PQ1Lxx3M2SP Series

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

■ Features

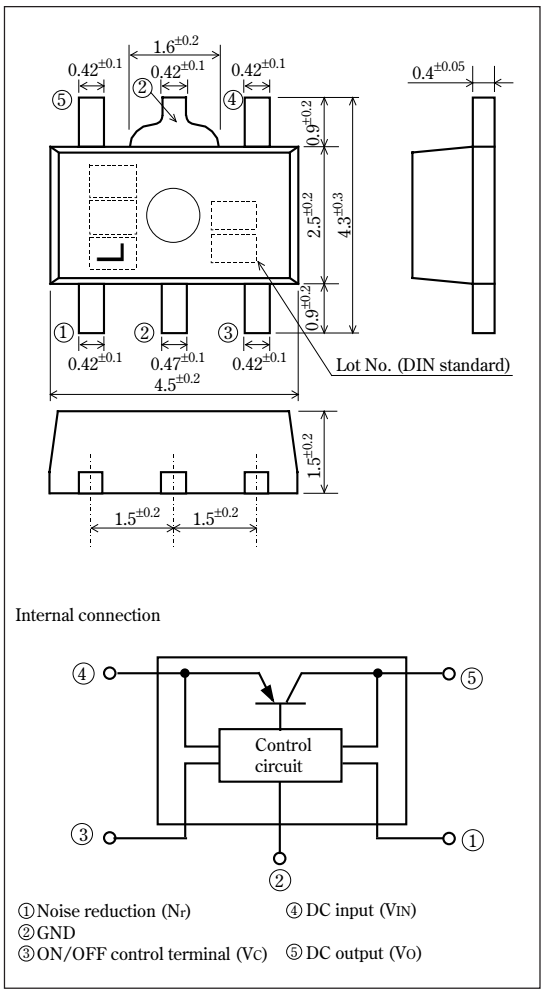
- Compact surface mount package SOT-89 (4.5×4.3×1.5 mm)
- Output current : MAX.300mA
- Power dissipation : MAX.900mW
- Low power-loss
  (Dropout voltage : MAX.0.7 V at I_O=300mA)
- High ripple rejection (TYP. 70dB)
- Built-in output ON/OFF control function

■ Applications

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

■ Outline Dimensions

(Unit : mm)



Internal connection

①Noise reduction (N_R) ④DC input (V_{IN})
②GND
③ON/OFF control terminal (V_C) ⑤DC output (V_O)

■ Absolute Maximum Ratings

(T_a=25°C)

Parameter	Symbol	Rating	Unit
※1 Input voltage	V_{IN}	16	V
※1 ON/OFF control terminal voltage	V_C	16	V
Output current	I_O	300	mA
※2 Power dissipation	P_D	900	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, condition shall be V_{IN}=V_O(TYP.)+1V, I_O=0.5A,V_C=2.7V, Ta=25°C)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Output voltage	V_O	–	Refer to the table below			V
Load regulation	R_{egL}	I_O=5mA to 300mA	–	35	160	mV
Line regulation	R_{egI}	Vin=V_O(TYP.)+1V to V_O(TYP.)+6V	–	3	20	mV
Temperature coefficient of output voltage	T_CV_O	I_O=10mA, Tj=–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, C_n=0.1µF	–	30	–	µV
Dropout voltage	V_{i-o}	I_O=300mA *5	–	0.3	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	–	150	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 100mV from the voltage at Vin=V_O(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
Output voltage	PQ1L253M2SP	V_O	–	2.440	2.5	2.560	V
	PQ1L303M2SP			2.940	3.0	3.060	
	PQ1L333M2SP			3.234	3.3	3.366	
	PQ1L503M2SP			4.900	5.0	5.100	

