SHUGUANG ELECTRONICS

Electronic Tube Catalogue

2024 / English reading edition

Shuguang Electronics Group Co., Ltd. • Electronic Tube Factory

“More than seventy years of focus. Military-grade quality. Enduring classics.”

Reading this edition

The company profile and product descriptions translate the 2024 factory catalogue. Sound descriptions, durability claims and substitution statements are the manufacturer’s own. The technical extracts reproduce the printed curves and figures at the resolution available. Where a small digit, decimal point or sign is indistinct, its value is left untranscribed. Use the source link on each page to consult the corresponding original spread.

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The Shuguang factory

Company profile / translated from the manufacturer's introduction

History and production

The factory dates to 1958. It was formerly State-Owned Factory No. 770 under the Ministry of Electronics Industry. The catalogue describes more than seventy years of expertise in tube design, development and production and more than 100 types across four ranges: Standard, Treasure, Reproduction and Nature Sound. It describes the company as one of the largest specialist makers of receiving and amplifying tubes and low- and medium-power transmitting tubes.

Applications and customers

The company lists communications, broadcasting, audio amplification, medical equipment and industrial high-frequency applications. Its receiving and amplifying tubes have been sold throughout China and exported to Europe, the Americas, Japan and Southeast Asia. It names Marshall, Fender and Spark among its customers and admirers.

Recognition

The catalogue cites a National Quality Silver Award, an industrial science and technology achievement award, and a quality citation issued under the authority of the British Queen. The final spread reproduces four historical award records. The legible portions are described on the last page of this edition.

The Changsha site

In 2020 the factory moved to the Changsha National High-Tech Industrial Development Zone. The catalogue describes new clean production areas, intelligent equipment, improved manufacturing processes and a more standardized supply chain. It identifies teamwork, practical work, innovation and dedication as the principles behind product development.

SHUGUANG ELECTRONICS

845-T

Nature Sound series

Design and construction

The 845-T revises the 845 design to improve consistency, sound and appearance. A thoriated-tungsten cathode imported from Japan is used for its emission performance. The imported graphite anode is vacuum-treated to improve its dissipation capability. A larger glass envelope improves heat dissipation.

Manufacturer’s listening notes and applications

Shuguang describes a more spacious presentation, wider range and greater control. The catalogue lists the 845-T as a replacement for other 845 types.

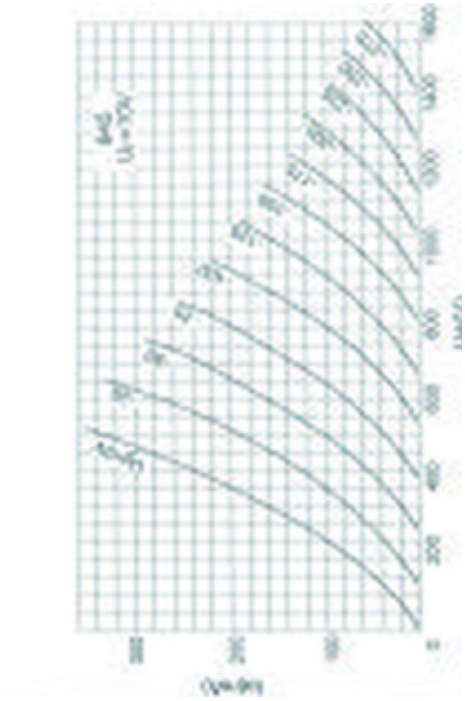
Technical notes

Directly heated triode. Filament voltage: 10 V. The sheet includes interelectrode capacitances, static characteristics and single-ended Class A1 operating examples.

From the printed data sheet

E_a	800	1000	1000	1250	V
$-E_g$	125	170	135	225	V
R_L	4.5	4.6	4.6	6.6	kΩ
I_a	80	70	60	40	mA
$\hat{U}_{g\,(pk)}$	177	248	–	–	V
$I_{a\,(max.\,sig)}$	178	238	238	248	mA
P_{out}	40	75	75	115	W

Single-ended Class A1 amplifier | source operating points



Anode characteristic curves

SHUGUANG ELECTRONICS

211-T

Nature Sound series

Design and construction

A Japanese thoriated-tungsten cathode provides emission. The high-purity graphite anode is treated to improve dissipation, and the larger envelope helps carry heat away.

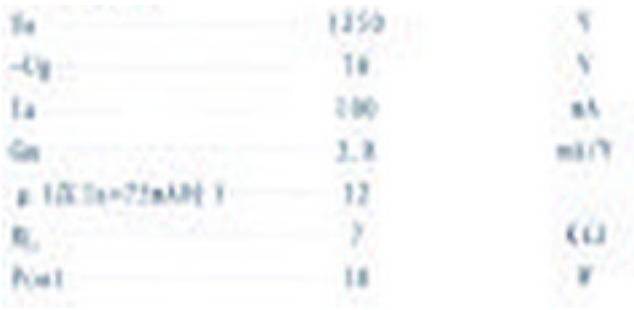
Manufacturer’s listening notes and applications

Shuguang describes an extended treble, an open midrange and full bass, with both strength and fine detail. The catalogue lists other 211-series tubes as possible replacements.

