

# PQ2Lxxx2MSPQ Series

2-Output Type  
Low Power-Loss Voltage Regulators

## ■ Features

- 1.Compact surface mount package (4.5x4.3x1.5mm)
- 2.Each channel 250mA  
Output 1:Voltage 3.3V / 2.5V  
Output 2:Voltage 3.3V / 2.5V / 1.8V / 1.5V
- 3.Power dissipation : MAX.900mW  
(At surface-mounted condition)
- 4.Low power-loss  
(Dropout voltage : MAX. 0.4V at  $I_o=100mA$ )
- 5.Use of ceramic capacitor is possible as output smooth capacitor
- 6.RoHS directive compliant

## ■ Applications

- 1.CD-ROM drives
- 2.DVD-ROM drives
- 3.Digital Still Cameras

## ■ Absolute Maximum Ratings

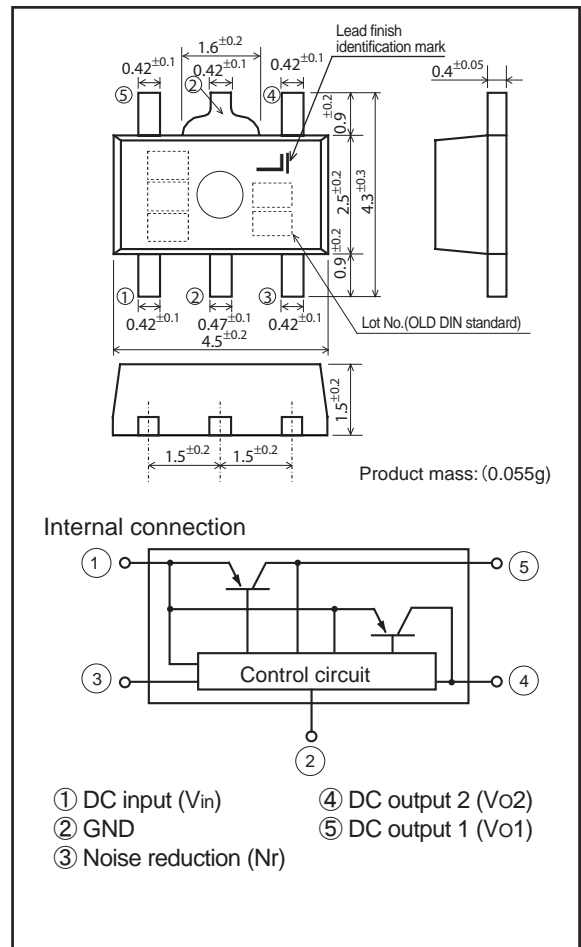
( $T_a=25^\circ C$ )

Parameter	Symbol	Rating	Unit
*1 Input voltage	$V_{IN}$	9	V
Output current	$I_{o1}$	250	mA
	$I_{o2}$	250	
*2 Power dissipation	$P_D$	900	mW
*3 Junction temperature	$T_j$	150	$^\circ C$
Operating temperature	$T_{opr}$	-30 to +80	$^\circ C$
Storage temperature	$T_{stg}$	-55 to +150	$^\circ C$
Soldering temperature	$T_{sol}$	270(10s)	$^\circ C$

\*1 All are open except GND and applicable terminals.  
\*2 At surface-mounted condition  
\*3 Overheat protection may operate at  $T_j:125^\circ C$  to  $150^\circ C$

## ■ Outline Dimensions

(Unit : mm)



Lead finish:Lead-free solder plating  
(Composition: Sn2Bi)

### Electrical Characteristics

(Unless otherwise specified condition shall be  $V_{in}=V_{o1}(TYP.)+1.0V$ ,  $I_{o1}=0mA$ ,  $I_{o2}=0mA$ ,  $T_a=25^{\circ}C$ )

