Svetlana 3CX300A1 Audio Power Triode

The Svetlana 3CX300A1 is a ceramic-metal forced-air-cooled power triode intended for use in high-end audio amplifier equipment requiring high power, low plate resistance and exceptional linearity. Ceramic-metal transmitting-tube construction gives the 3CX300A1 extreme ruggedness and freedom from microphonics. The large cathode and the grid are rigidly mounted on coaxial cones terminating in rugged ceramic-metal seals. The anode is machined from solid copper, to insure high power handling capability. The 3CX300A1 is suitable for single-ended Class A or push-pull Class A or AB operation. The Svetlana 3CX300A1 is manufactured at the Svetlana factory in St. Petersburg, Russia, using the same processes and materials as Svetlana’s large RF power tubes. Thus, quality and reliability are assured to strict transmitting-tube standards.

**General Characteristics**

**Electrical**
- **Cathode:** Oxide-coated, unipotential
- **Voltage (AC or DC):** 6.3 ± 0.3 V
- **Current:** 2.65 A
- **Heater-cathode voltage (max):** ±100 Vpeak
- **Amplification factor:** 9
- **Transconductance:** 20,000 µS
- **Plate resistance:** 450 ohms
- **Interelectrode capacitances (typical), with cathode grounded:**
  - Input: 25 pF
  - Output: 1 pF
  - Feedback: 10 pF

**Mechanical**
- **Cooling:** Radiation and convection, or forced-air (see below)
- **Base:** Ceramic, special 8-pin with center contact
- **Basing diagram:** see below
- **Socket:** Svetlana SK2A or equivalent
- **Anode connector:** Svetlana AC-5 or equivalent
- **Operating position:** Any (vertical for convection cooling)
  (Note: for operation at >30W dissipation, forced-air cooling is required—consult cooling data on reverse.)

**Nominal dimensions:**
- Diameter: 42 mm (1.656 in)
- Base to top: 52 mm (2.055 in)
- Overall height: 72 mm (2.836 in)
- Net weight: 200 gm

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**Svetlana 3CX300A1 Outline drawing**

**Dimensional Data**

<table>
<thead>
<tr>
<th>Dim.</th>
<th>Millimeters</th>
<th>Inches</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>52</td>
<td>2.055</td>
</tr>
<tr>
<td>B</td>
<td>42</td>
<td>1.656</td>
</tr>
</tbody>
</table>

**Base pin connections bottom view**

Top Cap = Anode
Center Guide Pin on Base = Control Grid

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Maximum Ratings

DC plate voltage 1800 V
Maximum signal DC plate current 470 mA
Plate dissipation w/forced-air cooling 300 W
Plate dissipation w/convection cooling 30 W
Grid dissipation (maximum) 1 W
Operating temperature (metal/ceramic seals or metal core) 250 °C
Control grid maximum negative voltage -400 V

Typical Operation, Class A, Audio Amplifier (single tube)
Plate voltage 500 V
Grid voltage -55 V
Peak grid drive 120 VP-P
Plate current, no signal 80 mA
Plate current, max signal 95 mA
Effective load resistance 1600 ohms
Distortion at 1 watt into 8 ohms 0.67 %
Power output at 5% distortion 15 W

Typical Operation, Class AB1, Audio Power Amplifier, Push-Pull
Plate voltage 500 V
Grid voltage -45 V
Peak grid drive 100 VP-P
Plate current, no signal (both tubes) 300 mA
Load resistance, plate-to-plate 2000 ohms
Power output 40 W

The flow rate for base cooling must be determined for satisfactory cooling to obtain base temperature not more than 220°C.

If the temperature of ambient air will increase, air flow must be increased in accordance with Table 1.

Table 1
<table>
<thead>
<tr>
<th>Ambient Air Temperature, °C</th>
<th>25</th>
<th>40</th>
<th>55</th>
<th>70</th>
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<tbody>
<tr>
<td>Correction Factor</td>
<td>1</td>
<td>1.2</td>
<td>1.5</td>
<td>1.9</td>
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