PQ1Kxx3M2ZP Series

Low Output Current, Compact Surface Mount Type Low Power-Loss Voltage Regulators

■ Features

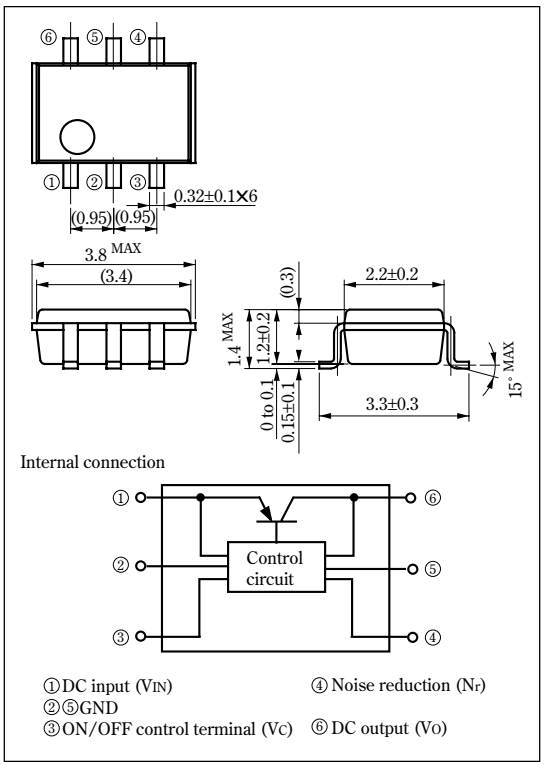
- Compact surface mount package SOT-23L (3.4×2.2×1.2 mm)
- Output current : MAX.300mA
- Low power-loss
  (Dropout voltage : MAX.0.7 V at I_O=300mA)
- High ripple rejection (TYP. 70dB)
- Built-in ON/OFF control function

■ Applications

- CD-ROM drives/DVD-ROM drives
- Digital Still Cameras

■ Outline Dimensions

(Unit : mm)



■ Absolute Maximum Ratings

(T_a=25˚C)

Parameter	Symbol	Rating	Unit
※1 Input voltage	V_{in}	9	V
※1 ON/OFF control terminal voltage	V_c	9	V
Output current	I_o	300	mA
※2 Power dissipation	P_D	400	mW
※3 Junction temperature	T_j	150	˚C
Operating temperature	T_{opr}	–30 to +80	˚C
Storage temperature	T_{stg}	–55 to +150	˚C
Soldering temperature	T_{sol}	260 (For 10s)	˚C

※1 All are open except GND and applicable terminals.

※2 At mounted on PCB

※3 Overheat protection may operate at 125<=T_j<=150˚C.

• Please refer to the chapter " Handling Precautions ".

■ Electrical Characteristics

(Unless otherwise specified, V_{in}=V_o(TYP.)+1.0V, I_o=30mA, V_c=1.8V, T_a=25˚C)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Output voltage	Vo	–	Refer to the table below			V
Load regulation	RegL	I_o=5mA to 300mA	–	35	160	mV
Line regulation	RegI	V_{IN}=V_o(TYP.)+1V to V_o(TYP.)+6V(MAX. 9V)	–	3.0	20	mV
Temperature coefficient of output voltage	T_cV_o	I_o=10mA,T_j=–25 to +75˚C	–	0.05	–	mV/˚C
※4 Ripple rejection	RR	–	–	70	–	dB
※4 Output noise voltage	$V_{no(rms)}$	10Hz<f<100kHz, I_o=30mA,Cn=0.1µF	–	30	–	µV
Dropout voltage	V_{I-O}	I_o=300mA,※5	–	–	0.7	V
※6 ON-state voltage for control	$V_{c(on)}$	–	1.8	–	–	V
ON-state current for control	$I_{c(on)}$	V_c=1.8V	–	5	30	µA
OFF-state voltage for control	$V_{c(off)}$	–	–	–	0.4	V
Quienscent current	I_q	I_o=0mA	–	–	500	µA
Output OFF-state dissipation current	I_{qs}	V_c=0.2V	–	–	1	µA

※4 Typical value at output voltage is 3.0V type.