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Output voltage	$V_o$	-	Refer to list.1			V
Load regulation	RegL1	$I_{o1}=5$ to 200mA	-	30	160	mV
	RegL2	$I_{o2}=5$ to 200mA	-	30	160	
Line regulation	RegL1	$V_{in}=V_{o1}(TYP.)+1V$ to $V_{o1}(TYP.)+6V(MAX.9V)$ , $I_{o1}=30mA$	-	3	20	mV
	RegL2	$V_{in}=V_{o2}(TYP.)+1V$ to $V_{o2}(TYP.)+6V(MAX.9V)$ , $I_{o2}=30mA$	-	3	20	
Temperature coefficient of output voltage	TcVo1	$I_{o1}=10mA$ , $T_j=-25$ to $75^{\circ}C$	-	0.1	-	mV/ $^{\circ}C$
	TcVo2	$I_{o2}=10mA$ , $T_j=-25$ to $75^{\circ}C$	-	0.1	-	
*4 Ripple rejection	RR	Refer to Fig.2	-	60	-	dB
Output noise voltage	$V_{no(rms)}$	$10Hz < f < 100kHz$ , $I_o=30mA$ , $C_n=0.01\mu F$	-	50	-	$\mu V$
Dropout voltage	$V_{I-o1}$	$I_{o1}=100mA$ , *5	-	0.16	0.4	V
	$V_{I-o2}$	$I_{o2}=200mA$ , *5	-	0.24	1.0	
Quiescent current	$I_q$	-	-	250	400	$\mu A$

\*4 Typical value of 3.3V output model.

\*5 Input voltage when output voltage falls 0.1V from that at  $V_{in}=V_o(TYP.)+1.0V$ .  
However,  $V_{in} \geq 2.3V$ .

### List.1 Output voltage

( $V_{in}=V_{o1}(TYP.)+1.0V$ ,  $T_a=25^{\circ}C$ )

Parameter	Model No.	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Output voltage	PQ2L3332MSPQ	$V_{o1}$	$I_{o1}=30mA$ , $I_{o2}=0mA$	3.234	3.3	3.366	V
		$V_{o2}$	$I_{o1}=0mA$ , $I_{o2}=30mA$	3.234	3.3	3.366	
	PQ2L3252MSPQ	$V_{o1}$	$I_{o1}=30mA$ , $I_{o2}=0mA$	3.234	3.3	3.366	
		$V_{o2}$	$I_{o1}=0mA$ , $I_{o2}=30mA$	2.440	2.5	2.560	
	PQ2L3182MSPQ	$V_{o1}$	$I_{o1}=30mA$ , $I_{o2}=0mA$	3.234	3.3	3.366	
		$V_{o2}$	$I_{o1}=0mA$ , $I_{o2}=30mA$	1.740	1.8	1.860	
	PQ2L3152MSPQ	$V_{o1}$	$I_{o1}=30mA$ , $I_{o2}=0mA$	3.234	3.3	3.366	
		$V_{o2}$	$I_{o1}=0mA$ , $I_{o2}=30mA$	1.440	1.5	1.560	
	PQ2L2182MSPQ	$V_{o1}$	$I_{o1}=30mA$ , $I_{o2}=0mA$	2.440	2.5	2.560	
		$V_{o2}$	$I_{o1}=0mA$ , $I_{o2}=30mA$	1.740	1.8	1.860	
	PQ2L2152MSPQ	$V_{o1}$	$I_{o1}=30mA$ , $I_{o2}=0mA$	2.440	2.5	2.560	
		$V_{o2}$	$I_{o1}=0mA$ , $I_{o2}=30mA$	1.440	1.5	1.560	

