

# Svetlana 3CX10,000H3 Medium-Mu Industrial Power Triode



**T**he Svetlana™ 3CX10,000H3 is a rugged high-performance industrial ceramic/metal power triode designed for use in amplifier, oscillator, or modulator service. The ceramic is glazed to facilitate cleaning when used in an industrial environment. A modern mesh filament is used, replacing the old-fashioned hairpin construction. The improved mesh filament design ensures better mechanical rigidity and long lasting concentricity of the filament, contributing to longer life. The mesh filament also provides improved RF efficiency at VHF operation. Flexible leads connect to the filament terminals and a flange is connected to the grid. The flange provides a convenient way to mount the tube.

The Svetlana 3CX10,000H3 is manufactured in the Svetlana Electron Devices complex in St. Petersburg, Russia. Svetlana has achieved the improved performance described above with exact replacement compatibility with the 3CX10,000H3 manufactured in the United States.



# Svetlana 3CX10,000H3

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## General Characteristics

### Electrical

Filament	Thoriated-tungsten mesh
Voltage	7.50 ±0.37 V
Current @ 7.50V	99 ±5 A
Amplification factor (average)	20
Direct interelectrode capacitances (grounded filament):	
Input	53.0 pF
Output	1.5 pF
Feedback	34 pF
Maximum frequency for full ratings (CW)	90 MHz

### Mechanical

Cooling	Forced air
Base	Flying leads/flange
Socketing	None. Mounting flange
Operating position	Vertical, Base up or down
Maximum operating temperature	250° C
Maximum dimensions:	
Length (including filament leads)	45.09 cm (17.75 in.)
Diameter	17.91cm (7.05 in.)
Net weight	5.5 kg (12 lb)

### RF Power Amplifier or Oscillator, Class C, (Filtered DC Plate Power Supply)

Maximum Ratings		
DC plate voltage	10,000	V
DC plate current	5.0	A
Plate dissipation	10,000	W
Grid dissipation	250	W
DC grid voltage	-1000	V
DC grid current	0.6	A
Plate input power	40,000	W

### Typical Operation

(Frequencies to 30MHz)			
DC plate voltage	7000	9000	V
DC plate current	4.0	4.0	A
DC grid voltage*	-670	-930	V
DC grid current*	275	430	mA
Peak RF grid voltage*	340	390	V
Driving Power*	260	570	W
Plate input power	28,000	36,000	W
Plate dissipation	9000	7000	W
Plate output power	19,000	29,000	W
Approximate load impedance	720	1100	Ohms

### Audio or Radio Frequency Amplifier Service, Class AB or B

Maximum Ratings (per tube)		
DC plate voltage	7500	V
DC plate current	5.0	A
Plate dissipation	12,000	W
Grid dissipation	250	W

\*Approximate values

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## Electrical Application

**Filament Operation** The rated filament voltage for the 3CX10,000H3 is 7.50 volts. Filament voltage, as measured at the filament seals, should be maintained within 5% of this value to obtain maximum tube life.

**High Frequency Operation** Useful operation of the 3CX10,000H3 may be obtained to 140 MHz. Class C service at this frequency requires a reduction of maximum plate voltage to 7000 volts.

## Mechanical Application

**Mounting** The 3CX10,000H3 must be mounted with its axis vertical. The base of the tube may be up or down.

**Filament Connections** The Svetlana 3CX10,000H3 filament connections are made via the attached flexible leads.

**Grid Connection** The mounting flange is also the electrical connection to the grid.

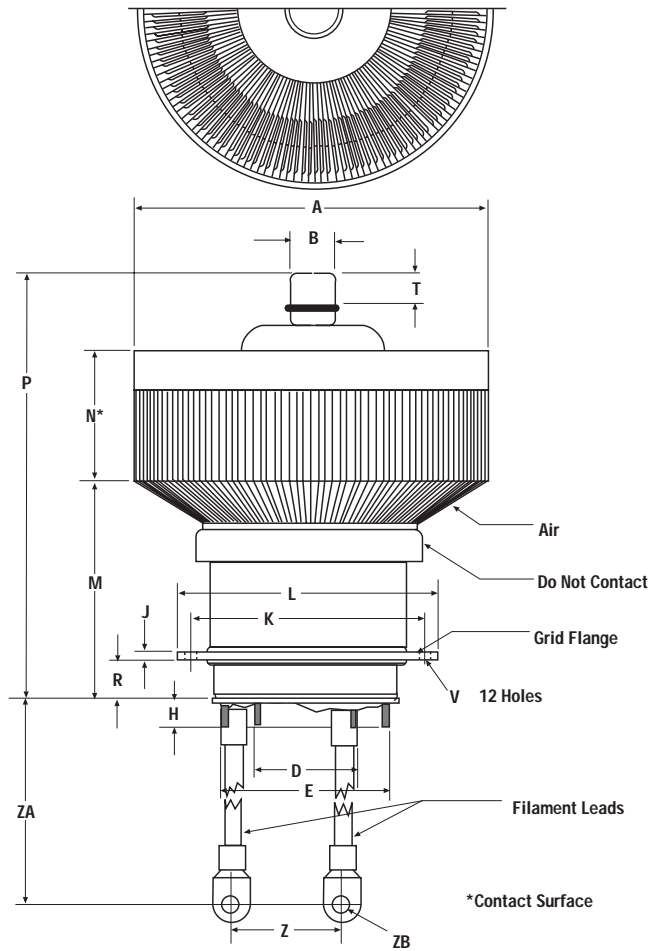
**Cooling** Sufficient forced-air circulation must be provided to keep the temperature of the anode core and the temperatures of the ceramic/metal seals below 250°C. Airflow requirements to maintain these temperatures below 225°C with an inlet-air temperature of 40°C are tabulated. Additional stem cooling is required. 10 cfm of airflow must be directed over the lead-to-tube connections for the filament leads. At frequencies above 30 MHz or at higher inlet-air temperatures or higher altitudes, more airflow will be required. The joints between the filament leads and the tube surfaces must be adequately cooled.

Base-to-Anode Air Flow				
Anode* Dissipation Watts	Sea Level		5000 Feet	
	Air Flow CFM	Pressure Drop Inches of Water	Air Flow CFM	Pressure Drop Inches of Water
4000	85	0.18	105	0.21
6000	145	0.38	175	0.46
8000	215	0.68	260	0.82
10,000	295	1.08	360	1.32
12,000	390	1.62	470	1.95

\* Adequate cooling allowance is included for approximately 1000 watts of additional dissipation of filament and grid power

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## Svetlana 3CX10,000H3 Outline Drawing



Dimensional Data						
Dim.	Millimeters			Inches		
	Ref.	Min.	Max.	Ref.	Min.	Max.
A	—	175.97	179.07	—	6.928	7.050
B	—	21.72	27.50	—	0.855	0.895
D	47.63	—	—	1.875	—	—
E	82.55	—	—	3.250	—	—
H	—	13.46	17.78	—	0.530	0.700
J	3.18	—	—	0.125	—	—
K	—	112.4	112.9	—	4.425	4.445
L	—	127.62	129.29	—	5.030	5.090
M	—	100.33	109.22	—	3.950	4.300
N	—	61.27	70.82	—	2.412	2.788
P	—	209.55	222.25	—	8.250	8.750
R	—	17.78	21.84	—	0.800	0.860
T	—	9.53	—	—	0.375	—
V	6.35	—	—	0.250	—	—
Z	50.8	—	—	2.000	—	—
ZA	—	215.9	228.6	—	8.500	9.00
ZB	9.91	—	—	0.390	—	—

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