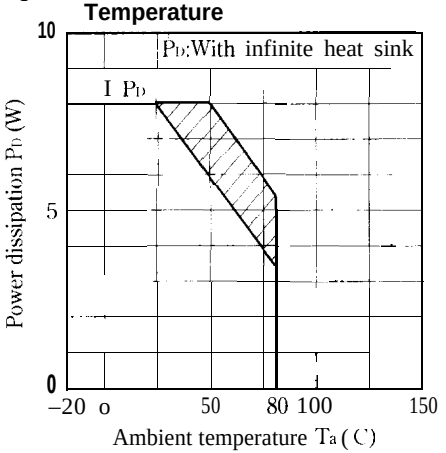



**Fig.2 Test Circuit for Ripple Rejection**




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)**

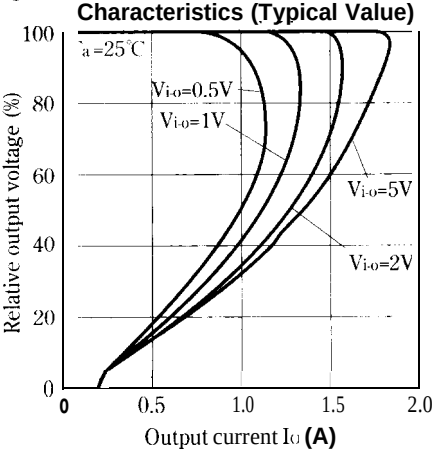


**Fig.5 Output Voltage Deviation vs. Junction Temperature (PQ3TZ50/PQ3TZ53)**

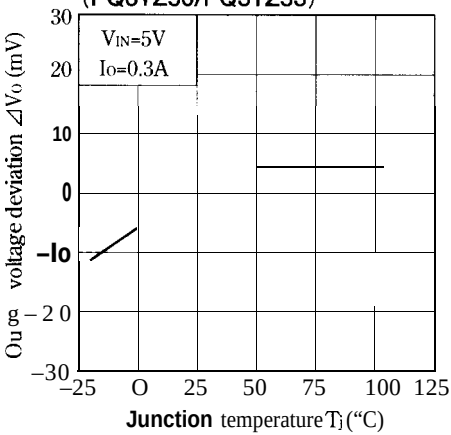



**Fig.6 Output Voltage vs. Input Voltage (PQ3TZ50)**

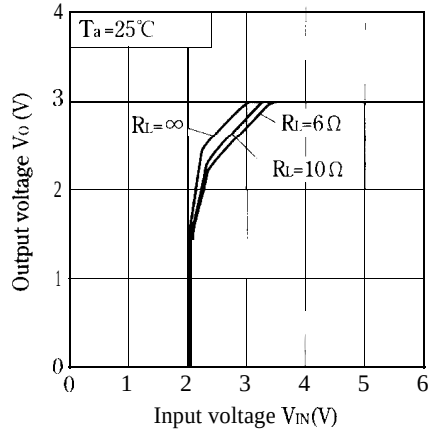



**Fig.7 Output Voltage vs. Input Voltage (PQ3TZ53)**

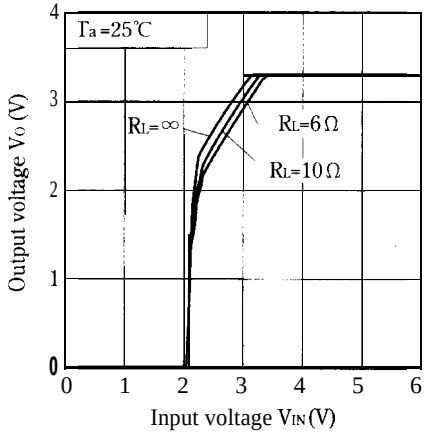



**Fig.8 Circuit Operating Current vs. Input Voltage (PQ3TZ50)**

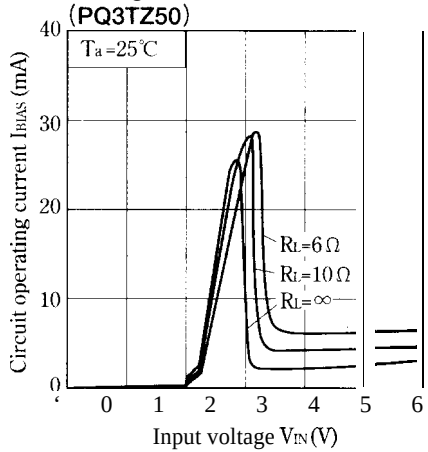



**Fig.9 Circuit Operating Current vs. Input Voltage (PQ3TZ53)**

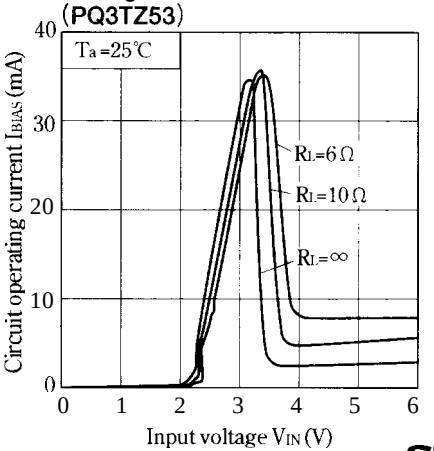



**Fig.10 Dropout Voltage vs. Junction Temperature (PQ3TZ50/PQ3TZ53)**

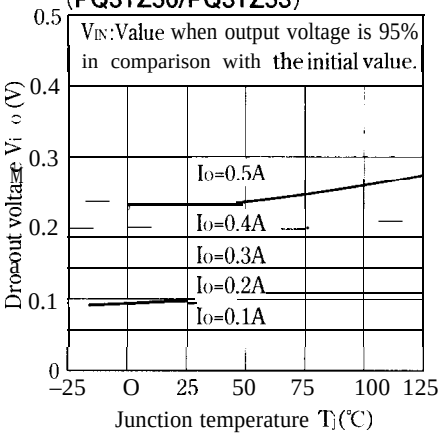