※5 Input voltage when output voltage lowers 100m V from the voltage at Vin=Vo(TYP.)+1.0V.

※6 In case of opening control terminal ③, output voltage turns off.

■ Output Voltage Line-up

(V_{IN}=V_o(TYP.)+1.0V,I_o=30mA,V_c=1.8V,T_a=25˚C)

Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit
※7 Output voltage	PQ1K183M2ZP	Vo	–	1.740	1.8	1.860	V
	PQ1K213M2ZP			2.040	2.1	2.160	
	PQ1K253M2ZP			2.440	2.5	2.560	
	PQ1K303M2ZP			2.940	3.0	3.060	
	PQ1K333M2ZP			3.234	3.3	3.366	
	PQ1K343M2ZP			3.332	3.4	3.468	
	PQ1K503M2ZP			4.900	5.0	5.100	

※7 It is available for every 0.1V (1.3V to 5V)

Fig.1 Test Circuit

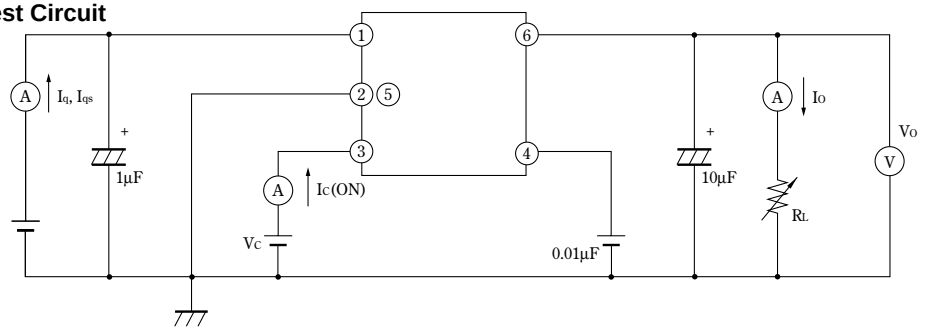
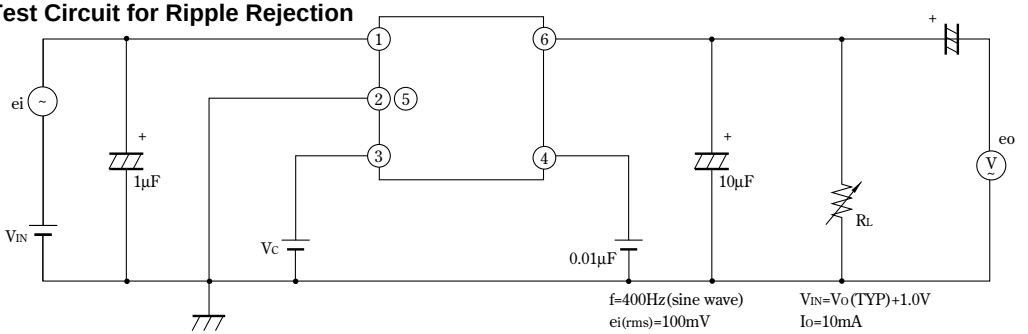


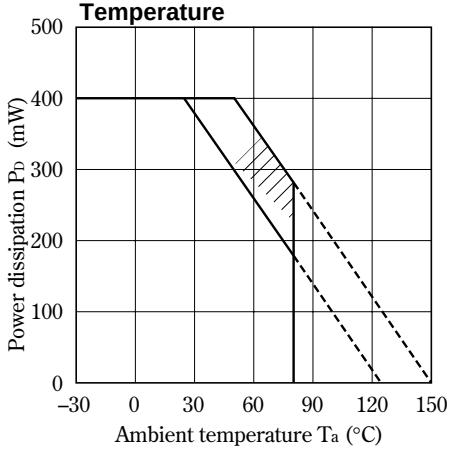
Fig.2 Test Circuit for Ripple Rejection



f=400Hz(sine wave)
ei(rms)=100mV
Vc=1.8V

V_{IN}=V_O(TYP)+1.0V
I_O=10mA
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 (Typical Value)

