

SVETLANA TECHNICAL DATA

3CX20,000A7

High-Mu Power Triode



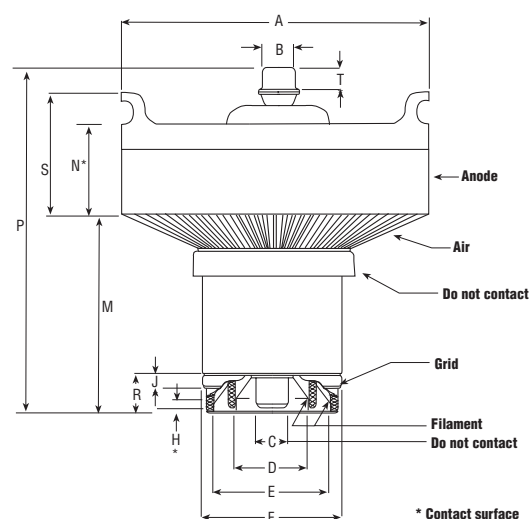
The Svetlana™ 3CX20,000A7 is a high-performance ceramic/metal power triode designed for use in zero-bias, class B RF or audio amplifiers, or class C power amplifiers. A modern mesh filament is used, replacing the old-fashioned hairpin construction. The improved mesh filament design ensures better mechanical rigidity and long lasting concentricity of the filament, providing enhanced linearity, less noise, reduced warm-up variation and longer life. The low-inductance, mesh-filament basket also forms a natural extension of the cylindrical stem geometry into the active area, giving superior VHF performance.

The Svetlana 3CX20,000A7 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 3CX20,000A7 manufactured in the United States.

Characteristics

Electrical	
Filament:	Thoriated-tungsten mesh
Voltage	6.3± 0.3 V
Current @ 6.3V	160 A
Amplification factor (average)	200
Direct interelectrode capacitances (grounded grid):	
Input	61 pF
Output	36 pF
Feedback	0.2 pF
Direct interelectrode capacitances (grounded filament):	
Input	61 pF
Output	0.2 pF
Feedback	36 pF
Maximum frequency for full ratings (CW)	110 MHz
Mechanical	
Cooling	Forced air
Base	Coaxial
Socketing	Svetlana SK1300 or SK1320 or equiv.
Operating position	Vertical, base up or down
Maximum operating temperature	250° C
Maximum dimensions:	
Maximum length	222.3 mm (8.75 in.)
Diameter	211.1 mm (8.31 in.)
Net weight	6.14 kg (13.5 lb.)
Cathode-Driven Radio Frequency Linear Amplifier, Class AB	
Maximum Ratings	
DC plate voltage	8,000 V
DC plate current	6.0 A
Plate dissipation	20 kW
Grid dissipation	500 W

Svetlana Outline drawing



	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	208.10	211.07	8.193	8.310
B	21.72	22.73	0.855	0.895
C	15.24	18.30	0.600	0.720
D	48.16	49.17	1.896	1.936
E	79.58	80.59	3.133	3.173
F	96.32	97.33	3.792	3.832
H	4.78	—	0.188	—
J	4.78	—	0.188	—
M	104.775	111.13	4.125	4.375
N	45.01	46.99	1.775	1.850
P	209.55	222.25	8.250	8.750
R	25.04	26.67	0.986	1.050
S	87.63	95.25	3.450	3.750
T	9.53	—	0.375	—



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Typical Operation, Class AB2 (Frequencies to 110 MHz)

DC plate voltage	7,000	7,000	V
Zero-signal DC plate current*	0.6	0.6	A
Single-tone DC plate current	5.0	5.92	A
Grid bias	0	0	V
Single-tone DC grid current*	1.0	1.22	A
Peak driving power	1540	1750	W
Plate dissipation	10.8	11.8	kW
Single-tone plate output power	24.2	29.6	kW
Resonant load impedance	745	693	Ohms
Driving impedance	32	27	Ohms

Cathode Driven Class C RF Amplifier, CW or FM

Maximum Ratings			
DC plate voltage	8,000	V	
DC plate current	5.0	A	
Plate dissipation	20,000	W	
Grid voltage	-500	V	
Grid dissipation	500	W	

Typical Operation (frequencies to 110 MHz)

Plate voltage	7,200	7,800	V
DC grid to cathode voltage	-200	-200	V
Plate current	3.7	4.2	A
Peak RF cathode voltage	480	500	V
Grid current*	92	98	mA
Cathode driving power*	1900	2300	W
Plate dissipation	4.5	5.0	kW
Useful output power	22.0	27.5	kW
Resonant load impedance	1080	1020	Ohms

Cathode Driven Class B RF Amplifier Television Service

Maximum Ratings			
DC plate voltage	8,000	V	
DC plate current	6.0	A	
Plate dissipation	20	kW	
Grid voltage	-500	V	
Grid dissipation	500	W	

Typical Operation (frequencies to 216 MHz)

Plate voltage	7,000	V
Grid voltage	0	V
Zero signal plate current	1.2	A
Plate current, blanking level	4.8	A
Plate current, sync peak level	5.8	A
Grid current, blanking level	0.47	A
Grid current, sync peak level	1.14	A
Peak RF cathode voltage, blanking level	230	V
Peak RF cathode voltage, sync peak level	300	V
Driving power, blanking level	690	W
Driving power, sync peak level	1700	W
Plate output power, blanking level	16.5	kW
Plate output power, sync peak level	27.5	kW
Plate load resistance	605	ohms

*Approximate Values

Base-to-Anode Air Flow

Anode* Dissipation Watts	Sea Level		10,000 Feet	
	Air Flow CFM	Pressure Drop Inches of Water	Air Flow CFM	Pressure Drop Inches of Water
7500	122	0.25	203	0.45
10,000	241	0.70	350	1.00
15,000	590	2.45	940	3.90
20,000	1180	6.90	1710	10.00

* Because the power dissipated by the filament represents about 1000 watts and because grid dissipation can, under some conditions, represent another 500 watts, allowance has been made in preparing this tabulation for an additional 1500 watts.

