

Electrical Characteristics

(Unless otherwise specified, $V_{IN}=V_O(TYP) + 1.0V$, $I_o=30mA$, $V_C=1.8V$, $T_a=25^\circ C$)

| Parameter | Symbol | Conditions | MIN. | TYP. | MAX. | Unit |
|---|---------------|---|--------------------------------|------|------|----------------|
| Output voltage | V_O | - | Refer to the following table.1 | | | V |
| *4 Output peak current | I_{op} | - | 180 | 300 | - | mA |
| Recommended output current | - | - | - | - | 150 | mA |
| Load regulation | RegL1 | $I_o=5$ to 60mA | - | 10 | 50 | mV |
| | RegL2 | $I_o=5$ to 100mA | - | 20 | 100 | mV |
| | RegL3 | $I_o=5$ to 150mA | - | 30 | 160 | mV |
| Line regulation | RegL | $V_{IN}=V_O(TYP)+1V$ to $V_O(TYP)+6V$ | - | 3.0 | 20 | mV |
| Temperature coefficient of output voltage | $T_C V_O$ | $I_o=10mA$, $T_j=-25$ to $+75^\circ C$ | - | 0.05 | - | mV/ $^\circ C$ |
| Ripple rejection | RR | Refer to Fig.2 | - | 70 | - | dB |
| Output noise voltage | $V_{no}(rms)$ | $10Hz < f < 100kHz$, $C_n=0.1\mu F$, $I_o=30mA$ | Refer to the following table.2 | | | μV |
| *8 Dropout voltage | V_{I-O1} | $I_o=60mA$ *5 | - | 0.11 | 0.26 | V |
| | V_{I-O2} | $I_o=150mA$ *5 | - | 0.20 | 0.4 | |
| *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 |
| Quiescent current | I_q | $I_o=0mA$ | - | 130 | 200 | μA |
| Output OFF-state dissipation current | I_{qs} | $V_C=0.2V$ | - | - | 1 | μA |

- *4 Output current shall be the value when output voltage lowers 0.3V from the voltage at $I_o=30mA$.
- *5 Input voltage when output voltage falls 0.1V from that at $V_{IN}=V_O(TYP)+1.0V$.
- *6 In case that the control terminal (③ pin) is open, output voltage should be OFF state.
- *7 In case of **PQ1U181M2ZPH**, V_{IN} minimum=2.3V.
- *8 Excluding **PQ1U181M2ZPH**

Table.1 Output Voltage

$(V_{IN}=V_O(TYP)+1.0V, I_o=30mA, V_C=1.8V, T_a=25^\circ C)$

| Model No. | Symbol | MIN. | TYP. | MAX. | Unit |
|---------------------|--------|-------|------|-------|------|
| PQ1U181M2ZPH | V_O | 1.740 | 1.8 | 1.860 | V |
| PQ1U251M2ZPH | | 2.440 | 2.5 | 2.560 | |
| PQ1U281M2ZPH | | 2.740 | 2.8 | 2.860 | |
| PQ1U301M2ZPH | | 2.940 | 3.0 | 3.060 | |
| PQ1U331M2ZPH | | 3.234 | 3.3 | 3.366 | |
| PQ1U351M2ZPH | | 3.430 | 3.5 | 3.570 | |
| PQ1U501M2ZPH | | 4.900 | 5.0 | 5.100 | |

Table.2 Output Noise Voltage

$(V_{IN}=V_O(TYP)+1.0V, I_o=30mA, V_C=1.8V, C_n=0.1\mu F, 10Hz < f < 100kHz, T_a=25^\circ C)$

| Model No. | Symbol | MIN. | TYP. | MAX. | Unit |
|---------------------|---------------|------|------|------|---------|
| PQ1U181M2ZPH | $V_{no}(rms)$ | - | 15 | - | μV |
| PQ1U251M2ZPH | | - | 25 | - | |
| PQ1U281M2ZPH | | - | 25 | - | |
| PQ1U301M2ZPH | | - | 30 | - | |
| PQ1U331M2ZPH | | - | 30 | - | |
| PQ1U351M2ZPH | | - | 35 | - | |
| PQ1U501M2ZPH | | - | 50 | - | |