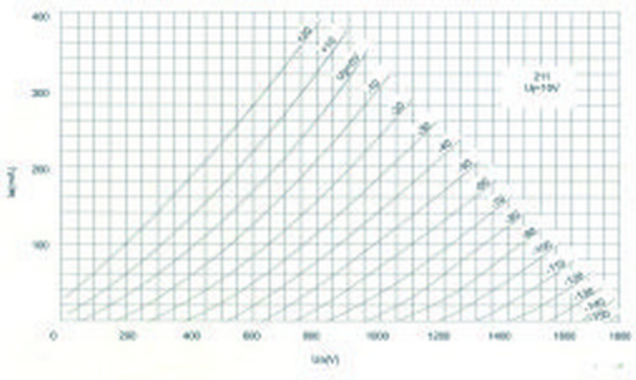
Technical notes

Directly heated triode for Class A, B and C amplification. The data sheet also names GL-211 and UV-211 equivalents. Filament voltage: 10 V.

From the printed data sheet



Static characteristics | source symbols and values



Anode current versus anode voltage

6SL7-T

Nature Sound series

Design and construction

Shuguang combines features of several established designs with its proprietary carbonized anode material. The tube has a high-emission cathode, a spiral heater and a larger blackened glass envelope intended to reduce external interference and dissipate heat.

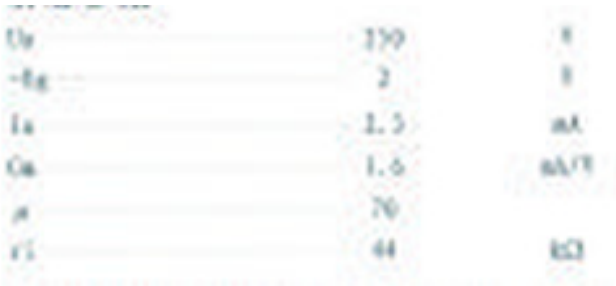
Manufacturer’s listening notes and applications

The catalogue describes a gold-finished base and a quiet, sweet and musically expressive sound.

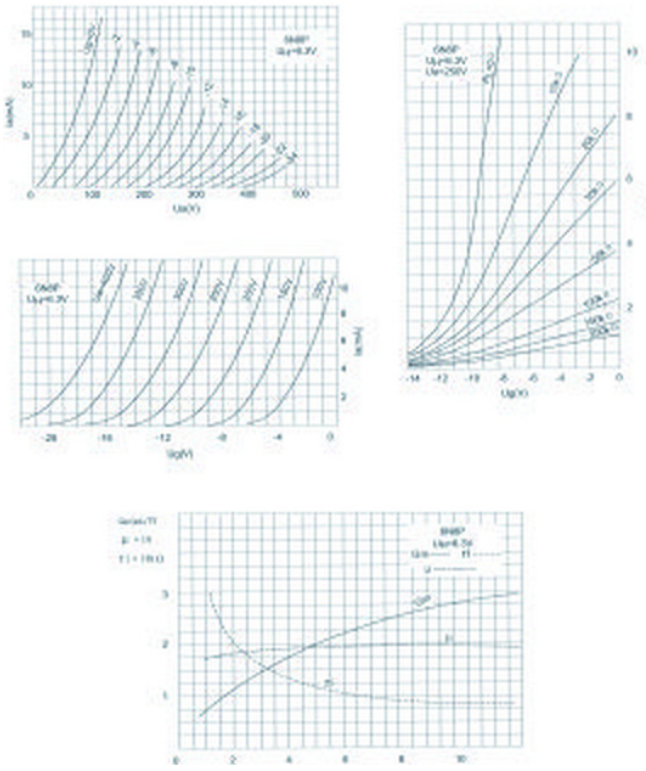
Technical notes

High-mu twin triode with an octal base. The sheet identifies uses in phase inversion and resistance-capacitance-coupled amplifiers. Heater: 6.3 V, 0.3 A.

From the printed data sheet



Static characteristics | source symbols and values



Characteristic families from the second sheet

SHUGUANG ELECTRONICS

300B-T

Nature Sound series

Design and construction

A heat-dissipating shielding coating on the inside of the envelope is combined with a pure-gold grid, a high-emission cathode and Shuguang's proprietary anode material. The tube is evacuated with ultra-high-vacuum equipment and aged using a dedicated process.

Manufacturer's listening notes and applications

The catalogue describes clean highs, a full and detailed midrange and firm bass. It lists other 300B types as replacements.

