PQ2Lxxx2MSPQ Series

2-Output Type
Low Power-Loss Voltage Regulators

■ Features

1.Compact surface mount package (4.5×4.3×1.5mm)
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

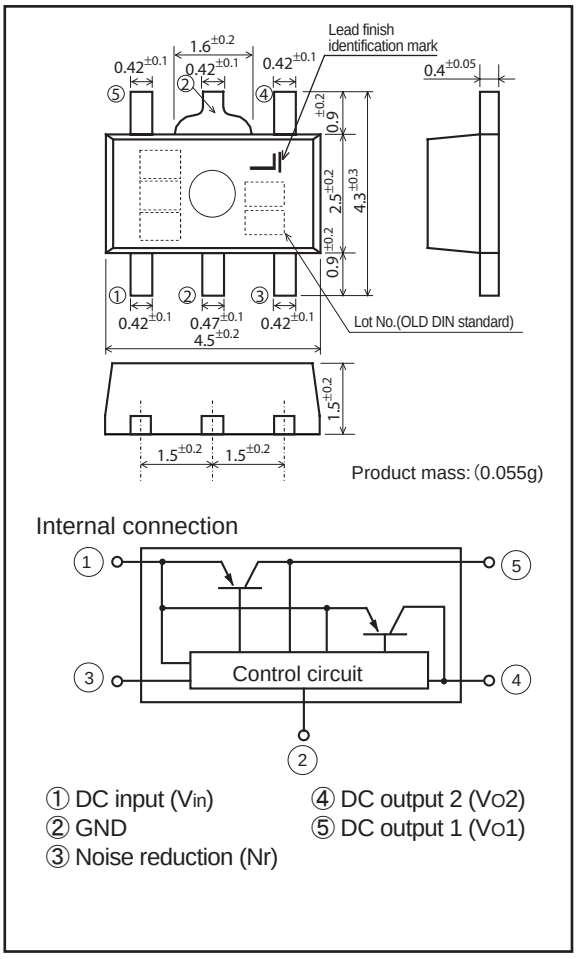
(Ta=25°C)

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	°C
Operating temperature	T_{opr}	-30 to +80	°C
Storage temperature	T_{stg}	-55 to +150	°C
Soldering temperature	T_{sol}	270(10s)	°C

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

■ Outline Dimensions

(Unit : mm)



Internal connection

① DC input (V_{in})
② GND
③ Noise reduction (Nr)
④ DC output 2 (V_{O2})
⑤ DC output 1 (V_{O1})

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,Ta=25°C)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Output voltage	V_O	-	Refer to list.1			V
Load regulation	$R_{egL}1$	I_{O1}=5 to 200mA	-	30	160	mV
	$R_{egL}2$	I_{O2}=5 to 200mA	-	30	160	
Line regulation	$R_{egI}1$	V_{IN}=V_{O1}(TYP.)+1V to V_{O1}(TYP.)+6V(MAX.9V) ,I_{O1}=30mA	-	3	20	mV
	$R_{egI}2$	V_{IN}=V_{O2}(TYP.)+1V to V_{O2}(TYP.)+6V(MAX.9V) ,I_{O2}=30mA	-	3	20	
Temperature coefficient of output voltage	T_CV_{O1}	I_{O1}=10mA, Tj=-25 to 75°C	-	0.1	-	mV/°C
	T_CV_{O2}	I_{O2}=10mA, Tj=-25 to 75°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,Cn=0.01µF	-	50	-	µV
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	µA

※4 Typical value of 3.3V output model.
※5 Input voltage when output voltage falls 0.1V from that at Vin=V_O(TYP)+1.0V.
However,Vin≧2.3V.

List.1 Output voltage

(V_{IN}=V_{O1}(TYP.)+1.0V, Ta=25°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

