PQ3TR5M0AZ Series

Low Power-Loss Voltage Regulators with Reset Signal Generating Function in Detecting Input Voltage Drop

■ Features

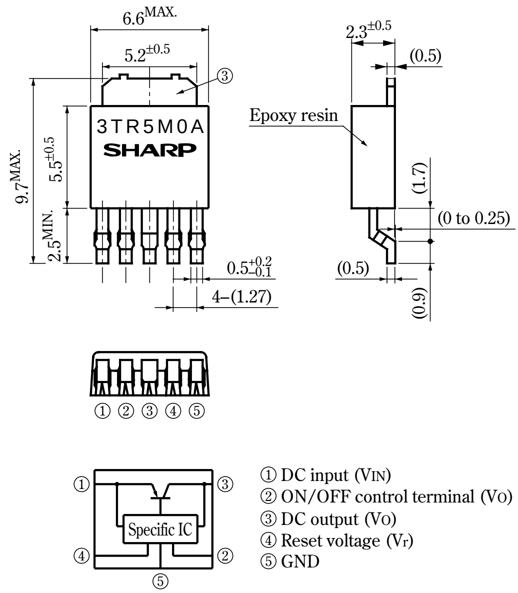
- Reset signal generating function
  The reset detection voltage can be custom-ordered in the range of 3.5 to 4.5V
- Low power-loss
  (Dropout votlage: MAX. 0.5A at I_O=0.3A)
- Compact surface mount package (equivalent to SC-63)
- Output voltage precision: ±2%
- Output voltage: 3 to 3.7V (available every 0.1V)
- Built-in overcurrent protection, overheat protection functions
- Both tape-packaged product and sleeve package product are available.

■ Applications

- Power supplies for various electronic equipment such as AV or OA equipment
- CD-ROM drives

■ Outline Dimensions

(Unit : mm)



( ) : Typical dimensions

■ 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
※1 Reset output voltage	V_r	10	V
Output current	I_O	500	mA
Reset output current	I_r	5	mA
※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 (10s)	˚C

※1 All are open except GND and applicable terminals
※2 P_D:With infinite heat sink
※3 Overheat protection may operate at T_j=125˚C to 150˚C

•Please refer to the chapter " Handling Precautions ".

Electrical Characteristics

(Unless otherwise specified, V_{IN}=5V, I_O=300mA, V_C=2.7V, Ta=25˚C)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
※4 Output voltage	V_O	–	3.234	3.3	3.366	V
Load regulation	$R_{eg}L$	I_O=5mA to 0.5A	0	0.3	2	%
Line regulation	$R_{eg}I$	V_{IN}=5 to 7V, I_O=5mA	0	0.3	2	%
Temperature coefficient of output voltage	T_CV_O	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}	V_{IN}=3.7V, I_O=0.3A	–	–	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_{IN}=5V, V_C=0.4V	–	–	–2	µA
Output OFF-state dissipatiion current	I_{qs}	V_{IN}=5V, I_O=0A, V_C=0.4V	–	–	500	µA
Quiescent current	I_q	I_O=0A	–	–	10	mA
※6 Input detection voltage	V_{ri}	I_O=5mA, Vr≤0.8V, R_r=10kΩ	4.116	4.2	4.284	V
"L" reset output voltage	V_{rl}	I_O=5mA, I_r=5mA	–	–	0.8	V
Hysteresis voltage	ΔV_{ri}	I_O=5mA	50	150	200	mV
Reset output leak current	I_{rlk}	V_r=5V, R_r=10kΩ	–	–	1	µA

※4 It is avaiable for every 0.1V (3.0V to 3.7V)
※5 In case of opening control terminal②, output voltage turns off
※6 It is avaiable for every 0.1V (3.5V to 0.45V)

Reset Threshold Voltage Line-up (3.3V Output)

Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Reset threshold voltage	PQ3TR5M3AZ	V_{ri}	V_r<=0.8V ※7, R_r=10kΩ	4.116	4.2	4.284	V
	PQ3TR5M3BZ			4.214	4.3	4.386	
	PQ3TR5M3CZ			4.312	4.4	4.488	
	PQ3TR5M3DZ			4.41	4.5	4.59	

※7 Output voltage when input voltage lowers and V_r becomes Low.