Fig.1 Test Cirsuit

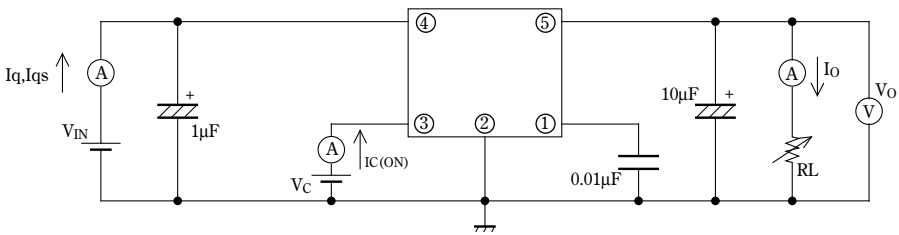


Fig.2 Test Circuit for Ripple Rejection

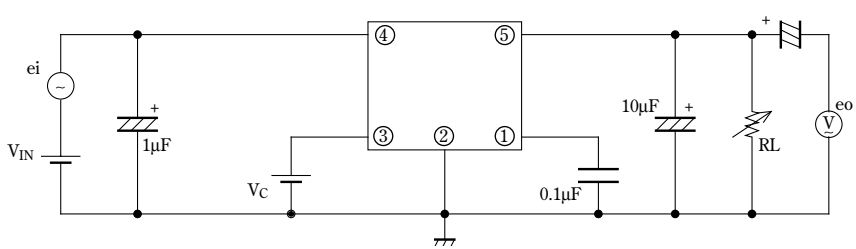
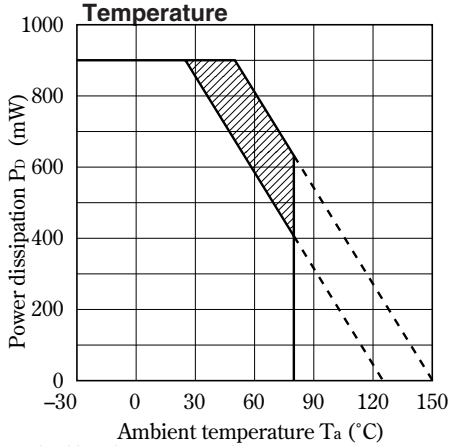


Fig.3 Power Dissipation vs. Ambient Temperature



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

Fig.4 Overcurrent Protection Characteristics (Typical Value)

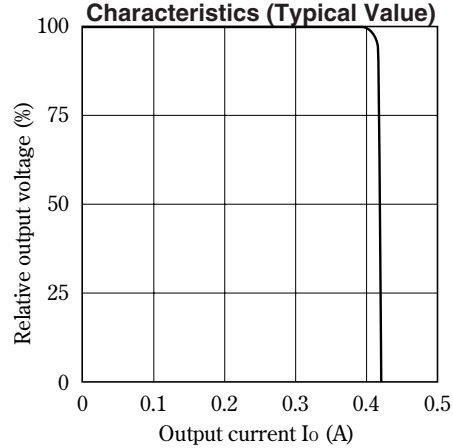


Fig.5 Output Voltage Fluctuation vs. Junction Temperature (PQ1L333M2SP) (Typical Value)

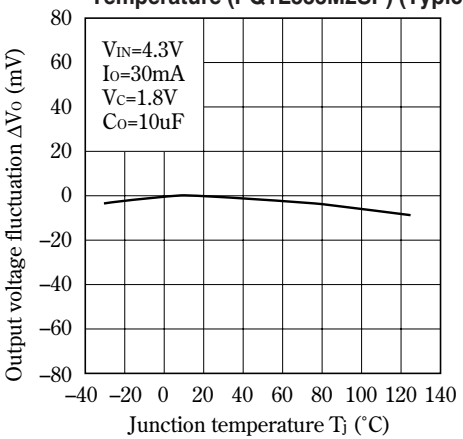


Fig.6 Output Voltage vs. Input Voltage (PQ1L333MS2SP) (Typical Value)

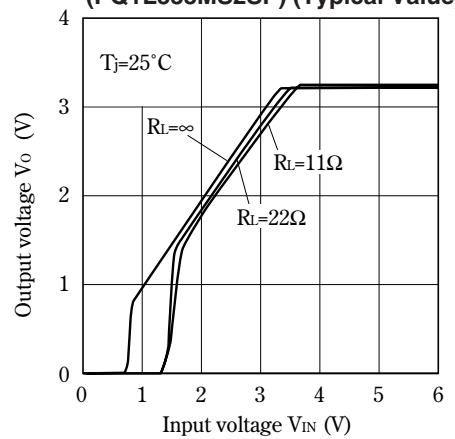


Fig.7 Circuit Operating Current vs. Input Voltage (PQ1L333M2SP) (Typical Value)

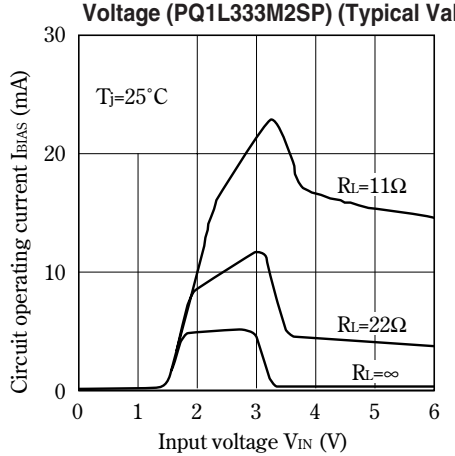


Fig.8 Dropout Voltage vs. Junction Temperature (Typical Value)

