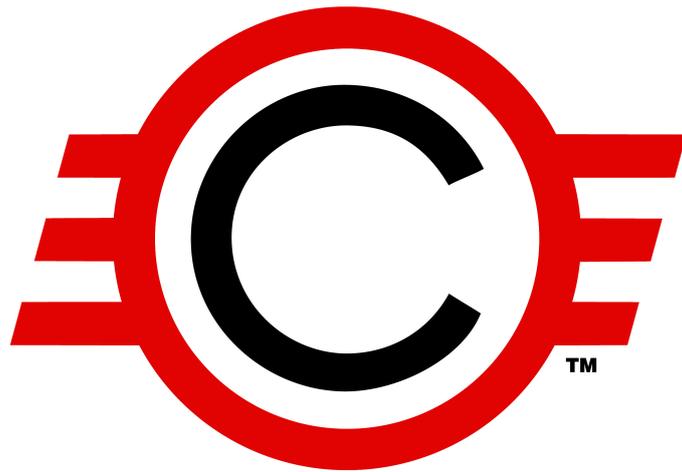


# SVETLANA TECHNICAL DATA



**Svetlana**

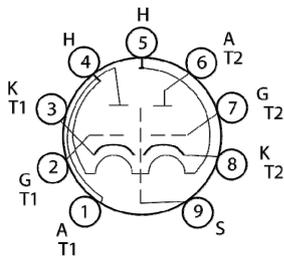
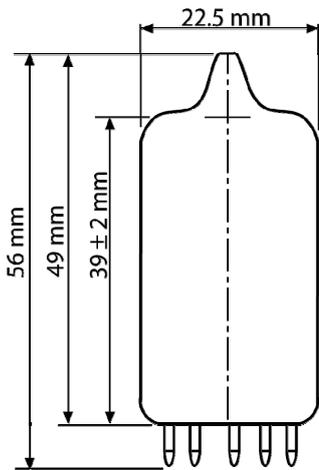
*TecSol®*

# Svetlana 6N1P

## High Performance Audio Power Pentode



The Svetlana 6N1P is a miniature glass-envelope small-signal dual triode intended for use as a line-level amplifier or driver in high-quality audio amplifiers. Except for higher heater-current consumption, it is a direct plug-in replacement for the 6DJ8, ECC88 or 6922 in most high-level audio applications. Features include very low distortion—optimized for line stages; medium transconductance; internally shielded between sections, allowing their use at differing signal levels; higher plate-voltage and dissipation rating than 6DJ8 types; and larger cathode than 6DJ8 types, giving it longer life and more transient current capability.

