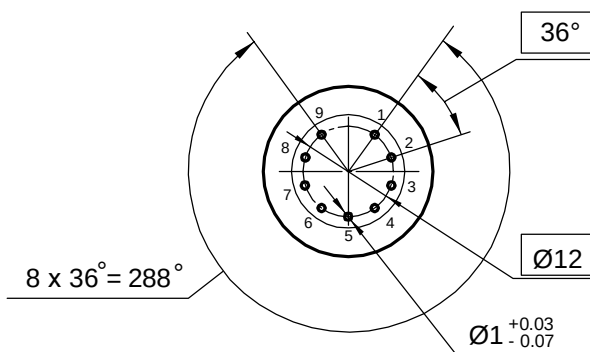
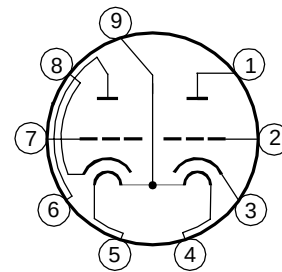


Vacuum tube 12AT7W/6201 Tung-Sol is a miniature twin triode with equipotential cathodes, designed to amplify low frequency voltage in radio engineering devices.

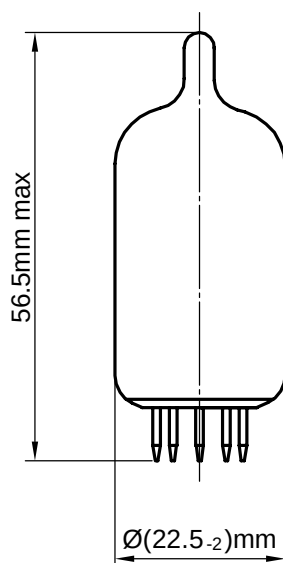
Pin arrangement



Electrode -to - lead connection diagram



Dimensions



Lead designation	Name of electrode
1	Second triode plate
2	Second triode grid
3	Second triode cathode
4,5,9	Heater
6	First triode plate
7	First triode grid
8	First triode cathode

Electrical parameters

Parameters, conditions and units	Nominal	
	min	max
Heater current, mA at: filament voltage 6.3 V at: filament voltage 12.6 V	340 170	370 185
Grid back current, μA , (at: filament voltage 6.3 V or 12.6 V, plate voltage 250 V, grid voltage minus 2.0 V, resistance in grid circuit 0.25 M Ω)	—	0.5
Plate current, mA, (at: filament voltage 6.3 V or 12.6 V, plate voltage 250 V, grid voltage minus 2.0 V)	7.0	16.0
First and second triodes plate current difference, % (at: filament voltage 6.3 V or 12.6 V, plate voltage 250 V, grid voltage minus 2.0 V)	—	± 25
Slope of characteristic, mA/V (at: filament voltage 6.3 V or 12.6 V, plate voltage 250 V, grid voltage minus 2.0 V)	4.1	6.8
Amplification factor (at: filament voltage 6.3 V or 12.6 V, plate voltage 250 V, grid voltage minus 2.0 V)	45	—
Cathode - heater insulation resistance, M Ω (at: filament voltage 6.3 V or 12.6 V, cathode - heater voltage ± 200 V)	20	—
Plate current at the beginning of the characteristic, μA (at: filament voltage 6.3 V or 12.6 V, plate voltage 250 V, grid voltage minus 12.0 V)	—	60

Limiting Values

Parameters, units	Nominal	
	min	max
Filament voltage, V for parallel connection for series connection	6 12	6.6 13.2
Plate voltage, V	—	330
Cathode - heater voltage, V	—	± 200
Power dissipation at the plate of each triode, W	—	3.25
Cathode current, mA	—	18
Grid circuit resistance for each of the triodes, M Ω fixed bias self - bias	— —	0.25 1.0

$I_p=f(E_g)$

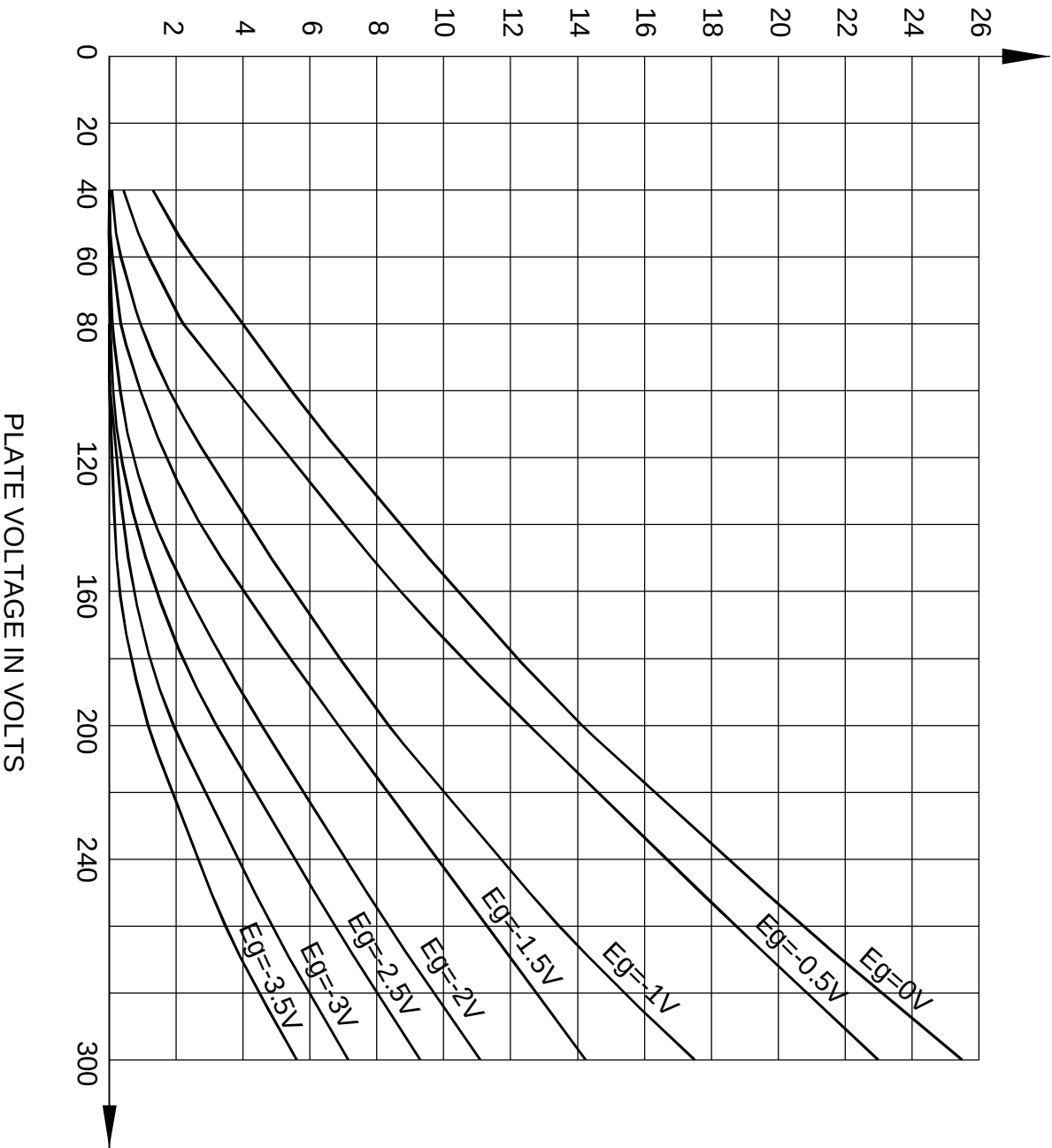
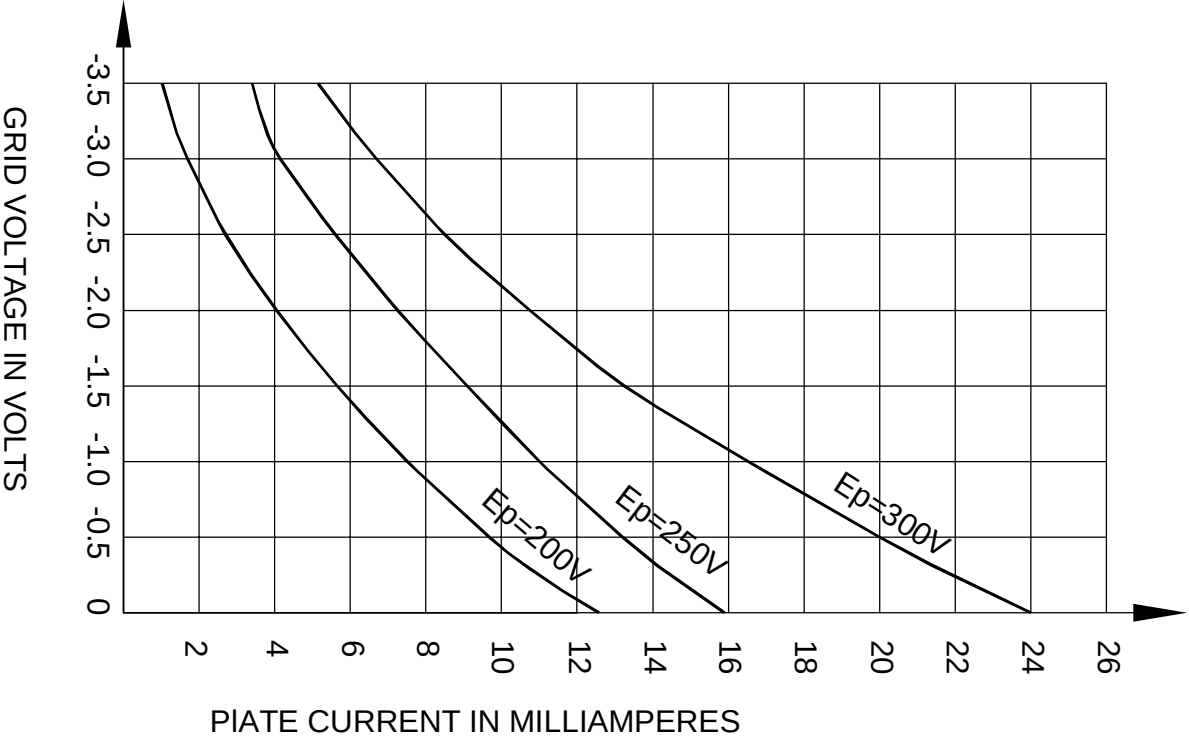
$E_f=6.3V$

$I_p(mA)$

$I_p(mA)$

$I_p=f(E_p)$

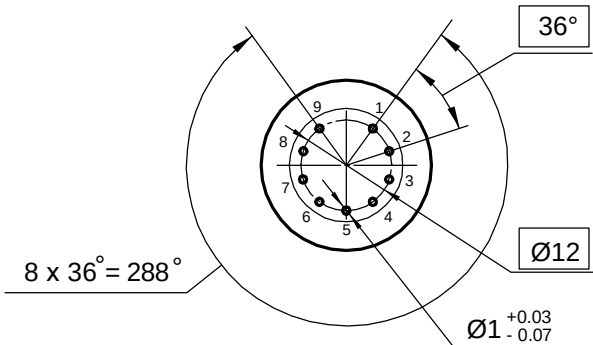
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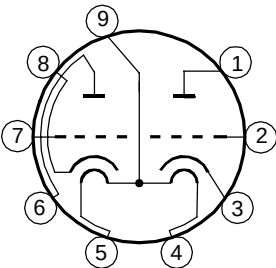
12AU7W/6189 Tung-Sol

Vacuum tube 12AU7W/6189 Tung-Sol is a miniature twin triode with equipotential cathodes, designed to amplify low frequency voltage in radio engineering devices.

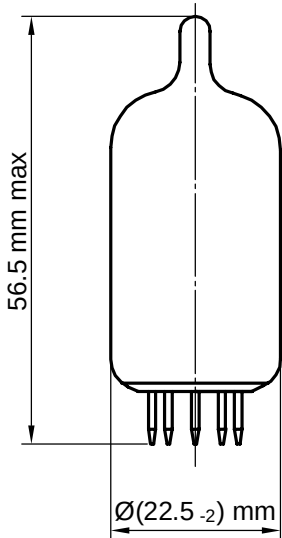
Pin arrangement



Electrode -to - lead connection diagram



Dimensions



Lead designation	Name of electrode
1	Second triode plate
2	Second triode grid
3	Second triode cathode
4, 5, 9	Heater
6	First triode plate
7	First triode grid
8	First triode cathode

Electrical parameters

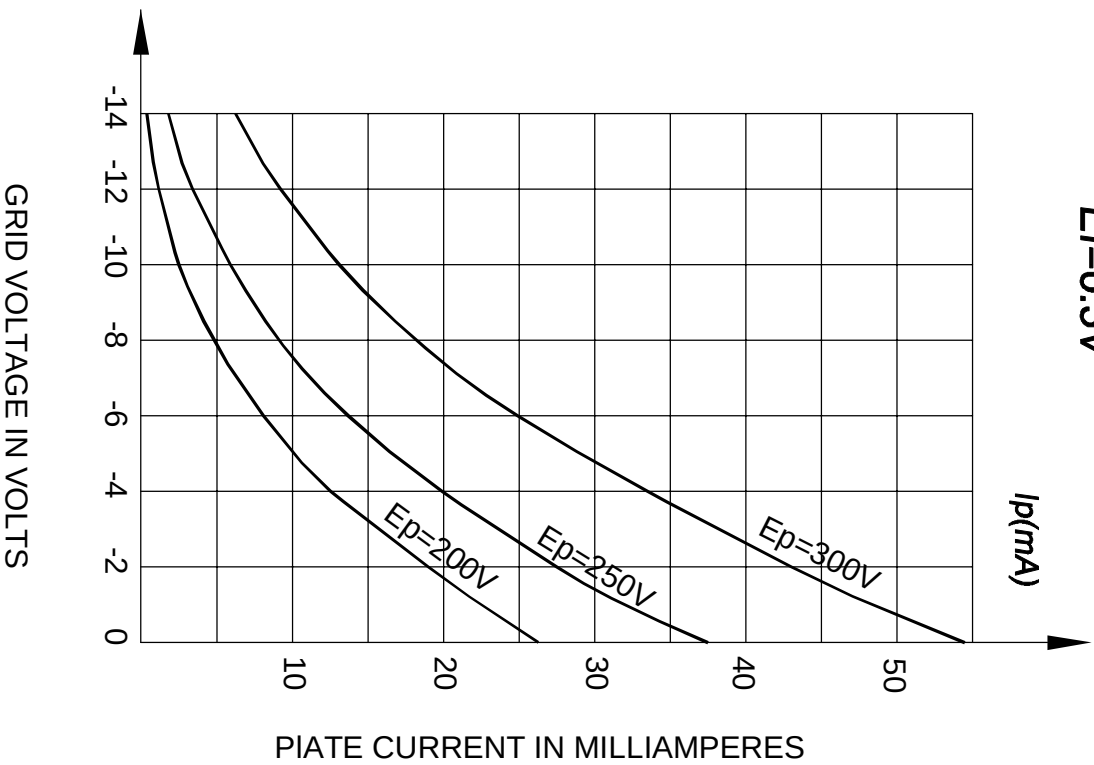
Parameters, conditions and units	Nominal	
	min	max
Heater current, mA at: filament voltage 6.3 V at: filament voltage 12.6 V	300 150	350 175
Grid reverse current, μA , (at: filament voltage 6.3 V or 12.6 V, plate voltage 250 V, grid voltage minus 8.5 V, resistance in grid circuit 0.25 M Ω)	—	0.2
Plate current, mA, (at: filament voltage 6.3 V or 12.6 V, plate voltage 250 V, grid voltage minus 8.5 V)	7.8	13.0
First and second triodes plate current difference, % (at: filament voltage 6.3 V or 12.6 V, plate voltage 250 V, grid voltage minus 8.5 V)	—	± 15
Slope of characteristic, mA/V (at: filament voltage 6.3 V or 12.6 V, plate voltage 250 V, grid voltage minus 8.5 V)	1.7	3.0
Amplification factor (at: filament voltage 6.3 V or 12.6 V, plate voltage 250 V, grid voltage minus 8.5 V)	13	—
Cathode - heater insulation resistance, M Ω (at: filament voltage 6.3 V or 12.6 V, cathode - heater voltage ± 200 V)	20	—
Plate current at the beginning of the characteristic, μA (at: filament voltage 6.3 V or 12.6 V, plate voltage 250 V, grid voltage minus 25.0 V)	—	50

Limiting Values

Parameters, units	Nominal	
	min	max
Filament voltage, V for parallel connection for series connection	6 12	6.6 13.2
Plate voltage, V	—	300
Cathode - heater voltage, V	—	± 200
Power dissipation at the plate of each triode, W	—	2.75
Cathode current, mA	—	22
Grid circuit resistance for each of the triodes, M Ω fixed bias self - bias	— —	0.25 1.0

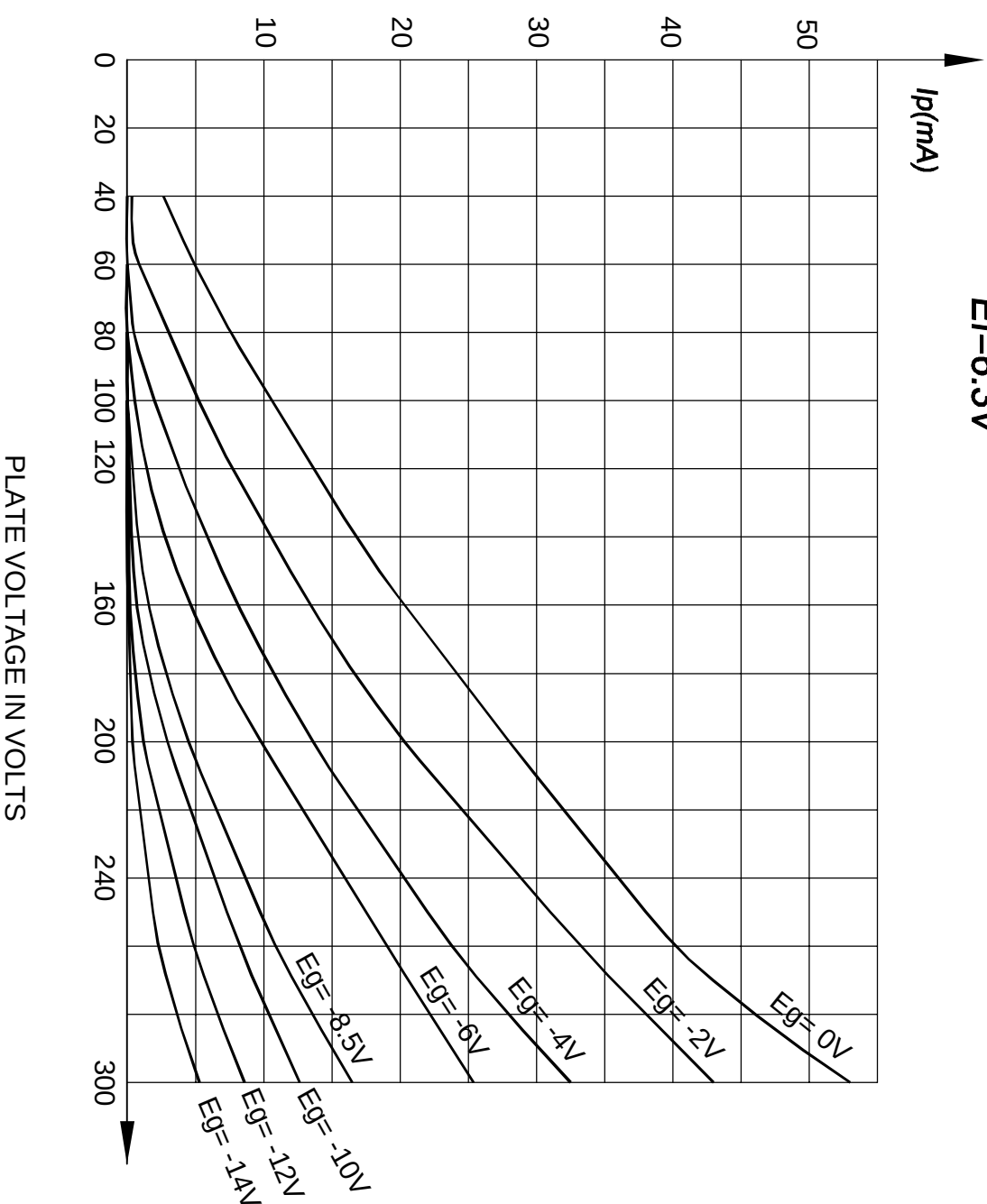
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$E_f=6.3V$



$I_p=f(E_p)$

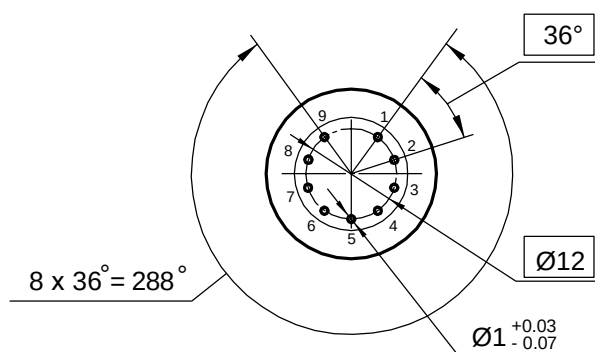
$E_f=6.3V$



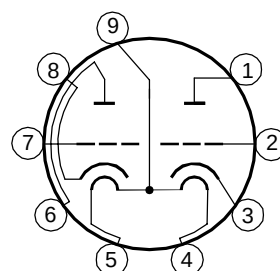
12AX7/ECC803S Tung-Sol gold

Vacuum tube 12AX7/ECC803S Tung-Sol gold is a miniature twin triode with equipotential cathodes, designed to amplify low frequency voltage in radio engineering devices.