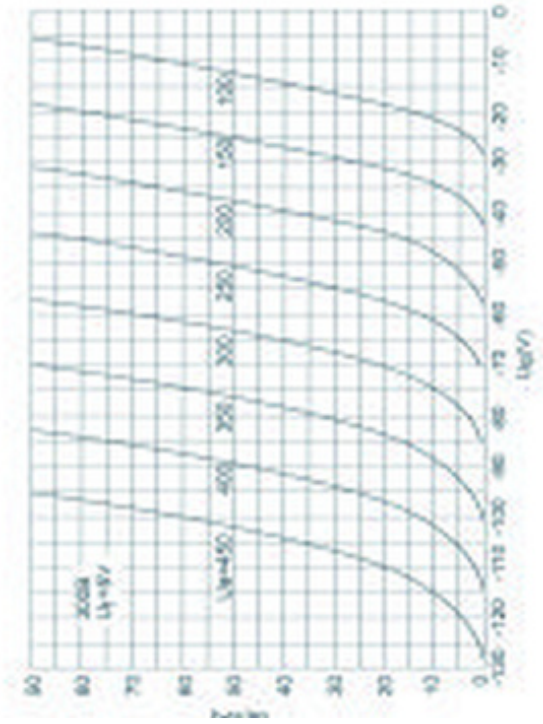
Technical notes

Directly heated medium-power triode for Class A1 audio amplification. DC filament: 5 V, 1.2 A. The sheet lists a 40 W anode-dissipation limit.

From the printed data sheet

U_a	350	V
$-U_g$	60	V
I_a	60	mA
G_m	5.5	mA/V
r_i	8.7	kΩ
μ	3.85	
$P_{a\,max}$	40	W

Static characteristics | source symbols and values



Anode characteristic curves

SHUGUANG ELECTRONICS

2A3C-T

Nature Sound series

Design and construction

The tube uses an internal heat-dissipating shielding coating, a pure-gold grid, a high-emission cathode and Shuguang's anode material. High-vacuum evacuation and a dedicated aging process are used. The base is gold-colored and the pins are gold-finished.

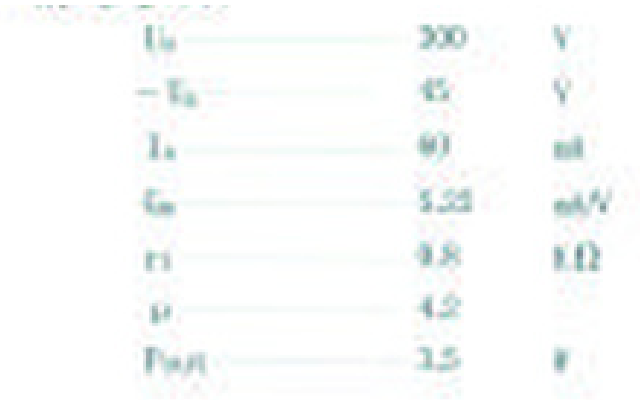
Manufacturer's listening notes and applications

Shuguang describes a silky, clear and open sound and lists compatibility with other 2A3 types.

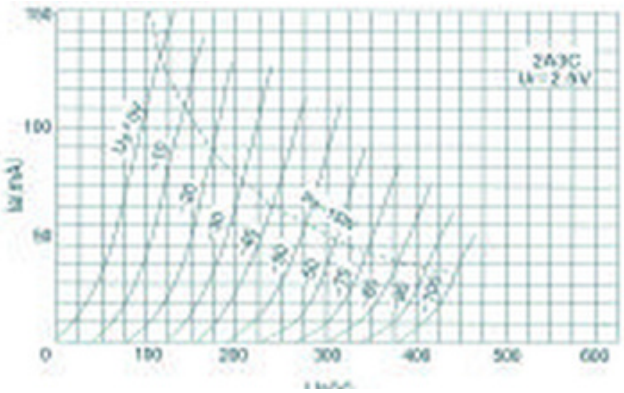
Technical notes

Directly heated medium-power triode using a 300B-style envelope for Class A1 and AB1 amplification. The sheet gives a filament voltage of 2.5 V.

From the printed data sheet



Static characteristics | source symbols and values



Anode characteristic curves

805A-T

Nature Sound series

Design and construction

A Japanese thoriated-tungsten cathode is combined with a treated high-purity graphite anode and a larger glass envelope. The design omits a high-voltage top cap.

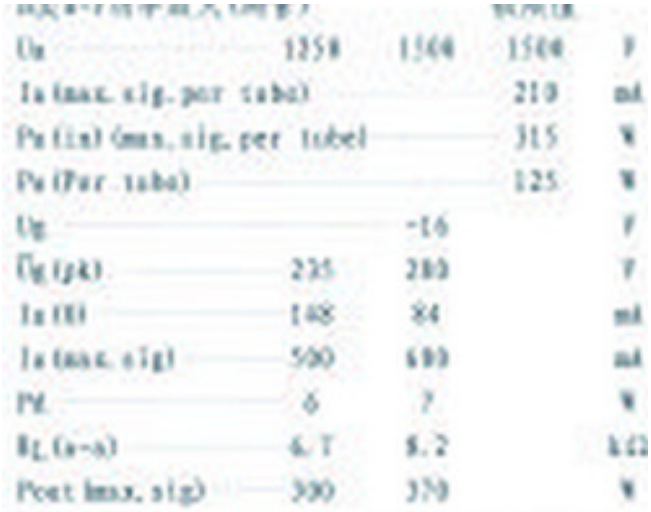
Manufacturer’s listening notes and applications

The catalogue describes strong dynamics, vivid treble, clear midrange and smooth bass. Shuguang lists it as a replacement for other 805A-series tubes.