Fig.1 Standard measuring circuit of Regulator portion

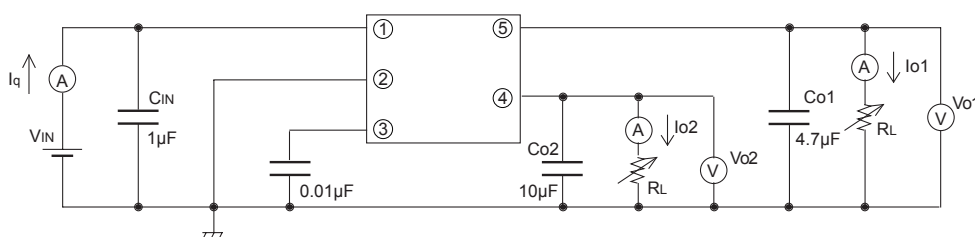


Fig.2 Standard measuring circuit of critical rate of ripple rejection

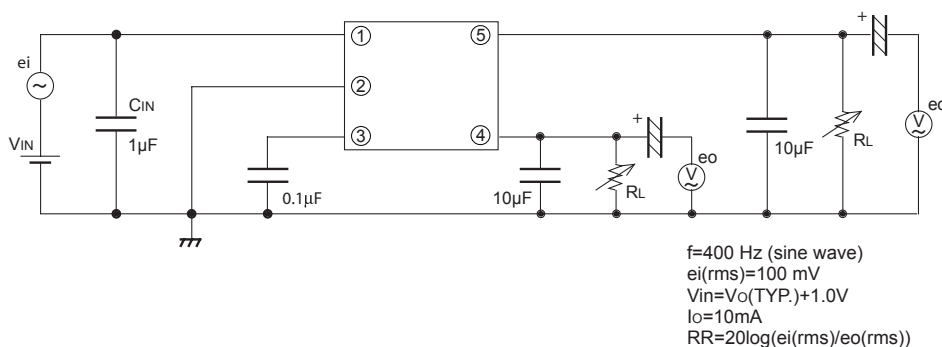
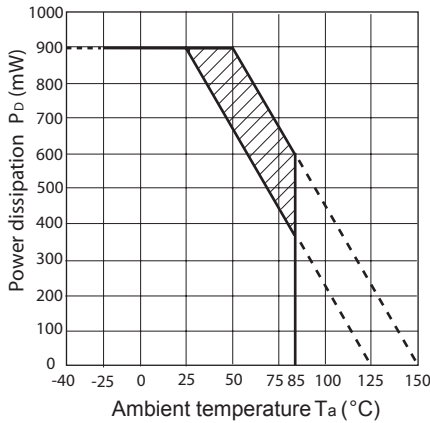
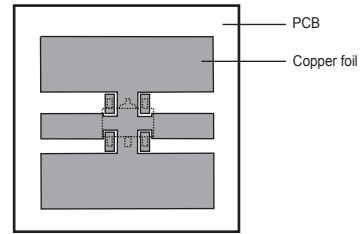


Fig.3 Power Dissipation vs. Ambient Temperature



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

Mounting PCB



Material : Glass-cloth epoxy resin  
 PCB Size : 20×20×1.0mm  
 Copper foil area : 180mm<sup>2</sup>  
 Thickness of copper : 35μm

Fig.4 Overcurrent Protection Characteristics (Typical Value)

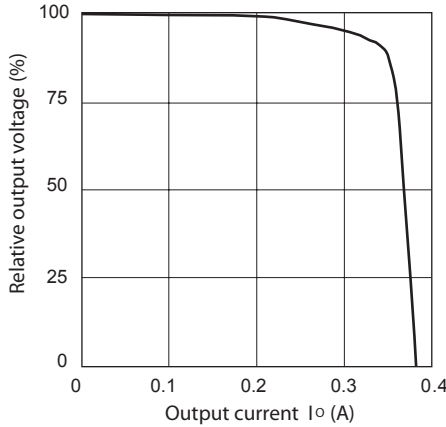


Fig.5 Reference Voltage Deviation vs. Junction Temperature (PQ2L3252MSPQ)(Typical Value)

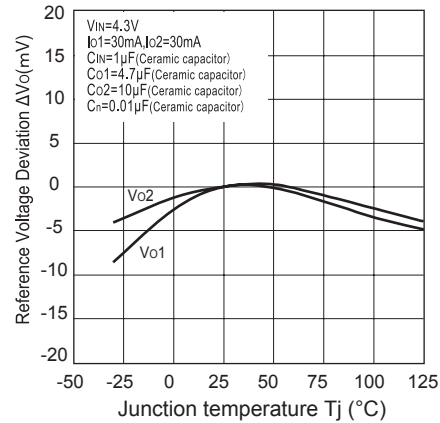


Fig.6 Output Voltage(Vo1) vs. Input Voltage (PQ2L3152MSPQ)(Typical Value)

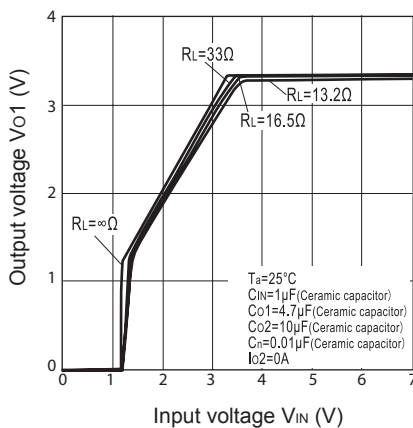


Fig.7 Output Voltage(Vo2) vs. Input Voltage (PQ2L3152MSPQ)(Typical Value)