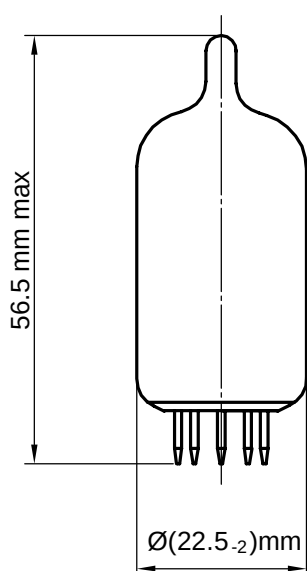
Pin arrangement



Electrode -to - lead connection diagram



Dimensions



Lead designation	Name of electrode
1	Second triode plate
2	Second triode grid
3	Second triode cathode
4, 5, 9	Heater
6	First triode plate
7	First triode grid
8	First triode cathode

Electrical parameters

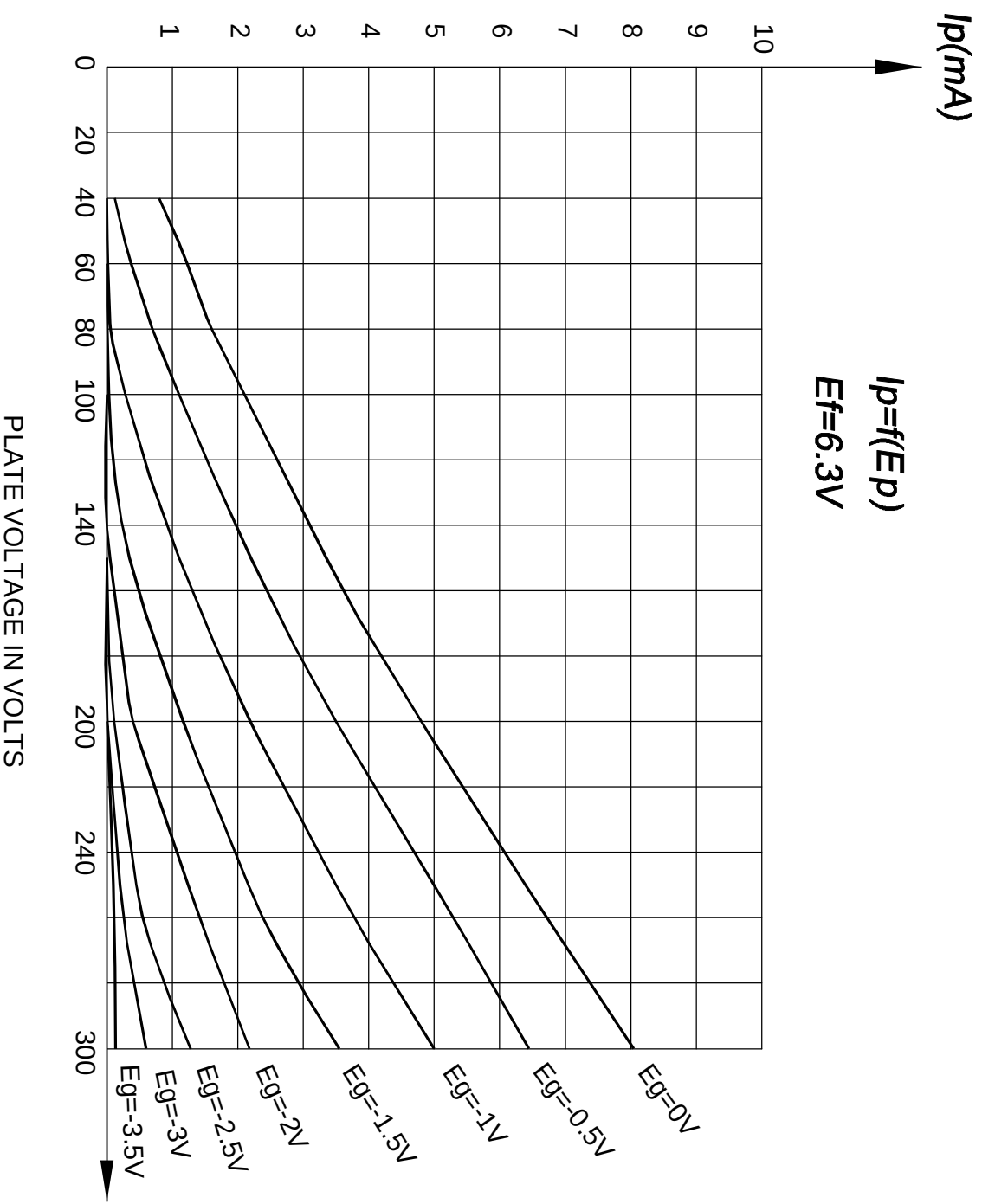
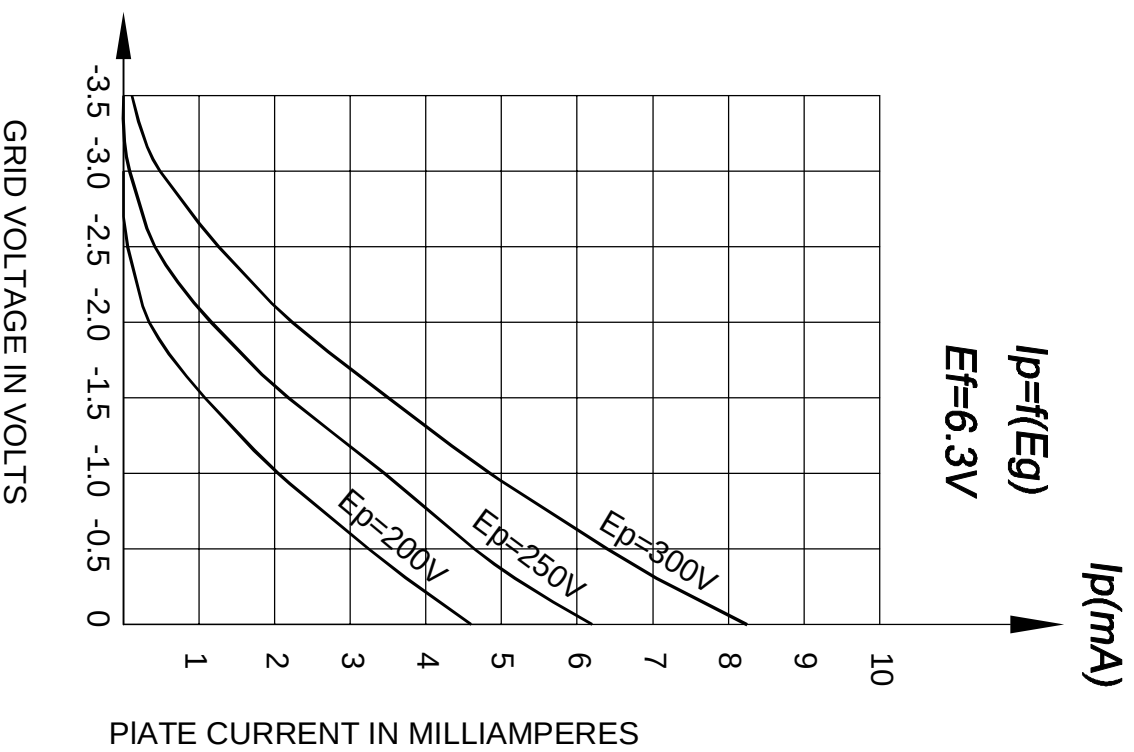
12AX7/ECC803S
Tung-Sol gold

Parameters, conditions and units	Nominal	
	min	max
Heater current, mA at: filament voltage 6.3 V at: filament voltage 12.6 V	320 160	365 183
Grid reverse current, μA , (at: filament voltage 6.3 V or 12.6 V, plate voltage 250 V, grid voltage minus 2.0 V, resistance in grid circuit 1.0 M Ω)	—	0.2
Plate current, mA, (at: filament voltage 6.3 V or 12.6 V, plate voltage 250 V, grid voltage minus 2.0 V)	0.75	2.1
First and second triodes plate current difference, % (at: filament voltage 6.3 V or 12.6 V, plate voltage 250 V, grid voltage minus 2.0 V)	—	± 15
Plate current at the beginning of the characteristic, μA (at: filament voltage 6.3 V or 12.6 V, plate voltage 250 V, grid voltage minus 4.5 V)	—	30
Slope of characteristic, mA/V (at: filament voltage 6.3 V or 12.6 V, plate voltage 250 V, grid voltage minus 2.0 V)	1.4	—
Amplification factor (at: filament voltage 6.3 V or 12.6 V, plate voltage 250 V, grid voltage minus 2.0 V)	83	—
Cathode - heater insulation resistance, M Ω (at: filament voltage 6.3 V or 12.6 V, cathode -heater voltage ± 200 V)	20	—

Limiting Values

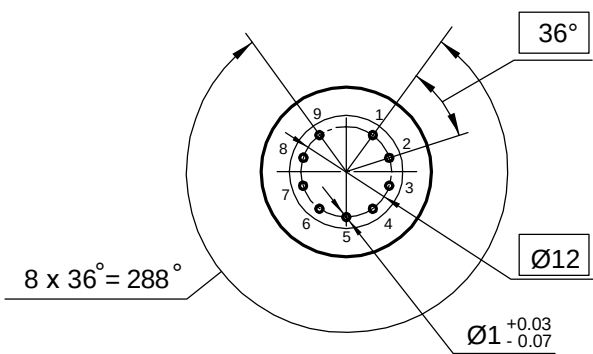
Parameters, units	Nominal	
	min	max
Filament voltage, V for parallel connection for series connection	6 12	6.6 13.2
Plate voltage, V	—	330
Cathode - heater voltage, V	—	± 200
Cathode current, mA	—	9
Power dissipation at the plate of each triode, W	—	1.2
Grid circuit resistance for each of the triodes, M Ω fixed bias self - bias	— —	1.0 2.2

12AX7/ECC803S
Tung-Sol gold

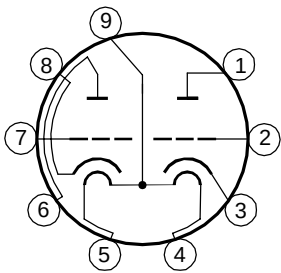


Vacuum tube 12AX7 Tung-Sol is a miniature twin triode with equipotential cathodes, designed to amplify low frequency voltage in radio engineering devices.

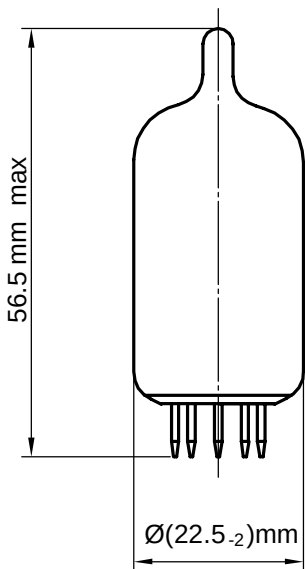
Pin arrangement



Electrode -to - lead connection diagram



Dimensions



Lead designation	Name of electrode
1	Second triode plate
2	Second triode grid
3	Second triode cathode
4, 5, 9	Heater
6	First triode plate
7	First triode grid
8	First triode cathode

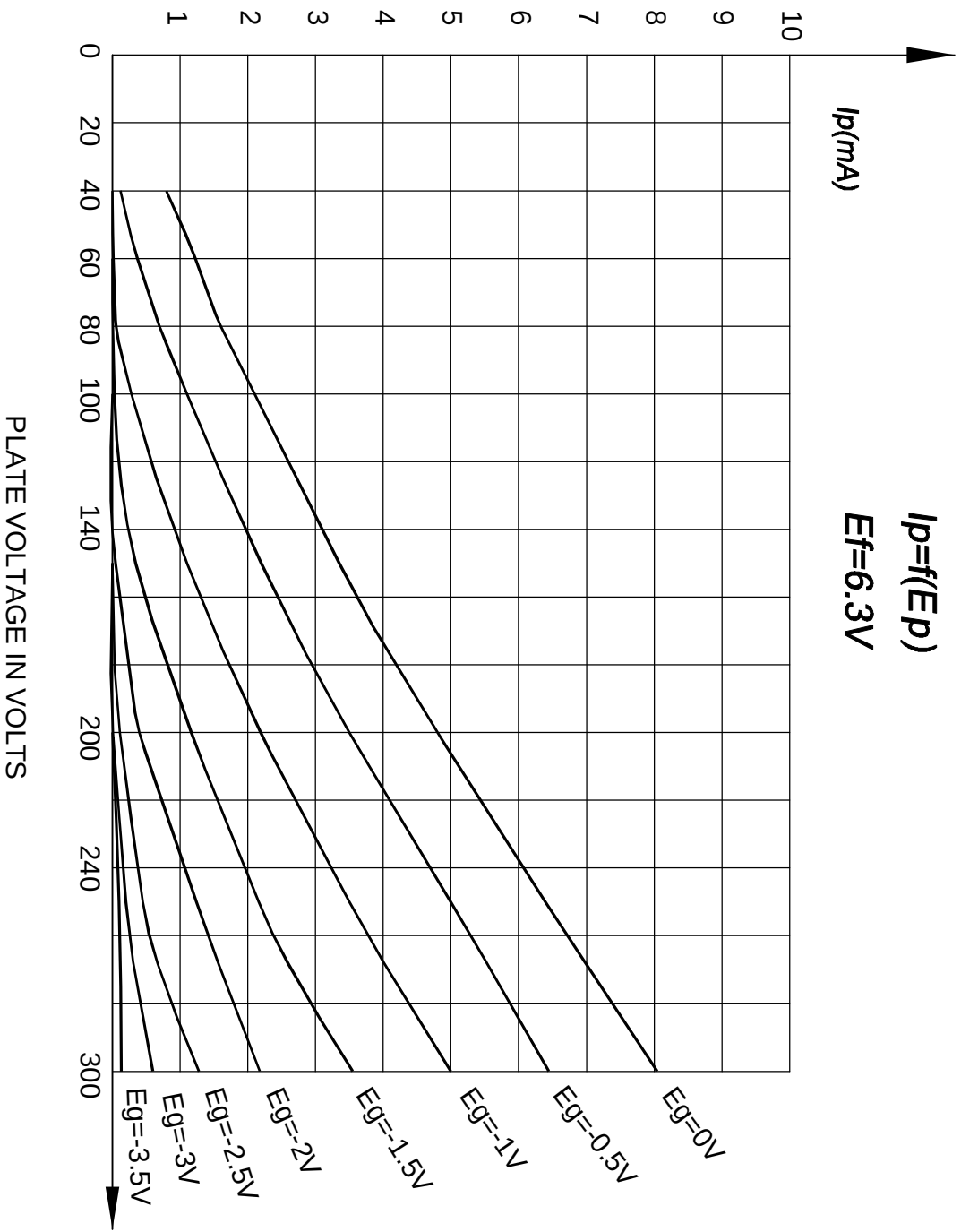
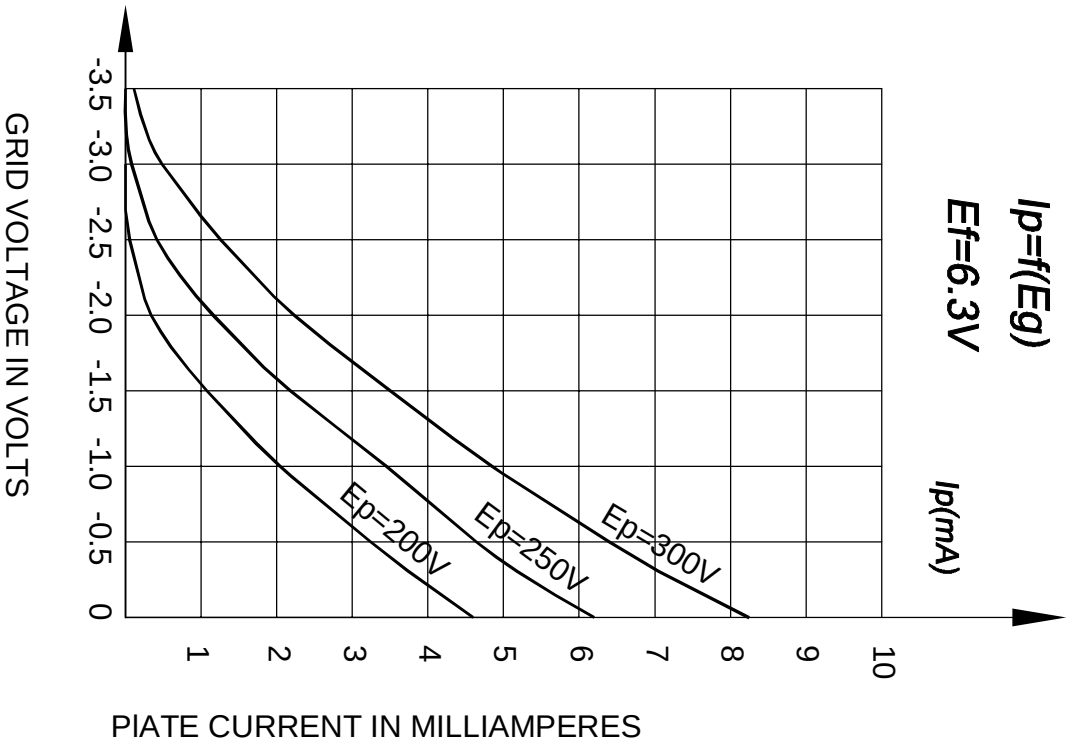
Electrical parameters

Parameters, conditions and units	Nominal	
	min	max
Heater current, mA at: filament voltage 6.3 V at: filament voltage 12.6 V	320 160	365 183
Grid reverse current, μA , (at: filament voltage 6.3 V or 12.6 V, plate voltage 250 V, grid voltage minus 2.0 V, resistance in grid circuit 1.0 M Ω)	—	0.2
Plate current, mA, (at: filament voltage 6.3 V or 12.6 V, plate voltage 250 V, grid voltage minus 2.0 V)	0.75	2.1
First and second triodes plate current difference, % (at: filament voltage 6.3 V or 12.6 V, plate voltage 250 V, grid voltage minus 2.0 V)	—	± 40
Plate current at the beginning of the characteristic, μA (at: filament voltage 6.3 V or 12.6 V, plate voltage 250 V, grid voltage minus 4.5 V)	—	30
Slope of characteristic, mA/V (at: filament voltage 6.3 V or 12.6 V, plate voltage 250 V, grid voltage minus 2.0 V)	1.4	—
Amplification factor (at: filament voltage 6.3 V or 12.6 V, plate voltage 250 V, grid voltage minus 2.0 V)	83	—
Cathode - heater insulation resistance, M Ω (at: filament voltage 6.3 V or 12.6 V, cathode -heater voltage ± 200 V)	20	—

Limiting Values

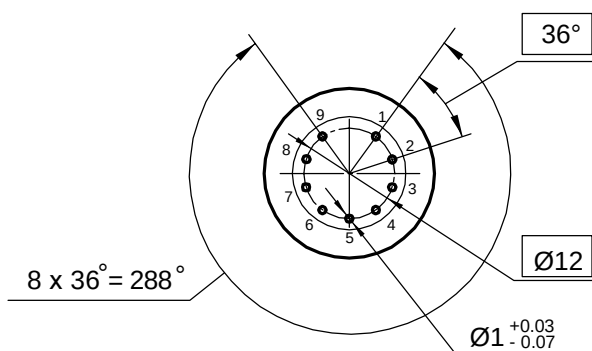
Parameters, units	Nominal	
	min	max
Filament voltage, V for parallel connection for series connection	6 12	6.6 13.2
Plate voltage, V	—	330
Cathode - heater voltage, V	—	± 200
Cathode current, mA	—	9
Power dissipation at the plate of each triode, W	—	1.2
Grid circuit resistance for each of the triodes, M Ω fixed bias self - bias	— —	1.0 2.2

12AX7 Tung-Sol

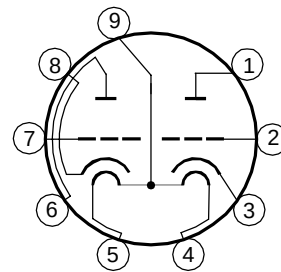


Vacuum tube 5751 Tung-Sol gold is a miniature twin triode with equipotential cathodes, designed to amplify low frequency voltage in radio engineering devices.

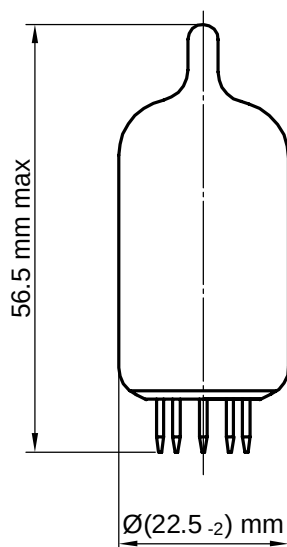
Pin arrangement



Electrode -to - lead connection diagram



Dimensions



Lead designation	Name of electrode
1	Second triode plate
2	Second triode grid
3	Second triode cathode
4, 5, 9	Heater
6	First triode plate
7	First triode grid
8	First triode cathode

Electrical parameters

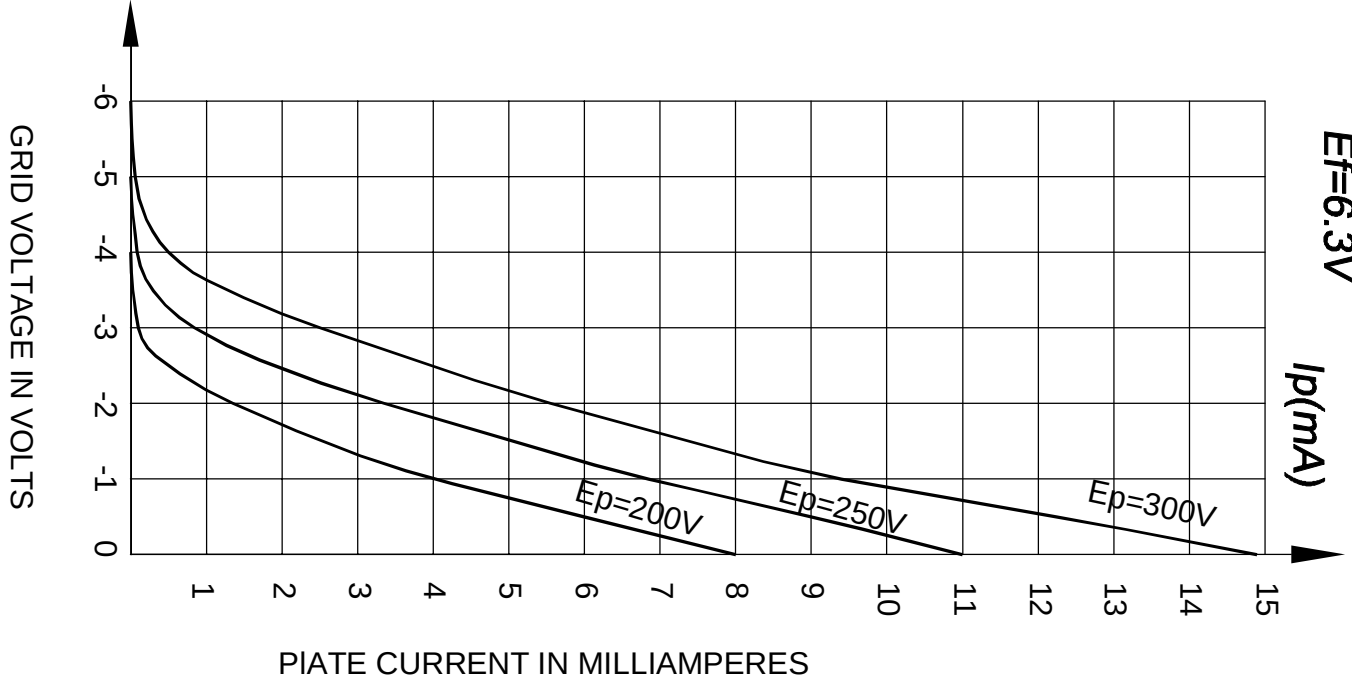
Parameters, conditions and units	Nominal	
	min	max
Heater current, mA at: filament voltage 6.3 V at: filament voltage 12.6 V	360 180	390 195
Grid reverse current, μA , (at: filament voltage 6.3 V or 12.6 V, plate voltage 250 V, grid voltage minus 3.0 V, resistance in grid circuit 0.51 M Ω)	—	0.2
Plate current, mA, (at: filament voltage 6.3 V or 12.6 V, plate voltage 250 V, grid voltage minus 3.0 V)	0.8	2.0
First and second triodes plate current difference, % (at: filament voltage 6.3 V or 12.6 V, plate voltage 250 V, grid voltage minus 3.0 V)	—	± 40
Slope of characteristic, mA/V (at: filament voltage 6.3 V or 12.6 V, plate voltage 250 V, grid voltage minus 3.0 V)	1.5	—
Amplification factor (at: filament voltage 6.3 V or 12.6 V, plate voltage 250 V, grid voltage minus 3.0 V)	55	—
Cathode - heater insulation resistance, M Ω (at: filament voltage 6.3 V or 12.6 V, cathode - heater voltage ± 200 V)	20	—
Plate current at the beginning of the characteristic, μA (at: filament voltage 6.3 V or 12.6 V, plate voltage 250 V, grid voltage minus 5.0 V)	—	50

Limiting Values

Parameters, units	Nominal	
	min	max
Filament voltage, V for parallel connection for series connection	6 12	6.6 13.2
Plate voltage, V	—	330
Cathode - heater voltage, V	—	± 200
Power dissipation at the plate of each triode, W	—	0.8
Cathode current, mA	—	6
Grid circuit resistance for each of the triodes, M Ω fixed bias self - bias	— —	0.51 1.0

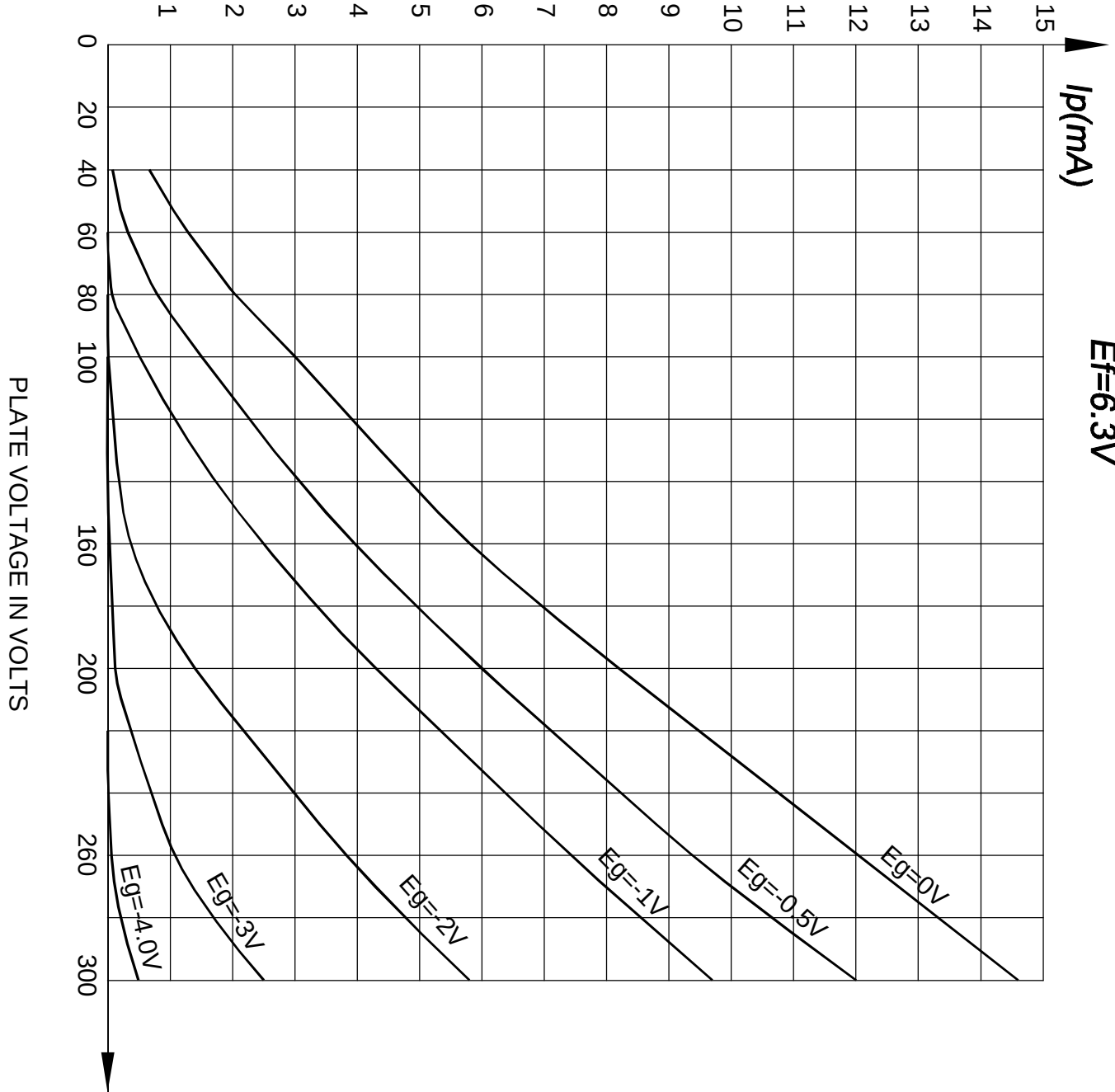
$I_p=f(E_g)$

$E_f=6.3V$



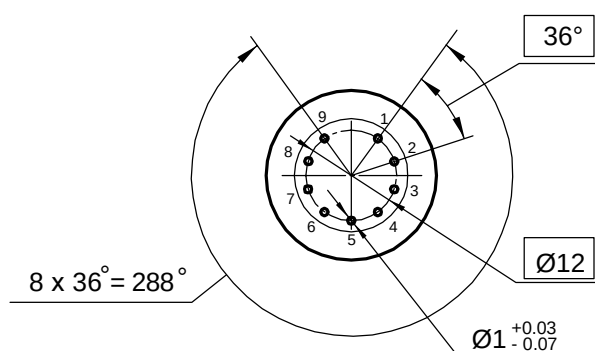
$I_p=f(E_p)$

$E_f=6.3V$

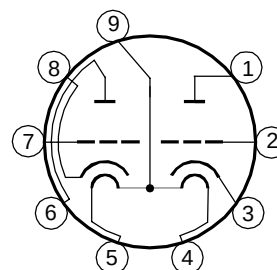


Vacuum tube 5751 Tung-Sol is a miniature twin triode with equipotential cathodes, designed to amplify low frequency voltage in radio engineering devices.