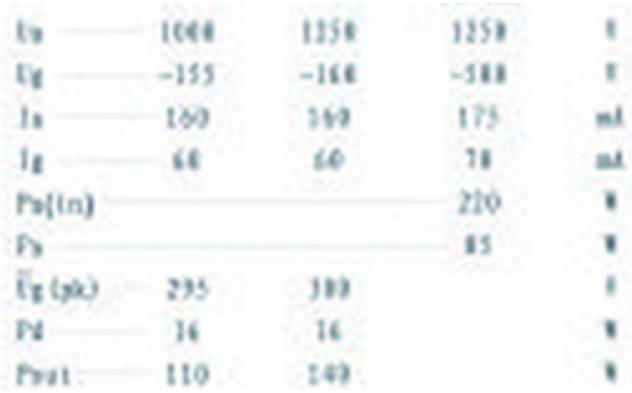
Technical notes

Directly heated triode. Filament: 10 V, 3.25 A. The sheet discusses RF power amplification, oscillation and audio amplification.

From the printed data sheet



Push-pull audio operating examples | original symbols



Additional operating conditions | original symbols

KT88-T

Nature Sound series

Design and construction

Developed from the GE KT88 and Gold Lion KT88, this version uses imported key materials, ultra-high-vacuum processing and clean manufacturing. Shuguang describes a high-dissipation design rated to withstand up to 800 V and claims more than twice the service life. The pins and base are plated with 24-karat gold.

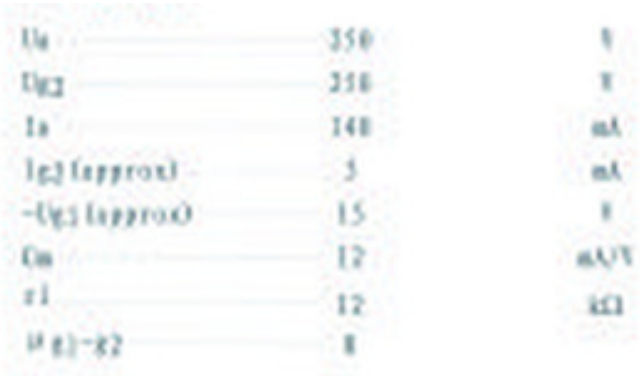
Manufacturer’s listening notes and applications

The catalogue describes a balanced, smooth and detailed sound that retains the dynamic character of the KT88.

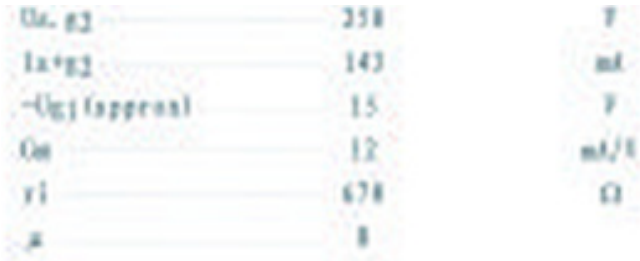
Technical notes

Beam power tetrode. The sheet cites CV5220 and 6550, a heater rating of 6.3 V and 1.6 A, and a 42 W anode-dissipation figure. The limiting values depend on the conditions shown.

From the printed data sheet



Tetrode connection | static characteristics



Triode connection | static characteristics

12AX7-T

Nature Sound series

Design and construction

Designed for the input and preamplifier stages of high-end tube amplifiers, the 12AX7-T offers high gain and low noise. Shuguang describes selected internal materials and careful assembly.

Manufacturer’s listening notes and applications

A dedicated evacuation and aging process is followed by precision measurements and matching.

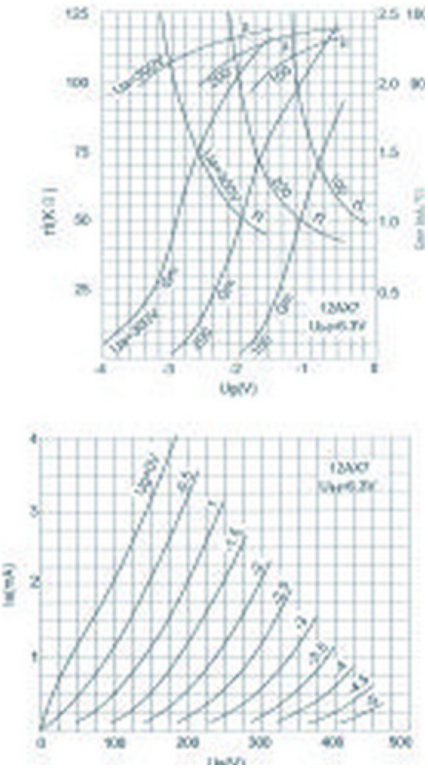
Technical notes

High-mu, low-noise twin triode. Heater: 6.3 V in parallel or 12.6 V in series, at 0.30 A or 0.15 A respectively. The sheet identifies voltage amplification, phase splitting and related audio applications.