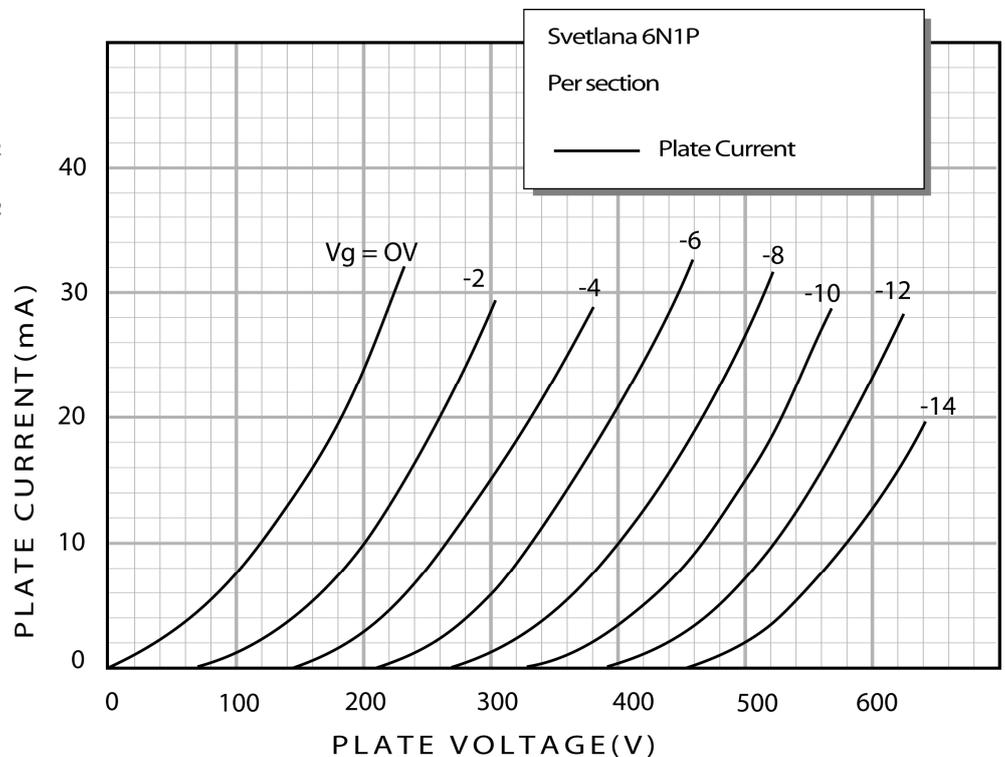


### Electrical

|   |         |    |
|---|---------|----|
| <b>Heater</b>   |         |    |
| Voltage(AC,DC)  | 6.3±0.6 | V  |
| Current   | 600±35  | mA |
| <b>Cathode</b> Oxide-coated, unipotential                                 |         |    |
| Peak Cathode-to-heater voltage  | ±100    | V  |
| Amplification factor(nominal)   | 33      |    |
| Transconductance(nominal)   | 7,500   | μS |
| Plate resistance(nominal)   | 4,400   | Ω  |
| Interelectrode capacitances(typical), per section, with cathode grounded: |         |    |
| Grid to cathode   | 3.2     | pF |
| Anode to cathode  | 1.5     | pF |
| Grid to anode   | 1.6     | pF |

### Maximum Ratings

|   |     |    |
|---|-----|----|
| Anode DC voltage                        | 250 | V  |
| Anode dissipation, per triode           | 2.2 | W  |
| Cathode current, continuous, per triode | 20  | mA |
| Grid-circuit resistance                 | 0.5 | MΩ |



# Svetlana EL34 / 6CA7

## High Performance Audio Power Pentode

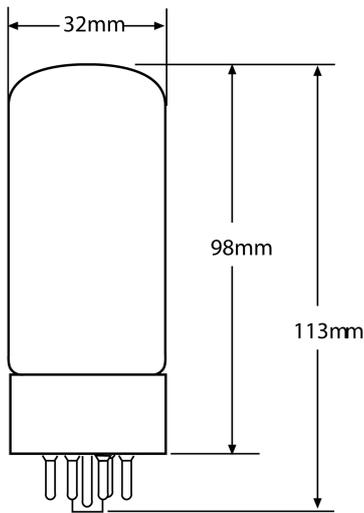


The Svetlana EL34 is a glass envelope power pentode having a plate dissipation rating of 25 Watts with convection cooling. It is intended for audio frequency power amplification service in either pentode, ultralinear or triode connection and single or push-pull/parallel applications. The Svetlana EL34 has an indirectly-heated oxide cathode, which may be DC operated for the absolute best hum/noise performance.

The Svetlana EL34 plate is made from a laminated material that improves heat transfer and has superior performance under overload conditions which are often seen with guitar amplifiers.

Close manufacturing specification tolerances and improved processing provide enhanced reliability and superior sonic performance. The high sensitivity of a pair or quad of Svetlana EL34's is an economical method to achieve high quality sound with a minimum of driving stage components.

The Svetlana EL34 is manufactured with the original Mullard design in the Svetlana factory in St. Petersburg, Russia, and is designed to be a direct replacement for any EL34/6CA7 or equivalent. The Svetlana EL34 gives electrical and audio performance very similar to that of the original Mullard EL34.



### Electrical

| Heater  | Min | Nom | Max |         |
|---|-----|-----|-----|---------|
| Voltage(AC,DC)  | 5.7 | 6.3 | 6.9 | V       |
| Current   | 1.6 |     |     | A       |
| <b>Cathode</b> Oxide-coated, unipotential                 |     |     |     |         |
| Cathode-to-heater potential, max.                         |     |     |     | 100 V   |
| Direct interelectrode capacitances, max.*                 |     |     |     |         |
| Grid1 to cathode and grid3, grid2, base sleeve and heater |     |     |     | <16 pF  |
| Plate to cathode and grid3, grid2, base sleeve and heater |     |     |     | <0.6 pF |
| Grid1 to plate  |     |     |     | <1.1 pF |