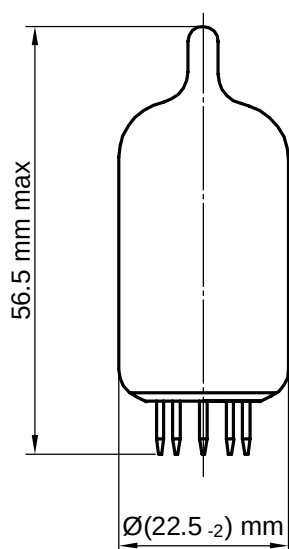
Pin arrangement



Electrode -to - lead connection diagram



Dimensions



Lead designation	Name of electrode
1	Second triode plate
2	Second triode grid
3	Second triode cathode
4, 5, 9	Heater
6	First triode plate
7	First triode grid
8	First triode cathode

Electrical parameters

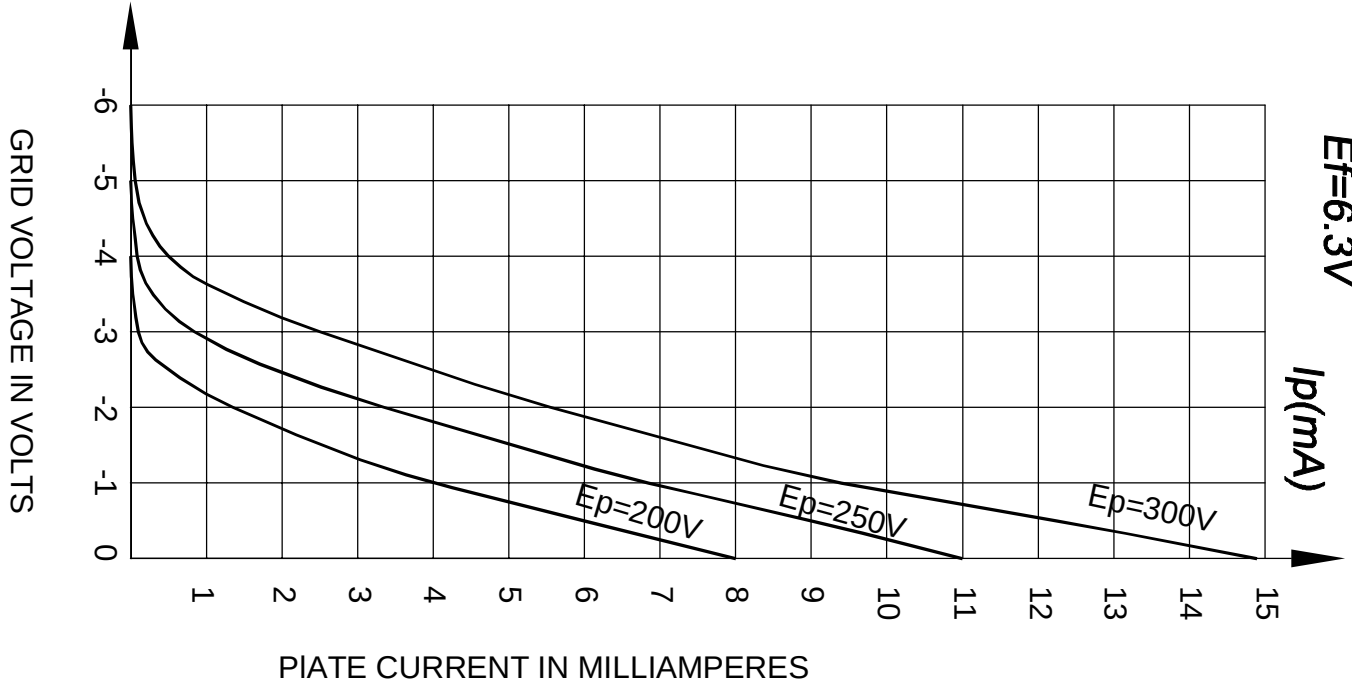
Parameters, conditions and units	Nominal	
	min	max
Heater current, mA at: filament voltage 6.3 V at: filament voltage 12.6 V	360 180	390 195
Grid reverse current, μA , (at: filament voltage 6.3 V or 12.6 V, plate voltage 250 V, grid voltage minus 3.0 V, resistance in grid circuit 0.51 M Ω)	—	0.2
Plate current, mA, (at: filament voltage 6.3 V or 12.6 V, plate voltage 250 V, grid voltage minus 3.0 V)	0.8	2.0
First and second triodes plate current difference, % (at: filament voltage 6.3 V or 12.6 V, plate voltage 250 V, grid voltage minus 3.0 V)	—	± 40
Slope of characteristic, mA/V (at: filament voltage 6.3 V or 12.6 V, plate voltage 250 V, grid voltage minus 3.0 V)	1.5	—
Amplification factor (at: filament voltage 6.3 V or 12.6 V, plate voltage 250 V, grid voltage minus 3.0 V)	55	—
Cathode - heater insulation resistance, M Ω (at: filament voltage 6.3 V or 12.6 V, cathode - heater voltage ± 200 V)	20	—
Plate current at the beginning of the characteristic, μA (at: filament voltage 6.3 V or 12.6 V, plate voltage 250 V, grid voltage minus 5.0 V)	—	50

Limiting Values

Parameters, units	Nominal	
	min	max
Filament voltage, V for parallel connection for series connection	6 12	6.6 13.2
Plate voltage, V	—	330
Cathode - heater voltage, V	—	± 200
Power dissipation at the plate of each triode, W	—	0.8
Cathode current, mA	—	6
Grid circuit resistance for each of the triodes, M Ω fixed bias self - bias	— —	0.51 1.0

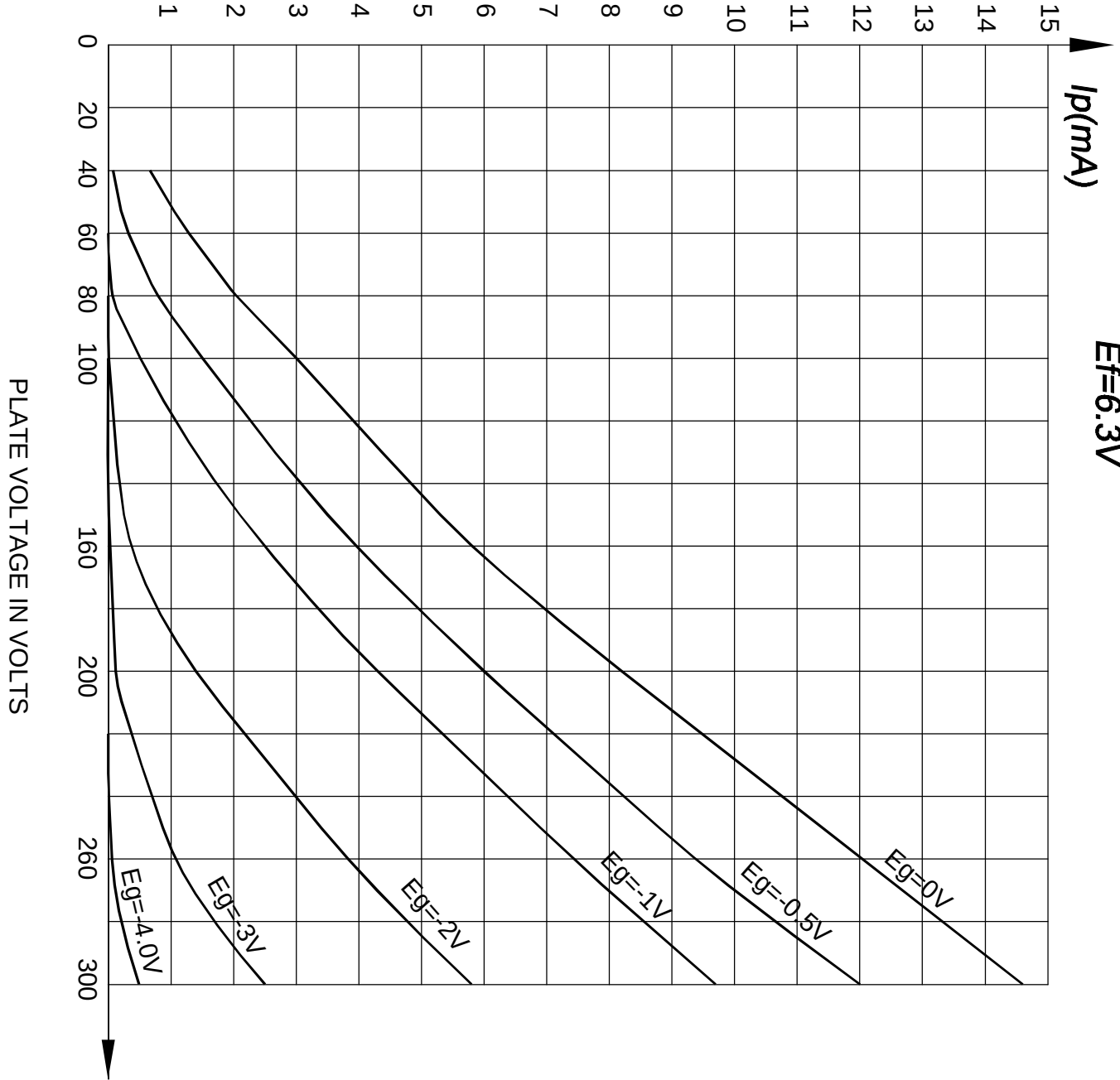
$I_p = f(E_g)$

$E_f = 6.3V$



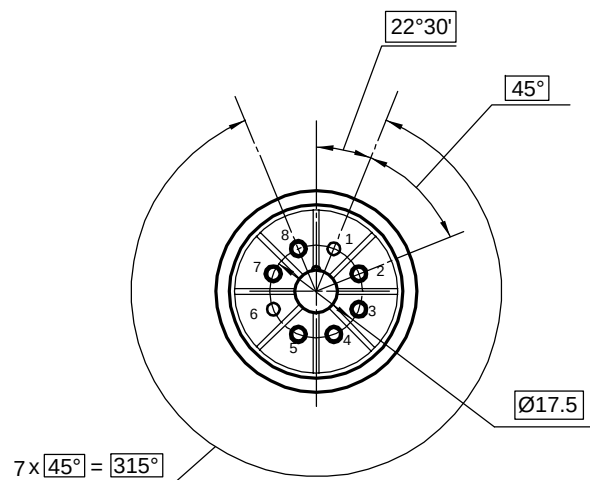
$I_p = f(E_p)$

$E_f = 6.3V$

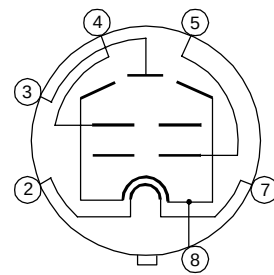


Vacuum tube 5881 Tung - Sol is a beam tetrode in the glass bulb with octal base, with equipotential cathode, designed to amplify low frequency power in the output stages of HI - FI audio.

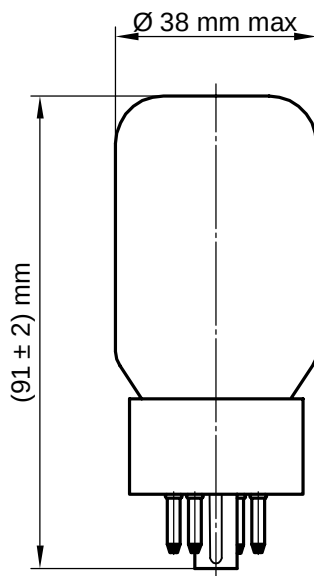
Pin arrangement



Electrode -to - lead connection diagram



Dimensions



Lead designation	Name of electrode
1, 6	No
2, 7	Heater
3	Plate
4	Grid 2
5	Grid 1
8	Cathode, beam-forming screen

Electrical parameters

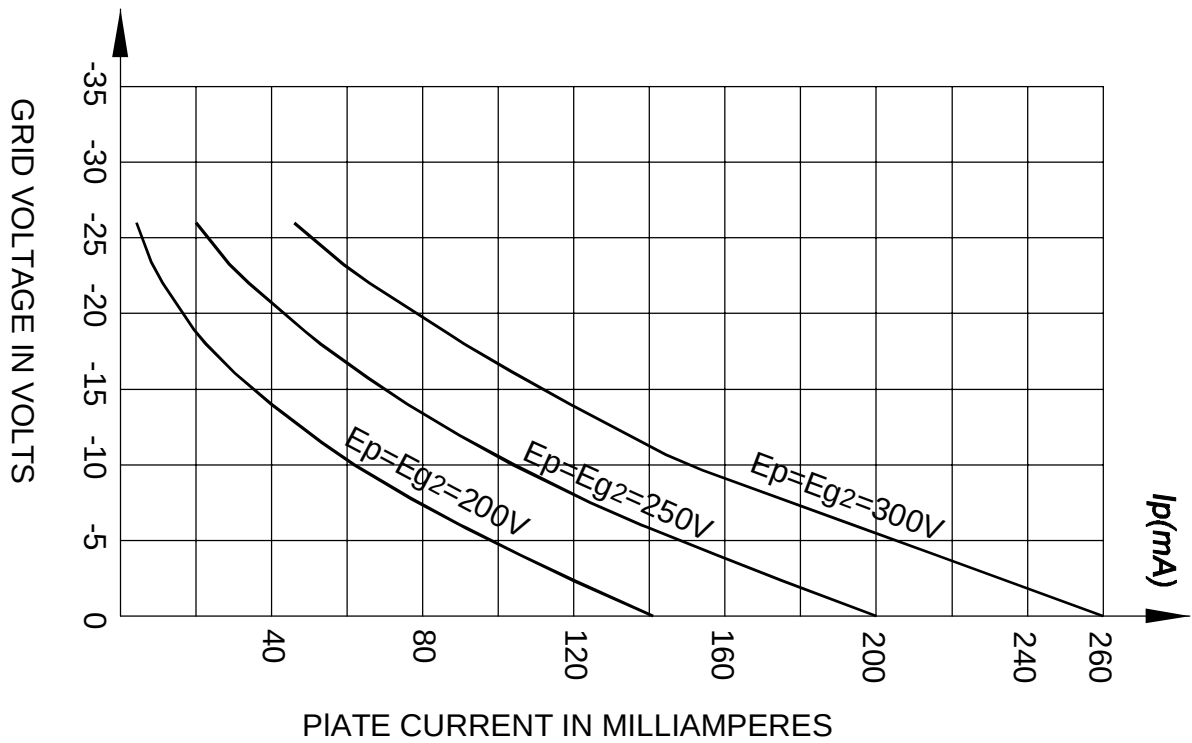
Parameters, conditions and units	Nominal	
	min	max
First grid reverse current, μA (at: filament voltage 6.3 V, plate voltage 250 V, first grid voltage minus 14.0 V, second grid voltage 250 V, first grid circuit resistance 0.51M Ω)	—	0.7
Heater current, A	0.840	0.920
Plate current, mA (at: filament voltage 6.3 V, plate voltage 250 V, first grid voltage minus 14.0 V, second grid voltage 250 V)	60	88
Second grid current, mA (at: filament voltage 6.3 V, plate voltage 250 V, first grid voltage minus 14.0 V, second grid voltage 250 V)	—	8.0
Output power, W (at: filament voltage 6.3 V, plate voltage 250 V, first grid voltage minus 14.0 V, second grid voltage 250 V, plate circuit resistance 2.5 k Ω first grid alternating voltage, efficacious 9.8 V)	5.8	—
Plate current at the beginning of the characteristic, mA (at: filament voltage 6.3 V, plate voltage 250 V, first grid voltage minus 35.0 V, second grid voltage 250 V)	—	10
Slope of characteristic, mA/V (at: filament voltage 6.3 V, anode voltage 250 V, first grid voltage minus 14.0 V, second grid voltage 250 V)	5.2	7.0
Cahtode - heater insulation resistance, M Ω (at: filament voltage 6.3 V cathode -heater voltage $\pm$ 250 V)	4.0	—

Operating conditions limits

Parameters, units	Nominal	
	min	max
Filament voltage, V	5.76	7.0
Cathode - heater voltage, V	—	$\pm$ 250
Cathode current, mA	—	90
First grid voltage, negative, V	—	100
Power dissipation at the plate, W	—	20.5
Power dissipation at the second grid, W	—	2
First grid circuit resistance, M Ω	—	0.51
Temperature at the most heated part of the envelope, K°	—	513

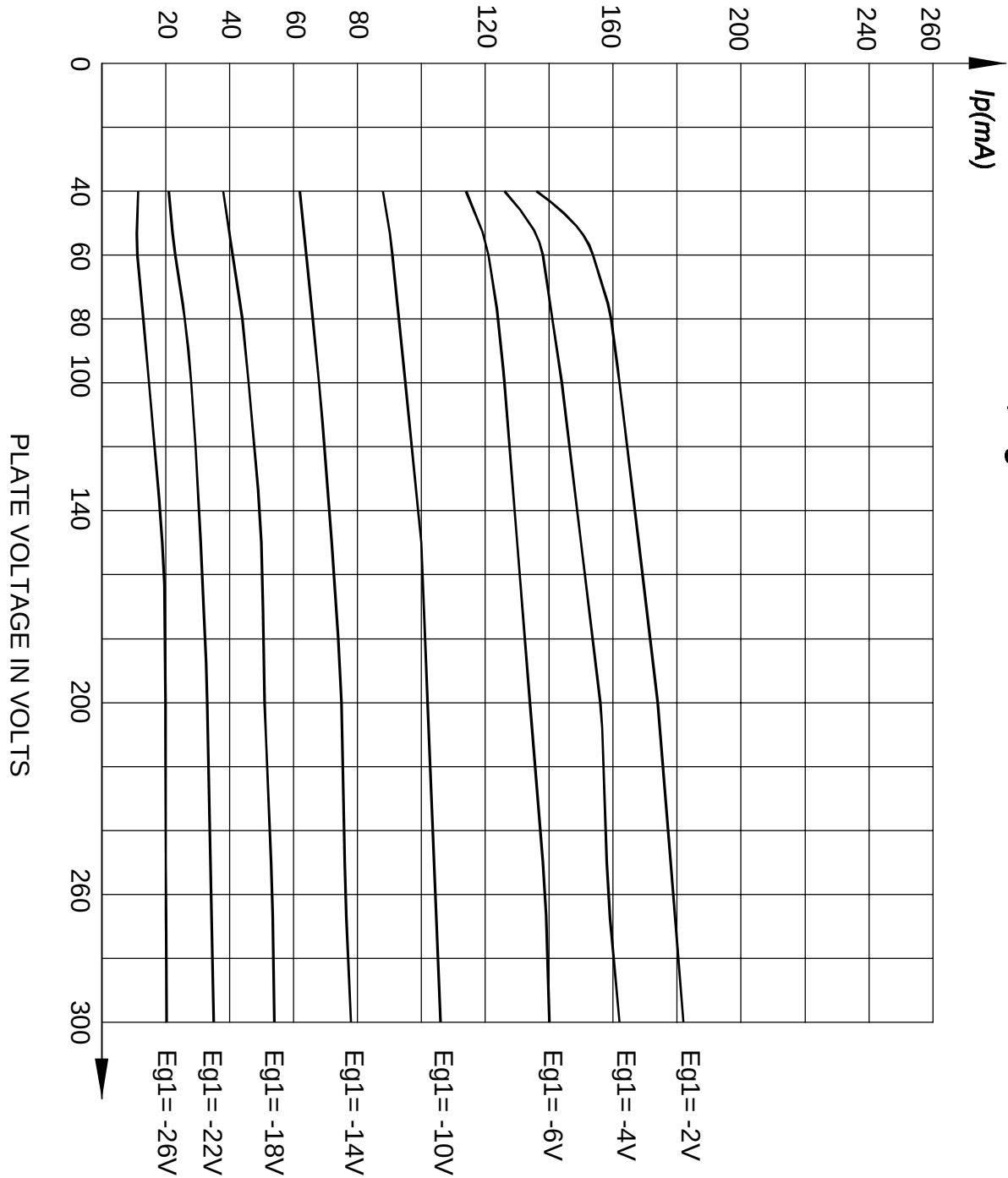
$I_p = f(E_{g1})$

$E_f = 6.3V$



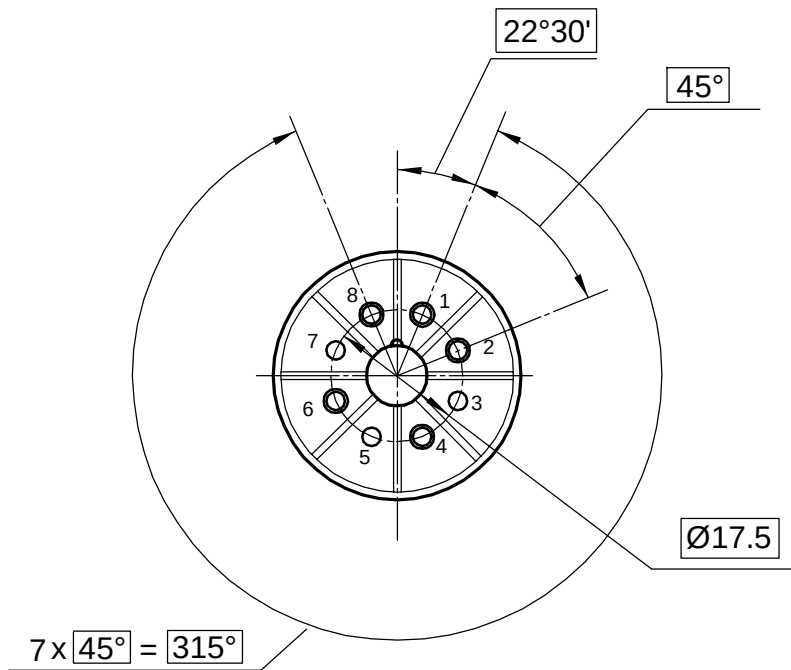
$I_p = f(E_p)$

$E_f = 6.3V, E_{g2} = 250V$

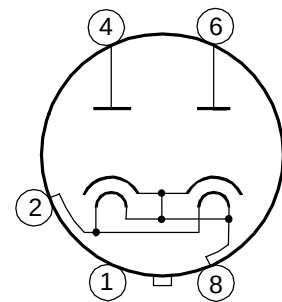


Vacuum tube 5AR4 Tung - Sol is a two - plate cenotron in the glass bulb with octal base, wiht equipotential cathode, designed for two - half - period rectification of alternating current in the midpoint circuits in radio engineering devices.