From the printed data sheet

I_a	100	250	
V_g	-1	-2	
I_a	0.5	1.3	mA
S_m	1.25	1.6	mA/V
μ	100	100	
r_i	80	62.5	kΩ

Static characteristics | two operating points



Characteristic curves

WE211

WE series

Design and construction

Shuguang describes a mechanically stable construction using an imported graphite anode, a high-emission thoriated-tungsten cathode, a grid coating of 99.99% gold and a high-voltage-resistant lead-out arrangement.

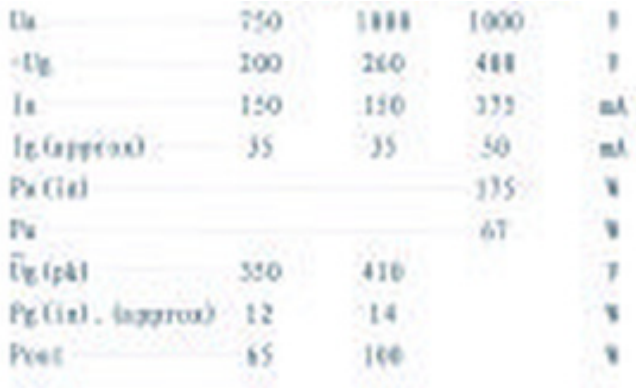
Manufacturer’s listening notes and applications

The manufacturer describes a quiet and expressive presentation with liveliness and impact.

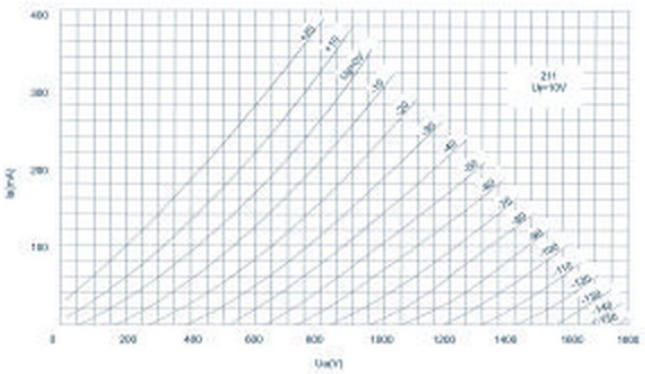
Technical notes

The insert shows Class C operating conditions and a family of 211 anode curves. The plotted axes are anode current and anode voltage.

From the printed data sheet



Class C table | original symbols and figures



Anode characteristic curves

WE274

WE series

Design and construction

The design draws on Western Electric and Sylvania rectifiers. Shuguang specifies a fast-dissipating anode material with high thermal capacity, a high-emission cathode, a highly insulating stem and ultra-high-vacuum processing. The cathode design is intended to suppress arcing.

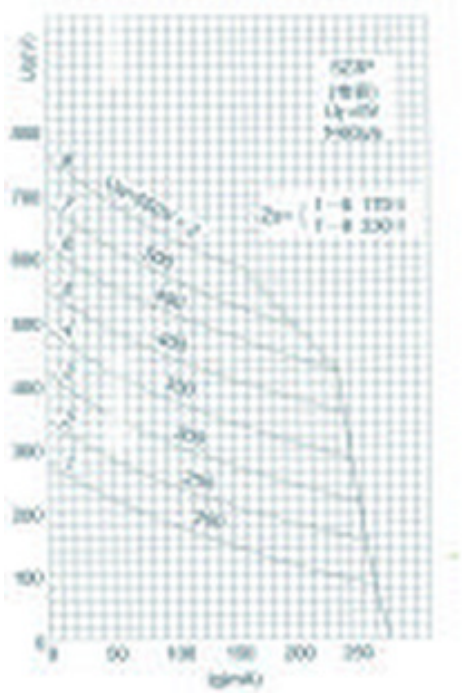
Manufacturer’s listening notes and applications

Shuguang reports improved soundstage and sound quality. The main text lists 5U4G, 5Z3, 274B and 5AR4 as alternatives.

Technical notes

Glass-envelope, octal-base, directly heated full-wave rectifier. Filament: 5 V, 3 A. The insert gives limiting values and examples under different transformer and filter conditions.

From the printed data sheet



Rectifier characteristic curves



Rectifier limits | values and units in printed order

WE6SL7

WE series

Design and construction

Drawing on Western Electric and Datang designs, this tube uses Shuguang's carbonized anode, a high-emission cathode and a spiral heater intended to reduce noise. The catalogue describes increased anode dissipation, a larger glass envelope and a gold-finished base.