\*Without external shielding, nominal values

### AF Power Amplifier, Maximum Ratings

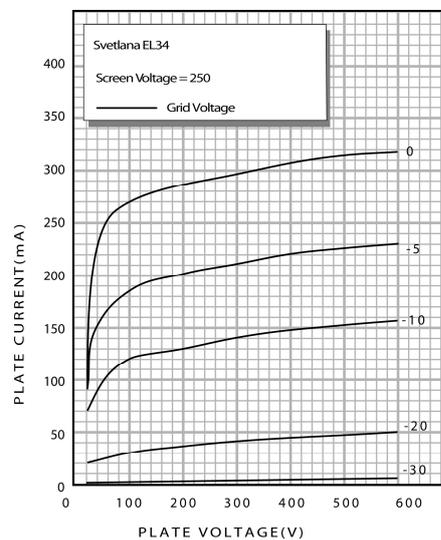
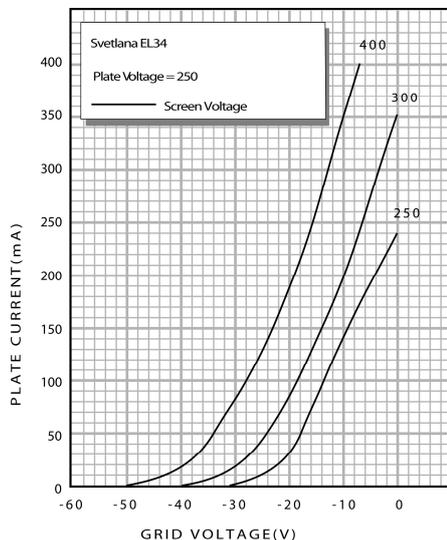
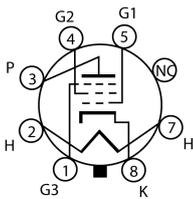
|                             |      |    |
|-----------------------------|------|----|
| DC plate voltage            | 800  | V  |
| Grid2(screen) DC voltage    | 500  | V  |
| Grid1(control) voltage      | -100 | V  |
| DC cathode current          | 150  | mA |
| Plate dissipation           | 25   | W  |
| Grid2 DC screen dissipation | 8    | W  |
| Envelope temperature        | 250  | °C |

### Typical Operation

### AF Power Amplifier, Class A1 (single tube)

|                                       |        |    |
|---------------------------------------|--------|----|
| DC plate voltage                      | 250    | V  |
| Grid2(screen) DC voltage              | 250    | V  |
| Grid1(control) voltage**              | -14    | V  |
| Peak AF grid1 control voltage         | 14     | V  |
| Zero signal plate current             | 100    | mA |
| Max signal plate current              | 105    | mA |
| Zero signal grid2 screen current(avg) | 15     | mA |
| Transconductance(nominal)             | 11,000 | μS |
| Load resistance                       | 2,000  | Ω  |
| Output power at 5% distortion         | 10     | W  |

\*\*Approximate value(set to zero signal plate current)



# Svetlana 300B

## Low-Mu Audio Power Triode

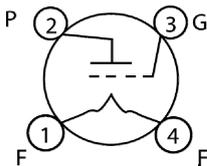
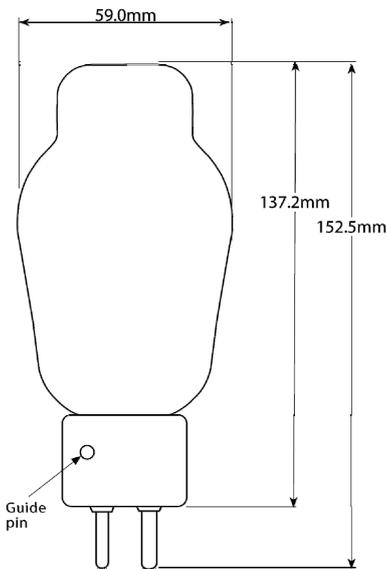


The Svetlana 300B is a power triode intended for use in class A, AB or B audio amplifiers. It is one of the lowest-distortion tubes ever made, and is a close duplicate of the original Western Electric™ 300B.

The Svetlana 300B uses ultra-pure carbonized nickel plate material and a proprietary oxide coating on the filament to give Western Electric™-like performance. The internal structure is well-supported and is aligned with respect to the base pins to avoid internal shorts in equipment designed for horizontal tube mounting. The filament is center-tapped to insure low hum.

The Svetlana 300B is manufactured in Russia at the Svetlana factory in St. Petersburg.

The strict manufacturing and quality controls at the Svetlana plant assure functionality and sound as good as Western Electric™ manufactured products.



