

PQ07VR5MAZ Series

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

■ Features

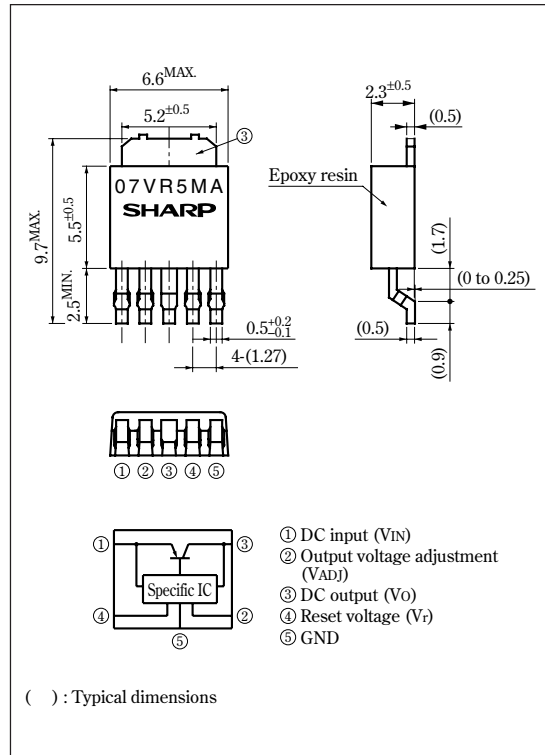
- Built-in reset signal generating function
(The reset detection voltage can be custom-ordered in the range of 3.5 to 4.5V.)
- Low power-loss (Dropout voltage: Max. 0.5V at $I_o=0.3A$)
- Compact, surface mount package (Equivalent to SC-63)
- Variable output voltage type (1.5 to 7V)
- Overcurrent protection and overheat protection function
- Tape-packaged products and sleeve-packaged products are available.

■ Applications

- Power supplies for AV, OA equipment, and various electronic equipment
- CD-ROM drives and CD-R drives
- DVD-ROM drives

■ Outline Dimensions

(Unit : mm)



■ Absolute Maximum Ratings

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

Parameter	Symbol	Rating	Unit
*1 Input voltage	V_{IN}	10	V
*1 Output adjustment terminal voltage	V_{ADJ}	7	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	$^{\circ}C$
Operating temperature	T_{opr}	-20 to +80	$^{\circ}C$
Storage temperature	T_{stg}	-40 to +150	$^{\circ}C$
Soldering temperature	T_{sol}	260 (10s)	$^{\circ}C$

*1 All are open except GND and applicable terminals

*2 P_D : With infinite heat sink

*3 Overheat protection may operate at the condition $T_j=125^{\circ}C$ to $150^{\circ}C$

• Please refer to the chapter " Handling Precautions ".

SHARP

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Electrical Characteristics (Unless otherwise specified, condition shall be $V_{IN}=5V$, $V_O=3V$ ($R_1=1k\Omega$), $I_O=300mA$, $T_a=25^\circ C$)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Input voltage	V_{IN}	—	3.4	—	10	V
Output voltage	V_O	—	1.5	—	7	V
Load regulation	R_{egL}	$I_O=5mA$ to $0.5A$	—	0.3	2	%
Line regulation	R_{egI}	$V_{IN}=5$ to $7V$, $I_O=5mA$	—	0.5	2	%
Ripple rejection	RR	Refer to Fig.2	45	60	—	dB
Dropout voltage	V_{I-O}	$V_{IN}=3.4V$	—	—	0.5	V
Reference voltage	V_{ref}	—	1.22	1.245	1.27	V
Temperature coefficient of reference voltage	$T_C V_{ref}$	$T_j=0$ to $125^\circ C$, $I_O=5mA$	—	± 1	—	%
Quiescent current	I_q	$I_O=0A$	—	—	5	mA
Input detection voltage	V_{ri}	$V_r=0.8$, $R_r=10k\Omega$, $I_O=5mA$	4.116	4.2	4.284	V
"L" Reset output voltage	V_{rl}	$2.5V < V_{IN} < V_{ri}$, $I_O=5mA$	—	—	0.8	V
Hysteresis voltage	ΔV_{ri}	$R_r=10k\Omega$	50	150	200	mV
Reset output leak current	I_{rlk}	$V_r=5V$, $R_r=10k\Omega$	—	—	1	μA

