SVETLANA TECHNICAL DATA

4CX20,000B

Radial Beam Power Tetrode

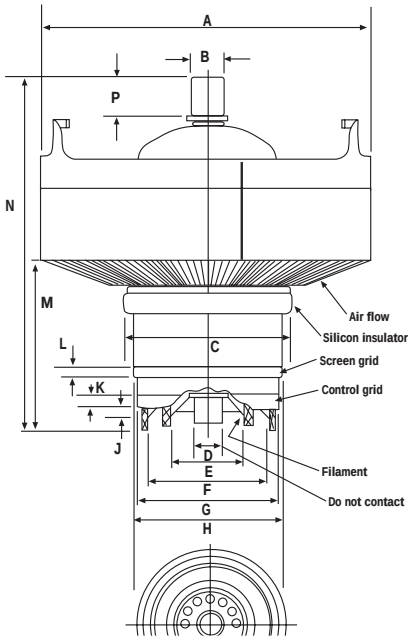
The Svetlana™ 4CX20,000B is a high-performance ceramic/metal power tetrode designed for audio and radio frequency applications. It is particularly well-suited for use in AM broadcast transmitters and pulse modulator service. The Svetlana 4CX20,000B has a directly-heated thoriated tungsten mesh filament for mechanical ruggedness and has excellent high voltage stand-off capability.

The Svetlana 4CX20,000B is manufactured in the Svetlana factory in St. Petersburg, Russia, and is a direct replacement for the 4CX20,000B manufactured in the United States.

Characteristics

Electrical		
Filament:	*Thoriated-tungsten mesh*	
Voltage	*10.0 ± 0.5*	*V*
Current @ 10.0V	*140*	*A*
Amplification factor (average):		
Grid to screen	*6.7*	
Direct interelectrode capacitances (grounded cathode):		
Cin	*190*	*pF*
Cout	*23.5*	*pF*
Cgp	*1.5*	*pF*
Direct interelectrode capacitance (grounded grid):		
Cin	*83*	*pF*
Cout	*24.5*	*pF*
Cgk	*0.2*	*pF*
Maximum frequency for full ratings (CW)	*30*	*MHz*
Mechanical		
Maximum overall dimensions:		
Length	*25 cm (9.84 in)*	
Diameter	*22.4 cm (8.80 in.)*	
Net weight	*6.35 kg (14.0 lb.)*	
Operating position	*Axis vertical, base up or down*	
Maximum operating temperature, ceramic/metal seals or envelope	*250˚ C*	
Cooling	*Forced air*	
Base	*Coaxial, for use with Svetlana SK300A socket*	

Svetlana Outline drawing



Dimensional Data

	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	221.74	225.04	8.730	8.860
B	21.72	22.73	.855	.895
C	116.66	118.26	4.593	4.656
D	15.24	19.30	.600	.760
E	48.16	49.17	1.896	1.936
F	79.58	80.59	3.133	3.173
G	96.32	97.33	3.792	3.832
H	101.09	102.11	3.980	4.020
J	4.78	—	.188	—
K	4.78	—	.188	—
L	4.78	—	.188	—
M	123.01	124.61	4.906	
N	240.41	249.94	9.465	9.840
P	12.70	—	.500	—

Svetlana

Svetlana 4CX20,000B
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Radio Frequency Power Amplifier Class C AM

Absolute Maximum Ratings:		
DC plate voltage	*10,000*	*V*
DC grid voltage-	*1000*	*V*
DC screen voltage	*2,000*	*V*
DC plate current	*5.0*	*A*
Plate dissipation	*20*	*kW*
Screen dissipation	*450*	*W*
Grid dissipation	*200*	*W*

Typical Operation (Frequencies to 30 MHz, Carrier Conditions)

DC plate voltage	*7.8*	*kVdc*
DC screen voltage	*750*	*Vdc*
DC grid voltage	*300*	*Vdc*
Peak AF screen voltage (100% modulation)	*750*	*Vdc*
DC plate current	*4.6*	*Adc*
*DC screen current**	*0.220*	*Adc*
*DC grid current**	*0.108*	*Adc*
Driving power(calculated)	*35*	*W*
Plate dissipation	*6.9*	*kW*
Plate impedance	*845*	*Ohms*
Plate output power	*29*	*kW*

Pulse Modulator or Regulator Service

Absolute Maximum Ratings		
DC plate voltage	*35*	*kV*
DC screen voltage	*2500*	*V*
DC grid voltage	*-15*	*kV*
Rear DC cathode current	*80*	*A*
Plate dissipation	*20.0*	*W*
Screen dissipation	*450*	*W*
Grid dissipation	*200*	*W*
Maximum pulse length	*100*	*mS*

**Approximate value*

Cooling

Base-to-Anode Air Flow

Sea Level			10,000 Feet	
Plate Dissipation Watts	Air Flow CFM	Pressure Drop Inches of Water	Air Flow CFM	Pressure Drop Inches of Water
12.5	257	0.6	377	0.7
15.0	367	1.0	537	1.2
17.5	500	1.5	730	1.9
20.0	652	2.4	955	3.0

1. For each 10˚ increase in air temperature cooling, flow rate should be increased 20%

2. Air must be passed around the base of the tube and through the socket, to assure adequate cooling of the tube base and the socket contacts.

3. Minimum air flow requirements for a maximum anode temperature of 225˚C are shown in the table.

4. Air flow must be applied before or simultaneously with the applicaiton of power, including the tube filament, and should normally be maintained for several minutes after all power is removed from the tube.