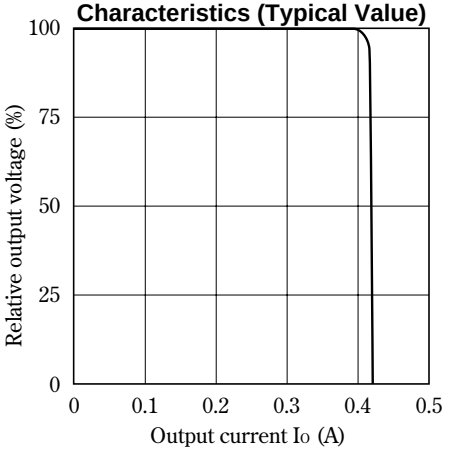


Fig.5 Output Voltage Fluctuation vs. Junction Temperature (PQ1K333M2ZP) (Typical Value)

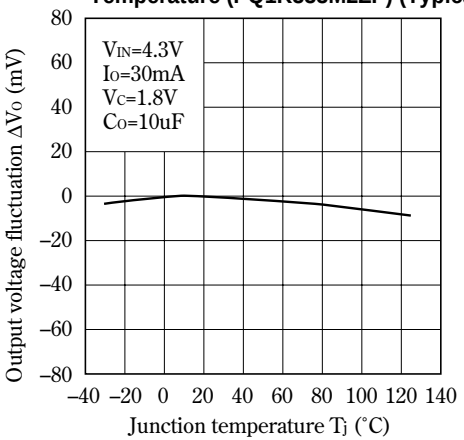


Fig.6 Output Voltage vs. Input Voltage (PQ1K333M2ZP) (Typical Value)

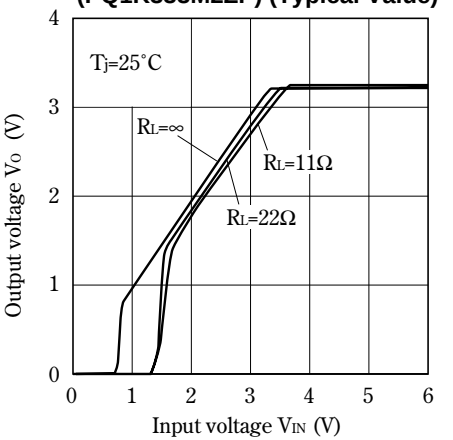


Fig.7 Circuit Operating Current vs. Input Voltage (PQ1K333M2ZP) (Typical Value)

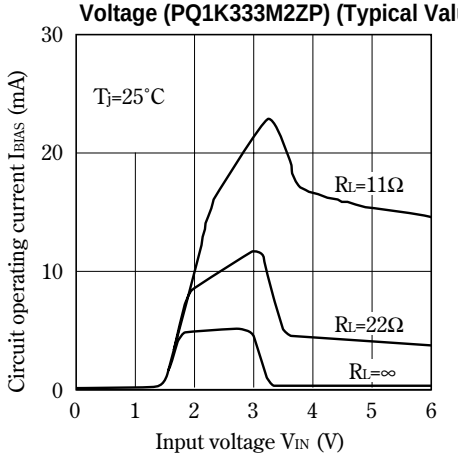


Fig.8 Dropout Voltage vs. Junction Temperature (Typical Value)

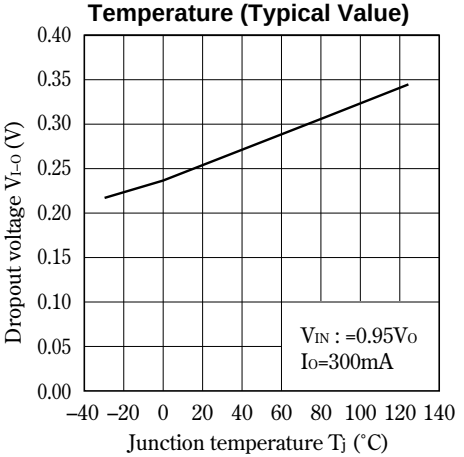


Fig.9 Quiescent Current vs. Junction Temperature

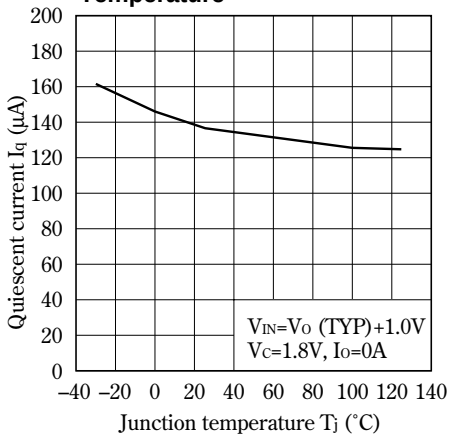


Fig.10 Ripple Rejection vs. Input Ripple Frequency (PQ1K333M2ZP) (Typical Value)