### Electrical

|   |                       |    |
|---|-----------------------|----|
| Filament  | Oxide-coated tungsten |    |
| Voltage(AC,DC)  | 5.0±0.3               | V  |
| Current   | 1.2                   | A  |
| Amplification factor  | 3.85                  |    |
| Transconductance  | 5,500                 | μS |
| Plate resistance  | 700                   | Ω  |
| Interelectrode capacitances(typical), with filament grounded: |                       |    |
| Grid to filament  | 9                     | pF |
| Grid to plate   | 15                    | pF |

### Maximum Ratings

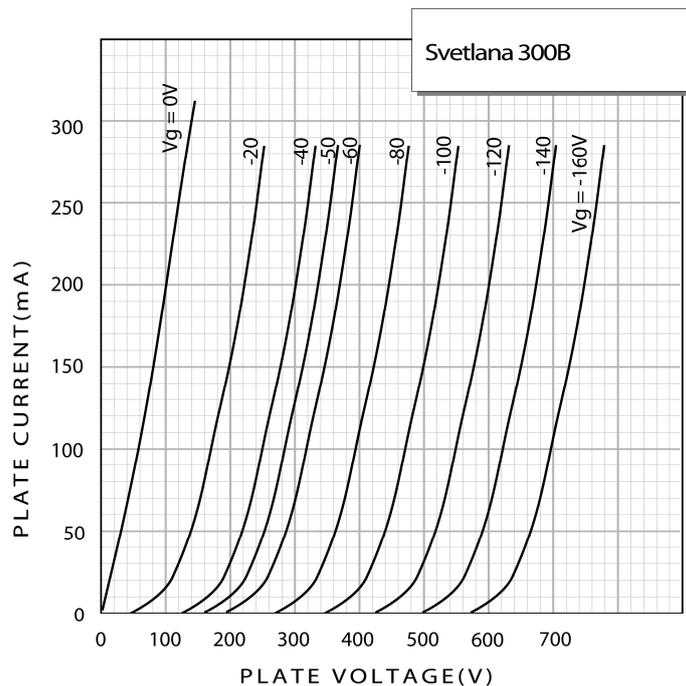
|                         |     |    |
|-------------------------|-----|----|
| DC plate voltage        | 450 | V  |
| Signal DC plate current | 100 | mA |
| Plate dissipation       | 40  | W  |

### Typical Operation

### Audio Amplifier, Class A

|                                  |       |      |
|----------------------------------|-------|------|
| DC plate voltage                 | 450   | V    |
| Grid(control) voltage            | -100  | V    |
| Peak grid drive                  | 200   | VP-P |
| Zero signal plate current        | 60    | mA   |
| Max signal plate current         | 65    | mA   |
| Effective load resistance        | 5,500 | Ω    |
| Distortion at 1 watt into 8 ohms | 0.10  | %    |
| Output power at 5% distortion    | 10    | W    |

Notes: The internal structure is aligned with respect to the base pins to avoid internal shorting problems in equipment designed for horizontal mounting. Pins 1 and 4 should be in a horizontal plane when mounting the device horizontally.

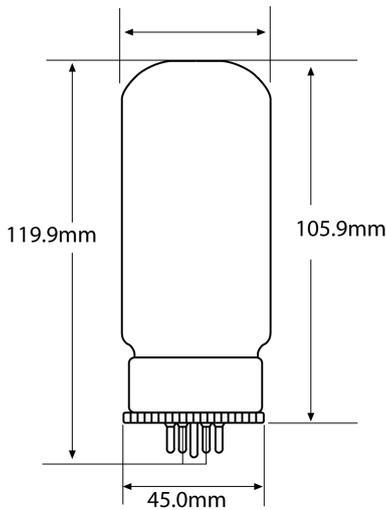


# Svetlana 6550C

## High Performance Audio Beam Power Pentode



The Svetlana 6550C is a glass envelope beam power pentode. It is intended for ultra linear audio frequency power amplification service. Close manufacturing specification tolerances and improved processing provide improved reliability and superior sonic performance. The new Svetlana 6550C features: increased peak cathode emission from new cathode materials; stable operation from extended processing and aging; gold-plated grid; new tri-plate anode; single-piece beam forming electrode; precise grid/screen alignment; improved vacuum processing; and comprehensive static and audio amplifier testing before and after aging. The Svetlana 6550C is manufactured in the Svetlana factory in St. Petersburg, Russia, and is designed to be a direct replacement for any 6550.