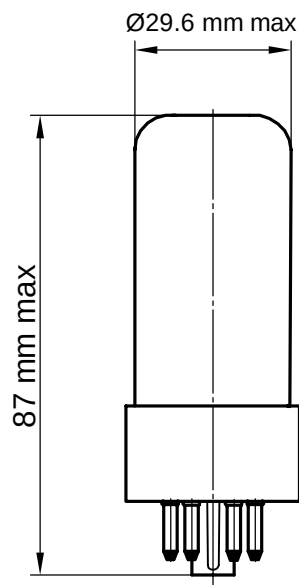
Pin arrangement



Electrode -to - lead connection diagram



Dimensions



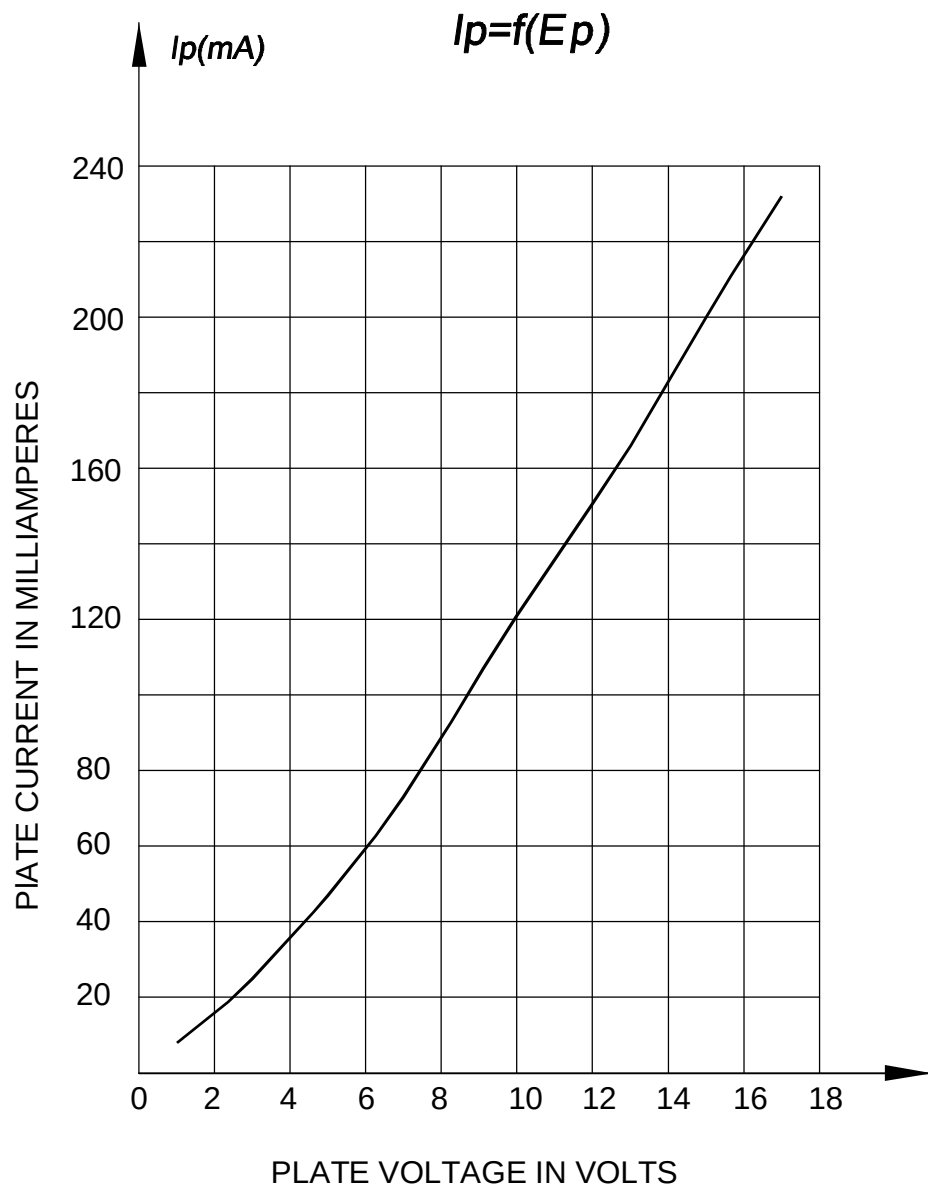
Lead designation	Name of electrode
1	Free
2	Heater
3, 5, 7	No
4	First diode plate
6	Second diode plate
8	Cathode, heater

Electrical parameters

Parameters, conditions and units	Nominal	
	min	max
Heater current, A	1.7	2.1
Diode anod current, mA (at: filament voltage 5.0 V, plate voltage 17 V)	180	280
Rectified current, mA (at: filament voltage 5.0 V, the voltage of the secondary winding of the transformer, effective, 2 x 550 V, load resistance 3000 Ω , capacitance in the cathode chain, 40 μ F)	180	—
First and second diodes plate current difference, % (at: filament voltage 5.0 V, plate voltage 17 V)		± 30

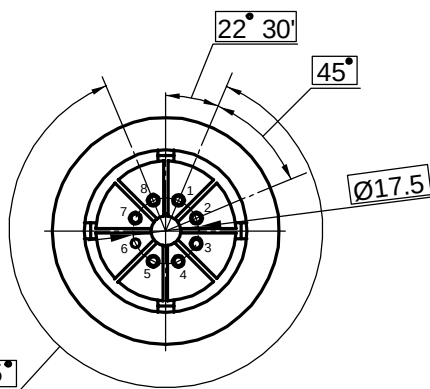
Limiting Values

Parameters, units	Nominal	
	min	max
Filament voltage, V	4.5	5.5
Rectified current (average), mA	—	250
Anode current amplitude, mA	—	825
Current surge at the turn -on moment , A	—	3.7
Anod reverse voltage amplitude, V	—	1500
Temperature at the most heated part of the envelope, K°	—	473

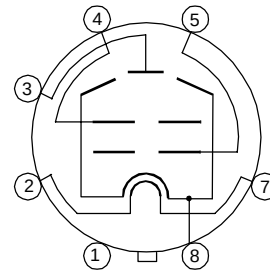


Vacuum tube KT88, 6550 Tung - Sol is a beam tetrode in the glass bulb with octal base, with equipotential cathode, designed to amplify low frequency power in the output stages of HI - FI audio.

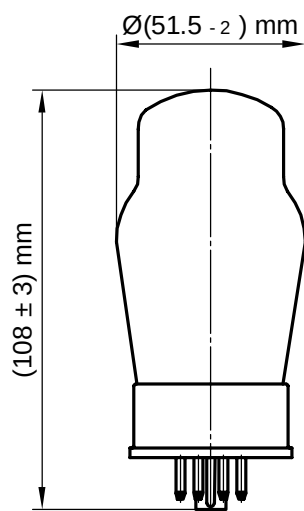
Pin arrangement



Electrode -to - lead connection diagram



Dimensions



Lead designation	Name of electrode
1	Outer metal screen
2, 7	Heater
3	Plate
4	Grid 2
5	Grid 1
6	No
8	Cathode, beam-forming screen

Electrical parameters

KT88, 6550 Tung - Sol

Parameters, conditions and units	Nominal	
	min	max
First grid reverse current, μA (at: filament voltage 6.3 V, plate voltage 400 V, first grid voltage minus 16.5 V, second grid voltage 225 V, first grid circuit resistance 0.051M Ω)	—	0.7
Heater current, A	1.5	1.7
Plate current, mA (at: filament voltage 6.3 V, plate voltage 400 V, first grid voltage minus 16.5 V, second grid voltage 225 V)	75	125
Second grid current, mA (at: filament voltage 6.3 V, plate voltage 400 V, first grid voltage minus 16.5 V, second grid voltage 225 V)	2	9.5
Output power, W (at: filament voltage 6.3 V, plate voltage 400 V, first grid voltage minus 16.5 V, second grid voltage 225 V, plate circuit resistance 3.0 k Ω first grid alternating voltage, efficacious 11.7 V)	14	—
First grid cut-off voltage, negative, V (at: filament voltage 6.3 V, plate voltage 400 V, second grid voltage 225 V,)	—	58
Slope of characteristic, mA/V (at: filament voltage 6.3 V, anode voltage 400 V, first grid voltage minus 16.5 V, second grid voltage 225 V)	8.2	—
Distortion factor, % (at: filament voltage 6.3 V, plate voltage 400 V, first grid voltage minus 16.5 V, second grid voltage 225 V, plate circuit resistance 3.0 k Ω first grid alternating voltage, efficacious 11.7 V)	—	18.0
Cahtode - heater insulation resistance, M Ω at: filament voltage 6.3 V, cathode -heater voltage + 300 V)	10.0	—

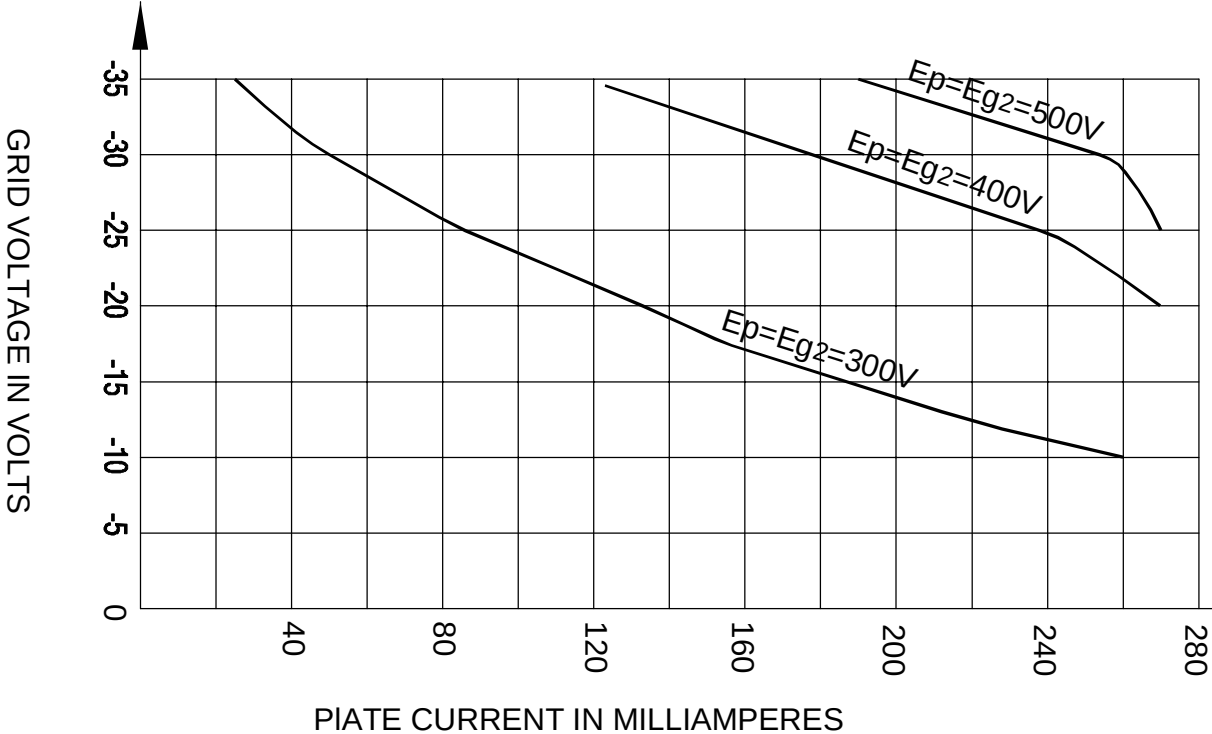
Operating conditions limits

Parameters, units	Nominal	
	triode connection	tetrode connection
Filament voltage, V, min	5.7	5.7
max	6.9	6.9
Cathode - heater voltage, pulse:		
positive polarity at the cathode (average level of the constant component $\leq 300\text{V}$), V, max	300	300
negative polarity at the cathode (average level of the constant component $\leq 100\text{V}$), V, max	200	200
Cathode current, mA	230	192.5
First grid voltage: negative, V, max	300	300
positive, V, max	0	0
Power dissipation at the plate, W, max	42	44
Power dissipation at the second grid, W, max	6.6	6.6
First grid circuit resistance, M Ω , max		
fixed bias	0.051	0.051
self - bias	0.1	0.1
Temperature at the most heated part of the envelope, K°	523	523

$I_p=f(E_{g1})$

$E_f=6.3V$

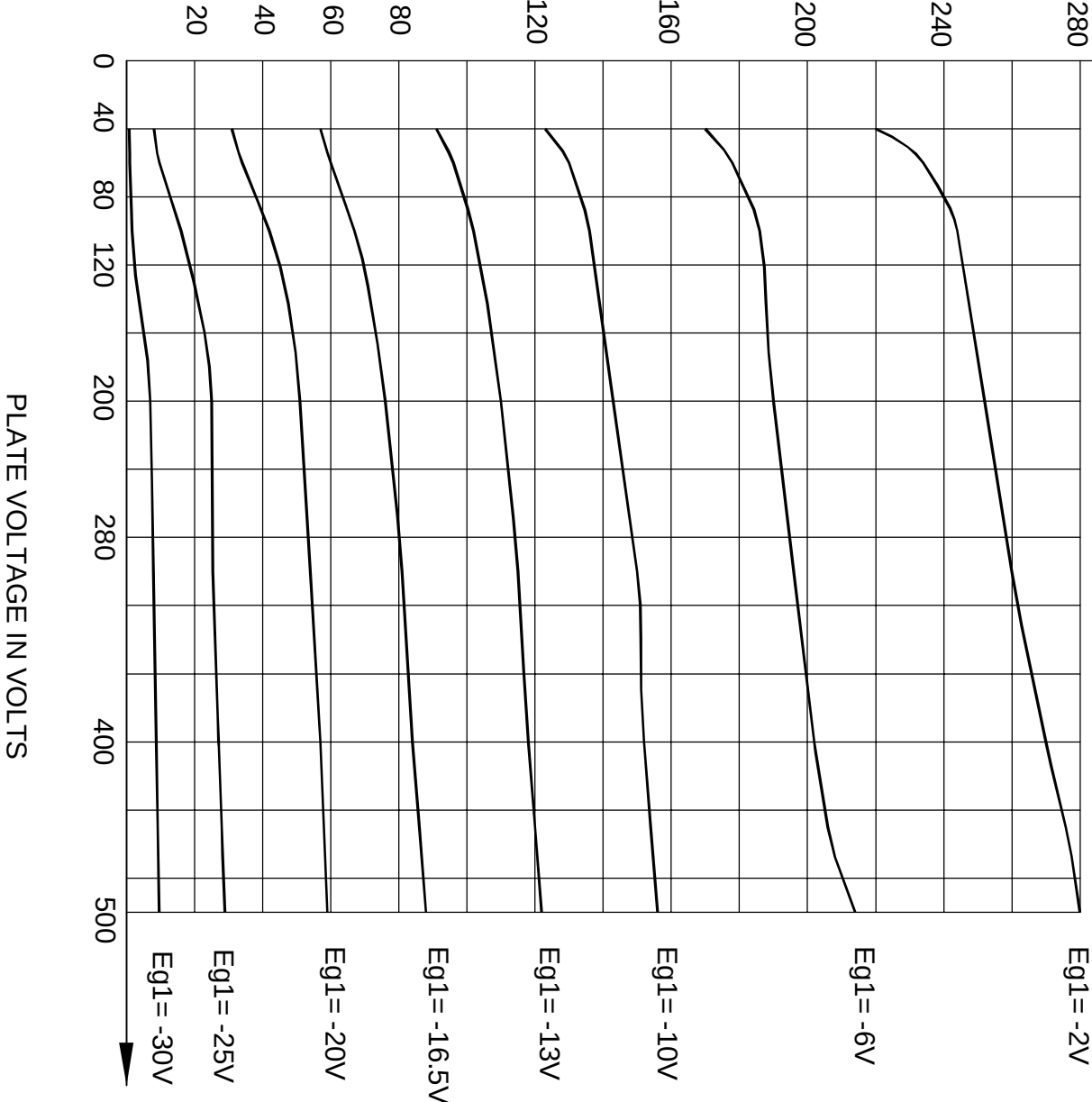
$I_p(mA)$



$I_p=f(E_p)$

$E_f=6.3V, E_{g2}=250V$

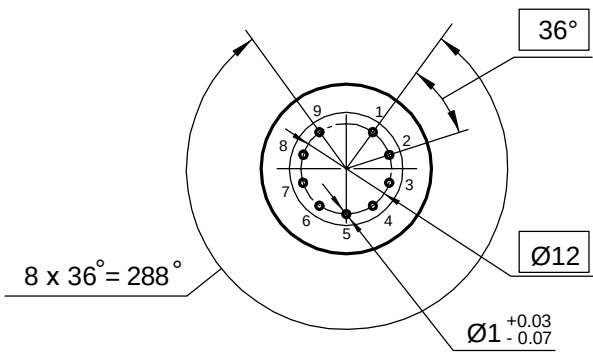
$I_p(mA)$



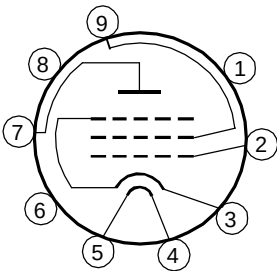
6BQ5/EL84 Tung-Sol

Vacuum tube 6BQ5/EL84 Tung-Sol is a miniature pentode with equipotential cathode, designed to amplify low frequency power in the output stages of HI-FI audio.

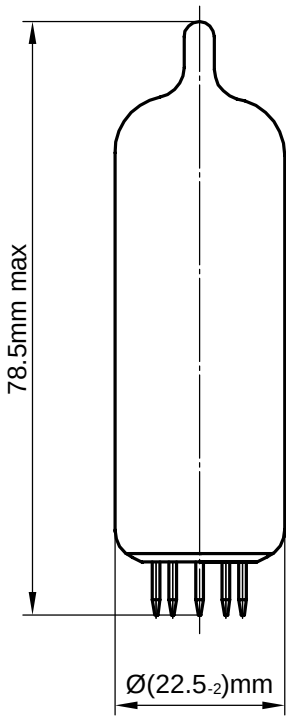
Pin arrangement



Electrode -to - lead connection diagram



Dimensions



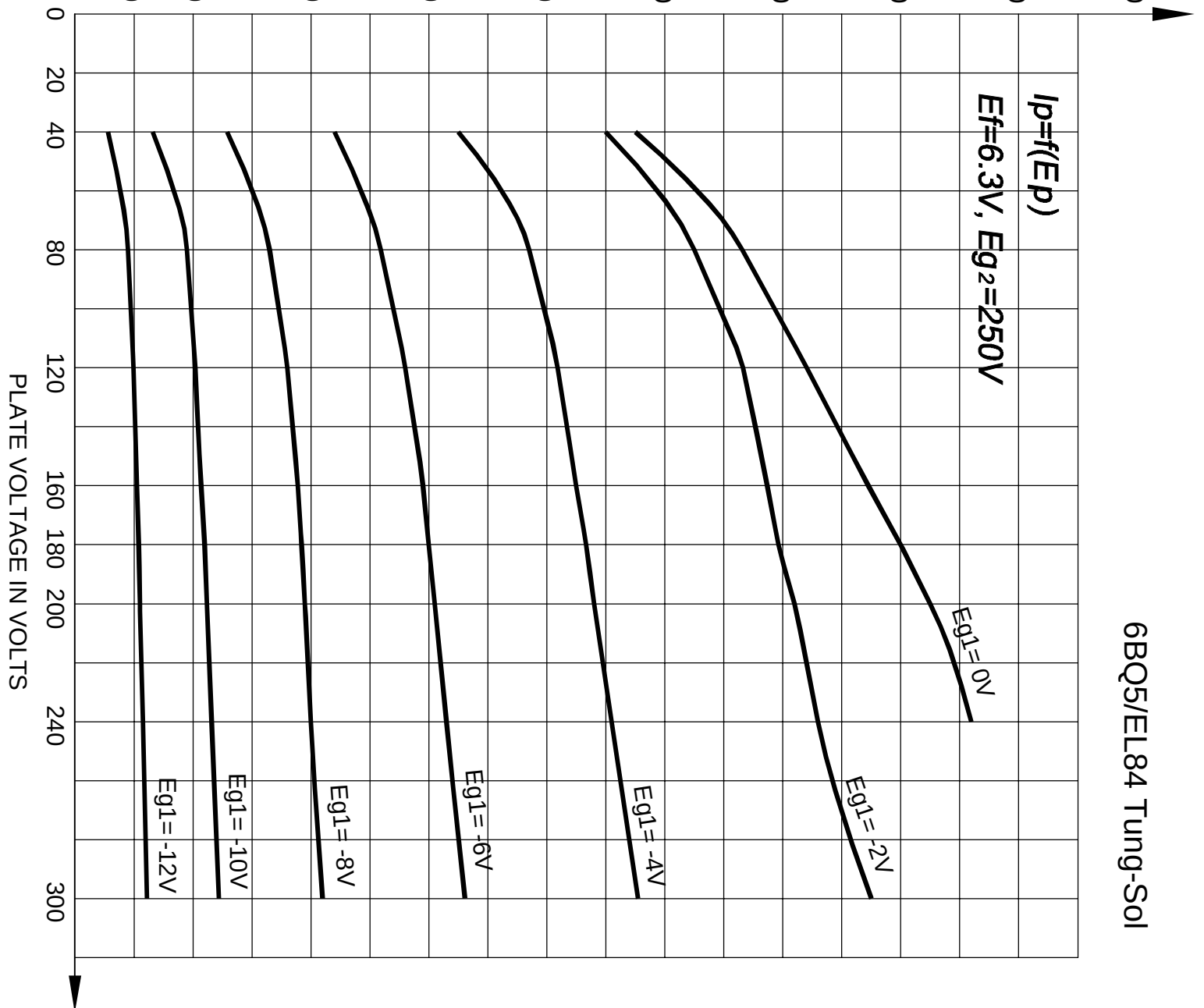
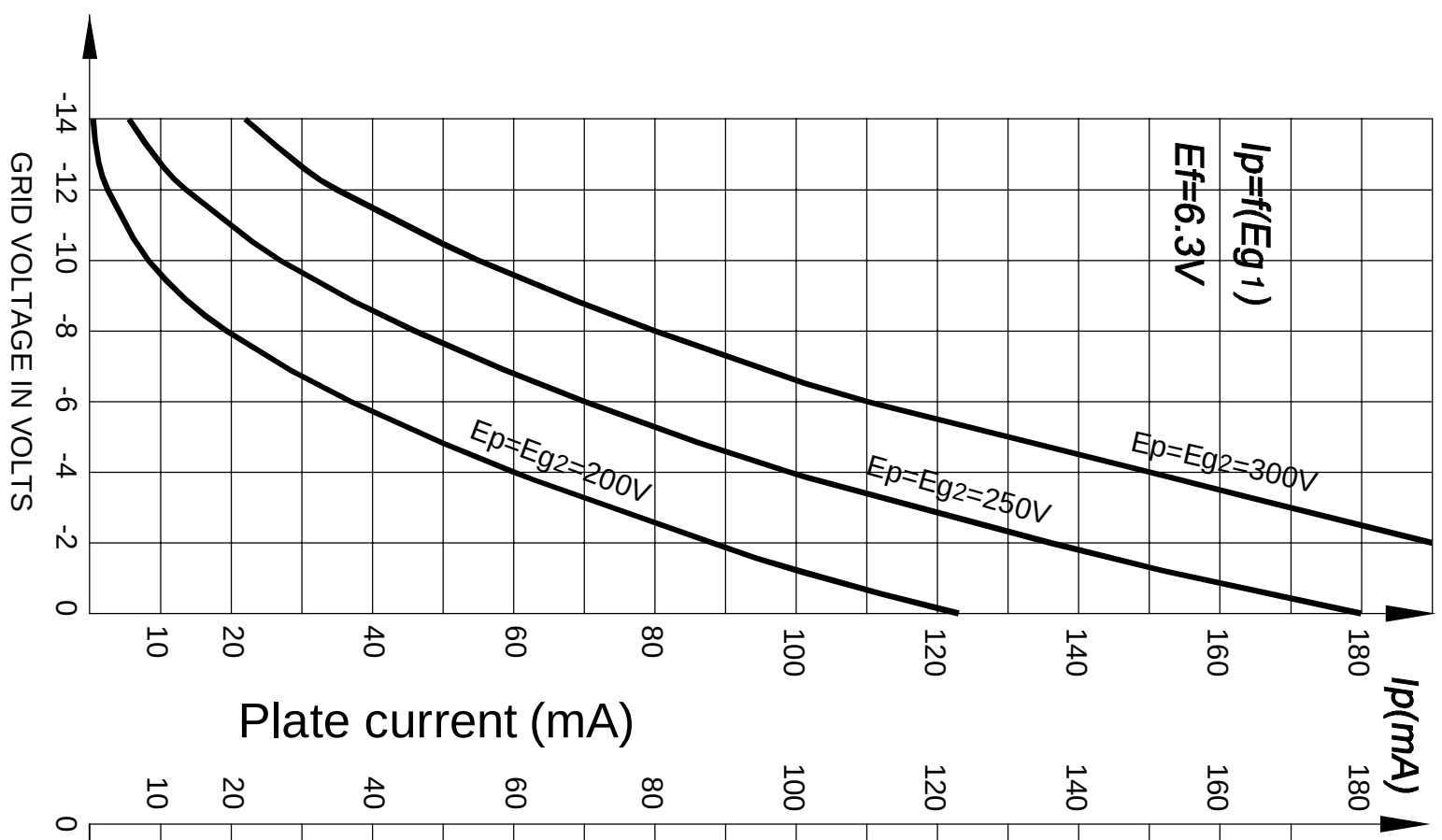
Lead designation	Name of electrode
1, 6, 8	Free
2	Grid 1
3	Cathode, Grid 3
4, 5	Heater
7	Plate
9	Grid 2

Parameters, conditions and units	Nominal	
	min	max
First grid reverse current, μA (at: filament voltage 6.3 V plate voltage 250 V, first grid voltage minus 7.3 V, second grid voltage 250 V, first grid circuit resistance 0.51M Ω)	—	1.0
Heater current, mA	700	840
Plate current, mA (at: filament voltage 6.3 V plate voltage 250 V, first grid voltage minus 7.3 V, second grid voltage 250 V)	48	60
Second grid current, mA (at: filament voltage 6.3 V plate voltage 250 V, first grid voltage minus 7.3 V, second grid voltage 250 V)	—	10
Output power, W (at: filament voltage 6.3 V plate voltage 250 V, first grid voltage minus 7.3 V, second grid voltage 250 V, plate circuit resistance 5.2 k Ω alternating first grid, efficacious 5.2 V)	5.5	—
Output power at low voltage, W (at: filament voltage 5.7 V plate voltage 250 V, first grid voltage minus 7.3 V, second grid voltage 250 V, plate circuit resistance 5.2 k Ω first grid alternating voltage, efficacious 5.2 V)	5.0	—
Slope of characteristic, mA/V (at: filament voltage 6.3 V plate voltage 250 V, first grid voltage minus 7.3 V, second grid voltage 250 V)	9.0	—
Distortion factor,% (at: filament voltage 6.3 V, plate voltage 250 V, first grid voltage minus 7.3 V, second grid voltage 250 V, plate circuit resistance 5.2 k Ω alternating first grid, efficacious 5.2 V)	—	17
Cahtode - heater insulation resistance, M Ω (at: filament voltage 6.3 V cathode -heater voltage ± 100 V)	5.0	—

Limiting Values

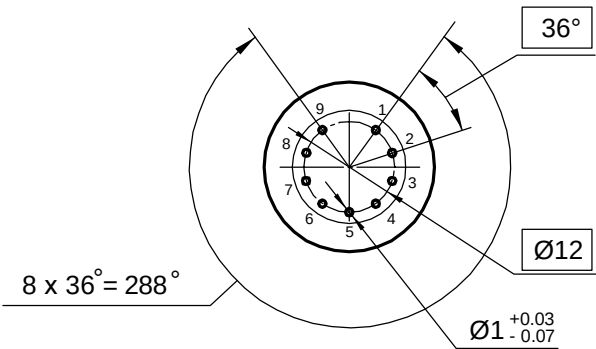
Parameters, units	Nominal	
	min	max
Filament voltage, V	5.7	7.0
Plate voltage, V	—	300
Second grid voltage, V	—	300
Cathode - heater voltage, V	—	100
Cathode current, mA	—	65
Power dissipation at the plate, W	—	14
Power dissipation at the second grid, W	—	2.2
First grid circuit resistance, M Ω self - bias	—	1.0
fixed bias	—	0.51
Temperature at the most heated part of the envelope, K°	—	493

6BQ5/EL84 Tung-Sol

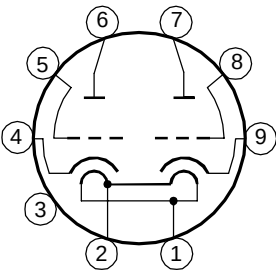


Vacuum tube 6EU7 Tung - Sol is a miniature twin triode with equipotential cathodes, designed to amplify low frequency voltage in the output stages of HI-FI audio.