Fig.1 Test Circuit

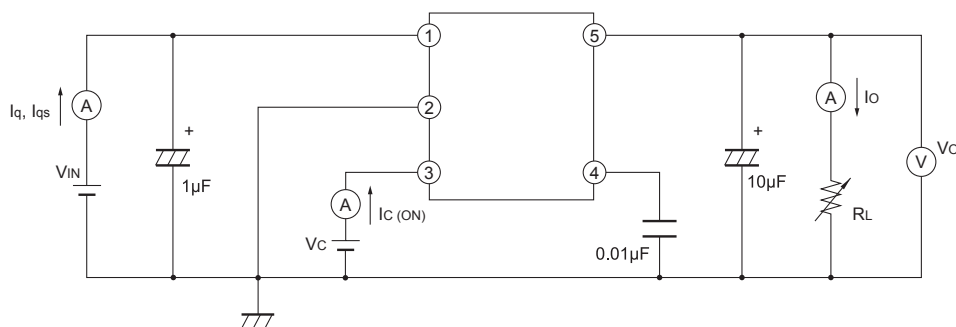


Fig.2 Test Circuit for Ripple Rejection

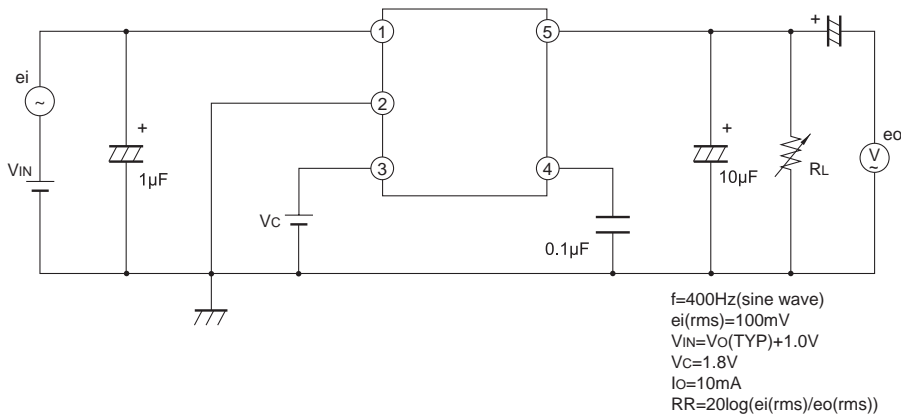
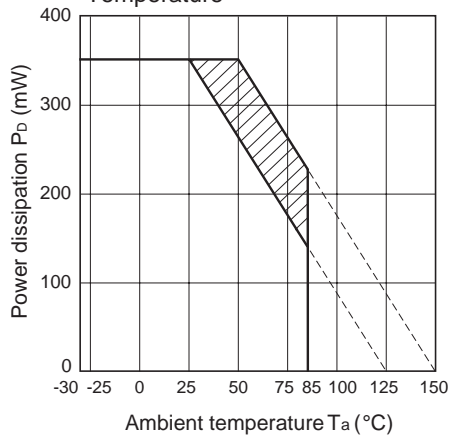


Fig.3 Power Dissipation vs. Ambient Temperature



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

Fig.4 Overcurrent Protection Characteristics (Typical Value)

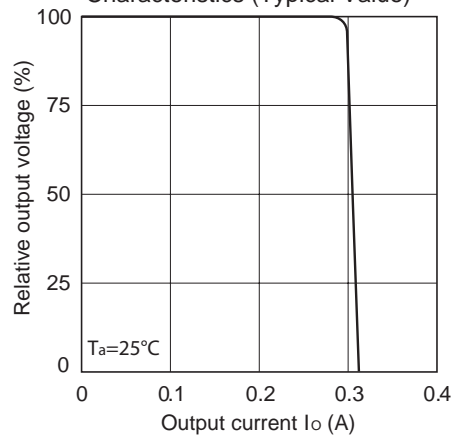


Fig.5 Output Voltage Fluctuation vs. Junction Temperature (PQ1U281M2ZPH)(Typical Value)

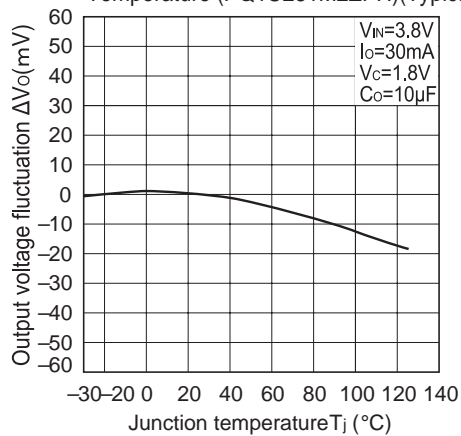


Fig.6 Output Voltage vs. Input Voltage (PQ1U281M2ZPH)(Typical Value)

