

PQ3TZ50/PQ3TZ53

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

■ Features

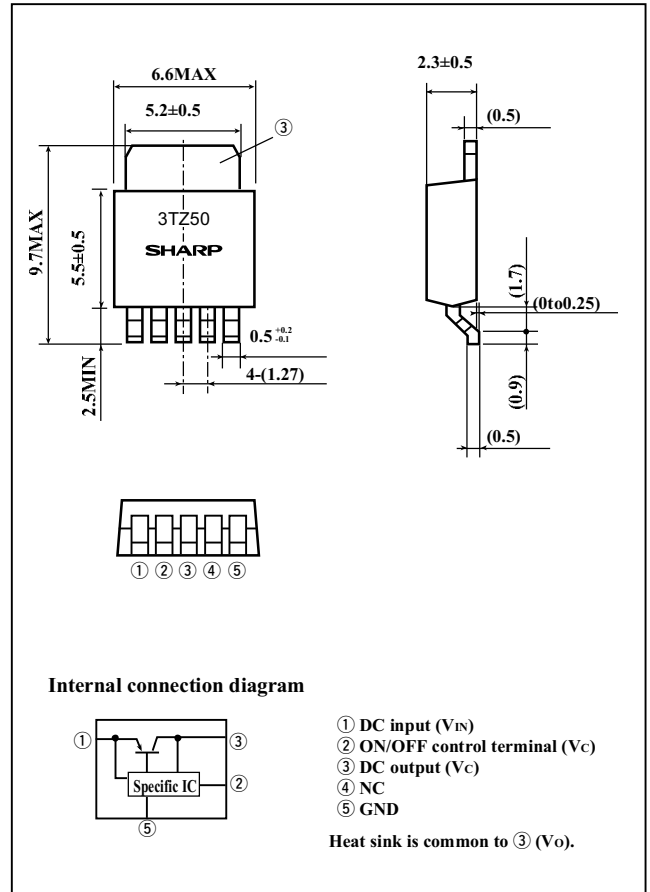
- Low power-loss (Dropout voltage : MAX. 0.5V)
- Surface mount type package (equivalent to EIAJ SC-63)
- Output current : MAX.0.5A
- Low dissipation current at OFF-state (I_{qs} : MAX.5 μ A)
- Built-in ON/OFF control function
- Output voltage precision : $\pm 2.5\%$
- Output voltage : (3.0V : PQ3TZ50)
(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

($T_a=25^\circ\text{C}$)

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	$^\circ\text{C}$
Operating temperature	T_{opr}	-20 to +80	$^\circ\text{C}$
Storage temperature	T_{stg}	-40 to +150	$^\circ\text{C}$
Soldering temperature	T_{sol}	260 (For 10s)	$^\circ\text{C}$

*1 All are open except GND and applicable terminals.

*2 P_D : With infinite heat sink.

*3 Overheat protection may operate at $125 < T_j < 150^\circ\text{C}$

· Please refer to the chapter "Handling Precautions".

SHARP

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Electrical Characteristics

($V_C=2.7V, T_a=25^\circ C$)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Input voltage	PQ3TZ50	-	3.4	-	10.0	V
	PQ3TZ53		3.7	-	10.0	
Output voltage	PQ3TZ50	$V_{IN}=5V, I_o=0.3A$	2.925	3.0	3.075	V
	PQ3TZ53		3.218	3.3	3.382	
Load regulation	Reg_L	$V_{IN}=5V, I_o=5mA \text{ to } 0.5A$	-	0.2	2.0	%
Line regulation	Reg_I	$V_{IN}=4V \text{ to } 10V, I_o=5mA$	-	0.1	2.5	%
Temperature coefficient of output voltage	TcV_O	$V_{IN}=5V, I_o=5mA, T_j=0 \text{ to } 125^\circ C$	-	± 0.01	-	$\%/^\circ C$
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