### Electrical

| Heater  | Min | Nom | Max         |    |
|---|-----|-----|-------------|----|
| Voltage(AC,DC)  | 5.7 | 6.3 | 6.9         | V  |
| Current   |     | 1.6 |             | A  |
| <b>Cathode</b> Oxide-coated, unipotential                 |     |     |             |    |
| Cathode-to-heater potential, max.                         |     |     | -300*/200** | V  |
| Direct interelectrode capacitances, max.***               |     |     |             |    |
| Grid1 to cathode and grid3, grid2, base sleeve and heater |     |     | 18.5        | pF |
| Plate to cathode and grid3, grid2, base sleeve and heater |     |     | 12.5        | pF |
| Grid1 to plate  |     |     | 1.1         | pF |

\*Max with heater negative to cathode \*\*Max with heater positive to cathode \*\*\*Without external shielding

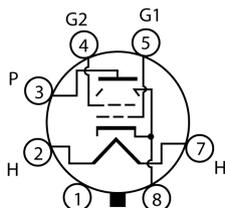
### AF Power Amplifier, Maximum Ratings

|                             |      |    |
|-----------------------------|------|----|
| DC plate voltage            | 680  | V  |
| Grid2(screen) DC voltage    | 400  | V  |
| Grid1(control) voltage      | -300 | V  |
| DC cathode current          | 175  | mA |
| Plate dissipation           | 35   | W  |
| Grid2 DC screen dissipation | 6    | W  |
| Envelope temperature        | 250  | °C |

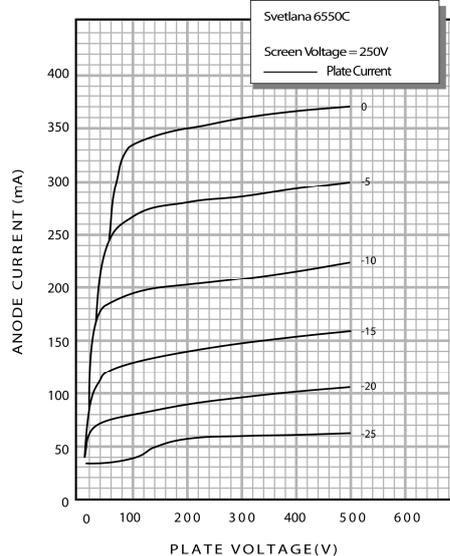
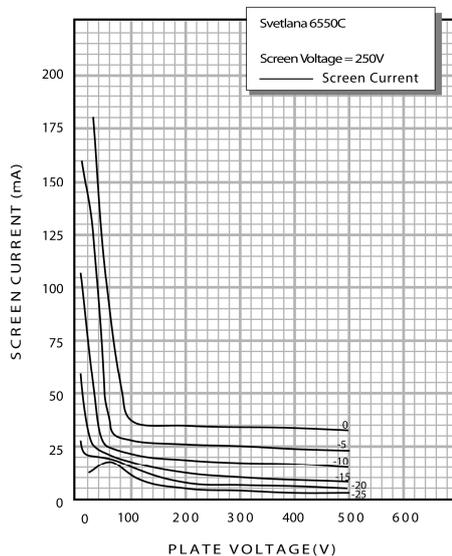
### Typical Operation

### Class A1 (single tube)

|                                      |       |     |
|--------------------------------------|-------|-----|
| DC plate voltage                     | 400   | V   |
| Grid2(screen) DC voltage             | 225   | V   |
| Grid1(control) voltage               | -22   | V   |
| Peak AF grid1 control voltage        | 22    | V   |
| Zero signal plate current            | 87    | mA  |
| Max signal plate current             | 105   | mA  |
| Zero signal grid2 screen current, DC | 4     | mA  |
| Max signal grid2 screen current      | 18    | mA  |
| Transconductance(nominal)            | 9,500 | μ S |
| Load resistance                      | 3,000 | Ω   |
| Output power at 5% distortion        | 12    | W   |



External shield around base



# Svetlana KT88

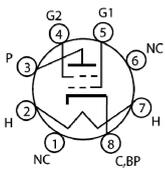
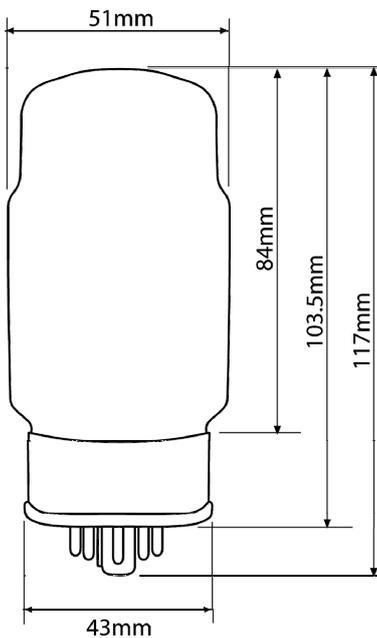
## High Performance Audio Beam Power Tetrode



The Svetlana KT88 is a glass envelope beam power tetrode. It is intended for audio frequency power amplification service. High plate dissipation rating, close manufacturing specification tolerances and thorough processing provides improved reliability and superior sonic performance.