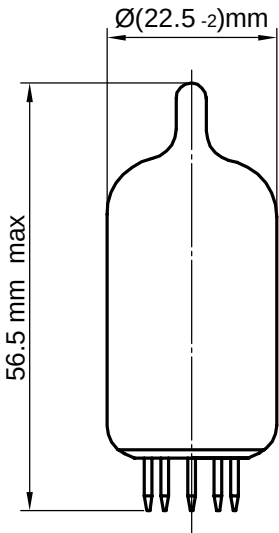
Pin arrangement



Electrode -to - lead connection diagram



Dimensions



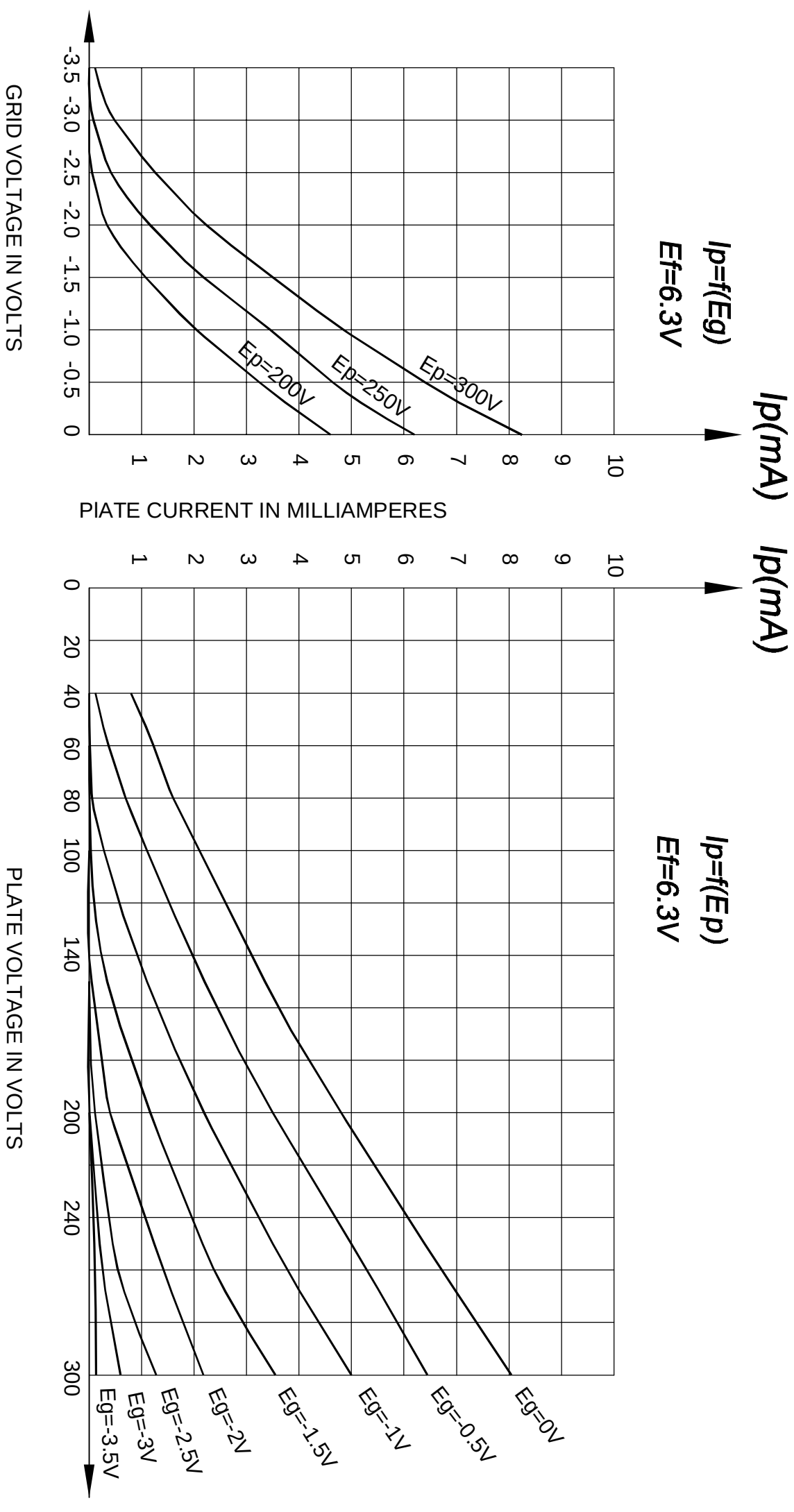
Lead designation	Name of electrode
1, 2	Heater
3	Free
4	First triode cathode
5	First triode grid
6	First triode plate
7	Second triode plate
8	Second triode grid
9	Second triode cathode

Electrical parameters

Parameters, conditions and units	Nominal	
	min	max
Heater current, mA	320	365
Grid reverse current, μA , (at: filament voltage 6.3 V, plate voltage 250 V, grid voltage minus 2.0 V, resistance in grid circuit 1.0 M Ω)	—	0.2
Plate current, mA, (at: filament voltage 6.3 V, plate voltage 250 V, grid voltage minus 2.0 V)	0.75	2.1
First and second triodes plate current difference, % (at: filament voltage 6.3 V, plate voltage 250 V, grid voltage minus 2.0 V)	—	± 40
Plate current at the beginning of the characteristic, μA (at: filament voltage 6.3 V, plate voltage 250 V, grid voltage minus 4.5 V)		30
Slope of characteristic, mA/V (at: filament voltage 6.3 V, plate voltage 250 V, grid voltage minus 2.0 V)	1.4	—
Amplification factor (at: filament voltage 6.3 V, plate voltage 250 V, grid voltage minus 2.0 V)	83	—
Cathode - heater insulation resistance, M Ω (at: filament voltage 6.3 V, cathode -heater voltage ± 200 V)	20	—

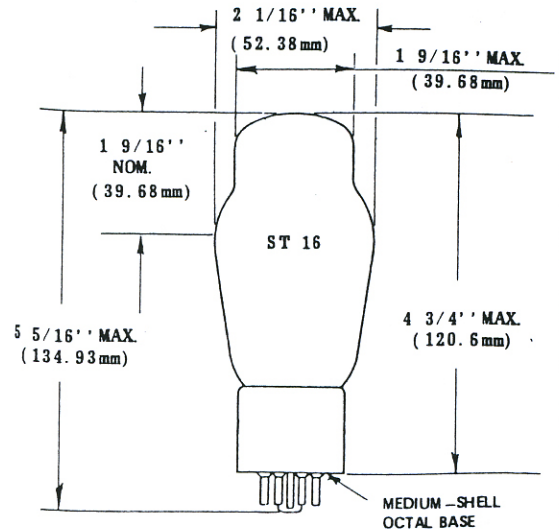
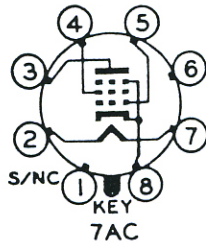
Limiting Values

Parameters, units	Nominal	
	min	max
Filament voltage, V	6	6.6
Plate voltage, V	—	330
Cathode - heater voltage, V	—	± 200
Cathode current, mA	—	9.0
Power dissipation at the plate of each triode, W	—	1.2
Grid circuit resistance for each of the triodes, M Ω fixed bias	—	1.0
self - bias	—	2.2
Grid voltage, negative, V	—	55



TUNG-SOL 6L6G

The 6L6G is a beam-power tetrode primarily designed for use in audio-frequency power amplifier applications. The 6L6G has a shoulder-type envelope for a vintage appearance. It also has the higher power ratings of and can be used in any circuit designed for the 6L6GC.



General Characteristics

	min	typ	max	
Heater Voltage (AC or DC)	5.7	6.3	6.9	V
Heater Current @6.3V		0.9		A
Cathode:	oxide-coated, unipotential			
Cathode-to-heater potential			±200	V
Direct interelectrode capacitances :				
Grid no. 1 to plate			0.6	pF
Grid no. 1 to cathode, heater, grid no. 2, and beam forming plates			10	pF
Plate to cathode, heater, grid no. 2, and beam forming plates			6.5	pF

Mechanical

Operating position	Any
Base	Large wafer octal 8-pin
Basing diagram	JEDEC 7AC
Cooling	Radiation and convection
Envelope temperature (max)	250 C
Nominal dimensions:	
Diameter	38.8mm (1.528 in.)
Base to top	93mm (3.605 in.)
Overall height	108mm (4.252 in.)
Diameter of base	34mm (1.339 in.)
Net weight	65 grams

Maximum ratings

DC plate voltage VP	500	V
Screen grid voltage Vg2	500	V
Plate Dissipation	30	W
Screen Grid Dissipation	5	W

Typical Operation, Class A, Audio Power Amplifier, Single Tube Connection

	tetrode	triode	
DC plate voltage	350	250	V
Screen grid voltage	250		V
Control grid bias voltage	-18	-20	V
Peak AF grid voltage	18	20	V
Zero-signal plate current	54	40	mA
Maximum-signal plate current	66	44	mA
Zero-signal screen grid current	2.5		mA
Maximum-signal screen current	7		mA
Plate resistance (approx)	33000	1700	ohms
Transconductance (approx)	5200	4700	μS
Load Resistance	4200	5000	ohms
Total harmonic distortion	15	5	%
Maximum signal power output	10.8	1.4	W

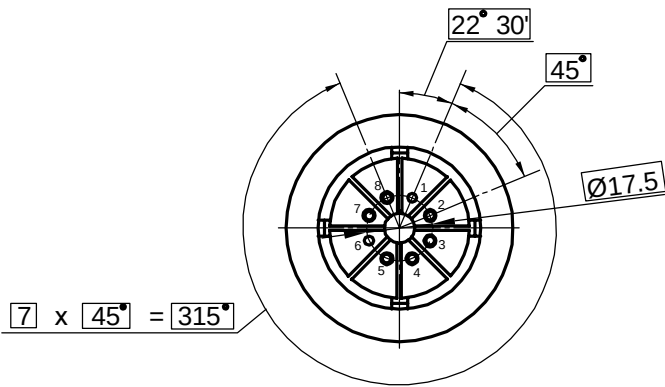
Typical Operation, Class AB₁, Audio Power Amplifier (Values for two tubes)

DC plate voltage	450	V
Screen grid voltage	400	V
Control grid bias voltage	-37	V
Peak AF grid-to-grid voltage	70	V
Zero-signal plate current	116	mA
Maximum-signal plate current	210	mA
Zero-signal screen grid current	5.6	mA
Maximum-signal screen current	22	mA
Load Resistance, plate-to-plate	5600	ohms
Total harmonic distortion	1.8	%
Maximum signal power output	55	W

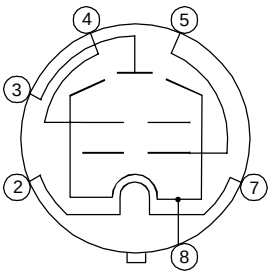
NEW SENSOR CORPORATION
32-33 47TH AVE. LONG ISLAND CITY, NY 11101
PHONE: (718) 937-8300, (800) 633-5477
FAX: (718) 937-9111

Vacuum tube 6L6G Tung - Sol is a beam tetrode in the glass bulb with octal base,with equipotential cathode, designed to amplify low frequency power in the output stages of HI - FI audio.

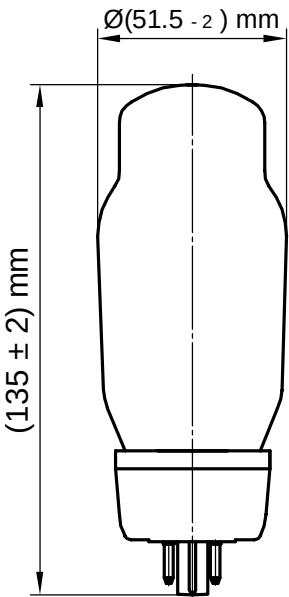
Pin arrangement



Electrode -to - lead connection diagram



Dimensions



Lead designation	Name of electrode
1, 6	No
2, 7	Heater
3	Plate
4	Grid 2
5	Grid 1
8	Cathode, beam-forming screen

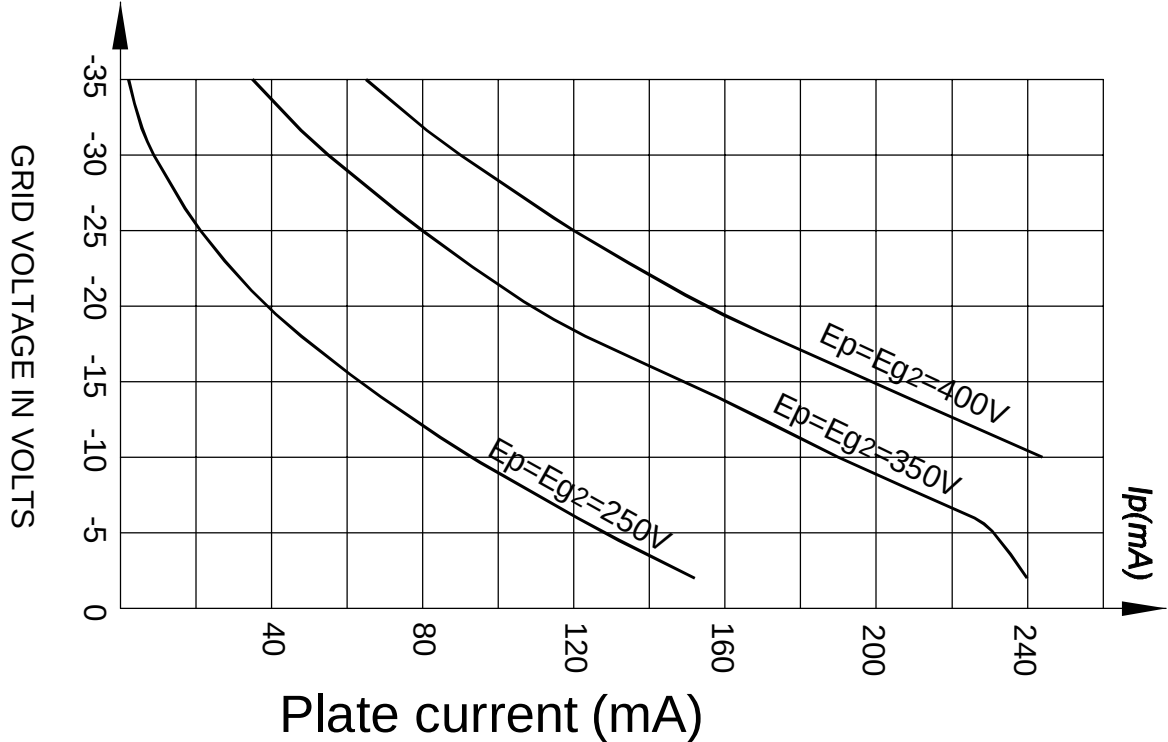
Parameters, conditions and units	Nominal	
	min	max
First grid reverse current, μA (at: filament voltage 6.3 V, plate voltage 350 V, first grid voltage minus 18.0 V, second grid voltage 250 V, first grid circuit resistance 0.1M Ω)	—	0.7
Heater current, A	0.845	1.06
Plate current, mA (at: filament voltage 6.3 V, plate voltage 350 V, first grid voltage minus 18.0 V, second grid voltage 250 V)	42	72
Second grid current, mA (at: filament voltage 6.3 V, plate voltage 350 V, first grid voltage minus 18.0 V, second grid voltage 250 V)	—	6.0
Output power, W (at: filament voltage 6.3 V, plate voltage 350 V, first grid voltage minus 18.0 V, second grid voltage 250 V, plate circuit resistance 4.2 k Ω first grid alternating voltage, efficacious 12.7 V)	8	—
First grid cut-off voltage, negative, V (at: filament voltage 6.3 V, plate voltage 350 V, second grid voltage 250 V,)	—	60
Slope of characteristic, mA/V (at: filament voltage 6.3 V, anode voltage 350 V, first grid voltage minus 18.0 V, second grid voltage 250 V)	4.2	7.0
Distortion factor, %	—	15.0
Cahtode - heater insulation resistance, M Ω (at: filament voltage 6.3 V, cathode -heater voltage ± 100 V)	2.0	—

Maximum permissible operating conditions

Parameters, units	Nominal	
	min	max
Filament voltage, V	5.7	6.9
Plate voltage, V	—	500
Second grid voltage, V	—	450
Cathode - heater voltage, V	—	± 200
Cathode current, mA	—	100
First grid voltage, negative, V	—	100
Power dissipation at the plate, W	—	30
Power dissipation at the second grin, W	—	5
First grid circuit resistance for each, M Ω		
fixed bias	—	0.1
self - bias	—	0.51
Temperature at the most heated part of the envelope, K°	—	523

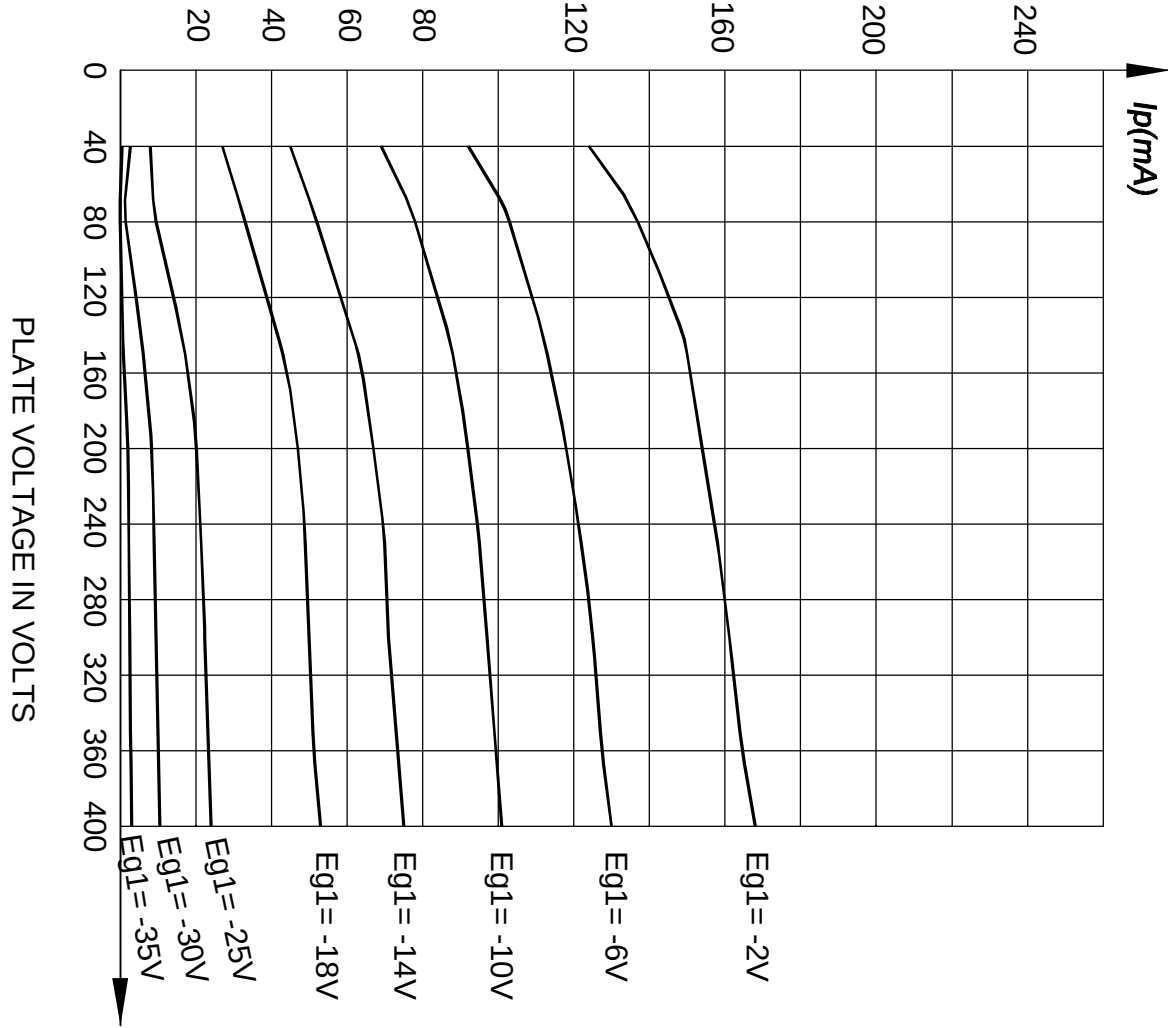
$I_p=f(E_g)$

$E_f=6.3V$



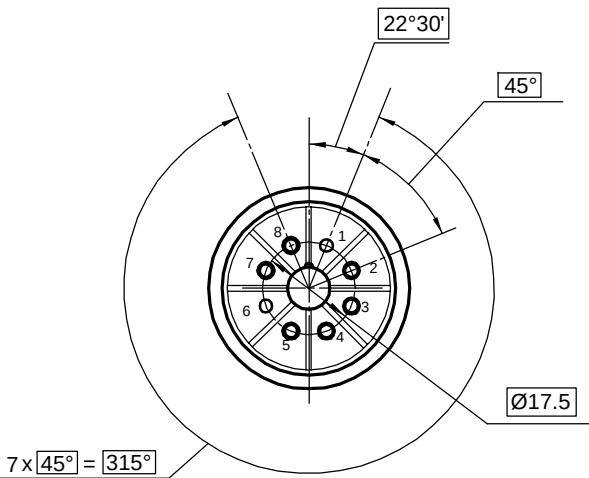
$I_p=f(E_g)$

$E_f=6.3V, E_{g2}=250V$

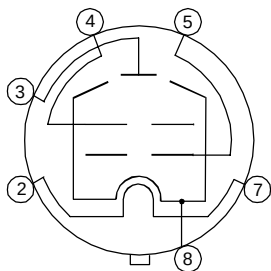


Vacuum tube 6L6GC STR Tung - Sol is a beam tetrode in the glass bulb with octal base,with equipotential cathode, designed to amplify low frequency power in the output stages of HI - FI audio.