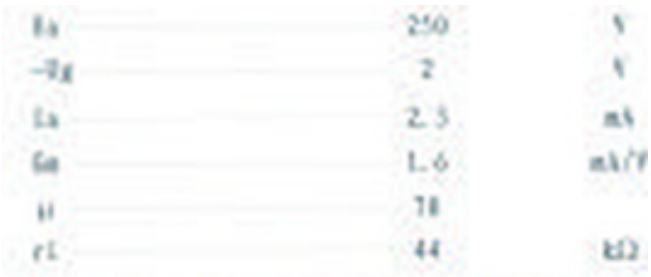
Manufacturer's listening notes and applications

Shuguang describes quiet, stable operation and a sweet, expressive sound.

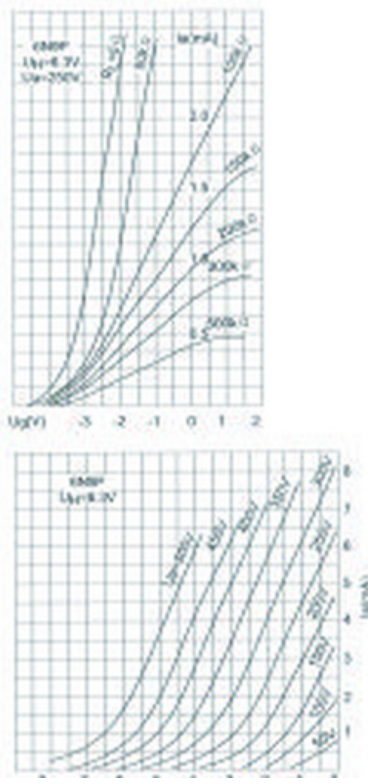
Technical notes

High-mu octal twin triode for phase-inverter and resistance-capacitance-coupled stages. Heater: 6.3 V, 0.3 A.

From the printed data sheet



Static characteristics | source symbols and values



Characteristic curves

WE6SN7

WE series

Design and construction

Shuguang describes a proprietary anode, high-emission cathode, low-noise spiral heater, high anode-dissipation capability, larger glass envelope and gold-finished base.

Manufacturer’s listening notes and applications

The catalogue describes clarity, resolution, speed and transparency, with an engaging musical presentation.

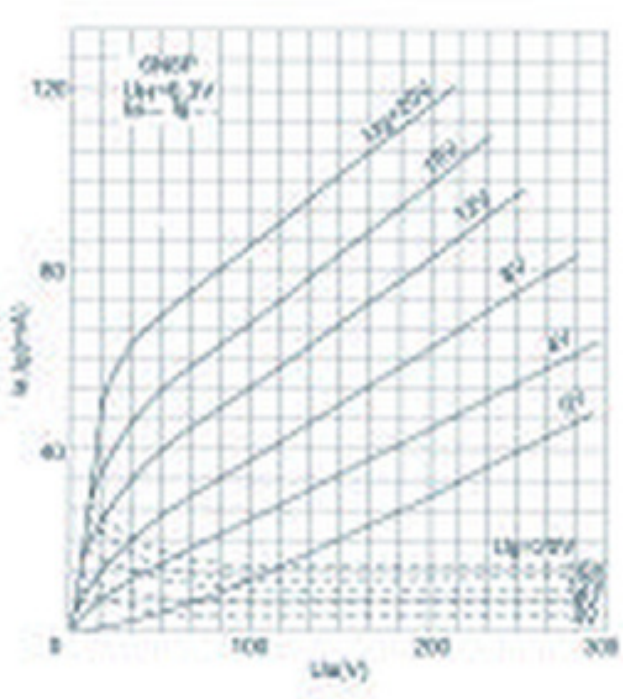
Technical notes

Medium-mu twin triode in a glass envelope with an octal base, for multivibrators and resistance-capacitance-coupled amplifiers. Heater: 6.3 V, 0.6 A.

From the printed data sheet

Ua	88	250	V
Ug	0	−8	V
Ia	18	9	mA
Ga	3	2.6	mA/V
μ	20	20	
ri	6.7	7.7	kΩ
Ia (Ug=−12.5V)	–	1.3	mA
Ug (Ia=10 μA)	−7	−18	V

Static characteristics | two operating points



Anode characteristic curves

WE300B

WE series

Design and construction

Shuguang says this reproduction follows the original American Western Electric 300B design, materials principles and manufacturing processes. It describes specially prepared materials and assembly by technicians with more than 20 years of experience.

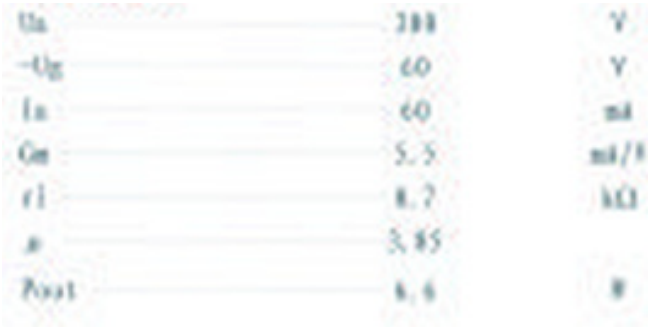
Manufacturer’s listening notes and applications

The catalogue describes a sound close to the original tube and lists 300B, 300B-Z and 300BS as possible replacements.