Reset Threshold Voltage Line-up

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Reset threshold voltage	V_{rt}	*4 $V_r \leq 0.8V$, $R_r=10k\Omega$	4.116	4.2	4.284	V
			4.214	4.3	4.386	
			4.312	4.4	4.488	
			4.41	4.5	4.59	

*4 Output voltage shall be the value when input voltage lowers and V_r becomes low

Fig.1 Test Circuit

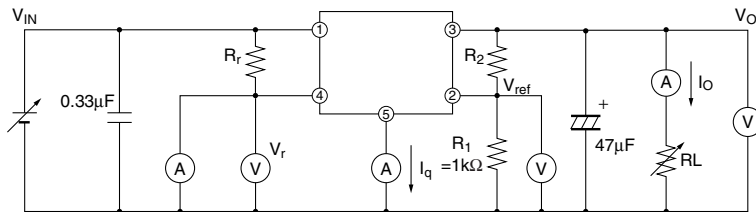


Fig.2 Test Circuit for Ripple Rejection

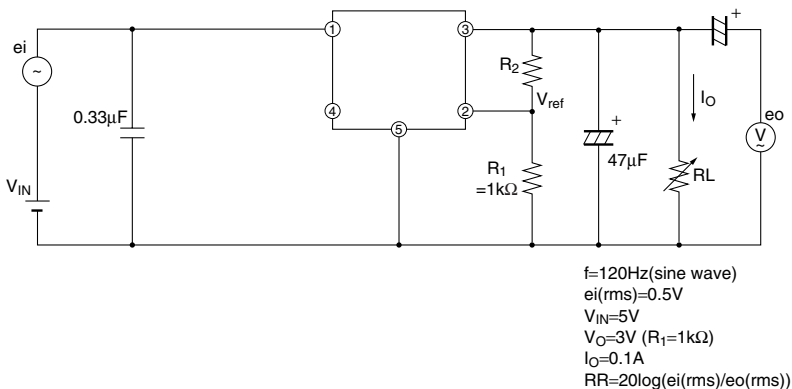
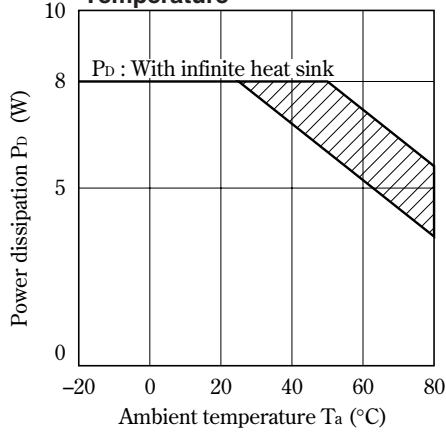


Fig.3 Power Dissipation vs. Ambient Temperature



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

Fig.5 Reference Voltage Fluctuation vs. Ambient Temperature

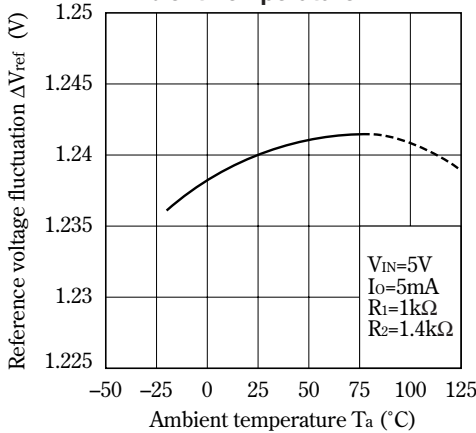


Fig.7 Circuit Operating Current vs. Input Voltage

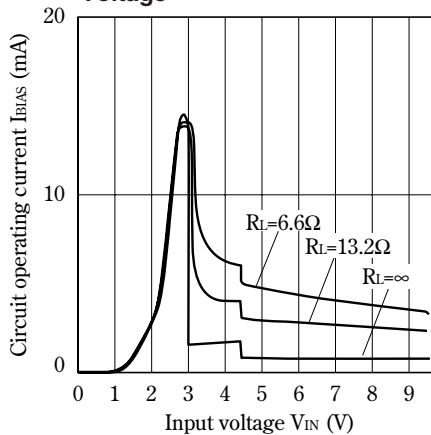


Fig.4 Overcurrent Protection Characteristics (Output:3V)