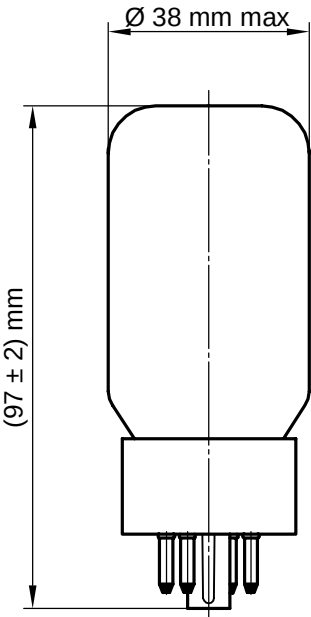
Pin arrangement



Electrode -to - lead connection diagram



Dimensions



Lead designation	Name of electrode
1, 6	No
2, 7	Heater
3	Plate
4	Grid 2
5	Grid 1
8	Cathode, beam-forming screen

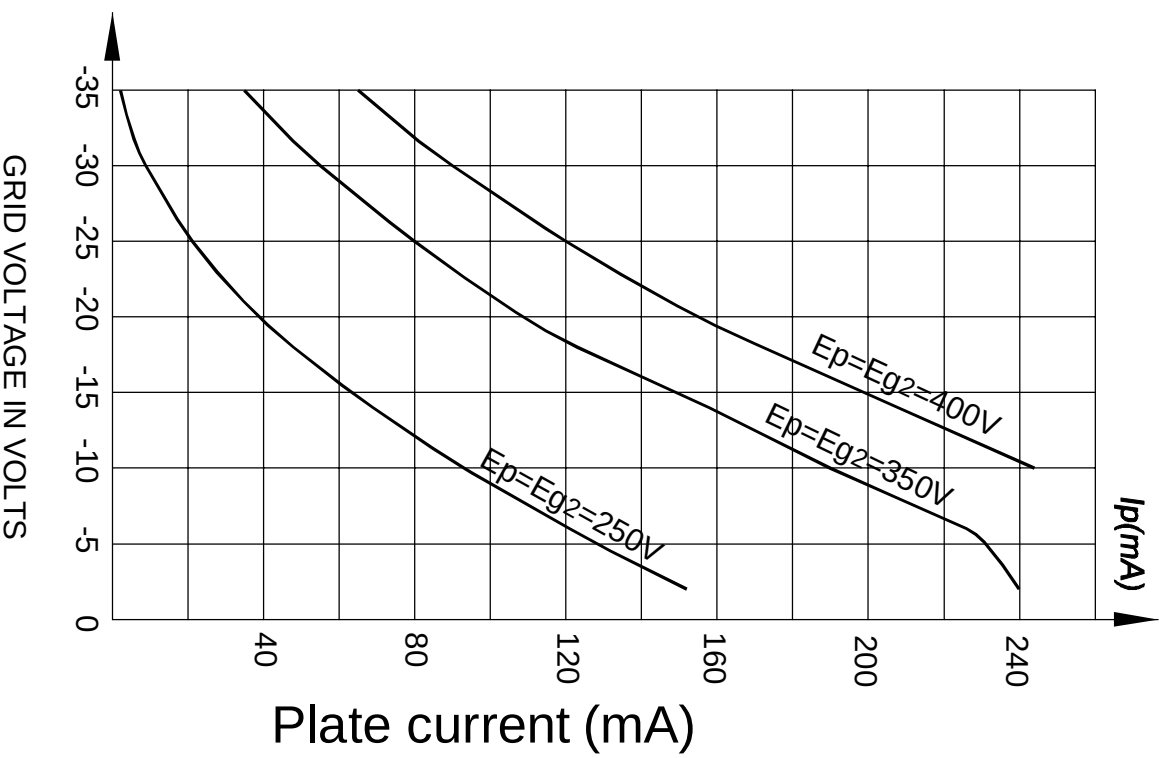
Parameters, conditions and units	Nominal	
	min	max
First grid reverse current, μA (at: filament voltage 6.3 V, plate voltage 350 V, first grid voltage minus 18.0 V, second grid voltage 250 V, first grid circuit resistance 0.1M Ω)	—	0.7
Heater current, A	0.845	1.06
Plate current, mA (at: filament voltage 6.3 V, plate voltage 350 V, first grid voltage minus 18.0 V, second grid voltage 250 V)	42	72
Second grid current, mA (at: filament voltage 6.3 V, plate voltage 350 V, first grid voltage minus 18.0 V, second grid voltage 250 V)	—	6.0
Output power, W (at: filament voltage 6.3 V, plate voltage 350 V, first grid voltage minus 18.0 V, second grid voltage 250 V, plate circuit resistance 4.2 k Ω first grid alternating voltage, efficacious 12.7 V)	8	—
First grid cut-off voltage, negative, V (at: filament voltage 6.3 V, plate voltage 350 V, second grid voltage 250 V,)	—	60
Slope of characteristic, mA/V (at: filament voltage 6.3 V, anode voltage 350 V, first grid voltage minus 18.0 V, second grid voltage 250 V)	4.0	7.0
Distortion factor, %	—	15.0
Cahtode - heater insulation resistance, M Ω (at: filament voltage 6.3 V, cathode -heater voltage ± 100 V)	2.0	—

Maximum permissible operating conditions

Parameters, units	Nominal	
	min	max
Filament voltage, V	5.7	6.9
Plate voltage, V	—	500
Second grid voltage, V	—	450
Cathode - heater voltage, V	—	± 200
Cathode current, mA	—	100
First grid voltage, negative, V	—	100
Power dissipation at the plate, W	—	30
Power dissipation at the second grin, W	—	5
First grid circuit resistance for each, M Ω		
fixed bias	—	0.1
self - bias	—	0.51
Temperature at the most heated part of the envelope, K°	—	523

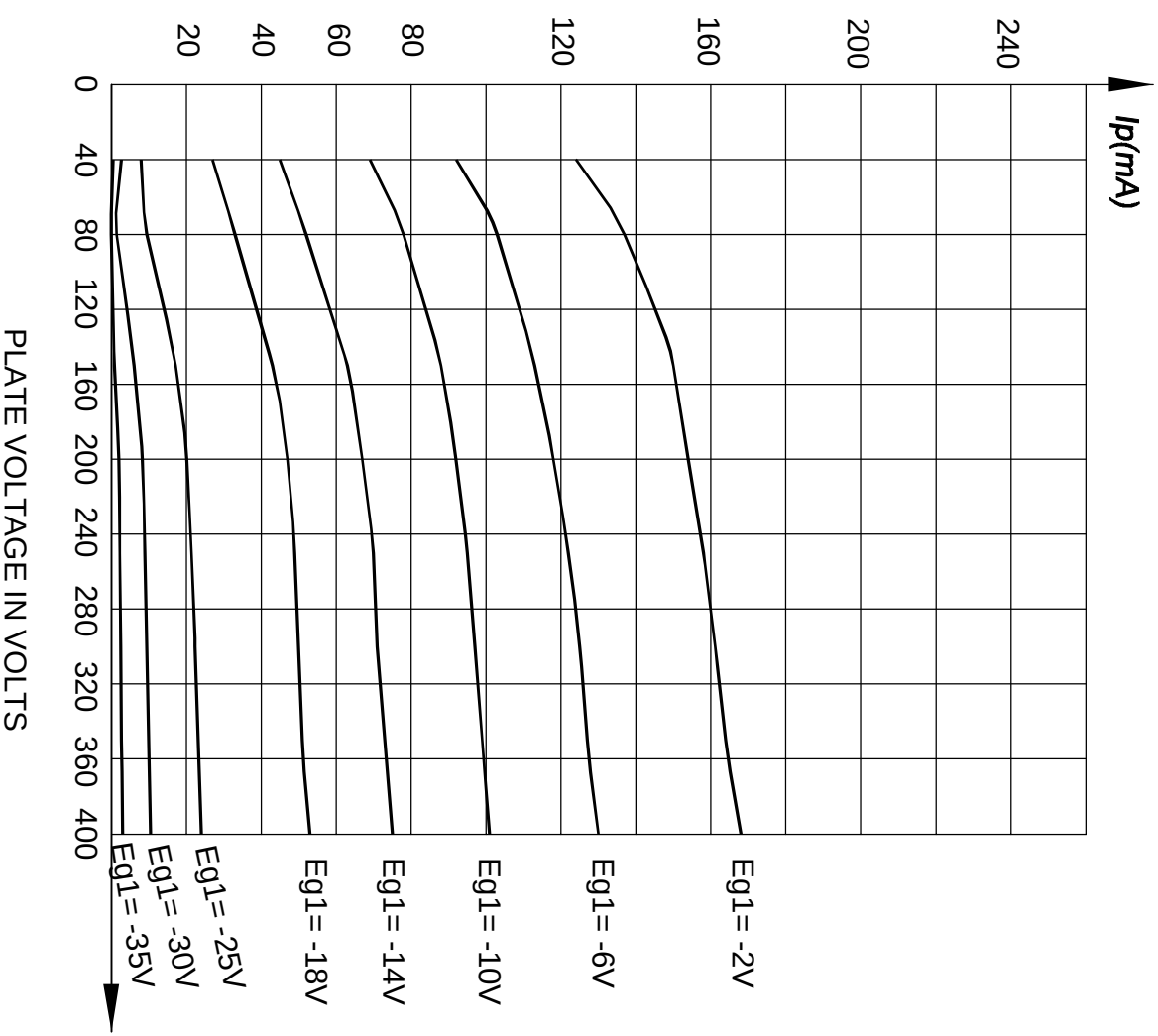
$$I_p = f(E_g)$$

$E_f = 6.3V$



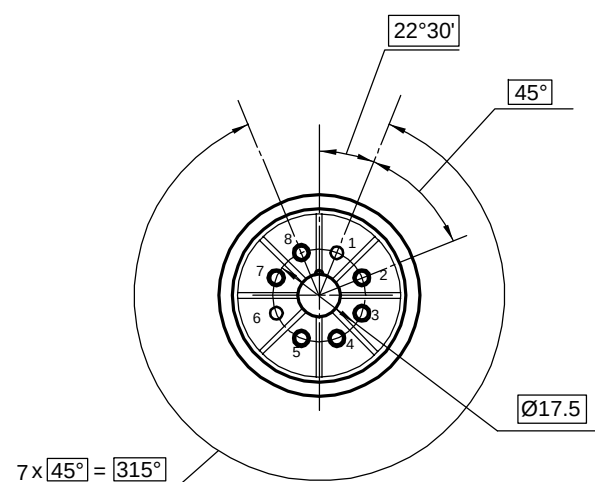
$$I_p = f(E_g)$$

$E_f = 6.3V, E_{g2} = 250V$

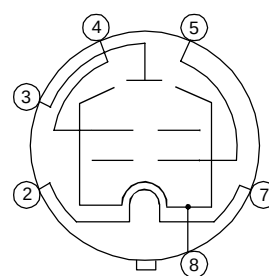


Vacuum tube 5881 Tung - Sol is a beam tetrode in the glass bulb with octal base, with equipotential cathode, designed to amplify low frequency power in the output stages of HI - FI audio.

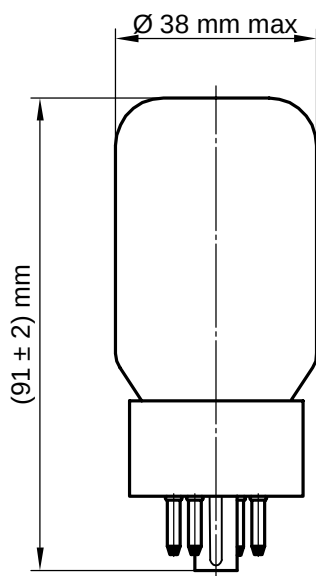
Pin arrangement



Electrode -to - lead connection diagram



Dimensions

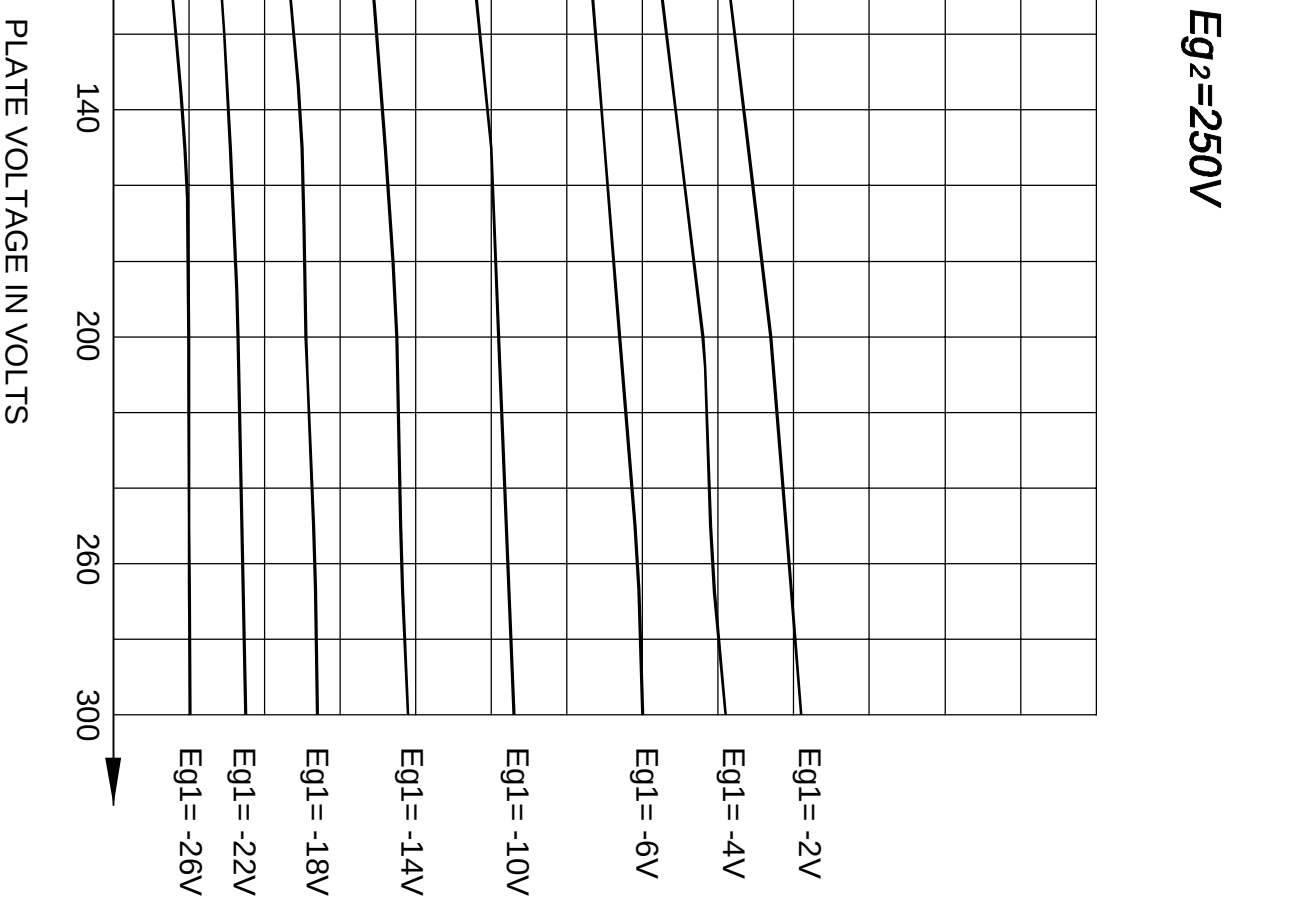
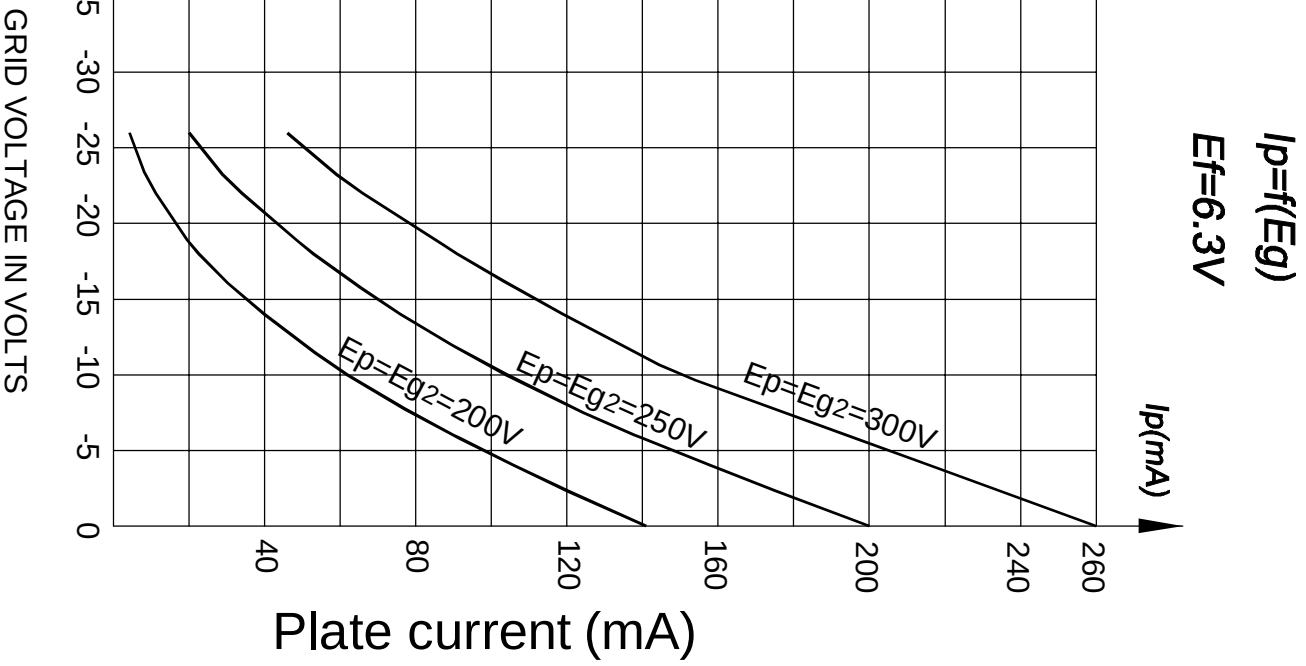


Lead designation	Name of electrode
1, 6	No
2, 7	Heater
3	Plate
4	Grid 2
5	Grid 1
8	Cathode, beam-forming screen

Parameters, conditions and units	Nominal	
	min	max
First grid reverse current, μA (at: filament voltage 6.3 V, plate voltage 250 V, first grid voltage minus 14.0 V, second grid voltage 250 V, first grid circuit resistance 0.51M Ω)	—	0.7
Heater current, A	0.840	0.920
Plate current, mA (at: filament voltage 6.3 V, plate voltage 250 V, first grid voltage minus 14.0 V, second grid voltage 250 V)	60	88
Second grid current, mA (at: filament voltage 6.3 V, plate voltage 250 V, first grid voltage minus 14.0 V, second grid voltage 250 V)	—	8.0
Output power, W (at: filament voltage 6.3 V, plate voltage 250 V, first grid voltage minus 14.0 V, second grid voltage 250 V, plate circuit resistance 2.5 k Ω first grid alternating voltage, efficacious 9.8 V)	5.8	—
Plate current at the beginning of the characteristic, mA (at: filament voltage 6.3 V, plate voltage 250 V, first grid voltage minus 35.0 V, second grid voltage 250 V)	—	10
Slope of characteristic, mA/V (at: filament voltage 6.3 V, anode voltage 250 V, first grid voltage minus 14.0 V, second grid voltage 250 V)	5.2	7.0
Cahtode - heater insulation resistance, M Ω (at: filament voltage 6.3 V cathode -heater voltage $\pm$ 250 V)	4.0	—

Maximum permissible operating conditions

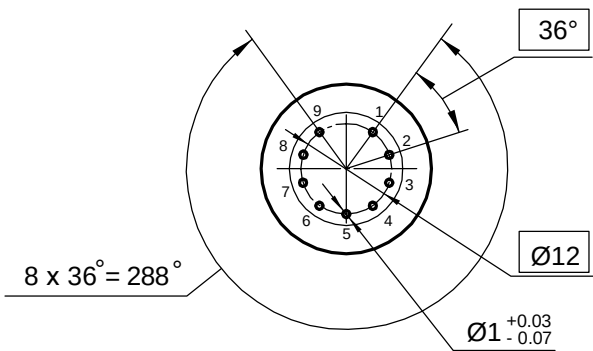
Parameters, units	Nominal	
	min	max
Filament voltage, V	5.76	7.0
Plate voltage, V	—	375
Second grid voltage, V	—	300
Cathode - heater voltage, V	—	$\pm$ 250
Cathode current, mA	—	90
First grid voltage, negative, V	—	100
Power dissipation at the plate, W	—	20.5
Power dissipation at the second grin, W	—	2
First grid circuit resistance for each, M Ω	—	0.51
Temperature at the most heated part of the envelope, K $^{\circ}$	—	513



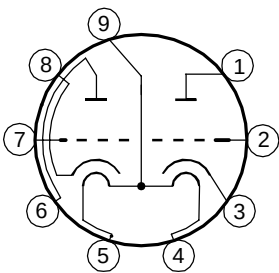
12AX7 Tung-Sol

Vacuum tube 12AX7 Tung-Sol is a miniature twin triode with equipotential cathodes, designed to amplify low frequency voltage in the output stages of HI-FI audio.

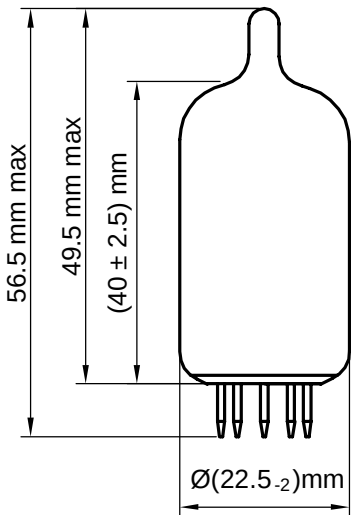
Pin arrangement



Electrode -to - lead connection diagram



Dimensions



Lead designation	Name of electrode
1	Second triode plate
2	Second triode grid
3	Second triode cathode
4, 5, 9	Heater
6	First triode plate
7	First triode grid
8	First triode cathode

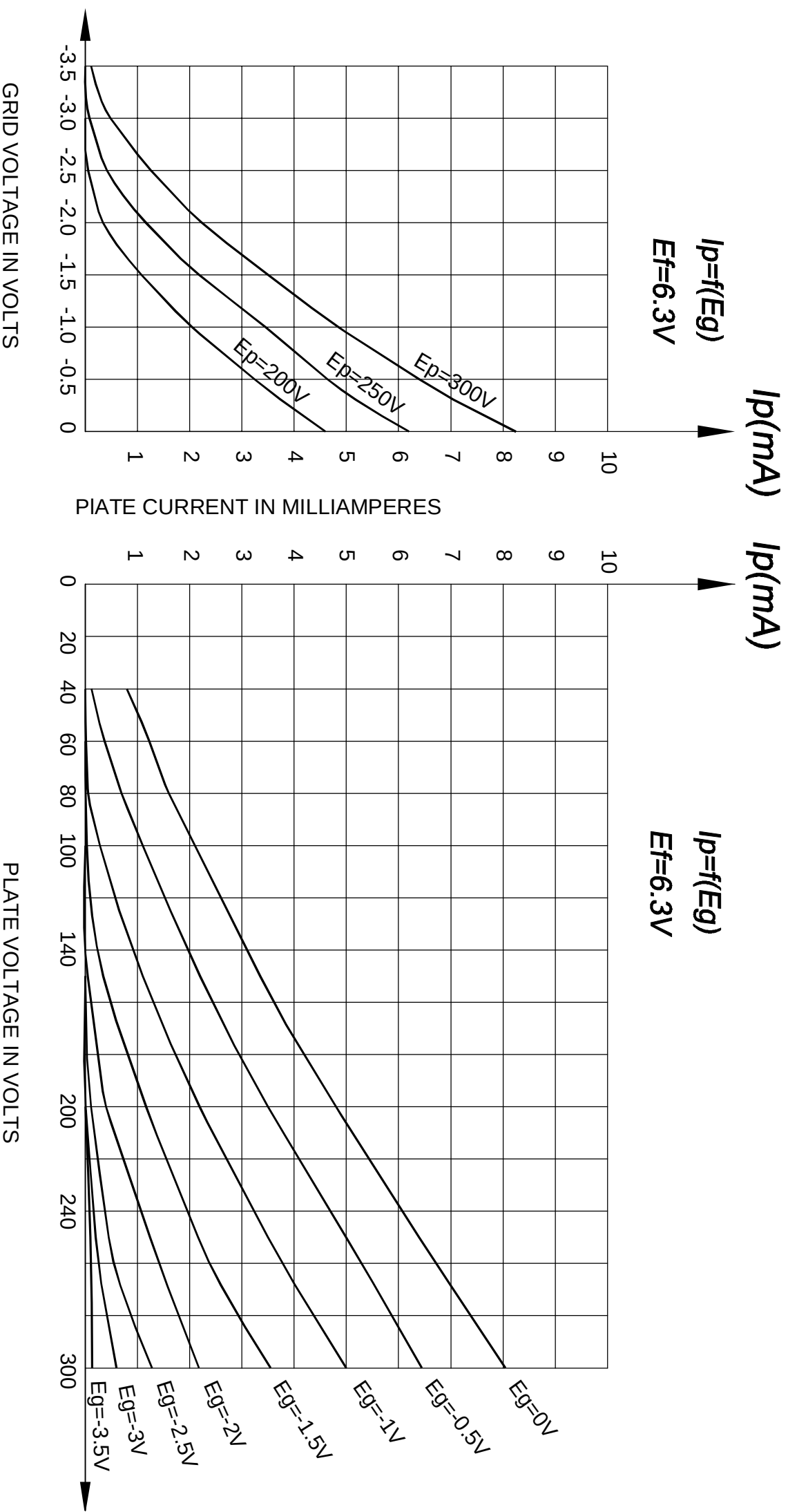
Electrical parameters

Parameters, conditions and units	Nominal	
	min	max
Heater current, mA at: filament voltage 6.3 V at: filament voltage 12.6 V	320 160	365 183
Grid back current, μA , (at: filament voltage 6.3 V or 12.6 V, plate voltage 250 V, grid voltage minus 2.0 V, resistance in grid circuit 1.0 M Ω)	—	0.2
Plate current, mA, (at: filament voltage 6.3 V or 12.6 V, plate voltage 250 V, grid voltage minus 2.0 V)	0.75	2.1
First and second triodes plate current difference, % (at: filament voltage 6.3 V or 12.6 V, plate voltage 250 V, grid voltage minus 2.0 V)	—	± 40
Plate current at the beginning of the characteristic, μA (at: filament voltage 6.3 V or 12.6 V, plate voltage 250 V, grid voltage minus 4.5 V)	—	30
Slope of characteristic, mA/V (at: filament voltage 6.3 V or 12.6 V, plate voltage 250 V, grid voltage minus 2.0 V)	1.4	—
Amplification factor (at: filament voltage 6.3 V or 12.6 V, plate voltage 250 V, grid voltage minus 2.0 V)	83	—
Cathode - heater insulation resistance, M Ω (at: filament voltage 6.3 V or 12.6 V, cathode -heater voltage ± 200 V)	20	—

Maximum permissible operating conditions

Parameters, units	Nominal	
	min	max
Filament voltage, V for parallel connection for series connection	6 12	6.6 13.2
Plate voltage, V	—	330
Cathode - heater voltage, V	—	± 200
Cathode current, mA	—	9
Power dissipation at the plate of each triode, W	—	1.2
Grid circuit resistance for each of the triodes, M Ω fixed bias self - bias	— —	1.0 2.2

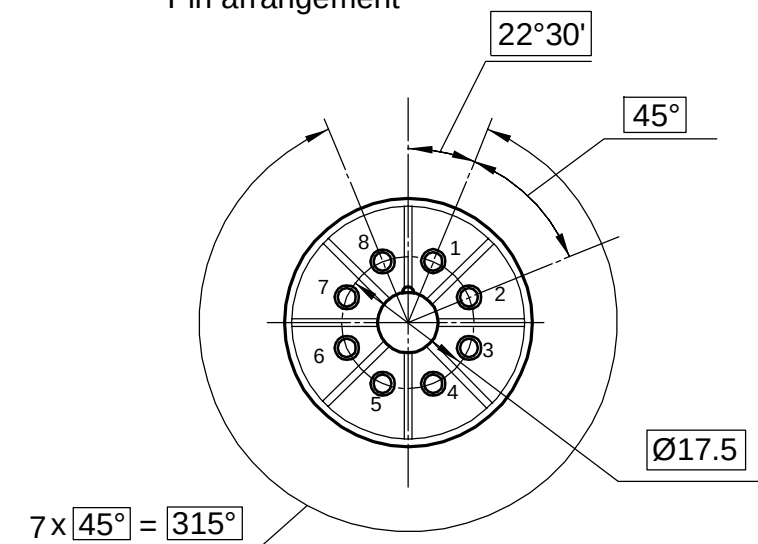
12AX7 Tung-Sol



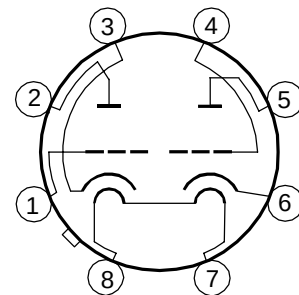
6SL7GT Tung-Sol gold

Vacuum tube 6SL7GT Tung-Sol gold is a twin triode with equipotential cathodes, designed to amplify low frequency voltage in radio engineering devices.