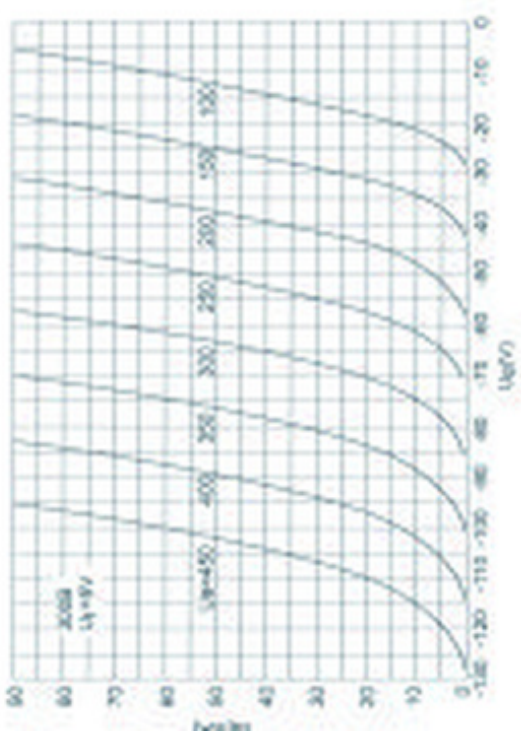
Technical notes

Directly heated medium-power triode for Class A1 audio amplification. DC filament: 5 V, 1.2 A. The data insert gives a 40 W anode-dissipation limit.

From the printed data sheet



Static characteristics | source symbols and values



Anode characteristic curves

CV181-Z

Treasure series

Design and construction

Shuguang presents this as a low-noise preamplifier tube for full-range amplification. It has a ceramic base and gold-plated pins.

Manufacturer’s listening notes and applications

The catalogue describes a quieter background and a broader soundstage. It lists the 6SN7 and 6N8 as alternatives.

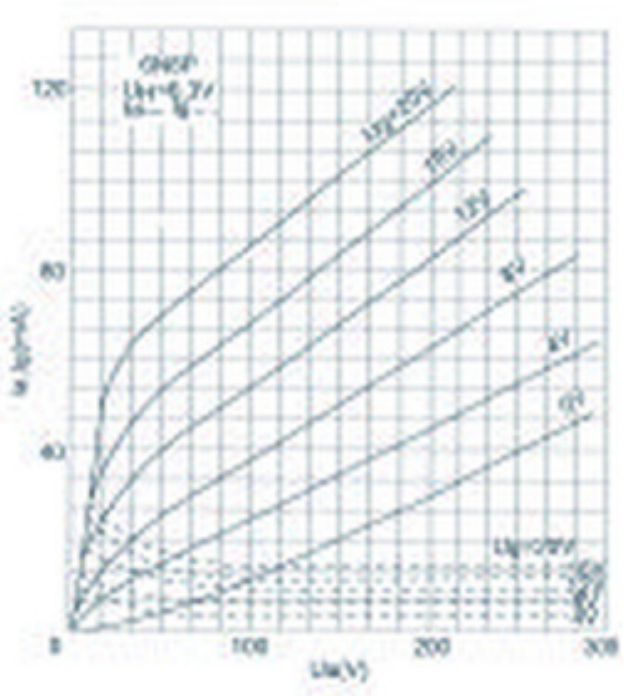
Technical notes

Medium-mu octal twin triode. Heater: 6.3 V, 0.6 A. The sheet shows two sets of static operating conditions.

From the printed data sheet

Ua	90	250	V
Ug	0	−8	V
Ia	10	9	mA
Gm	3	2.6	mA/V
μ	20	20	
ri	6.7	7.7	kΩ
Ia (Ug=−12.5V)	–	1.3	mA
Ug (Ia=10 μA)	−7	−18	V

Static characteristics | two operating points



Anode characteristic curves

SHUGUANG ELECTRONICS

300B-Z

Treasure series

Design and construction

This design uses an internal shielding and heat-dissipation coating, a pure-gold grid, a high-emission cathode and Shuguang's proprietary anode. Shuguang describes its ultra-high-vacuum evacuation and aging processes.

Manufacturer's listening notes and applications

The catalogue describes bright treble, clear midrange, substantial bass and a broad soundstage. It lists other 300B types as replacements.

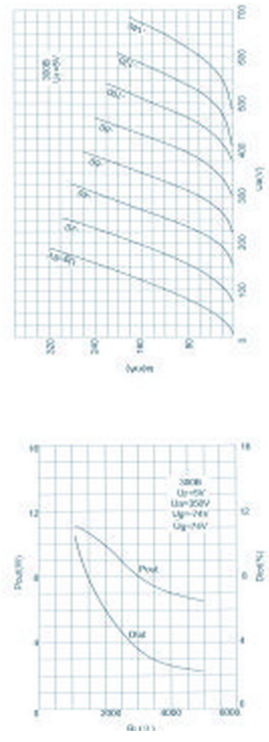
Technical notes

The printed insert gives typical triode operating points. Table columns include anode voltage, negative grid bias, anode current, load resistance, output power and second harmonic.