Fig.1 Test Circuit

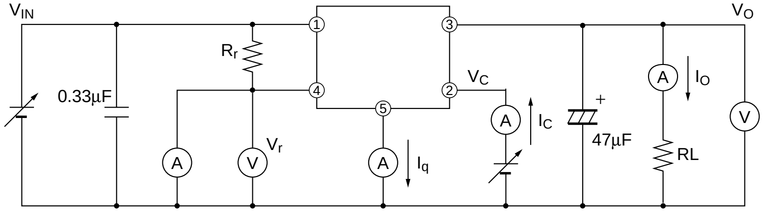
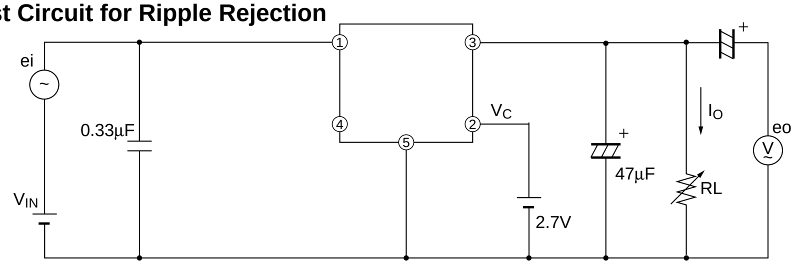
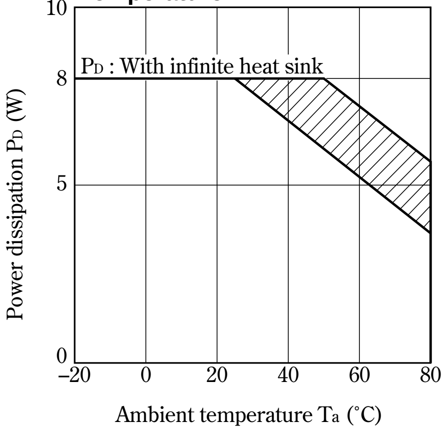


Fig.2 Test Circuit for Ripple Rejection



f=120Hz (sine wave)
ei(rms)=0.5V
V_{IN}=5V
I_O=0.1A
RR=20log (ei(rms)/eo(rms))

Fig.3 Power Dissipation vs. Ambient Temperature



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

Fig.4 Overcurrent Protection Characteristics (PQ3TR5M3AZ)

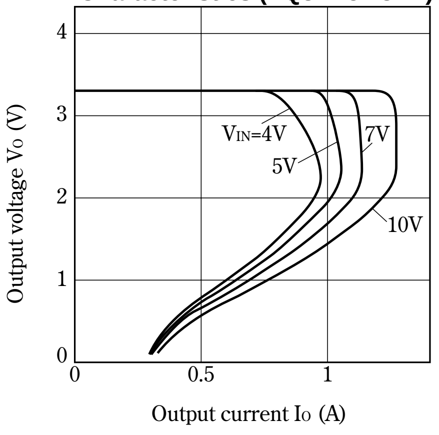


Fig.5 Output Voltage vs. Ambient Temperature (PQ3TR5M3AZ)

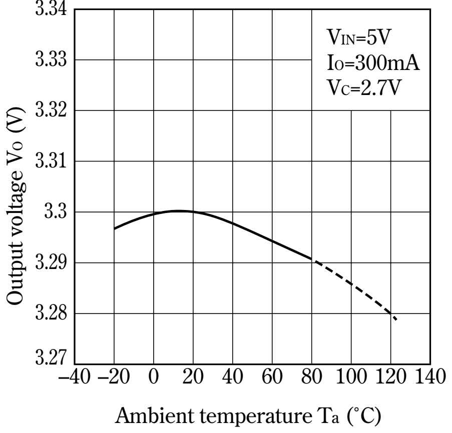


Fig.6 Output Voltage vs. Input Voltage (PQ3TR5M3AZ)

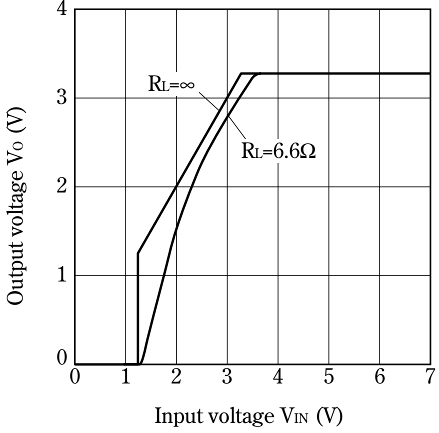


Fig.7 Circuit Operating Current vs. Input Voltage (Ex. PQ3TR5M3AZ)