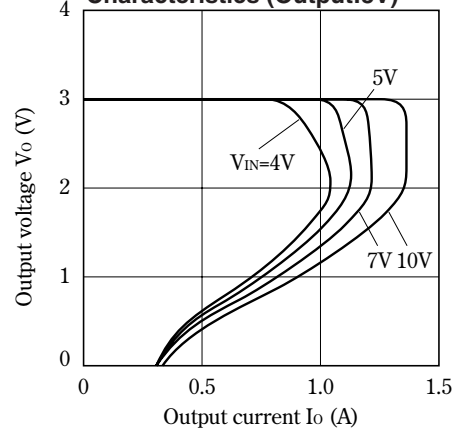


Fig.6 Output Voltage vs. Input Voltage (Output:3V)

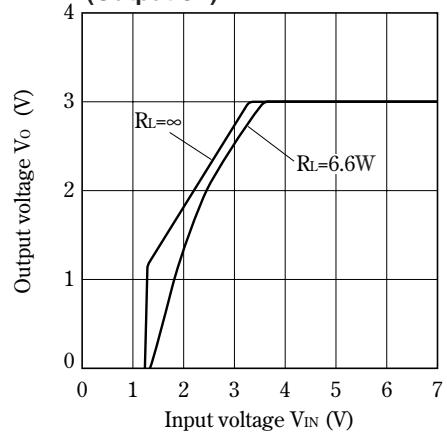


Fig.8 Quiescent Current vs. Junction Temperature

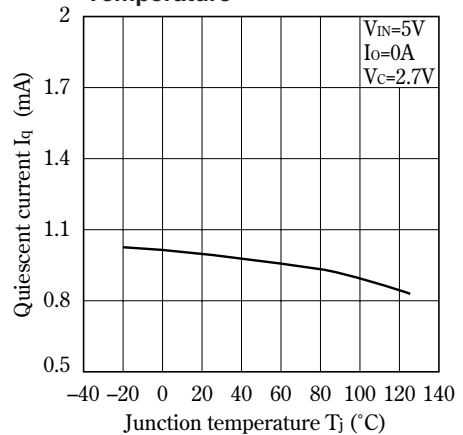


Fig.9 Reset Output Voltage vs. Input Voltage

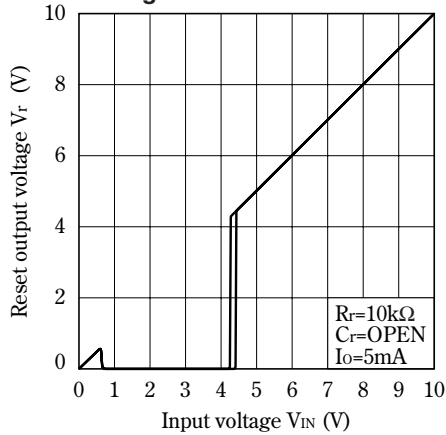


Fig.10 Input Detection Voltage vs. Junction Temperature

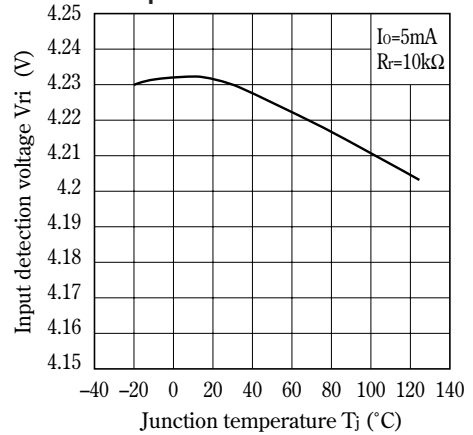


Fig.11 Hysteresis Voltage vs. Junction Temperature