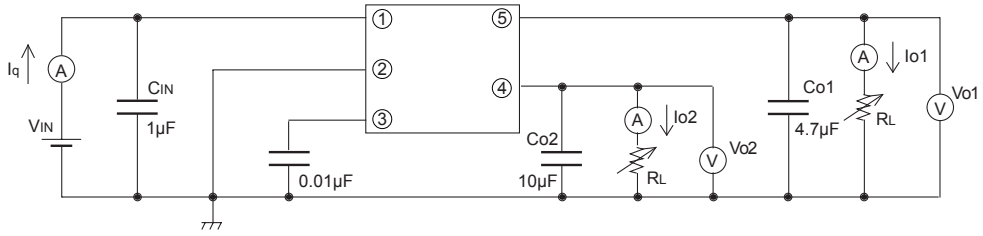
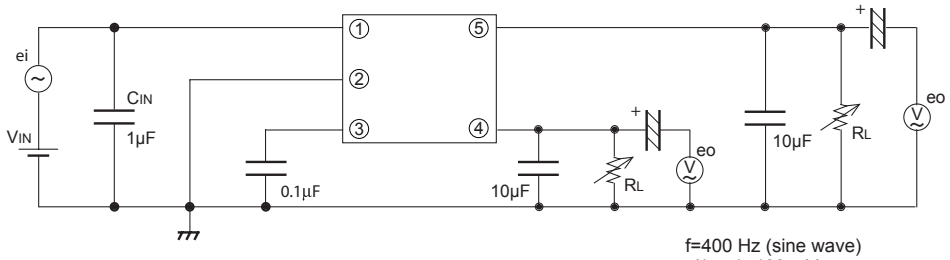
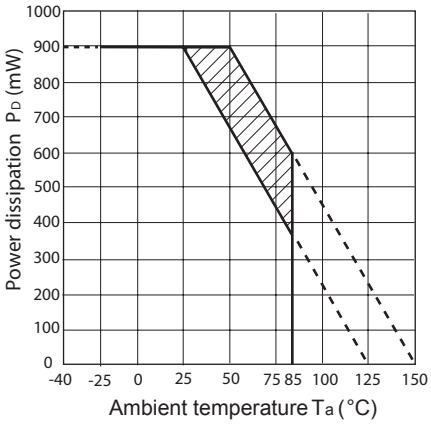


Fig.2 Standard measuring circuit of critical rate of ripple rejection



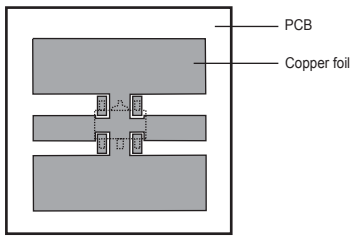
f=400 Hz (sine wave)
ei(rms)=100 mV
Vin=V_O(TYP.)+1.0V
I_O=10mA
RR=20log(ei(rms)/eo(rms))

Fig.3 Power Dissipation vs. Ambient Temperature



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

Mounting PCB



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

Fig.4 Overcurrent Protection Characteristics (Typical Value)

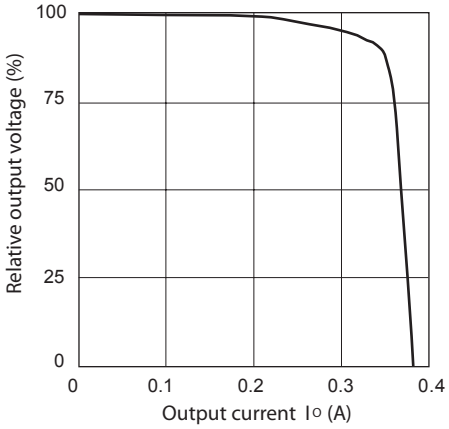


Fig.5 Reference Voltage Deviation vs. Junction Temperature (**PQ2L3252MSPQ**)(Typical Value)

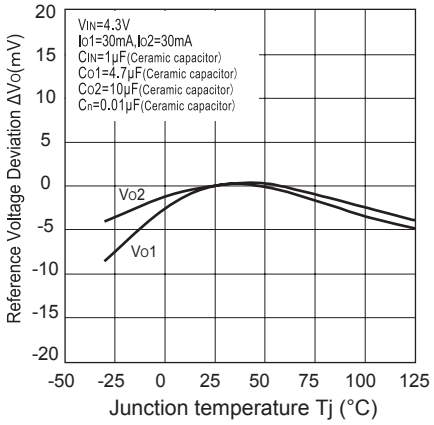


Fig.6 Output Voltage(Vo1) vs. Input Voltage (**PQ2L3152MSPQ**)(Typical Value)

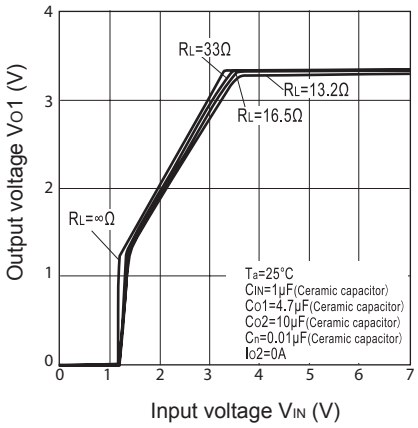


Fig.7 Output Voltage(Vo2) vs. Input Voltage (**PQ2L3152MSPQ**)(Typical Value)