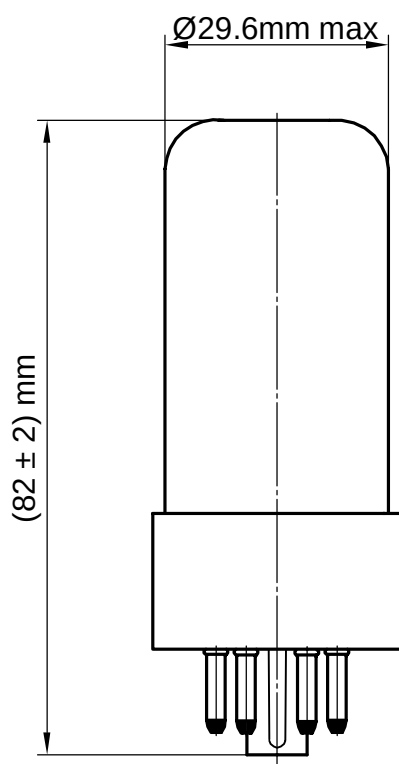
Pin arrangement



Electrode -to - lead connection diagram



Dimensions



Lead designation	Name of electrode
1	Second triode grid
2	Second triode plate
3	Second triode cathode
4	First triode grid
5	First triode plate
6	First triode cathode
7, 8	Heater

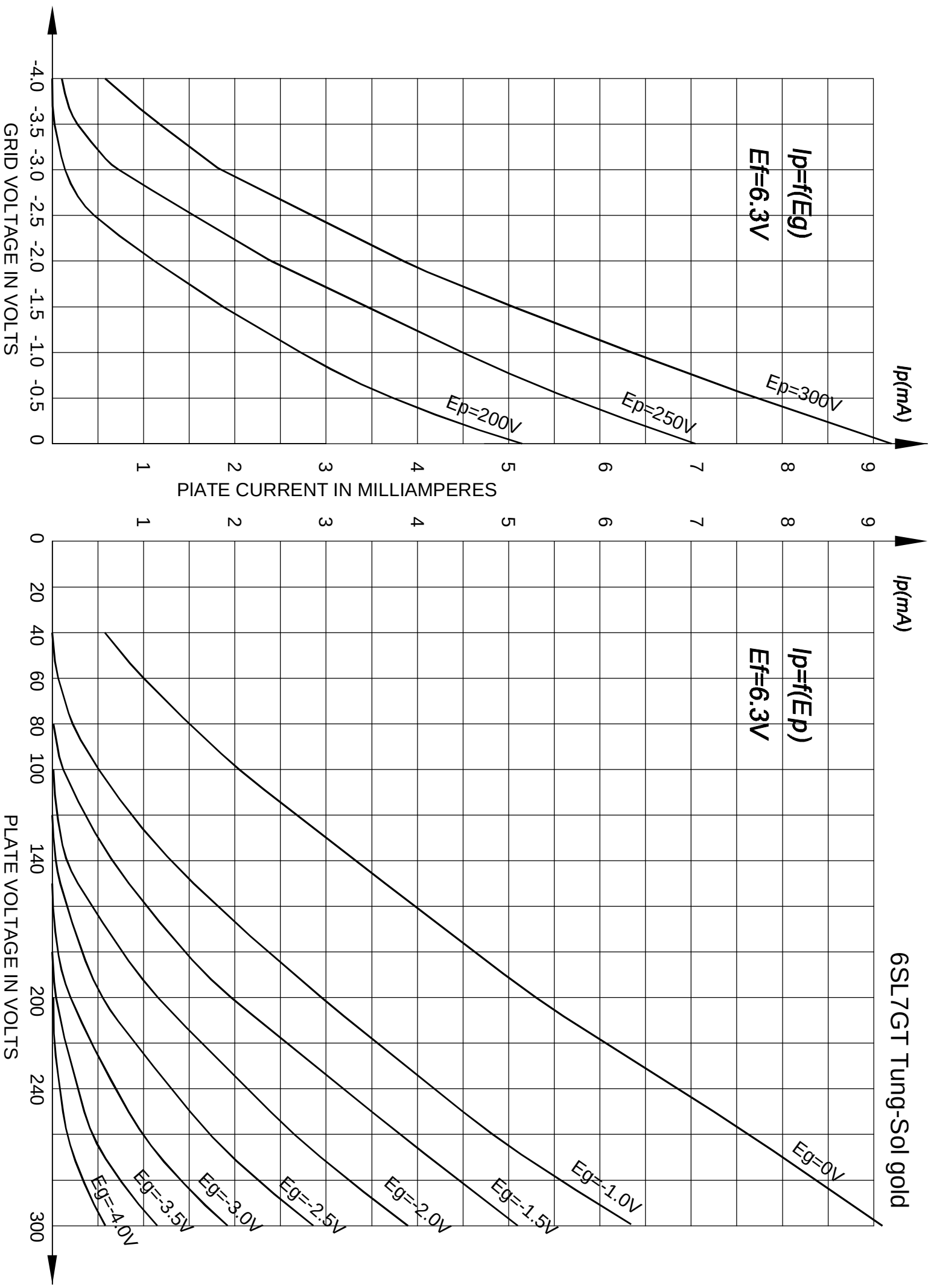
Electrical parameters

Parameters, conditions and units	Nominal	
	min	max
Heater current, mA at: filament voltage 6.3 V	400	450
Grid back current, μA , (at: filament voltage 6.3 V, plate voltage 250 V, grid voltage minus 2.0 V, resistance in grid circuit 1.0 M Ω)	—	0.5
First and second triodes plate current difference, % (at: filament voltage 6.3 V, plate voltage 250 V, grid voltage minus 2.0 V)	—	± 35
Plate current, mA, (at: filament voltage 6.3 V, plate voltage 250 V, grid voltage minus 2.0 V)	1.2	3.8
Slope of characteristic, mA/V (at: filament voltage 6.3 V, plate voltage 250 V, grid voltage minus 2.0 V)	1.2	2.5
Amplification factor (at: filament voltage 6.3 V, plate voltage 250 V, grid voltage minus 2.0 V)	55	85
Plate current at the beginning of the characteristic, μA (at: filament voltage 6.3 V, plate voltage 250 V, grid voltage minus 12.0 V)	—	20
Cathode - heater insulation resistance, M Ω (at: filament voltage 6.3 V, cathode - heater voltage ± 200 V)	10	—

Limiting Values

Parameters, units	Nominal	
	min	max
Filament voltage, V	5.7	7.0
Plate voltage, V	—	300
Grid voltage, negative, V	—	50
Cathode - heater voltage, V	—	± 200
Cathode current, mA	—	10
Power dissipation at the plate of each triode, W	—	1.2
Grid circuit resistance for each of the triodes, M Ω fixed bias	—	1.0
self - bias	—	2.0
Temperature at the most heated part of the envelope, K°	—	363

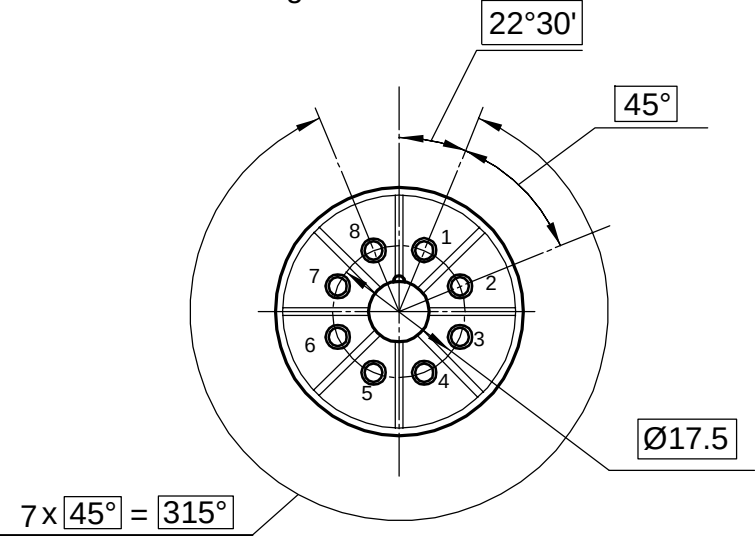
6SL7GT Tung-Sol gold



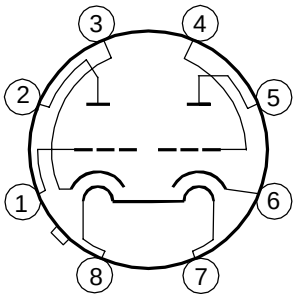
6SN7GTB Tung-Sol

Vacuum tube 6SN7GTB Tung-Sol is a twin triode with equipotential cathodes, designed to amplify low frequency voltage in the output stages of HI-FI audio.

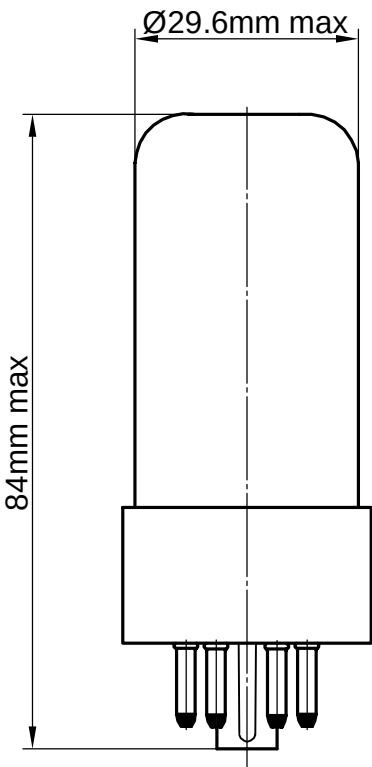
Pin arrangement



Electrode -to - lead connection diagram



Dimensions



Lead designation	Name of electrode
1	Second triode grid
2	Second triode plate
3	Second triode cathode
4	First triode grid
5	First triode plate
6	First triode cathode
7,8	Heater

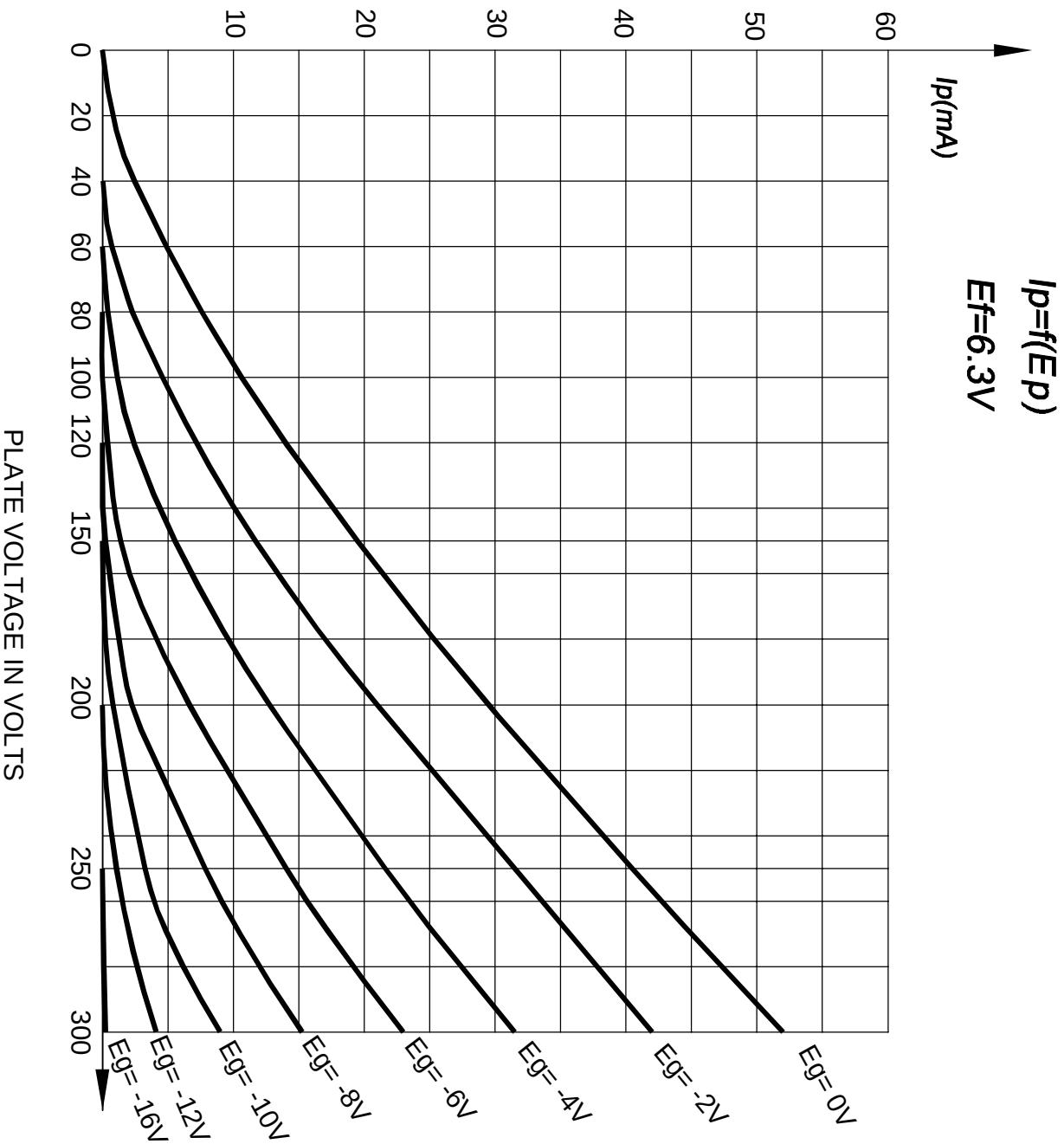
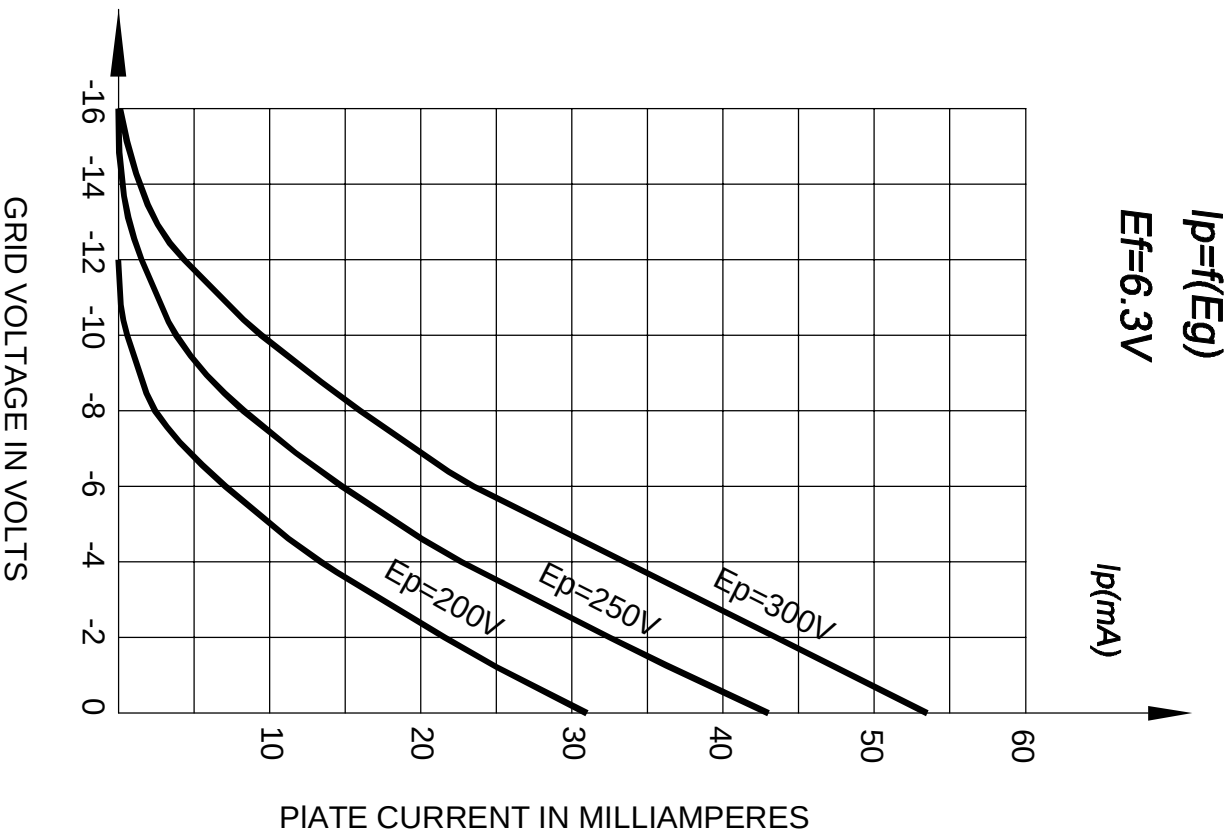
Electrical parameters

Parameters, conditions and units	Nominal	
	min	max
Heater current, mA at: filament voltage 6.3 V	550	650
Grid back current, μA , (at: filament voltage 6.3 V, plate voltage 250 V, grid voltage minus 8.0 V, resistance in grid circuit 1.0 M Ω)	—	0.2
First and second triodes plate current difference, % (at: filament voltage 6.3 V, plate voltage 250 V, grid voltage minus 8.0 V)	—	± 30
Plate current, mA, (at: filament voltage 6.3 V, plate voltage 250 V, grid voltage minus 8.0 V)	7.0	13.0
Slope of characteristic, mA/V (at: filament voltage 6.3 V, plate voltage 250 V, grid voltage minus 8.0 V)	2.0	3.6
Amplification factor (at: filament voltage 6.3 V, plate voltage 250 V, grid voltage minus 8.0 V)	16.5	—
Plate current at the beginning of the characteristic, μA (at: filament voltage 6.3 V, plate voltage 250 V, grid voltage minus 18.0 V)	—	50
Cathode - heater insulation resistance, M Ω (at: filament voltage 6.3 V, cathode - heater voltage ± 200 V)	13.3	—

Limiting Values

Parameters, units	Nominal	
	min	max
Filament voltage, V	6.0	6.6
Plate voltage, V	—	450
Cathode - heater voltage, V	—	± 200
Cathode current, mA	—	20
Power dissipation at the plate of each triode, W	—	2.5
Grid circuit resistance for each of the triodes, M Ω fixed bias self - bias	— —	1.0 2.0

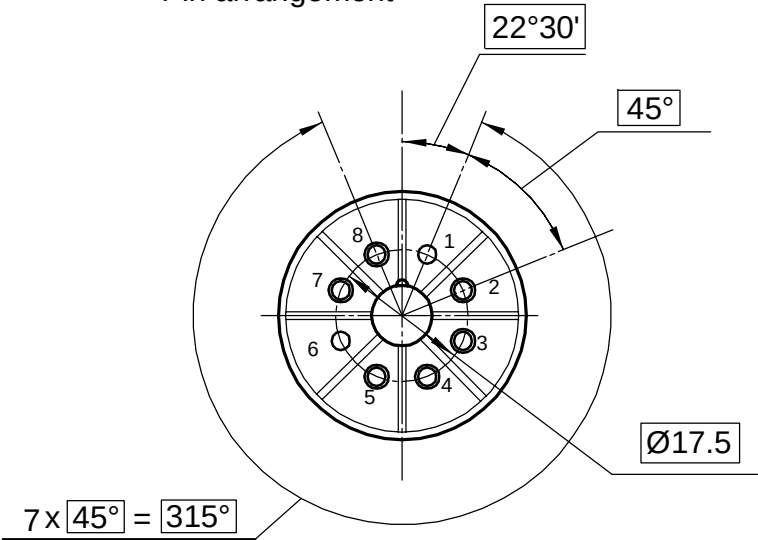
6SN7GTB Tung-Sol



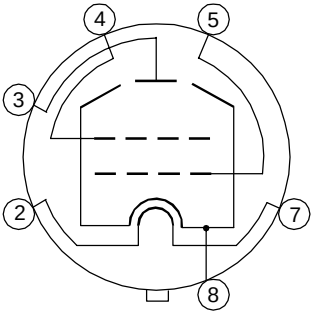
6V6GT Tung-Sol

Vacuum tube 6V6GT Tung-Sol is a beam tetrode in the glass bulb, with equipotential cathode, designed to amplify low frequency power in the output stages of HI - FI audio.