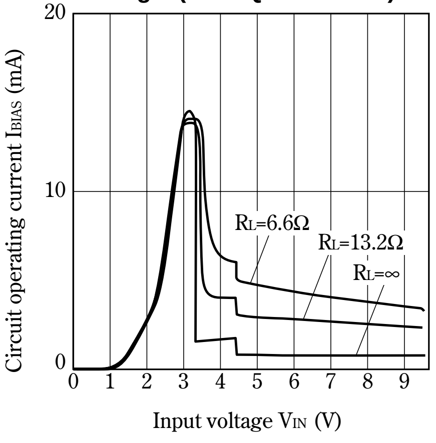


Fig.8 Quiescent Current vs. Junction Temperature

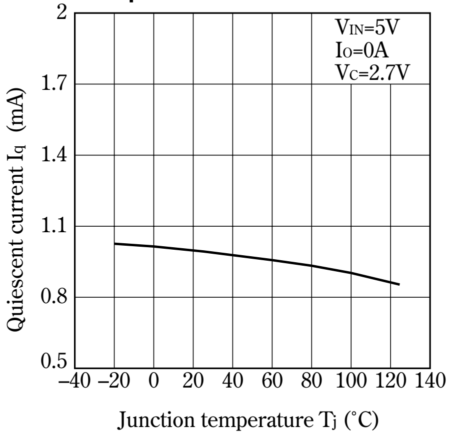


Fig.9 Reset Output Voltage vs. Input Voltage

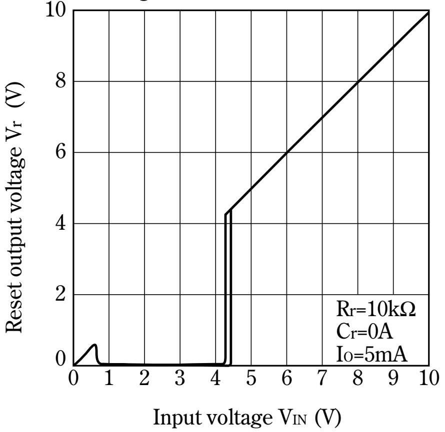


Fig.10 Input Detection Voltage vs. Junction Temperature

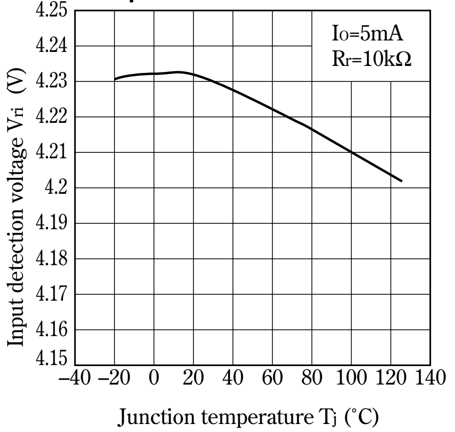


Fig.11 Hysteresis Voltage vs. Junction Temperature

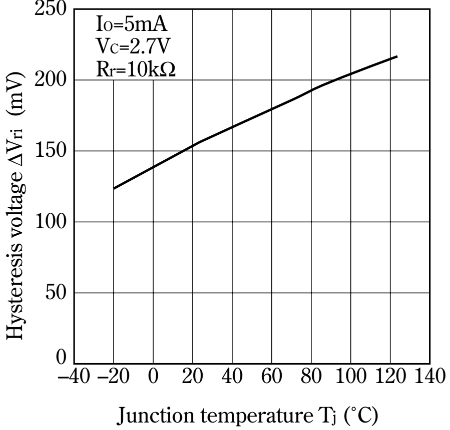


Fig.12 Ripple Rejection vs. Input Ripple Frequency

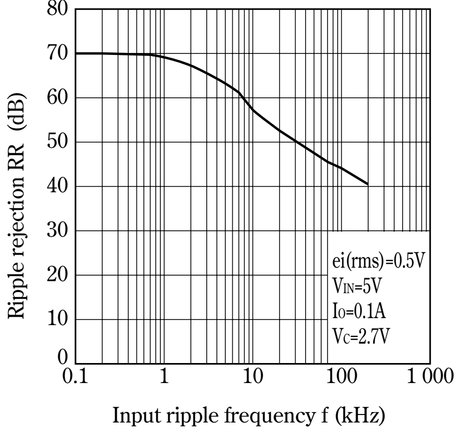


Fig.13 Ripple Rejection vs. Output Current

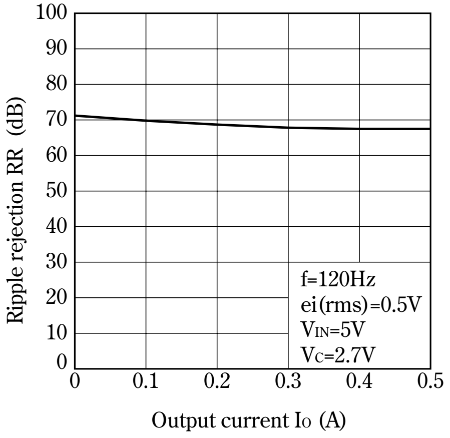


Fig.14 Typical Application

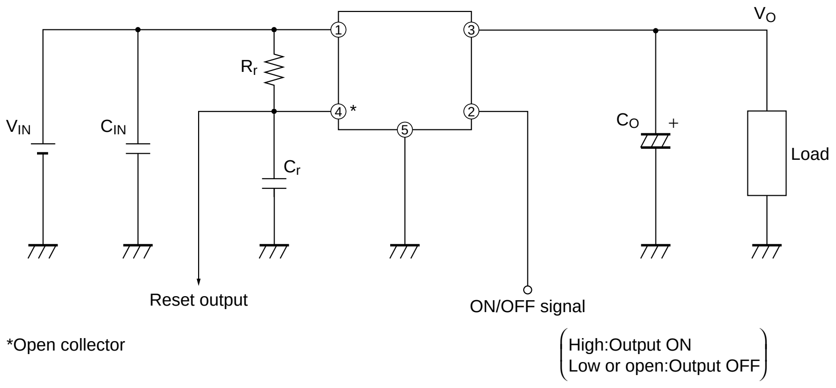


Fig.15 Reset Output Response (Typical Value)

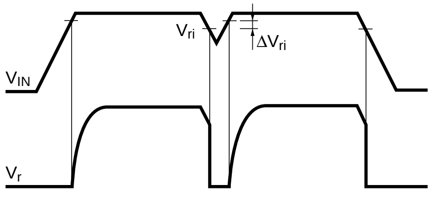
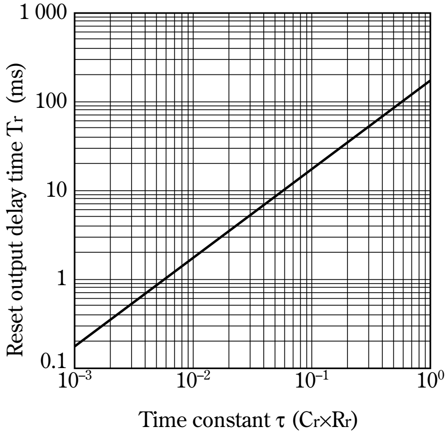


