

PRODUCT REVIEW

2A3 SOVTEKS

Reviewed by Charles Hansen

Sovtek 2A3 Power Triode, New Sensor Corp., 20 Cooper Square, Fourth Floor, New York, NY 10003, (212) 529-0466, www.newsensor.com.

In 1933 RCA introduced the 2A3 direct-heated power triode for audio amplification. The initial design used a single plate and a heater with 20 parallel filaments. Later that decade, RCA redesigned the tube with two short plates in parallel with an inverted “W” filament structure. The performance of the 2A3 has been shown to be sensitive to its filament current.¹

The RCA manual lists the maximum plate power as 15W. This rating was reported to be conservative for the later two-plate design, with successful single-ended designs of 20W or more.

The Sovtek 2A3s I received for testing are of the single-plate design. These tubes appear to have a robust construction. They were hand-marked with black paint, so I assume they are prototypes of the production versions. I received four tubes, with sample numbers marked on

the tops: 12, 29, 31, and 39, which I refer to in the test data. These tests were strictly objective measurements—I did not install them in an amplifier for any subjective testing.

TEST DATA

At 5.375”, the tubes exactly met the maximum height of the RCA ST16 outline. The maximum diameter of the Sovtek tube was 2.0”, just under the ST16 maximum of 2.063”. The filament currents for all four tubes were within the specified 2.5A maximum at a filament voltage of 2.5V AC 60Hz. The Sovtek 2A3 filaments are completely enclosed. Even in a dark room their glow was not visible.

No test data was supplied with the tubes. I measured the dynamic characteristics using the Audiomatica Sofia vacuum-tube curve tracer, available from Old Colony Sound Lab, (888)-924-9465, www.audioXpress.com). Figures 1–4 are the plate curves for tubes number 12, 29, 31, and 39, respectively.

The variations in plate current at a

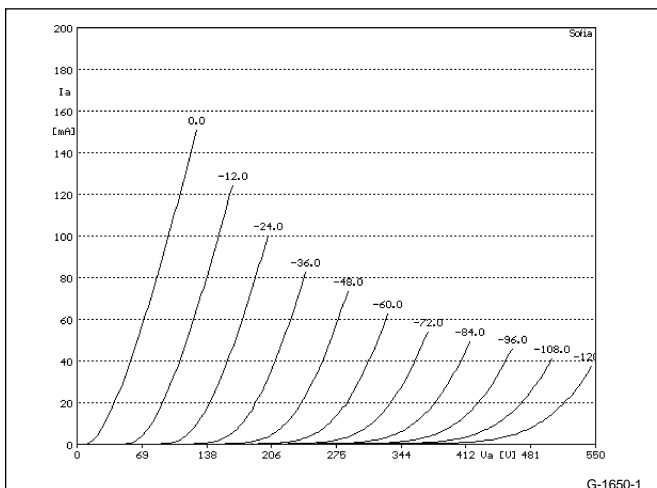


FIGURE 1: Plate curves for Sovtek 2A3 sample 12.

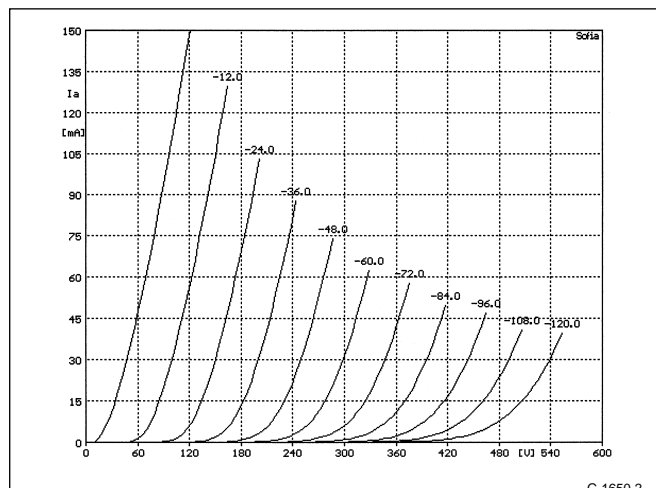


FIGURE 2: Plate curves for sample 29.

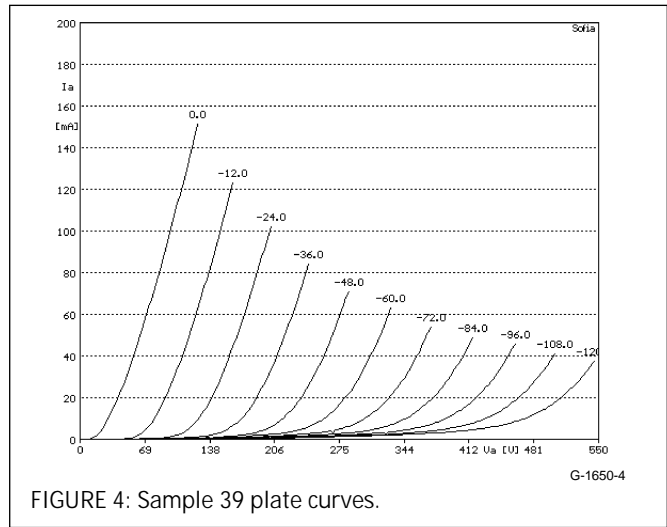
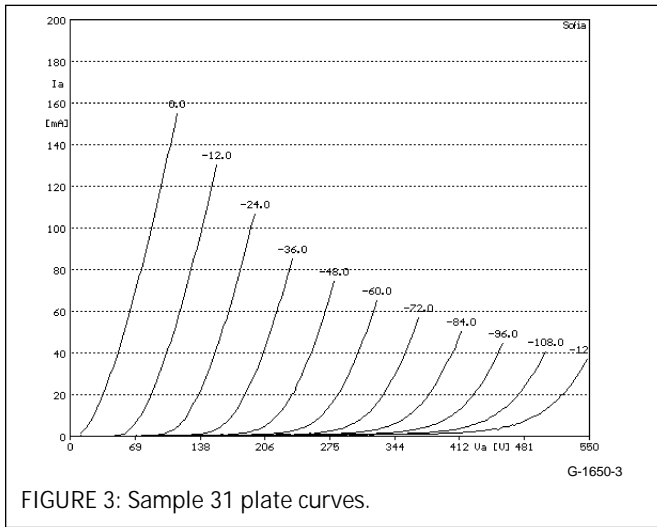


TABLE 1
COMPARISON OF PLATE CURRENTS AT V
K = 250V DC, VG = -48V DC

2A3 SAMPLE	IP (mA RMS)	Gm (mA/V)	μ	Rp (k Ω)	P (watts)
12	30.0	6.17	6.75	1.06	7.50
29	31.0	6.87	6.82	1.00	7.76
31	34.6	8.05	6.99	0.90	8.65
39	32.4	6.05	6.90	1.08	8.11

fixed plate voltage of 250V DC and a grid voltage of -48V DC are shown in *Table 1*. I have listed the Gm, μ , Rp, and P at the selected test points for information.

I also ran the Sofia matching program, and numbers 12 and 29 were matched with an ERR of 88. The remaining two tubes matched with an ERR of 237.

ERR is a dimensionless figure of merit representing the smallest root-

sum-square differences between the measured values of plate current and plate voltage over the specified range of grid-bias values.² The lower the number, the better the match. An ERR of less than 100 is a very good match. ❖

REFERENCES

1. "Filament Power and Performance of the 2A3," Don Jenkins, *GA* 5/96, pp. 42-46.
2. "The Sofia," Don Jenkins, *V&T News* 2/99, pp. 11-19.