The Svetlana KT88 is manufactured in the Svetlana factory in St. Petersburg, Russia, and is designed to be a direct replacement for any KT88, KT90, KT99 or 6550.

The new KT88 features greatly enhanced sonic performance: Increased peak cathode emission from new cathode materials; Stable operation from extended processing and aging; Gold-plated grid; New tri-plate anode; Single-piece beam forming electrode; Precise grid/screen alignment; Improved vacuum processing; comprehensive static and audio amplifier testing before and after aging.



### Electrical

| Heater  | Min | Nom | Max         |    |
|---|-----|-----|-------------|----|
| Voltage(AC,DC)  | 5.7 | 6.3 | 6.9         | V  |
| Current   |     | 1.6 |             | A  |
| <b>Cathode</b> Oxide-coated, unipotential                 |     |     |             |    |
| Cathode-to-heater potential, max.                         |     |     | -250*/250** | V  |
| <b>Direct interelectrode capacitances***</b>              |     |     |             |    |
| Grid1 to cathode and grid3, grid2, base sleeve and heater |     |     | 16          | pF |
| Plate to cathode and grid3, grid2, base sleeve and heater |     |     | 12          | pF |
| Grid1 to plate  |     |     | 1.2         | pF |

\*Max with heater negative to cathode \*\*Max with heater positive to cathode \*\*\*Without external shielding

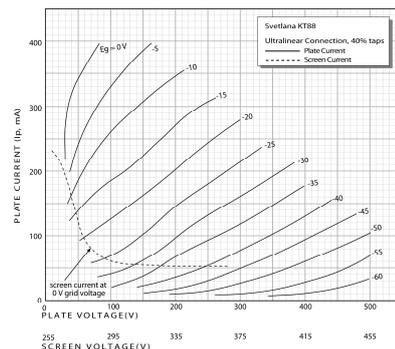
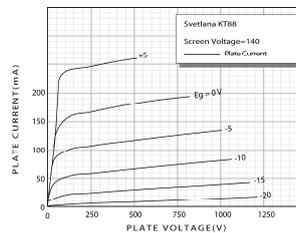
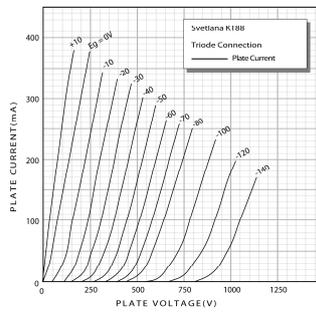
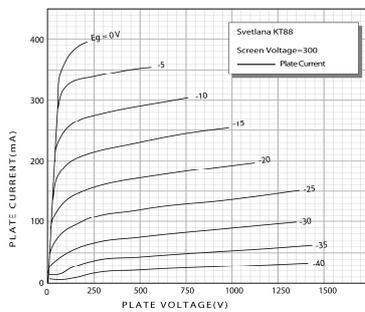
### AF Power Amplifier, Maximum Ratings

|                             |      |    |
|-----------------------------|------|----|
| DC plate voltage            | 800  | V  |
| Grid2(screen) DC voltage    | 600  | V  |
| Grid1(control) voltage      | -300 | V  |
| DC cathode current          | 230  | mA |
| Plate dissipation           | 42   | W  |
| Grid2 DC screen dissipation | 8    | W  |
| Envelope temperature        | -    | °C |

### Typical Operation

### Class A (single tube)

|                                      |        |         |
|--------------------------------------|--------|---------|
| DC plate voltage                     | 400    | V       |
| Grid2(screen) DC voltage             | 225    | V       |
| Grid1(control) voltage               | -16.5  | V       |
| Peak AF grid1 control voltage        | 16.5   | V       |
| Zero signal plate current            | 87     | mA      |
| Max signal plate current             | 105    | mA      |
| Zero signal grid2 screen current, DC | 4      | mA      |
| Max signal grid2 screen current      | 18     | mA      |
| Transconductance                     | 11,500 | $\mu$ S |
| Output power                         | 19     | W       |