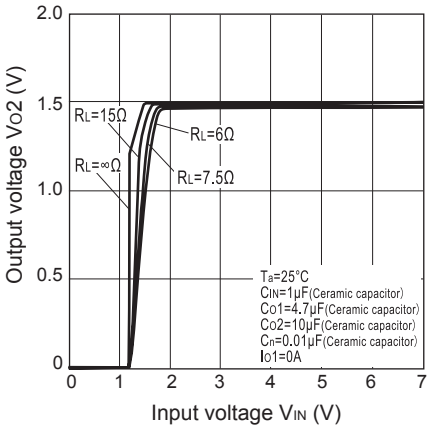


Fig.8 Circuit Operating Current vs. Input Voltage (**PQ2L3152MSPQ**)(Typical Value)

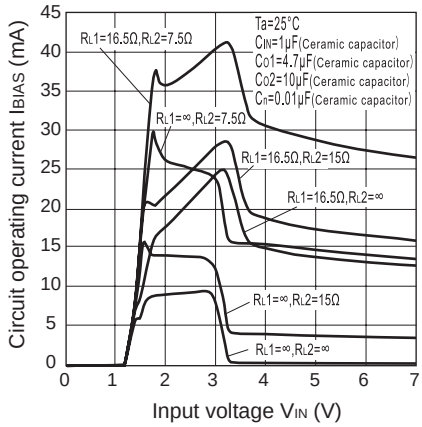


Fig.9 Dropout Voltage vs. Junction Temperature (**PQ2L3252MSPQ**)(Typical Value)

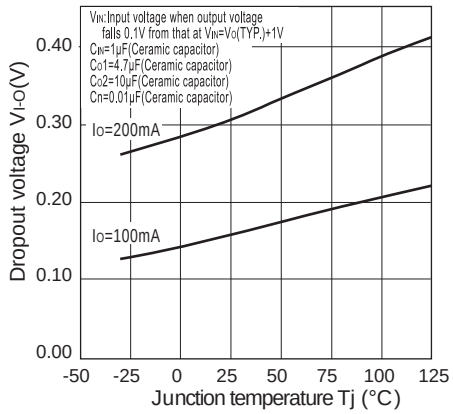


Fig.10 Quiescent Current vs. Junction Temperature (**PQ2L3252MSPQ**)(Typical Value)

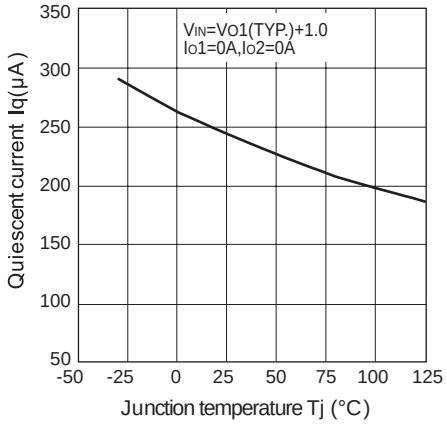


Fig.11 Ripple Rejection vs. Input Ripple Frequency (**PQ2L3182MSPQ**)(Typical Value)

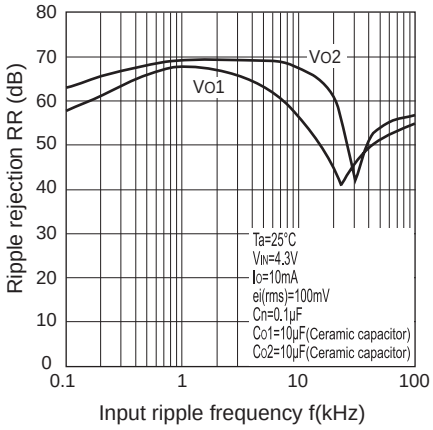


Fig.12 Dropout Voltage vs. Output Current (Typical Value)

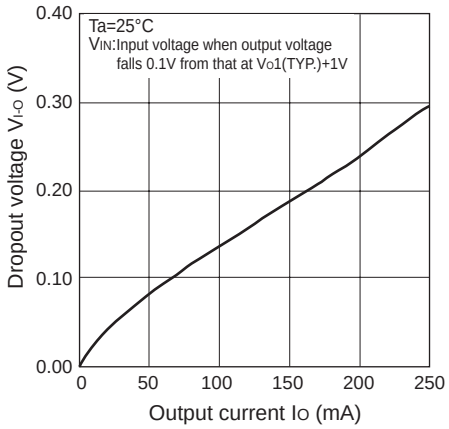


Fig.13 Output Peak Current vs. Junction Temperature(Typical Value)