Product Specifications

Product Name: PZT High Voltage Power Supply

Product Number: PPT04P2020XB1

Approval:
### 0 Revision History

<table>
<thead>
<tr>
<th>No.</th>
<th>Reason of Revision</th>
<th>Date</th>
<th>Rvsd</th>
<th>Appd</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>First</td>
<td>Jan/15/2009</td>
<td>Endo</td>
<td></td>
</tr>
</tbody>
</table>
1 Application
This specification applies to the PZT High Voltage Power Supply PPT04P2020XB1.

2 Electrical characteristic

Table 2.1 Electrical characteristic

<table>
<thead>
<tr>
<th>Items</th>
<th>Symbol</th>
<th>Specification</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input voltage</td>
<td>Vcc</td>
<td>8V - 14V</td>
<td></td>
</tr>
<tr>
<td>Output voltage range</td>
<td>Vout</td>
<td>0V to +2000V max</td>
<td>Vcon = 0 - 10V</td>
</tr>
<tr>
<td>Output current</td>
<td>Iout</td>
<td>2mA max</td>
<td></td>
</tr>
<tr>
<td>Output power</td>
<td>P</td>
<td>4W max</td>
<td></td>
</tr>
<tr>
<td>Control voltage</td>
<td>Vcon</td>
<td>0V - 10V</td>
<td></td>
</tr>
<tr>
<td>Shut-off current</td>
<td>Doff</td>
<td>&gt; 4.4+/-0.3mA</td>
<td></td>
</tr>
<tr>
<td>Ripple</td>
<td>Rip</td>
<td>0.1%p-p max</td>
<td></td>
</tr>
</tbody>
</table>

3 Dimension

Fig. 3.1 Dimension

<table>
<thead>
<tr>
<th>Length</th>
<th>Tolerance</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 4</td>
<td>± 0.2</td>
</tr>
<tr>
<td>4 ~ 16</td>
<td>± 0.3</td>
</tr>
<tr>
<td>16 ~ 74</td>
<td>± 0.5</td>
</tr>
<tr>
<td>74 ~ 250</td>
<td>± 0.8</td>
</tr>
<tr>
<td>250 ~ 1000</td>
<td>± 1.2</td>
</tr>
</tbody>
</table>

* Installation dimensions tolerance of a part is ± 0.2 mm.
4  Input & Output connector

1) CN1: Input connector - SM06B-SRSS-TB (JST)

<table>
<thead>
<tr>
<th>Pin</th>
<th>Symbol</th>
<th>Function</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>PGND</td>
<td>GND</td>
<td>0V</td>
</tr>
<tr>
<td>2</td>
<td>VBAT</td>
<td>Input power</td>
<td>8.0V - 14V</td>
</tr>
<tr>
<td>3</td>
<td>SGND</td>
<td>GND</td>
<td>0V</td>
</tr>
<tr>
<td>4</td>
<td>STBY</td>
<td>Standby control</td>
<td>No use</td>
</tr>
<tr>
<td>5</td>
<td>V CMP</td>
<td>Output Voltage control</td>
<td>0V - 10V -&gt; Output 0V - 2000V</td>
</tr>
<tr>
<td>6</td>
<td>DI</td>
<td>Output Current monitor</td>
<td>$D(V) = 6V - 1300 \left( \frac{V_{out}}{60 \cdot 10^5} + I_{out} \right)$</td>
</tr>
</tbody>
</table>

2) CN2: Output connector - SM02B-BHSS-1 (JST)

<table>
<thead>
<tr>
<th>Pin</th>
<th>Symbol</th>
<th>Function</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>HV</td>
<td>Output Voltage</td>
<td>0V - 2000V</td>
</tr>
<tr>
<td>2</td>
<td>NC</td>
<td>Non connection</td>
<td></td>
</tr>
</tbody>
</table>

5  Test circuit

A1: Ammeter; V3 and V4: Volt meter; F: Frequency counter Agilent 34401A
B1, V1: Power supply and Volt meter for Main power. Agilent 6633B
B2, V2: Power supply and Volt meter for VCMP ADVANTEST R6240A
Oscilloscope: Measure the ripple Tektronix TDS3014B
ANT: Antenna for detects the frequency.
R1: Load resistor. R2: 10kohm for detects the Iout.
C1: 2.2nF/20kV for detects the ripple.

Fig. 5.1 Test circuit
6 Environment / reliability

1) Operation temperature: 0°C to +55°C
2) Operation humidity: 10% RH - 90% RH (No dew-condensation)
3) Storage temperature: -10°C to +75°C
4) Storage humidity: 5% RH - 95% RH (No dew-condensation)
5) Vibration:
   Frequency: 5Hz > 55Hz > 5Hz, sweep time: 1 minute
   Amplitude: 1.5mmp-p XYZ each direction / 2 hours
6) Shock:
   Acceleration 50G / 6ms
   XYZ each direction 3 times, Total 18 times

7 Attention

1) High Voltage: High voltage occurs in the output of the PZT power supply. Disconnect the inverter from the power supply during the work.

2) Storage and transport
   a. Avoid placing the unit under dusty environments or under gas corrosive atmospheres.
   b. Preferably, temperature and humidity conditions should be about 5°C to 35°C and 45-75% RH. Avoid environments having very high temperature (> 55°C), high humidity (>90% RH) and a rapid change in temperature.
   c. Keep the product in a packing material during the delivery. The product should not gain a load (weight) when you take it from the package or when you pile it up.

3) Handling
   a. Please do not bend this product in your assembly process.
   b. Please do not use the product after you drop it accidentally because it might get unusual vibrations or shocks when it is dropped.
   c. Please do not strongly push the transformer of the product in your process.

8 About NCC product number.

PPT04 P2020XB1

- Revision
- Design number
- Customer number
- Output voltage
- Output polarity P=(+), N=(-)
- Output power
- PIEZO Power Supply
9 Control Voltage Response (Vcc=12V)

- Control Voltage to Output Voltage (Vcc=12V)
- Control Voltage to Efficiency (Vcc=12V)
- Control Voltage to Input Current (Vcc=12V)
10 Input Voltage Regulation Response

Control Voltage to Ripple (Vcc=12V)

Input Voltage to Output Voltage

Input Voltage to Efficiency
Input Voltage to Input Current

Input Voltage (V) vs. Input Current (A)

- 2Mohm Vc=10V
- 2Mohm Vc=7V
- 2Mohm Vc=5V
- 1Mohm Vc=10V
- 1Mohm Vc=7V
- 1Mohm Vc=5V
- 500kohm Vc=5V

Input Voltage to Ripple

Input Voltage (V) vs. Ripple (Vp-p)

- 2Mohm Vc=10V
- 2Mohm Vc=7V
- 2Mohm Vc=5V
- 1Mohm Vc=10V
- 1Mohm Vc=7V
- 1Mohm Vc=5V
- 500kohm Vc=5V