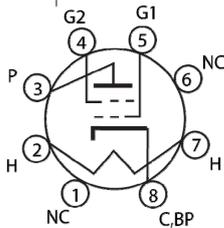
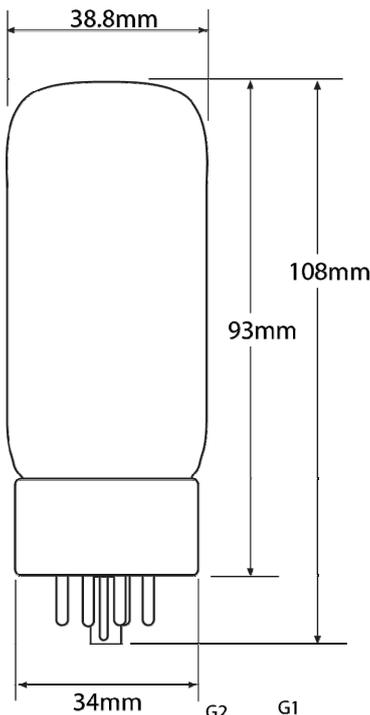
# Svetlana 6L6GC

## High Performance Audio Beam Power Tetrode



The Svetlana 6L6GC is a glass envelope beam-power tetrode intended for highpower audio amplifier service. Close manufacturing specification tolerances and improved processing provide improved reliability and superior sonic performance. The Svetlana 6L6GC is manufactured in the Svetlana factory in St. Petersburg, Russia, and is designed to be a direct replacement for any 6L6 type.

The Svetlana 6L6GC features: Design and construction based on the Sylvania 6L6GC/STR387; Extra-rugged construction for use in music amplifiers--thick mica spacers and extra bracing reduce microphonic effects and resist mechanical and thermal shocks; Increased peak cathode emission from new cathode materials; Gold-plated grid and extended processing and aging for stability and reliability; Tri-plate anode for superior dissipation; Precise grid/screen alignment; Comprehensive static and audio amplifier testing before and after aging; May be operated in inverted position--base fits into socket clamps in Fender guitar amplifiers.



### Electrical

| Heater  | Min                        | Nom | Max  |    |
|---|----------------------------|-----|------|----|
| Voltage(AC,DC)  | 5.7                        | 6.3 | 6.9  | V  |
| Current   |                            | 0.9 |      | A  |
| Cathode   | Oxide-coated, unipotential |     |      |    |
| Cathode-to-heater potential                             |                            |     | ±200 | V  |
| Direct interelectrode capacitances                      |                            |     |      |    |
| Grid1 to cathode, grid2, beam forming plates and heater |                            |     | 10   | pF |
| Plate to cathode, grid2, beam forming plates and heater |                            |     | 6.5  | pF |
| Grid1 to plate  |                            |     | 0.6  | pF |

### Maximum Ratings

|                             |     |    |
|-----------------------------|-----|----|
| DC plate voltage            | 500 | V  |
| Grid2(screen) DC voltage    | 500 | V  |
| Plate dissipation           | 30  | W  |
| Grid2 DC screen dissipation | 5   | W  |
| Envelope temperature        | 250 | °C |

### Typical Operation

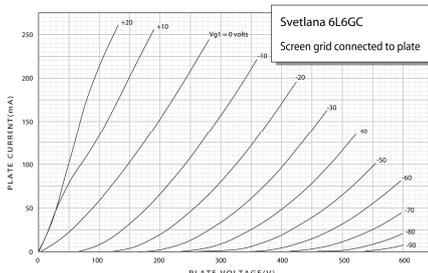
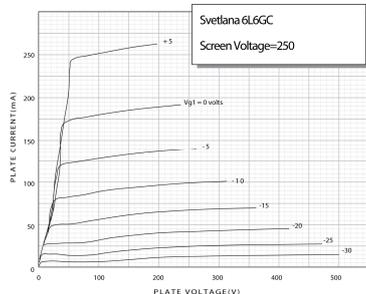
### Audio Power Amplifier, Class A (single tube)

|                                      | Tetrode | Triode |    |
|--------------------------------------|---------|--------|----|
| DC plate voltage                     | 350     | 250    | V  |
| Grid2(screen) DC voltage             | 250     |        | V  |
| Grid1(control) voltage**             | -18     | -20    | V  |
| Peak AF grid1 control voltage        | 18      | 20     | V  |
| Zero signal plate current            | 54      | 40     | mA |
| Max signal plate current             | 66      | 44     | mA |
| Zero signal grid2 screen current, DC | 2.5     |        | mA |
| Max signal grid2 screen current      | 7       |        | mA |
| Transconductance(approx)             | 5,200   | 4,700  | μS |
| Plate resistance(approx)             | 33,000  | 1,700  | Ω  |
| Load resistance                      | 4,200   | 5,000  | Ω  |
| Total harmonic distortion            | 15      | 5      | %  |
| Max output power                     | 10.8    | 1.4    | W  |

