

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

Absolute Maximum Ratings

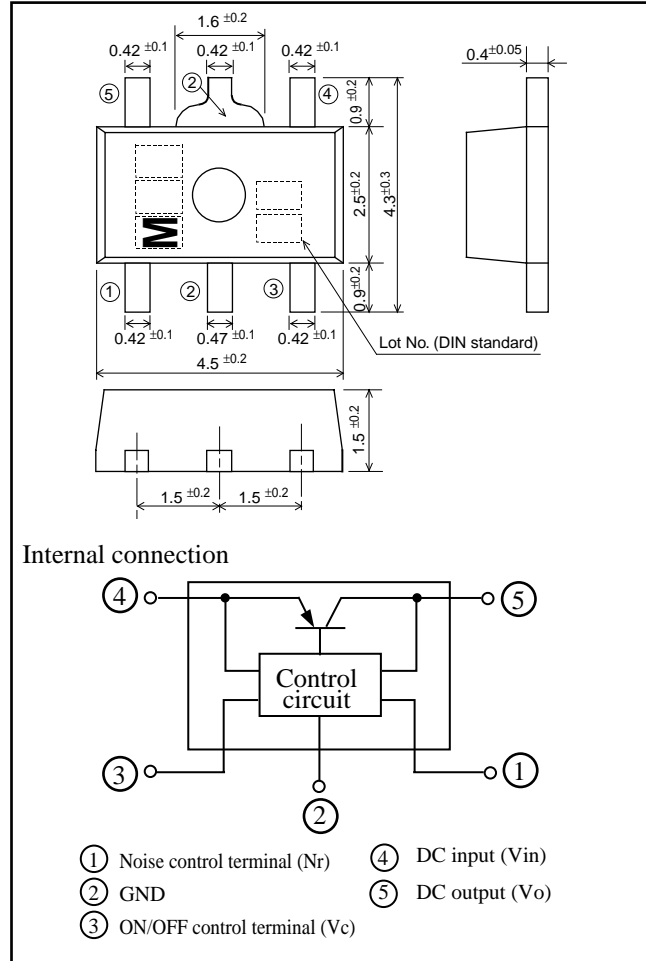
(Ta=25°C)

| Parameter | Symbol | Ratings | Unit |
|------------------------------------|------------------|--------------|------|
| *1 Input voltage | V _{in} | 9 | V |
| *1 ON/OFF control terminal voltage | V _c | 9 | V |
| Output current | I _o | 500 | 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} | 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 ≤ T_j ≤ 150°C.

Outline Dimensions

(Unit: mm)



(Notice)

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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 | $T_c V_o$ | $I_o=10mA$, $T_j=-25$ 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

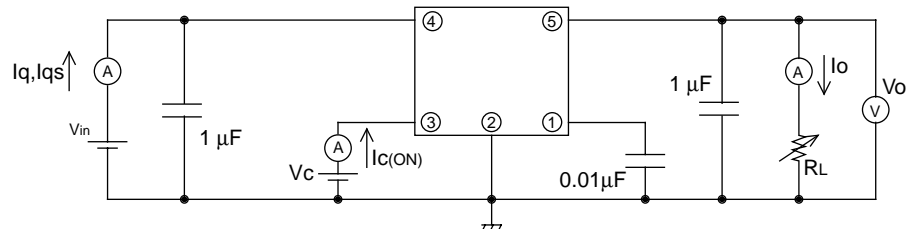
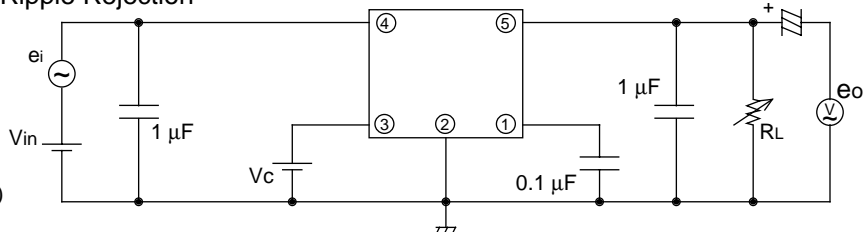


Fig.2 Test Circuit for Ripple Rejection

$f=400Hz$ (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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