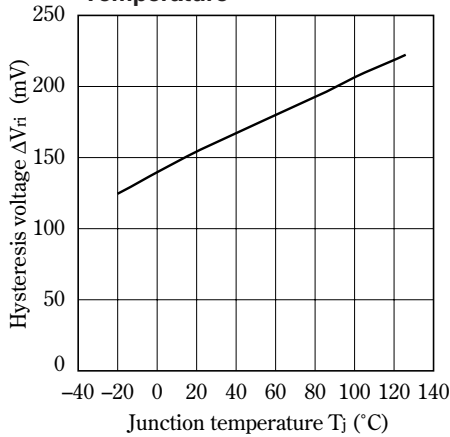


Fig.12 Ripple Rejection vs. Input Ripple Frequency

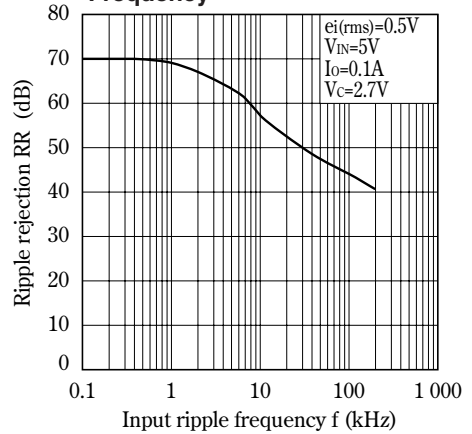


Fig.13 Ripple Rejection vs. Output Current

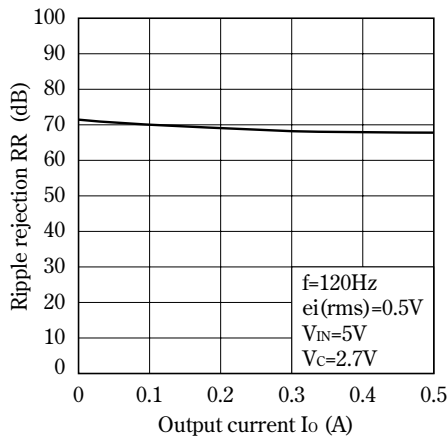


Fig.14 Typical Application

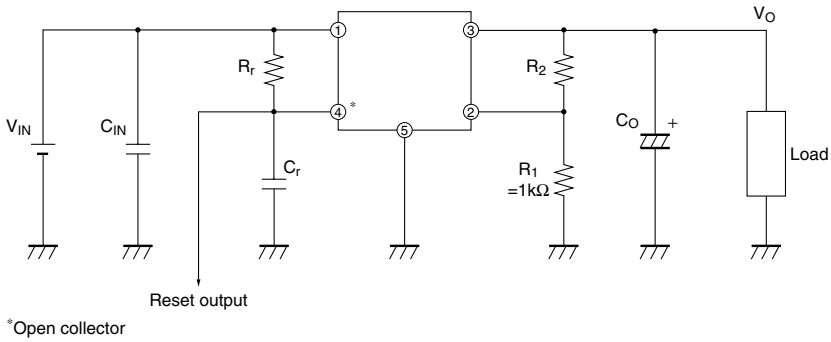


Fig.15 Reset Output Response (Typical Value)

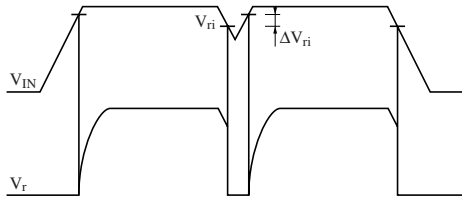


Fig.16 Reset Output Delay Time vs. Time Constant (Typical Value)

