

PQ1Mxx5M2SP Series

Low Power-Loss Voltage Regulator

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

Features

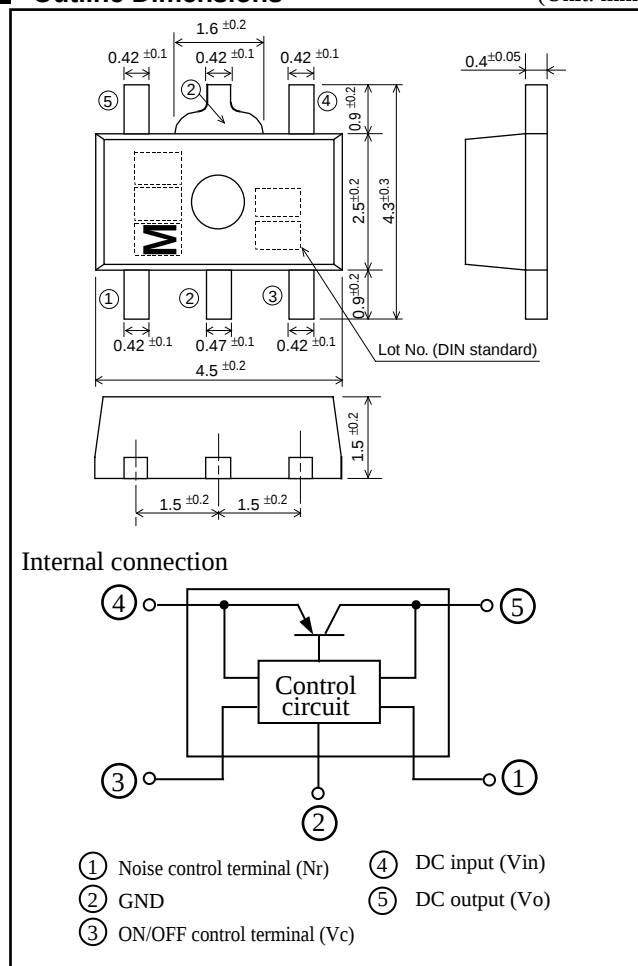
- (1) Compact surface mount package(4.5 × 4.3 × 1.5 mm)
- (2) Output current : MAX. 500 mA
- (3) Power dissipation : MAX. 900 mW
- (4) Low power-loss
(Dropout voltage: MAX. 0.7 V at $I_o=500$ mA)
- (5) High ripple rejection (TYP.65 dB)
- (6) Built-in ON/OFF control function
- (7) Built-in overcurrent, overheat protection functions
- (8) Use of ceramic capacitor is possible as output smooth capacitor

Applications

- (1) CD-ROM drives
- (2) DVD-ROM drives
- (3) Digital Still Cameras

Outline Dimensions

(Unit: mm)



Absolute Maximum Ratings

(Ta=25°C)

Parameter	Symbol	Ratings	Unit
*1 Input voltage	Vin	9	V
*1 ON/OFF control terminal voltage	Vc	9	V
Output current	Io	500	mA
*2 Power dissipation	Pd	900	mW
*3 Junction temperature	Tj	150	°C
Operating temperature	Topr	-30 to +80	°C
Storage temperature	Tstg	-55 to +150	°C
Soldering temperature	Tsol	270(For 10s)	°C

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

(Notice)

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•Specifications are subject to change without notice for improvement.

(Internet)

•Data for Sharp's optoelectronic/power devices is provided on internet. (Address <http://sharp-world.com/ecg/>)

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Electrical Characteristics

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

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Output voltage	V_o	-	Refer to the table below.			V
Load regulation	RegL	$I_o=5mA$ to $500mA$	-	60	200	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	TcV_o	$I_o=10mA$, $T_j=-25$ to $+75^\circ C$	-	0.1	-	mV/ $^\circ C$
Ripple rejection *4	RR	-	-	65	-	dB
Output noise voltage *4	$V_{no(rms)}$	$10Hz < f < 100kHz$ $I_o=30mA$, $C_n=0.1\mu F$	-	40	-	μV
Dropout voltage	V_{i-o}	$I_o=500mA$ *5	-	0.4	0.7	V
*6 ON-state voltage for control	$V_c(on)$	-	1.8	-	-	V
ON-state current for control	$I_c(on)$	$V_c=1.8V$	-	20	70	μA
OFF-state voltage for control	$V_c(off)$	-	-	-	0.4	V
Quiescent current	I_q	$I_o=0mA$	-	0.6	1.5	mA
Output OFF-state dissipation current	I_{qs}	$V_c=0.2V$	-	-	1	μA

*4 Typical value at output voltage is 3.3 V type.

*5 Dropout voltage when output voltage lowers 0.1V from the voltage at $V_{in}=V_o+1V$.

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

Output Voltage Line-up

($V_{in}=V_o(TYP.)+1.0V$, $V_c=1.8V$, $I_o=30mA$, $T_a=25^\circ C$)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
*7 Output voltage	PQ1M255M2SP	-	2.440	2.5	2.560	V
	PQ1M335M2SP		3.234	3.3	3.366	
	PQ1M505M2SP		4.900	5.0	5.100	

*7 : It is available for every 0.1V (1.3V to 5V).

Fig.1 Test Circuit

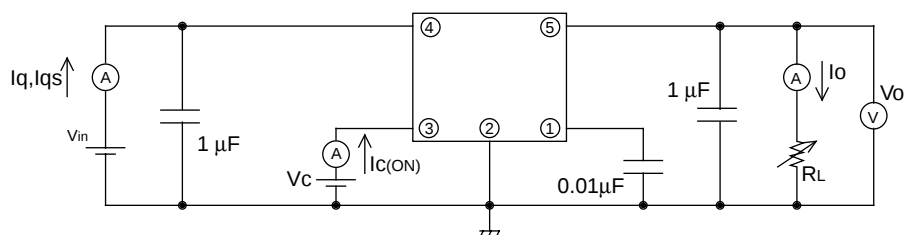
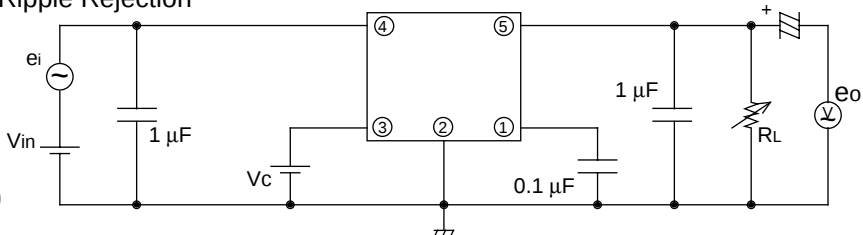


Fig.2 Test Circuit for Ripple Rejection

$f=400Hz$ (sine wave)
 $e_i(rms)=100mV$
 $V_{in}=V_o(TYP.)+1.0V$
 $V_c=1.8V$
 $I_o=30mA$
 $RR=20 \log(e_i(rms)/e_o(rms))$



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