Fig.16 Reset Output Delay Time (Typical Value)



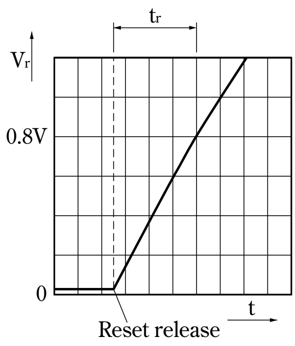


Fig.17 External Connection

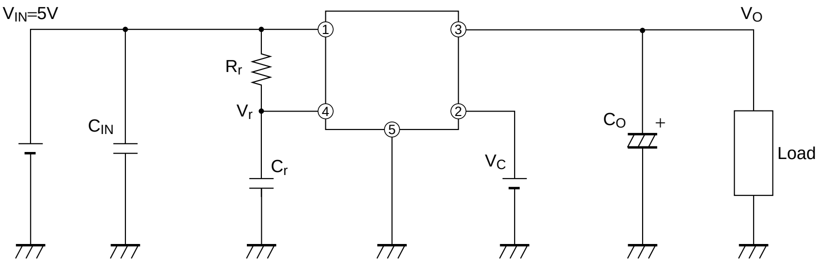
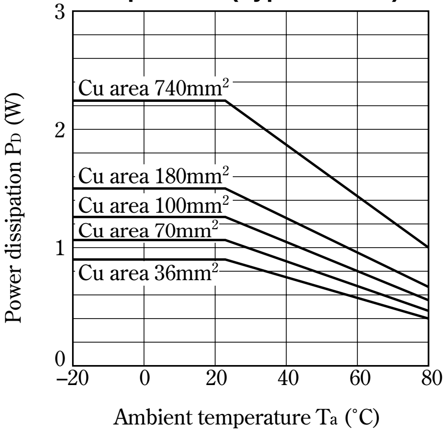
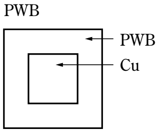


Fig.18 Power Dissipation vs. Ambient Temperature (Typical Value)





Material : Glass-cloth epoxy resin
Size : 50×50×1.6mm
Cu thickness : 35µm

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  --- Office automation equipment
  --- Telecommunication equipment [terminal]
  --- Test and measurement equipment
  --- Industrial control
  --- Audio visual equipment
  --- Consumer electronics

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  --- Gas leakage sensor breakers
  --- Alarm equipment
  --- Various safety devices, etc.

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