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

The 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

Svetlana 3CX10,000H3

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*

Medium-Mu Industrial Power Triode

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

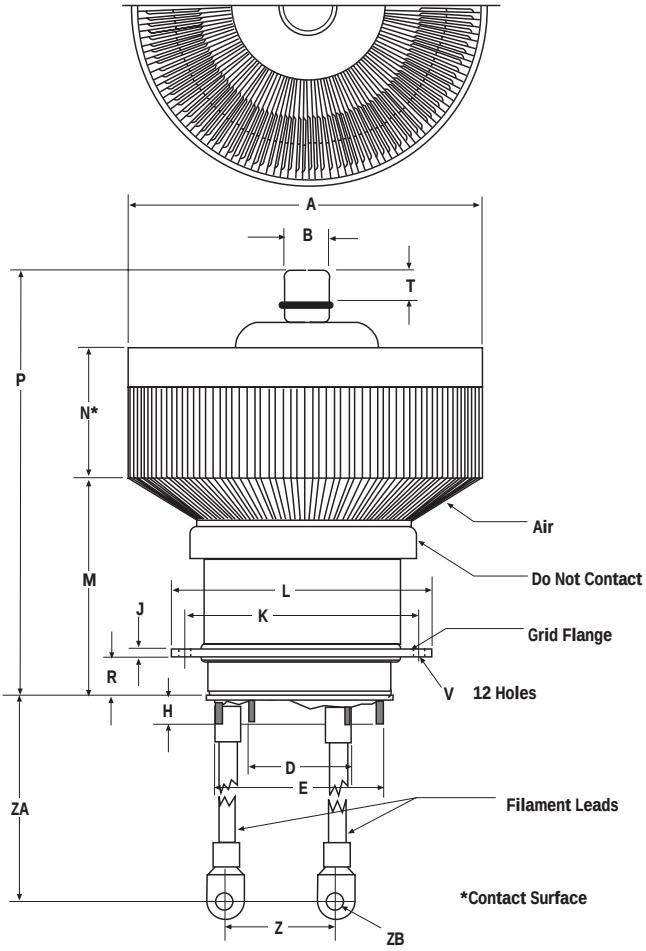
	Sea Level		5000 Feet	
Anode* Dissipation Watts	Air Flow CFM	Pressure Drop Inches of Water	Air Flow CFM	Pressure Drop Inches of Water
4000	85	0.18	105	0.21
6000	145	0.38	175	0.46
8000	215	0.68	260	0.82
10,000	295	1.08	360	1.32
12,000	390	1.62	470	1.95

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

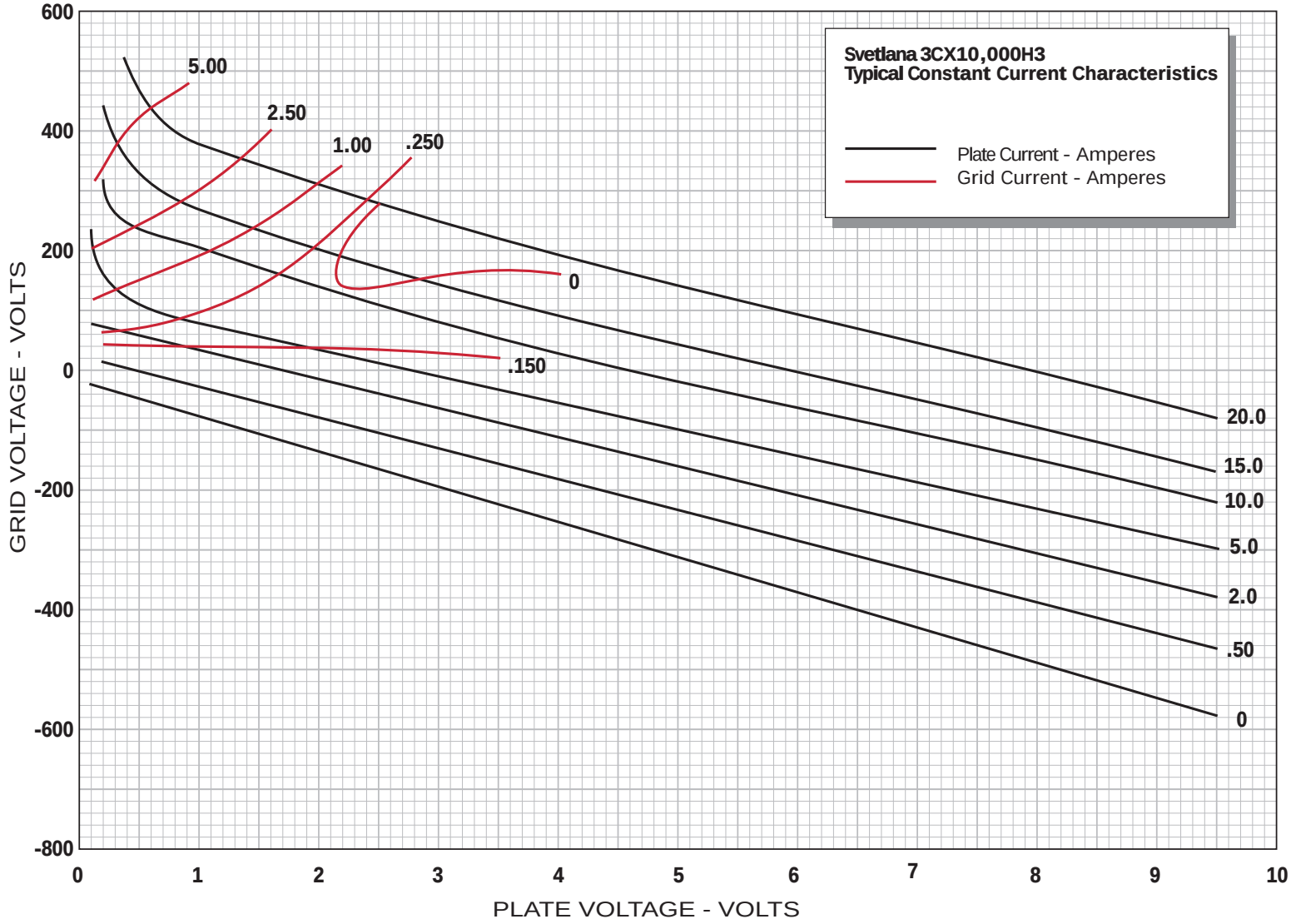
Svetlana

Svetlana 3CX10,000H3

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	—	—



Medium-Mu Industrial
Power Triode