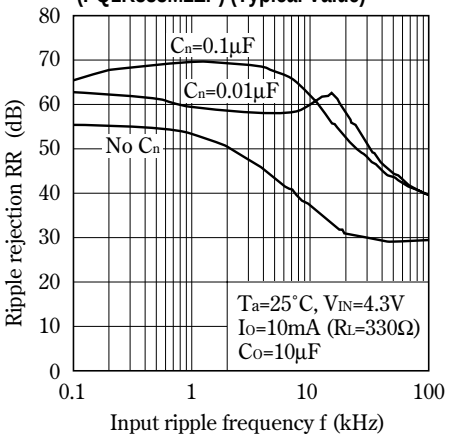


Fig.11 Dropout Voltage vs. Output Current (PQ1K333M2ZP) (Typical Value)

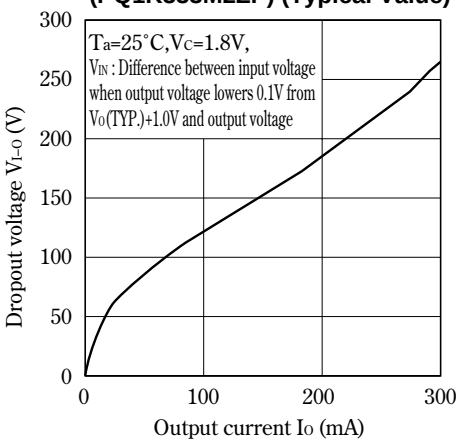
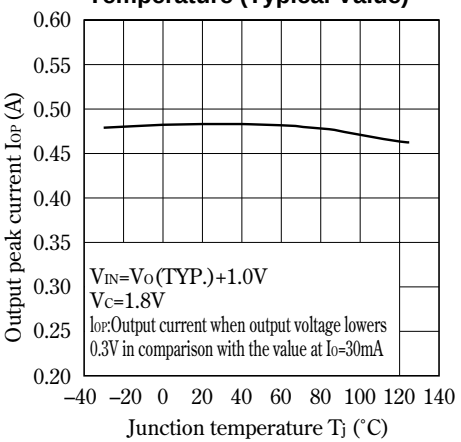
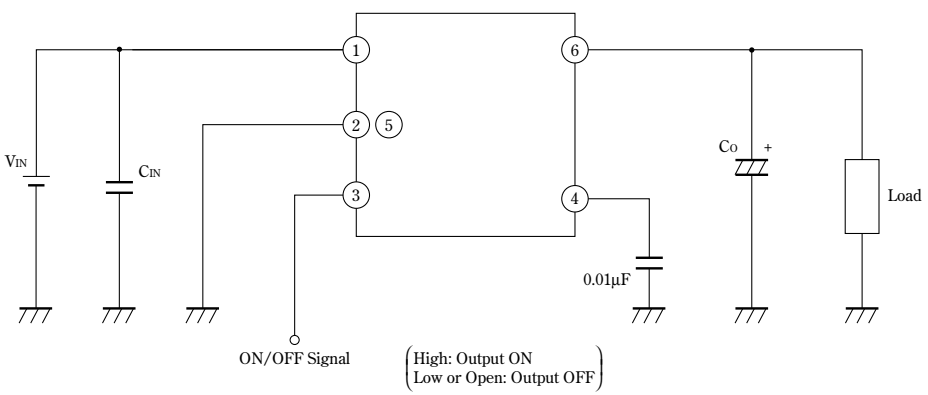


Fig.12 Output Peak Current vs. Junction Temperature (Typical Value)



■ ON/OFF Operation



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  --- Office automation equipment
  --- Telecommunication equipment [terminal]
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  --- Alarm equipment
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