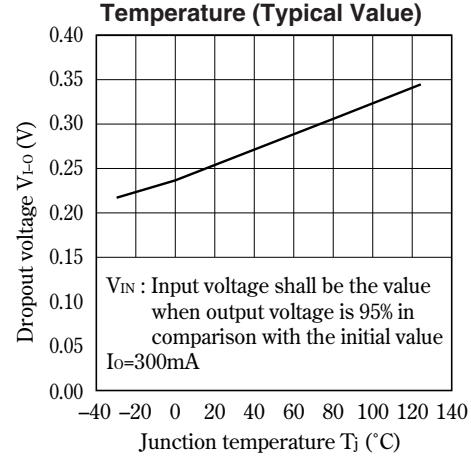


Fig.9 Quiescent Current vs. Junction Temperature

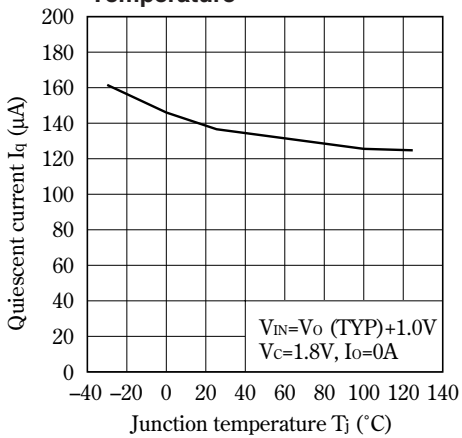


Fig.10 Ripple Rejection vs. Input Ripple Frequency (PQ1L333M2SP) (Typical Value)

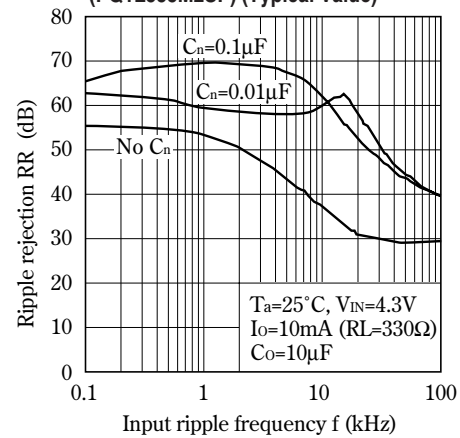


Fig.11 Dropout Voltage vs. Output Current (Typical Value)

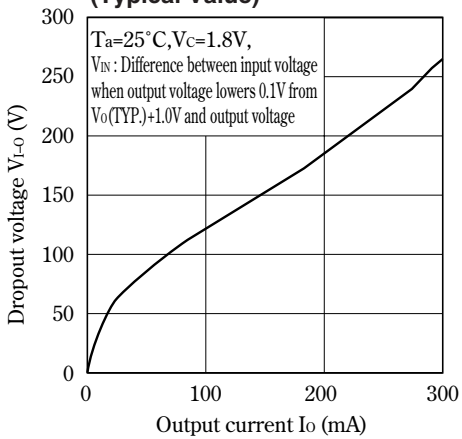
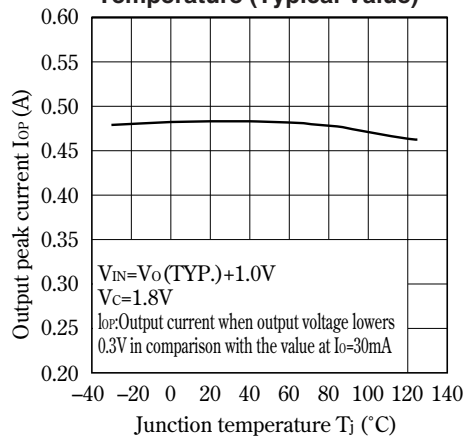
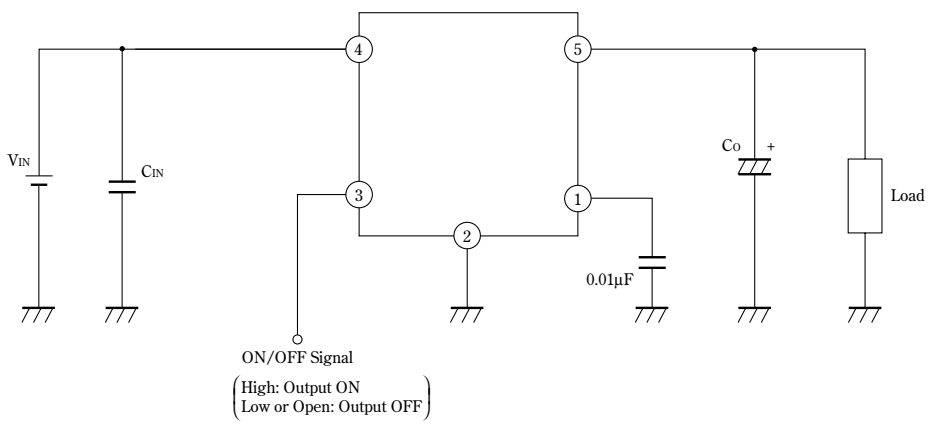


Fig.12 Output Peak Current vs. Junction Temperature (Typical Value)



■ ON/OFF Operation



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

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  --- Alarm equipment
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