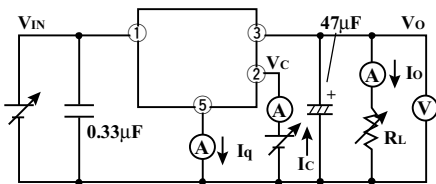
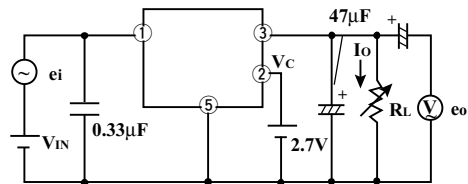
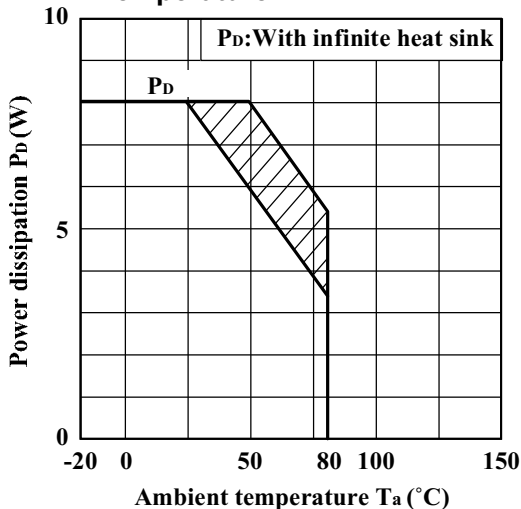


Fig.2 Test Circuit for Ripple Rejection



$f=120Hz$ (sine wave)
 $e_i=0.5V_{rms}$
 $V_{IN}=5V$
 $I_o=0.3A$
 $RR=20 \log(e_i/e_o)$

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)

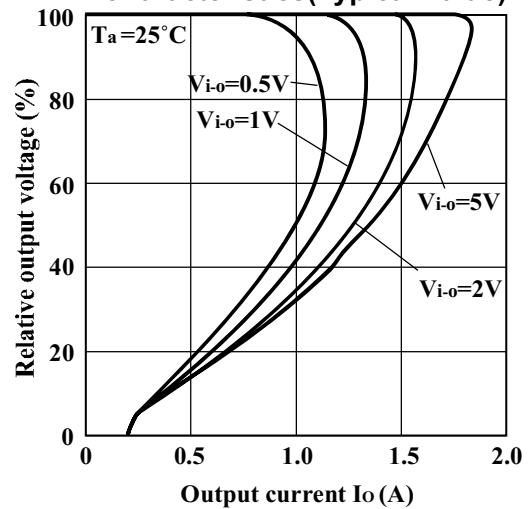


Fig.5 Output Voltage Deviation vs. Junction Temperature (PQ3TZ50/PQ3TZ53)

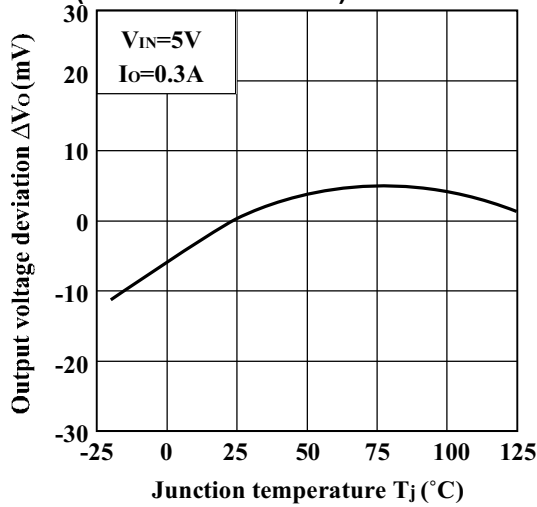


Fig.6 Output Voltage vs. Input Voltage (PQ3TZ50)

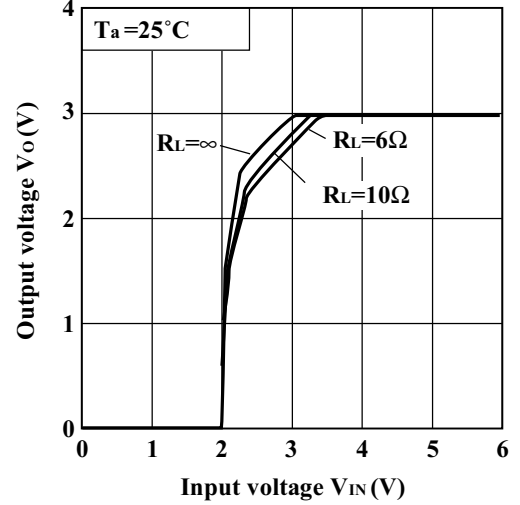


Fig.7 Output Voltage vs. Input Voltage (PQ3TZ53)