From the printed data sheet

Ua	-Ug	Ia	RL	Pout	2nd
V	V	mA	Ω	W	dB
200	42	30	2000	3	29
200	39	40	2300	2.6	26
220	55	30	2000	4.9	18
250	52	40	3000	4.0	26
250	50	50	2500	6.4	26
250	48	60	2000	4.7	26
250	48	60	2700	4.1	38
250	45	80	1200	5.0	26
300	65	40	2500	6.7	28
300	63	50	2000	7.3	21
300	63	50	3000	6.1	26
300	61	60	2400	6.6	26
300	58	80	1200	7.5	26
350	76	50	3600	7.8	26
350	74	60	3000	10.2	21
350	74	60	3000	8.3	26
350	74	60	4000	7.0	38
350	71	80	2200	9.6	26
400	91	40	5000	8.4	26
400	89	50	4000	11.5	21
400	89	50	6000	8.4	35
400	87	60	3500	10.3	26
400	84	80	2500	12.5	35
450	104	40	6000	9.5	26
450	103	50	5000	10.1	21
450	100	60	4000	12.5	26
450	100	60	5500	10.1	30
450	97	80	2800	17.8	21
450	97	80	3800	14.6	26
450	97	80	4500	11.5	31

Typical operating points | original numbers and units



Anode, output and distortion curves

2A3C-Z

Treasure series

Design and construction

This version combines a pure-gold grid, thoriated-tungsten cathode, proprietary anode, ultra-high vacuum and an internal shielding and heat-dissipation coating. Shuguang describes a mature aging process, a ceramic base and gold-finished pins.

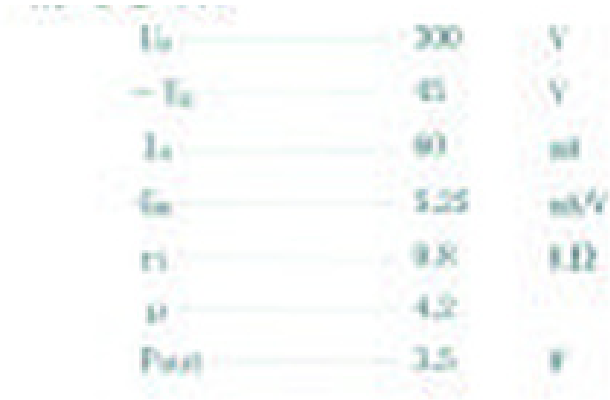
Manufacturer’s listening notes and applications

The catalogue describes a silky, clear and open sound and lists other 2A3 types as alternatives.

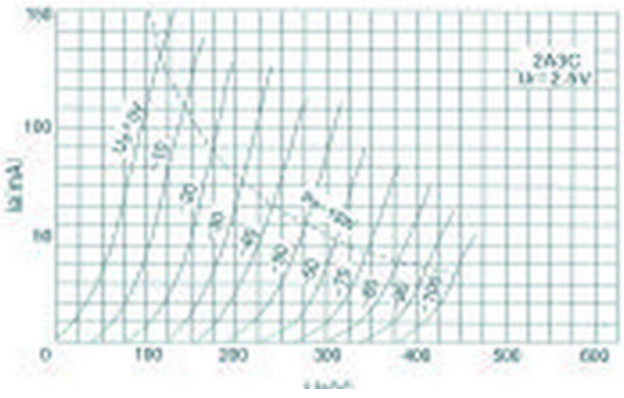
Technical notes

Directly heated medium-power triode in a 300B-style envelope for Class A1 and AB1. The sheet gives a filament voltage of 2.5 V.

From the printed data sheet



Static characteristics | source symbols and values



Anode characteristic curves

Historical awards

Recognition pictured on the final spread of the factory catalogue

United Kingdom

The upper-left photograph shows a certificate bearing the name of the Medway & Gillingham Chamber of Commerce. The fine print is indistinct in this scan.

Chinese National Quality Award

The upper-right photograph shows a framed Chinese National Quality Award medal marked 1980. The bottom-right certificate names Hunan Factory No. 770 and its 6P16P low-power beam tetrode. It records a silver award approved by the national quality award evaluation committee and bears the issuing name of the State Economic Commission of the People’s Republic of China.

Electronics industry research achievement

The lower-left certificate names the EL34 project and Factory No. 770. Several handwritten characters in the project title and the date are indistinct in the supplied reproduction.

Technical abbreviations in the extracts

Ua or Ea: anode voltage. Ug or Eg: grid voltage. Ia: anode current. Uf or Ef: filament voltage. If: filament current. Gm: transconductance. Ri or rp: internal anode resistance. RL: load resistance. Pout: output power. A minus sign before a grid-voltage symbol denotes negative grid bias.