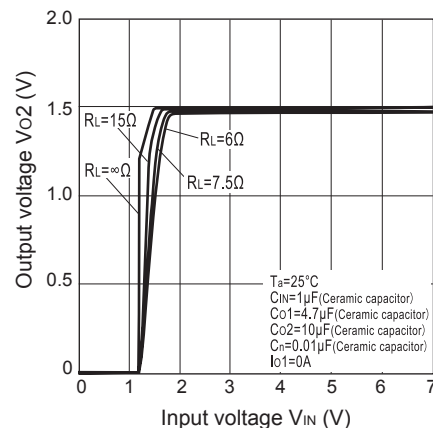


Fig.8 Circuit Operating Current vs. Input Voltage (PQ2L3152MSPQ)(Typical Value)

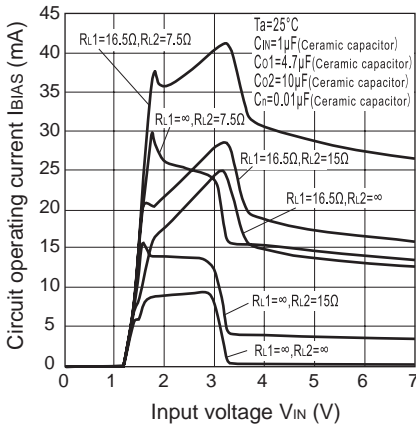


Fig.9 Dropout Voltage vs. Junction Temperature (PQ2L3252MSPQ)(Typical Value)

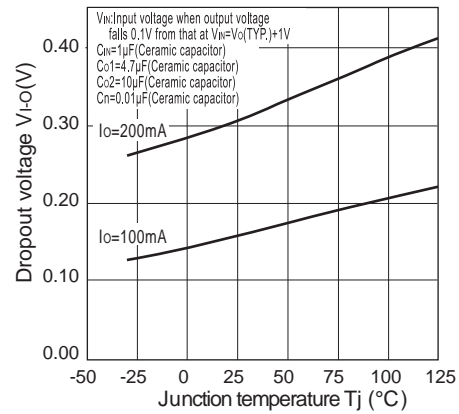


Fig.10 Quiescent Current vs. Junction Temperature (PQ2L3252MSPQ)(Typical Value)

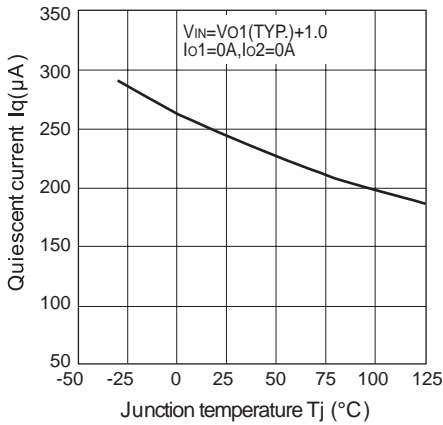


Fig.11 Ripple Rejection vs. Input Ripple Frequency (PQ2L3182MSPQ)(Typical Value)

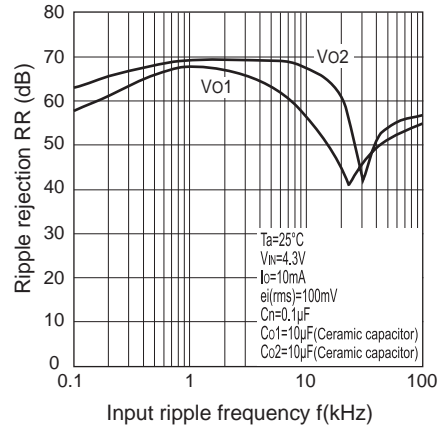


Fig.12 Dropout Voltage vs. Output Current (Typical Value)

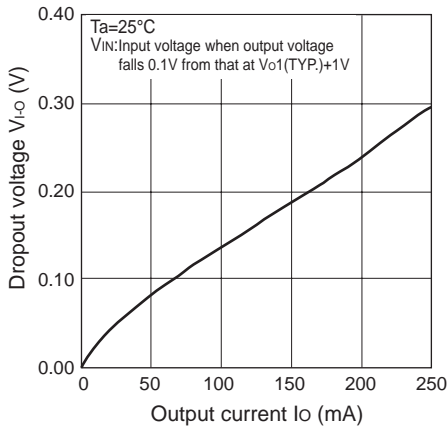


Fig.13 Output Peak Current vs. Junction Temperature (Typical Value)