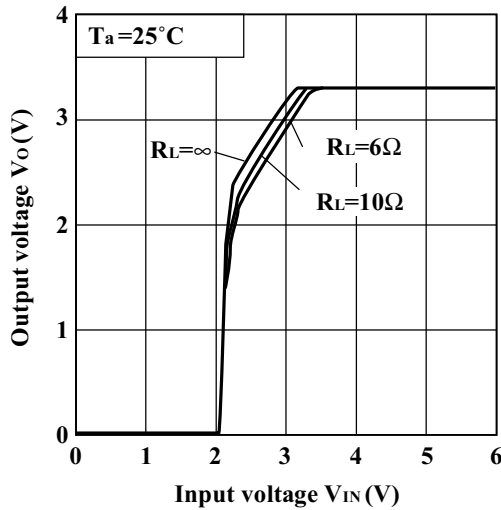


Fig.8 Circuit Operating Current vs. Input Voltage (PQ3TZ50)

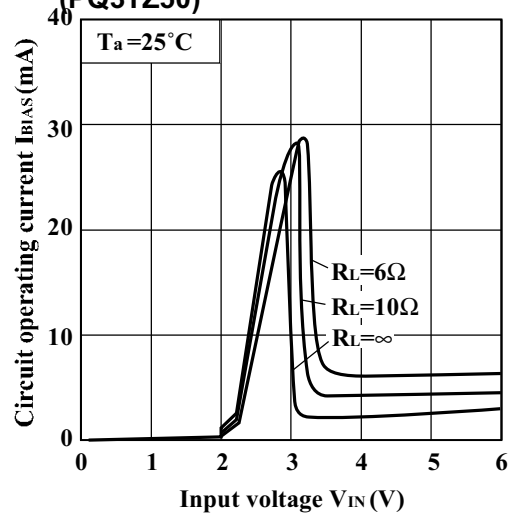


Fig.9 Circuit Operating Current vs. Input Voltage (PQ3TZ53)

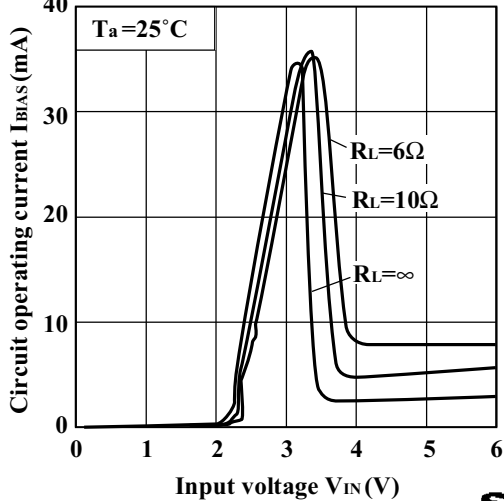


Fig.10 Dropout Voltage vs. Junction Temperature (PQ3TZ50/PQ3TZ53)

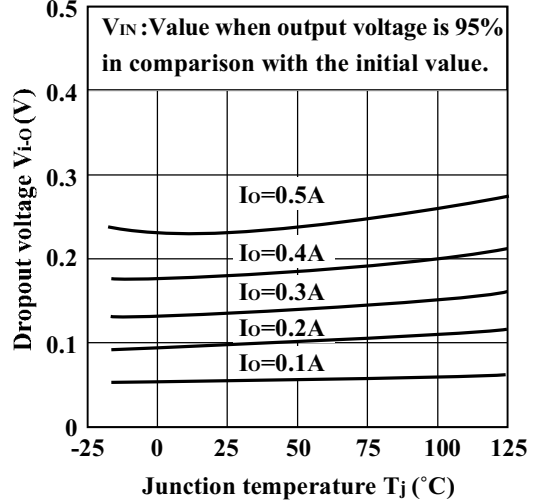


Fig.11 ON-state Voltage for Control vs. Junction Temperature(Typical Value) (PQ3TZ50/PQ3TZ53)

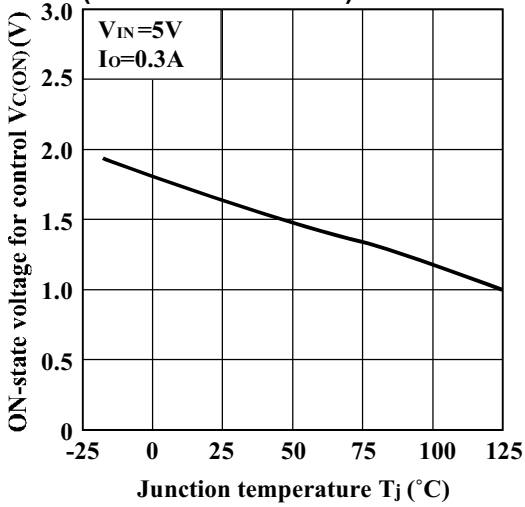


Fig.12 Quiescent Current vs. Junction Temperature(Typical Value) (PQ3TZ50/PQ3TZ53)