### Typical Operation

### Audio Power Amplifier, Class AB1 (two tubes)

|                                      |       |    |
|--------------------------------------|-------|----|
| DC plate voltage                     | 450   | V  |
| Grid2(screen) DC voltage             | 400   | V  |
| Grid1(control) voltage**             | -37   | V  |
| Peak AF grid to grid voltage         | 70    | V  |
| Zero signal plate current            | 116   | mA |
| Max signal plate current             | 210   | mA |
| Zero signal grid2 screen current, DC | 5.6   | mA |
| Max signal grid2 screen current      | 22    | mA |
| Load resistance, plate-to-plate      | 5,600 | Ω  |
| Total harmonic distortion            | 1.8   | %  |
| Max output power                     | 55    | W  |



# Svetlana EL509 / EL519 / 6KG6

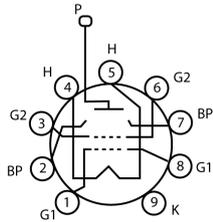
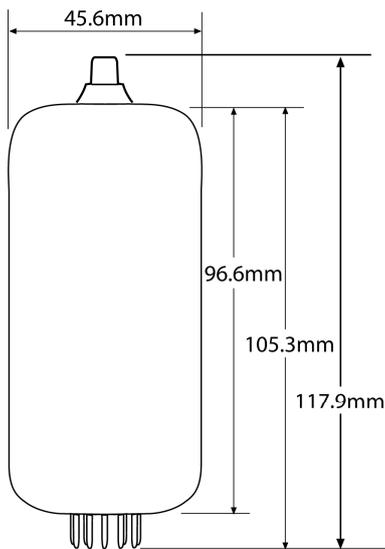
## High Performance Beam Power Tetrode



The Svetlana EL509 is a beam power tetrode intended for use in class A, AB or B audio amplifiers and for class B or C RF amplification. Close manufacturing specification tolerances and improved high voltage processing provides improved reliability and superior performance.

The Svetlana EL509 features: Increased peak cathode emission from new cathode materials; Stable operation from extended processing and aging; Gold-plated grid; Precise grid/screen alignment; Extraheavy glass envelope for ruggedness; Improved vacuum processing; Comprehensive testing before and after aging.

The Svetlana EL509 is manufactured in Russia at the Svetlana factory and is designed to be a direct replacement for any 6KG6 or EL509. The strict manufacturing and quality controls at the Svetlana plant assure functionality and long life.



### Electrical

| Heater                                | Min    | Nom | Max |          |
|---------------------------------------|--------|-----|-----|----------|
| Voltage(AC,DC)                        | 5.7    | 6.3 | 6.9 | V        |
| Current                               | 2.5    |     |     | A        |
| Transconductance(nominal)             | 18,000 |     |     | $\mu$ S  |
| Plate resistance(nominal)             | 8,000  |     |     | $\Omega$ |
| Interelectrode capacitances(typical): |        |     |     |          |
| Grid to cathode                       | 25     |     |     | pF       |
| Grid to plate                         | 2.5    |     |     | pF       |

### Maximum Ratings

|                             |       |    |
|-----------------------------|-------|----|
| DC plate voltage            | 900   | V  |
| DC plate voltage, pulsed    | 8,000 | V  |
| Grid2(screen) DC voltage    | 300   | V  |
| DC cathode current          | 500   | mA |
| Plate dissipation           | 35    | W  |
| Grid2 DC screen dissipation | 7     | W  |

### Typical Operation

### Audio Amplifier, Class A1 (single tube)

|                                  |       |          |
|----------------------------------|-------|----------|
| DC plate voltage                 | 500   | V        |
| Grid2(screen) DC voltage         | 280   | V        |
| Grid1(control) voltage           | -82   | V        |
| Peak grid drive                  | 50    | VP-P     |
| Zero signal plate current        | 70    | mA       |
| Max signal plate current         | 100   | mA       |
| Effective load resistance        | 1,650 | $\Omega$ |
| Distortion at 1 watt into 8 ohms | 0.9   | %        |
| Output power at 5% distortion    | 14    | W        |