**Fig.11 ON-state Voltage for Control vs. Junction Temperature (Typical Value) (PQ3TZ50/PQ3TZ53)**

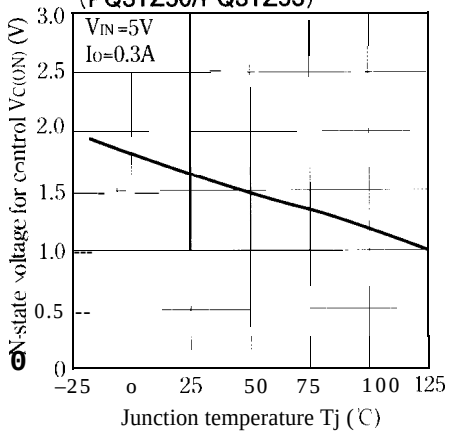



**Fig.12 Quiescent Current vs. Junction Temperature (Typical Value) ( PQ3TZ501PQ3TZ53)**

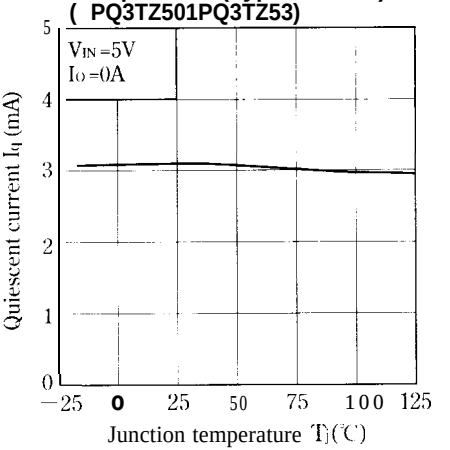



**Fig.13 Ripple Rejection vs. input Ripple Frequency (PQ3TZ50/PQ3TZ53)**

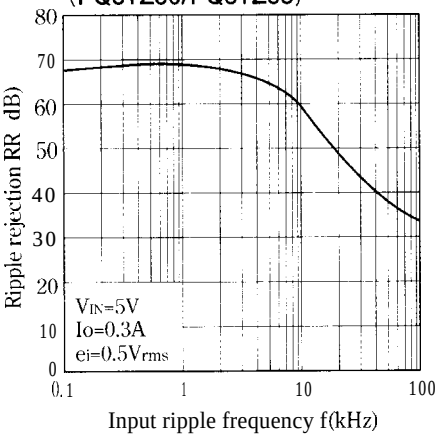



**Fig.14 Output Peak Current vs. Junction Temperature (Typical Value) (PQ3TZ50/PQ3TZ53)**

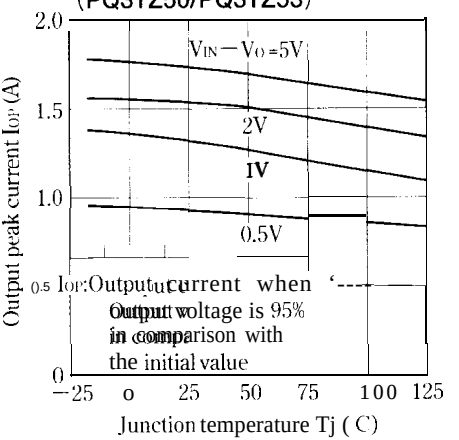
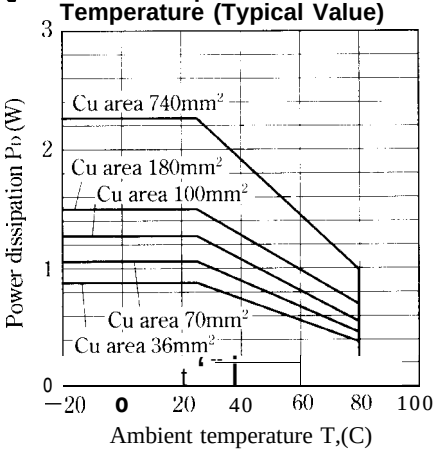
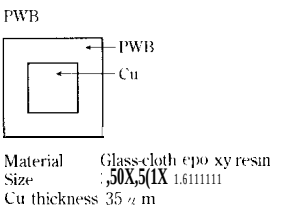



**Fig.15 Power Dissipation vs. Ambient Temperature (Typical Value)**



## ■ 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.OA output | | PQ3TZ53 | | PQ3TZ53U |