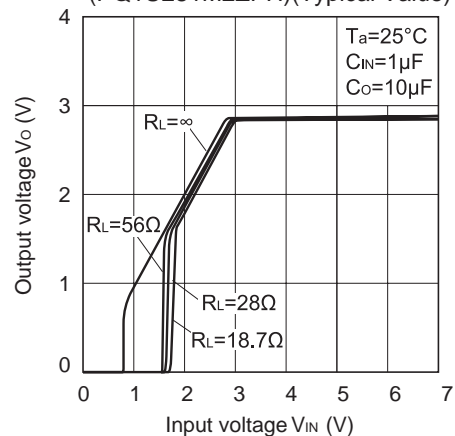


Fig.7 Circuit Operating Current vs. Input Voltage (PQ1U281M2ZPH)(Typical Value)

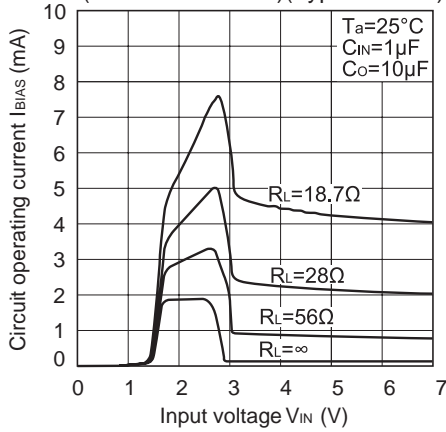


Fig.8 Dropout Voltage vs. Junction Temperature (PQ1U281M2ZPH)(Typical Value)

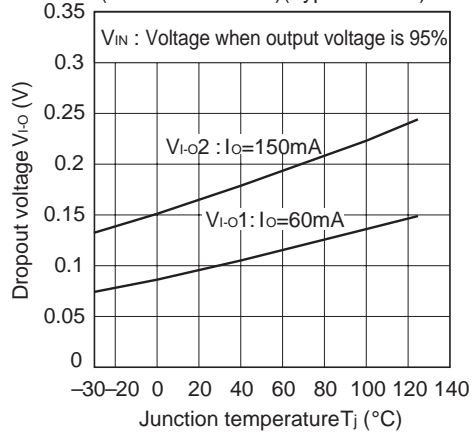


Fig.9 Quiescent Current vs. Junction Temperature (Typical Value)

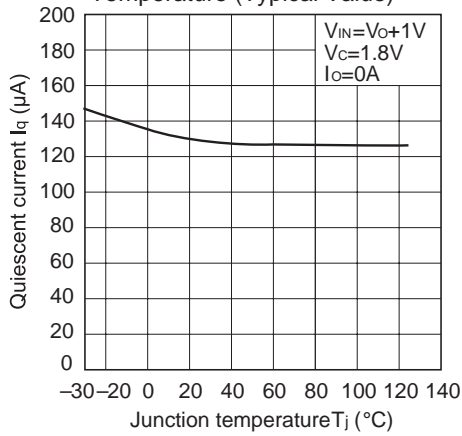


Fig.10 Ripple Rejection vs. Input Ripple Frequency (PQ1U281M2ZPH)(Typical Value)

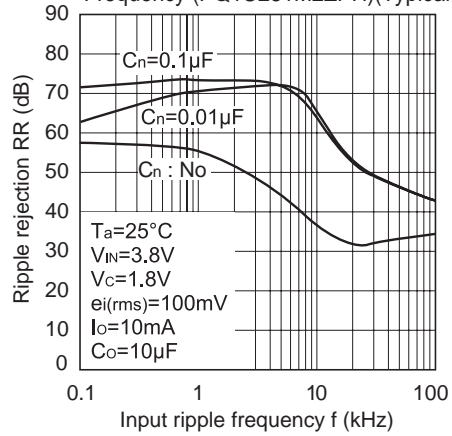


Fig.11 Dropout Voltage vs. Output Current (Typical Value)