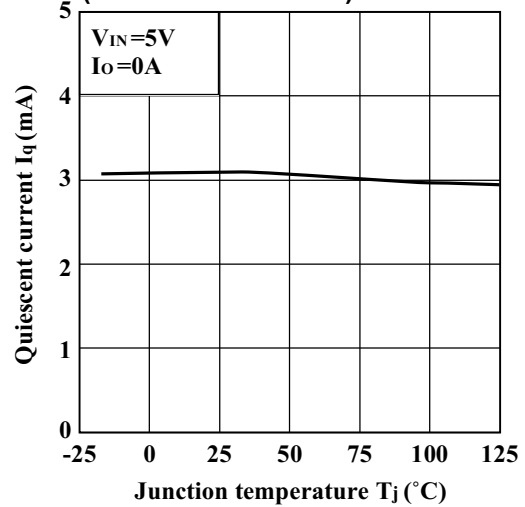


Fig.13 Ripple Rejection vs. Input Ripple Frequency (PQ3TZ50/PQ3TZ53)

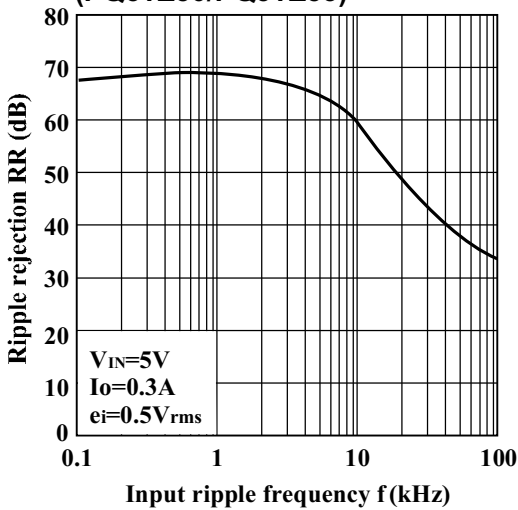


Fig.14 Output Peak Current vs. Junction Temperature(Typical Value) (PQ3TZ50/PQ3TZ53)

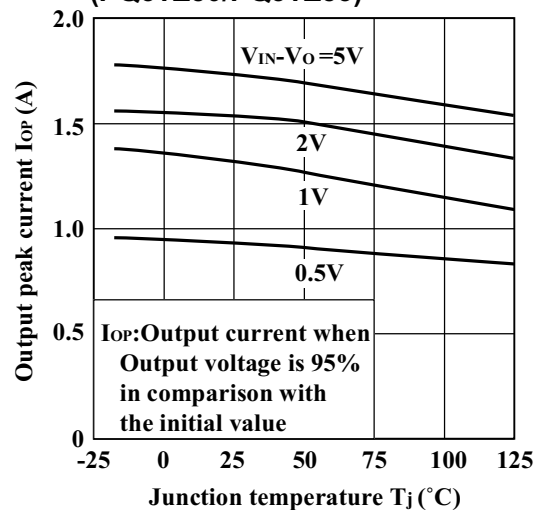
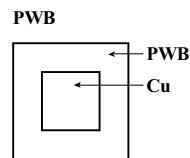
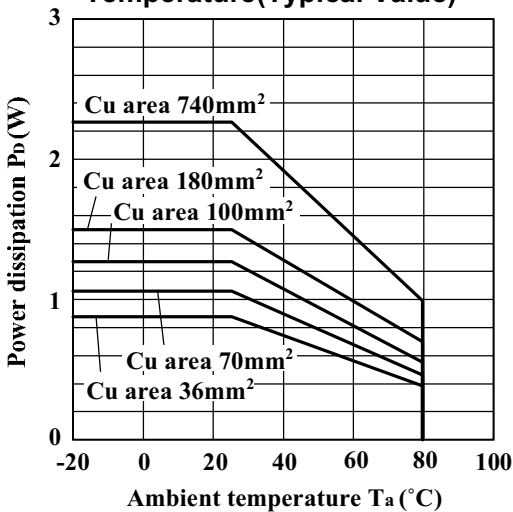


Fig.15 Power Dissipation vs. Ambient Temperature(Typical Value)



Material : Glass-cloth epoxy resin
 Size : 50X50X1.6mm³
 Cu thickness : 35μm

■ Model Line-ups for Tape-packaged Products

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