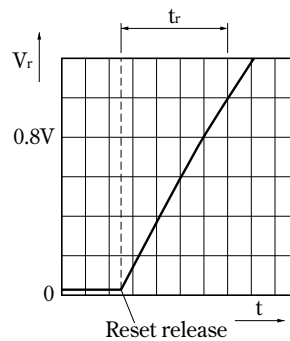
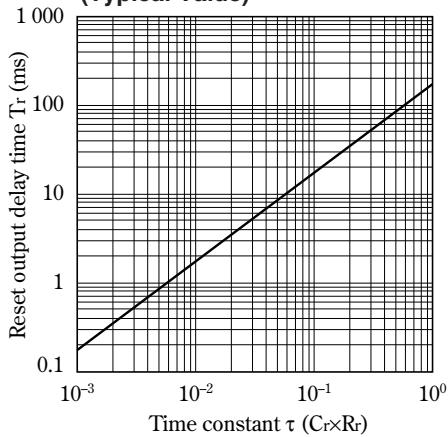


Fig.17 External Connection

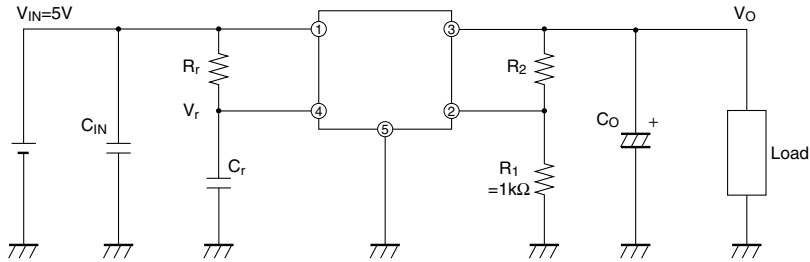
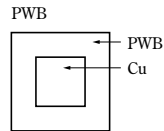
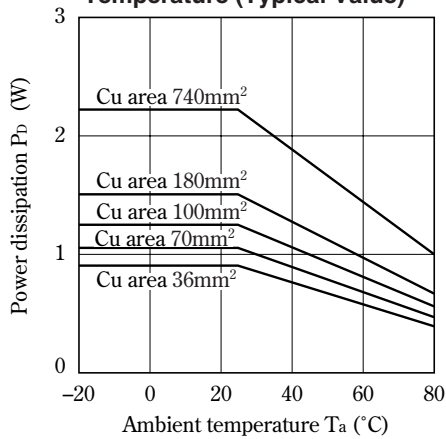
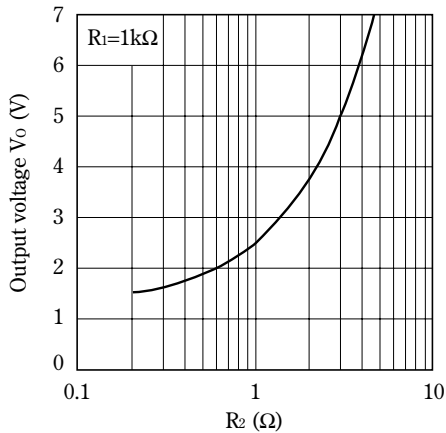


Fig.18 Power Dissipation vs. Ambient Temperature (Typical Value)



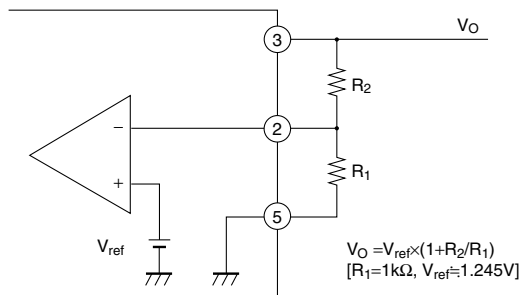
Material : Glass-cloth epoxy resin
 Size : 50×50×1.6mm
 Cu thickness : 35μm

Fig.19 Output Voltage Adjustment Characteristics



■ Setting of Output Voltage

Output voltage is able to set from 1.5V to 7V when resistors R₁ and R₂ are attached to ②, ③, ⑤ terminals. As for the external resistors to set output voltage, refer to the figure below and Fig.19.



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