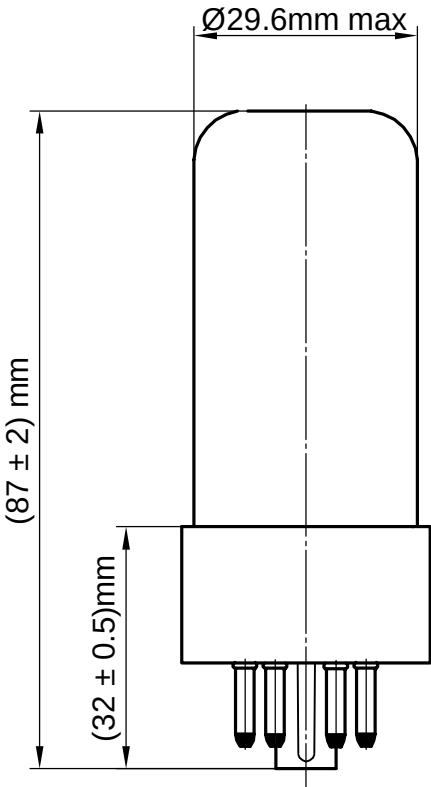
Pin arrangement



Electrode -to - lead connection diagram



Dimensions



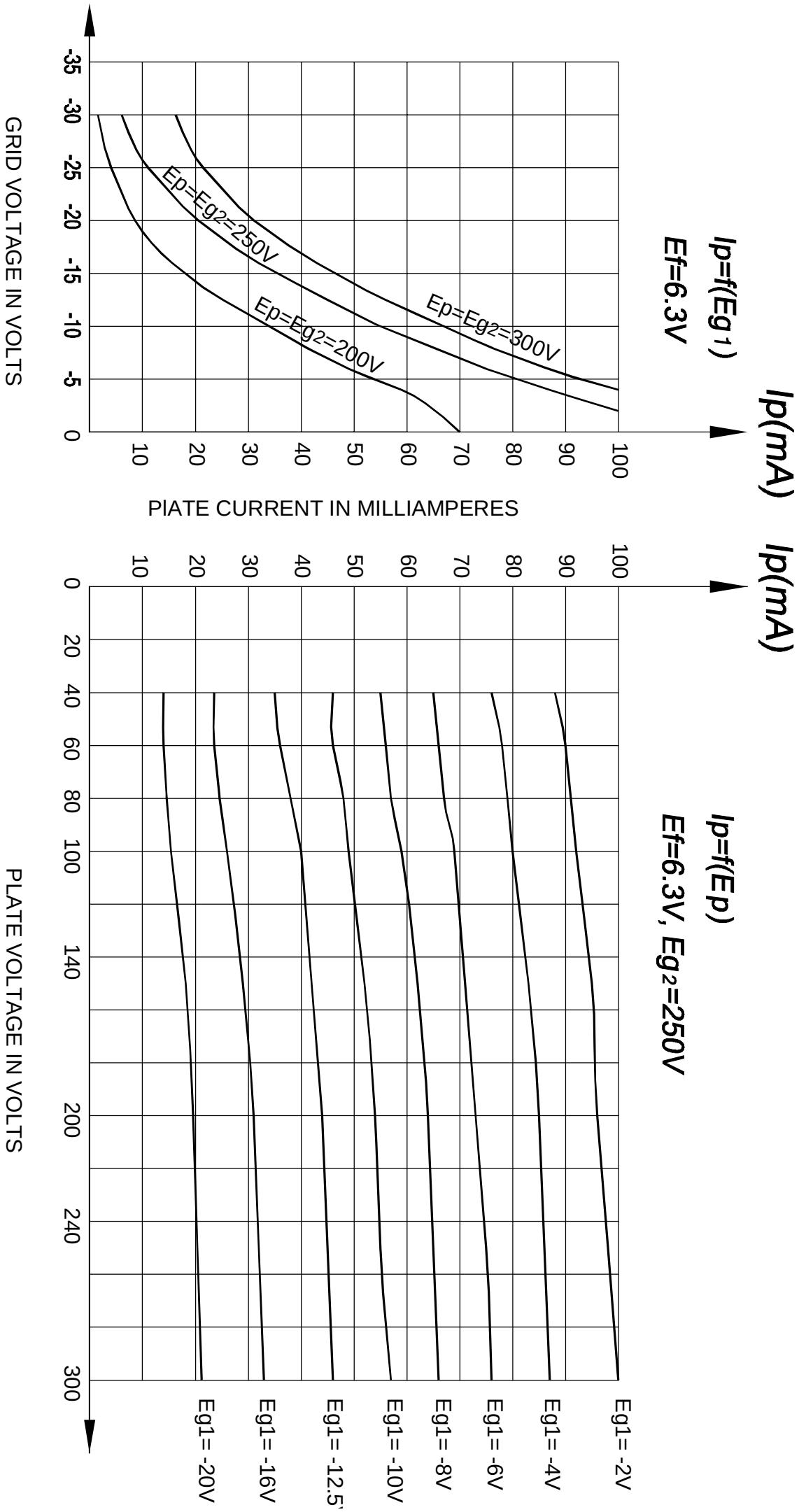
Lead designation	Name of electrode
1, 6	No
2, 7	Heater
3	Plate
4	Grid 2
5	Grid 1
8	Cathode, beam-forming screen

Electrical parameters

Parameters, conditions and units	Nominal	
	min	max
First grid reverse current, μA (at: filament voltage 6.3 V plate voltage 250 V, first grid voltage minus 12.5 V, second grid voltage 250 V, first grid circuit resistance 0.1 M Ω)	—	2.0
Heater current, mA	460	530
Plate current, mA (at: filament voltage 6.3 V, plate voltage 250 V, first grid voltage minus 12.5 V, second grid voltage 250 V)	33	59
Second grid current, mA (at: filament voltage 6.3 V, plate voltage 250 V, first grid voltage minus 12.5 V, second grid voltage 250 V)	—	8.0
Output power, W (at: filament voltage 6.3 V, plate voltage 250 V, first grid voltage minus 12.5 V, second grid voltage 250 V, plate circuit resistance 5.0 k Ω first grid alternating voltage, efficacious 8.8 V)	3.2	—
Output power at low voltage, W (at: filament voltage 5.7 V plate voltage 250 V, first grid voltage minus 12.5 V, second grid voltage 250 V, plate circuit resistance 5.0 k Ω first grid alternating voltage, efficacious 8.8 V)	2.9	—
Slope of characteristic, mA/V (at: filament voltage 6.3 V, anode voltage 250 V, first grid voltage minus 12.5 V, second grid voltage 250 V)	3.0	5.2
Cahtode - heater insulation resistance, M Ω (at: filament voltage 6.3 V, cathode -heater voltage ± 100 V)	2.0	—

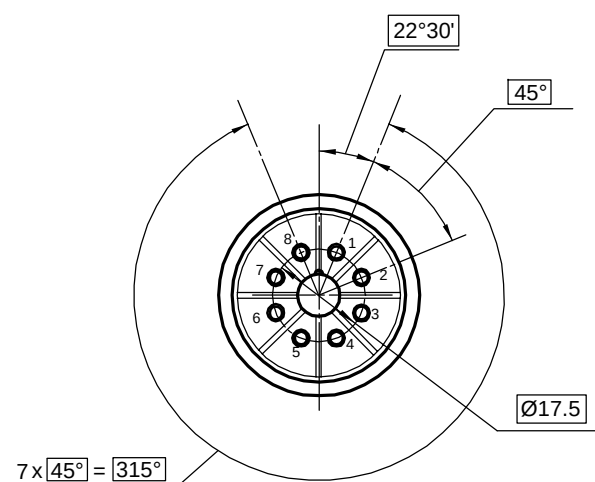
Operating conditions limits

Parameters, units	Nominal	
	min	max
Filament voltage, V	5.7	7.0
Plate voltage, V	—	350
Second grid voltage, V	—	310
Cathode - heater voltage, V	—	± 180
Power dissipation at the plate, W	—	13.2
Power dissipation at the second grid, W	—	2.2
First grid circuit resistance, M Ω fixed bias	—	0.1
self - bias	—	0.51
Temperature at the most heated part of the envelope, K $^{\circ}$	—	483

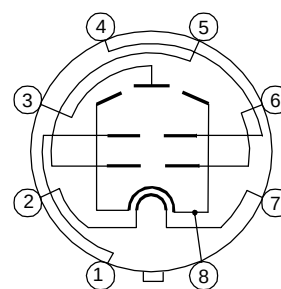


Vacuum tube 7027A Tung - Sol is a beam tetrode in the glass bulb with octal base, with equipotential cathode, designed to amplify low frequency power in the output stages of HI - FI audio.

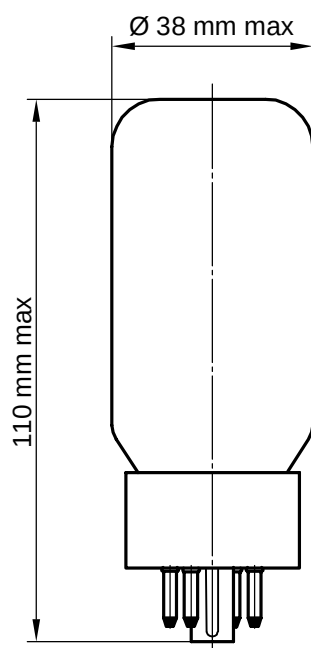
Pin arrangement



Electrode -to - lead connection diagram



Dimensions



Lead designation	Name of electrode
1, 4	Grid 2
2, 7	Heater
3	Plate
5, 6	Grid 1
8	Cathode, beam-forming screen

Parameters, conditions and units	Nominal	
	min	max
First grid reverse current, μA (at: filament voltage 6.3 V, plate voltage 350 V, first grid voltage minus 18.0 V, second grid voltage 250 V, first grid circuit resistance 0.1M Ω)	—	0.7
Heater current, A	0.845	1.06
Plate current, mA (at: filament voltage 6.3 V, plate voltage 350 V, first grid voltage minus 18.0 V, second grid voltage 250 V)	42	72
Second grid current, mA (at: filament voltage 6.3 V, plate voltage 350 V, first grid voltage minus 18.0 V, second grid voltage 250 V)	—	6.0
Output power, W (at: filament voltage 6.3 V, plate voltage 350 V, first grid voltage minus 18.0 V, second grid voltage 250 V, plate circuit resistance 4.2 k Ω first grid alternating voltage, efficacious 12.7 V)	8	—
First grid cut-off voltage, negative, V (at: filament voltage 6.3 V, plate voltage 350 V, second grid voltage 250 V,)	—	60
Slope of characteristic, mA/V (at: filament voltage 6.3 V, anode voltage 350 V, first grid voltage minus 18.0 V, second grid voltage 250 V)	4.2	7.0
Distortion factor,% (at: filament voltage 6.3 V, plate voltage 350 V, first grid voltage minus 18 V, second grid voltage 250 V, plate circuit resistance 4.2 kΩ, first grid alternating voltage,efficacious 12.7 V)	—	15.0
Cahtode - heater insulation resistance, M Ω (at: filament voltage 6.3 V, cathode -heater voltage ± 100 V)	2.0	—

Operating conditions limits.

Parameters, units	Nominal	
	min	max
Filament voltage, V	5.7	6.9
Cathode - heater voltage, V	—	± 200
Cathode current, mA	—	100
First grid voltage, negative, V	—	100
Power dissipation at the plate, W	—	35
Power dissipation at the second grid, W	—	5
First grid circuit resistance ,M Ω		
fixed bias	—	0.1
self - bias	—	0.51
Temperature at the most heated part of the envelope, K°	—	523

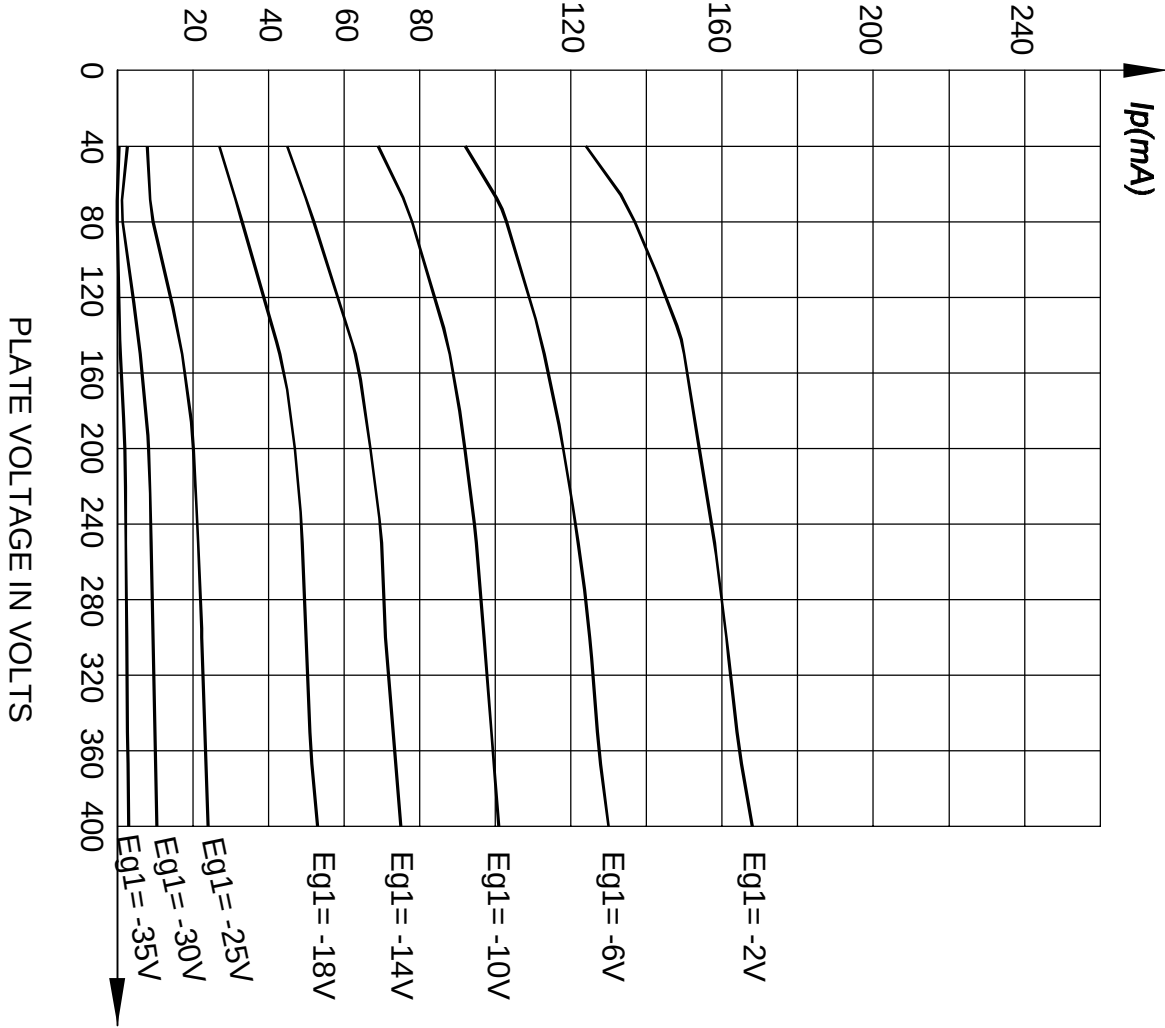
$I_p=f(E_{g1})$

$E_f=6.3V$



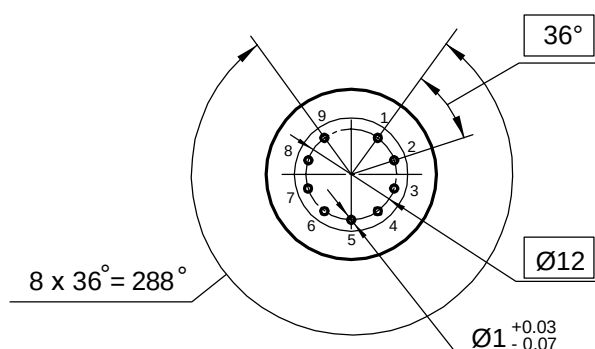
$I_p=f(E_p)$

$E_f=6.3V, E_{g2}=250V$

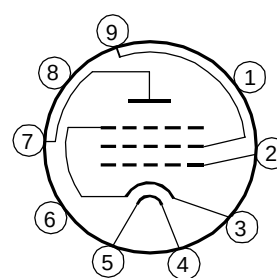


Vacuum tube 7189 Tung-Sol is a miniature pentode with equipotential cathode, designed to amplify low frequency power in the output stages of HI-FI audio.

Pin arrangement



Electrode -to - lead connection diagram



Dimensions



Lead designation	Name of electrode
1, 6, 8	Free
2	Grid 1
3	Cathode, Grid 3
4, 5	Heater
7	Plate
9	Grid 2

Electrical parameters

7189 Tung-Sol

Parameters, conditions and units	Nominal	
	min	max
First grid reverse current, μA (at: filament voltage 6.3 V, plate voltage 250 V, first grid voltage minus 6.6 V, second grid voltage 250 V, first grid circuit resistance 0.51 M Ω)	—	1.0
Heater current, mA	700	840
Plate current, mA (at: filament voltage 6.3 V, plate voltage 250 V, first grid voltage minus 6.6 V, second grid voltage 250 V)	34	68
Second grid current, mA (at: filament voltage 6.3 V, plate voltage 250 V, first grid voltage minus 6.6 V, second grid voltage 250 V)	—	8.0
Output power, W (at: filament voltage 6.3 V, plate voltage 250 V, first grid voltage minus 6.6 V, second grid voltage 250 V, plate circuit resistance 5.2 k Ω alternating first grid, efficacious 3.4 V)	3.0	—
Output power at low voltage, W (at: filament voltage 5.7 V, plate voltage 250 V, first grid voltage minus 6.6 V, second grid voltage 250 V, plate circuit resistance 5.2 k Ω first grid alternating voltage, efficacious 3.4 V)	2.0	—
Slope of characteristic, mA/V (at: filament voltage 6.3 V, plate voltage 250 V, first grid voltage minus 6.6 V, second grid voltage 250 V)	9.0	—
Distortion factor, % (at: filament voltage 6.3 V, plate voltage 250 V, first grid voltage minus 6.6 V, second grid voltage 250 V, plate circuit resistance 5.2 k Ω alternating first grid, efficacious 3.4 V)	—	10
Cathode - heater insulation resistance, M Ω (at: filament voltage 6.3 V cathode -heater voltage ± 100 V)	5.0	—

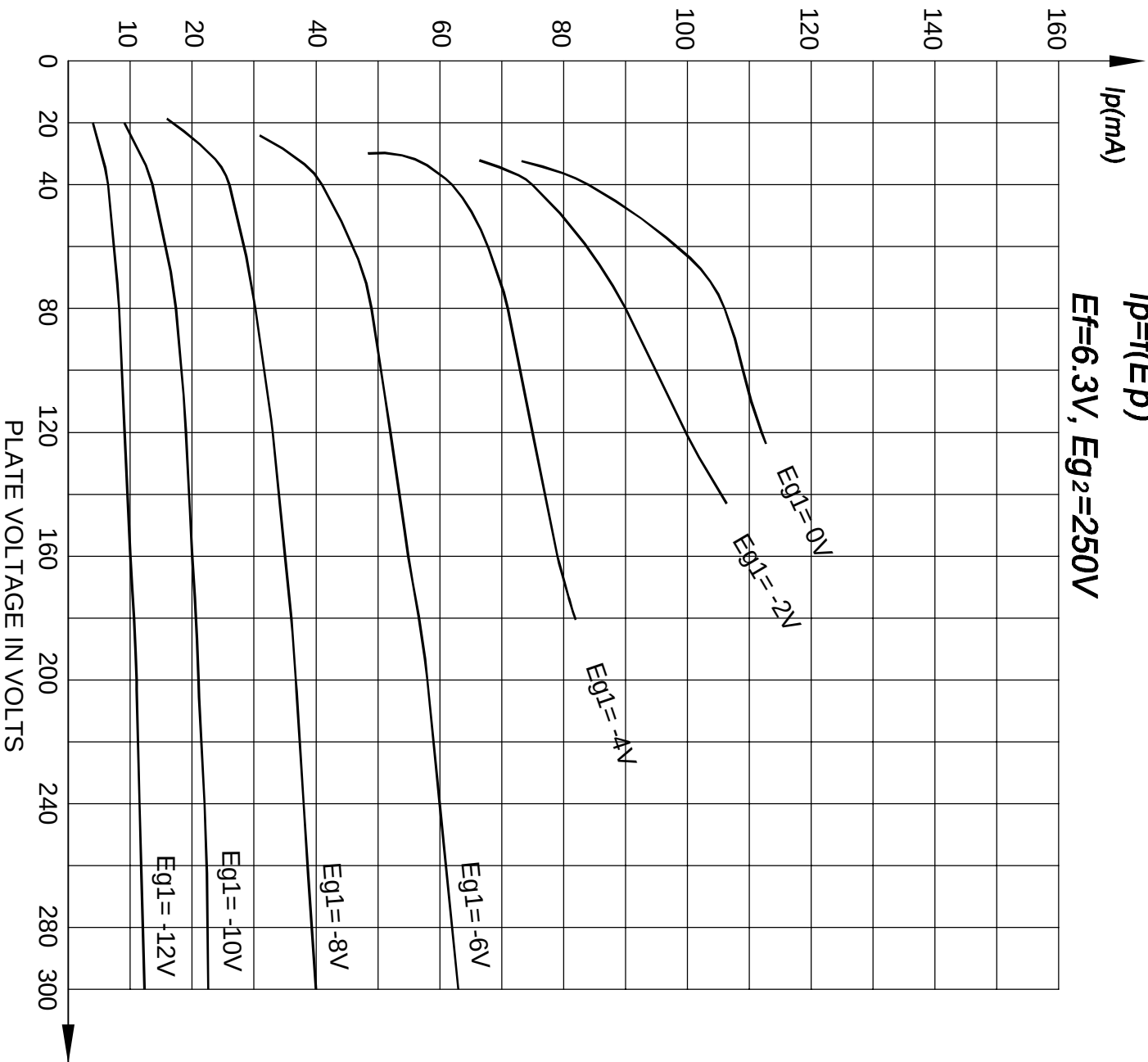
Limiting Values

Parameters, units	Nominal	
	min	max
Filament voltage, V	5.7	7.0
Plate voltage, V	—	400
Second grid voltage, V	—	300
Cathode - heater voltage, V	—	100
Cathode current, mA	—	65
Power dissipation at the plate, W	—	14
Power dissipation at the second grid, W	—	2.2
First grid circuit resistance, M Ω		
self - bias	—	1.0
fixed bias	—	0.51
Temperature at the most heated part of the envelope, K°	—	493

$I_p = f(E_{g1})$
 $E_f = 6.3V$

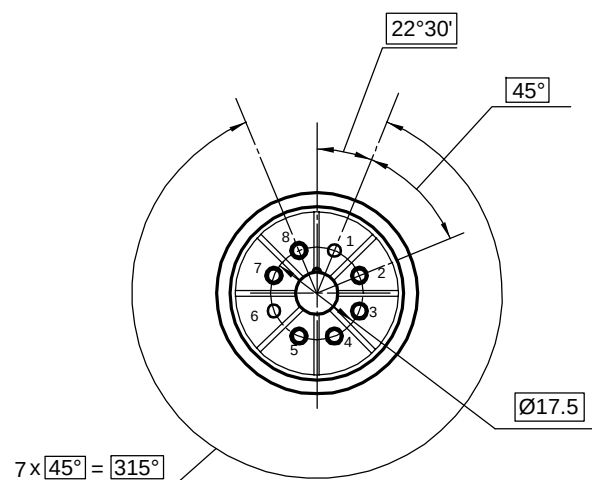


$I_p = f(E_p)$
 $E_f = 6.3V, E_{g2} = 250V$

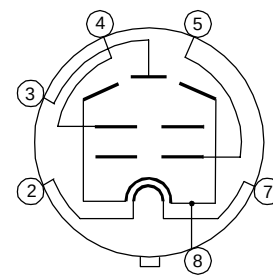


Vacuum tube 7581A Tung - Sol is a beam tetrode in the glass bulb with octal base, with equipotential cathode, designed to amplify low frequency power in the output stages of HI - FI audio.

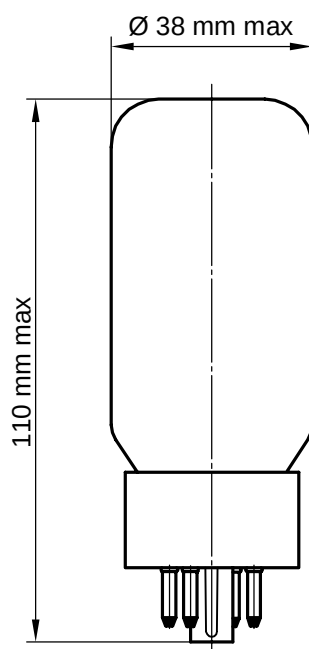
Pin arrangement



Electrode -to - lead connection diagram



Dimensions



Lead designation	Name of electrode
1, 6	No
2, 7	Heater
3	Plate
4	Grid 2
5	Grid 1
8	Cathode, beam-forming screen

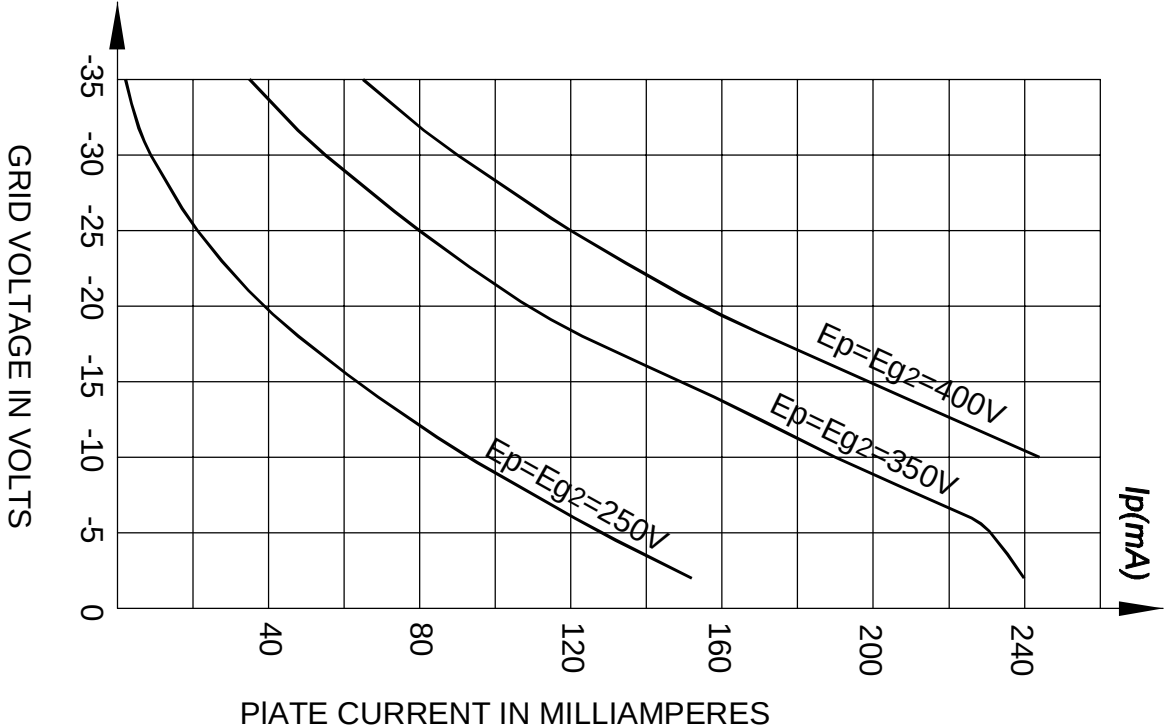
Parameters, conditions and units	Nominal	
	min	max
First grid reverse current, μA (at: filament voltage 6.3 V, plate voltage 350 V, first grid voltage minus 18.0 V, second grid voltage 250 V, first grid circuit resistance 0.1M Ω)	—	0.7
Heater current, A	0.845	1.06
Plate current, mA (at: filament voltage 6.3 V, plate voltage 350 V, first grid voltage minus 18.0 V, second grid voltage 250 V)	42	72
Second grid current, mA (at: filament voltage 6.3 V, plate voltage 350 V, first grid voltage minus 18.0 V, second grid voltage 250 V)	—	6.0
Output power, W (at: filament voltage 6.3 V, plate voltage 350 V, first grid voltage minus 18.0 V, second grid voltage 250 V, plate circuit resistance 4.2 k Ω first grid alternating voltage, efficacious 12.7 V)	8	—
First grid cut-off voltage, negative, V (at: filament voltage 6.3 V, plate voltage 350 V, second grid voltage 250 V)	—	60
Slope of characteristic, mA/V (at: filament voltage 6.3 V, anode voltage 350 V, first grid voltage minus 18.0 V, second grid voltage 250 V)	4.2	7.0
Distortion factor, % (at: filament voltage 6.3 V, plate voltage 350 V, first grid voltage minus 18 V, second grid voltage 250 V, plate circuit resistance 4.2 kΩ, first grid alternating voltage, efficacious 12.7 V)	—	15.0
Cahtode - heater insulation resistance, M Ω (at: filament voltage 6.3 V, cathode -heater voltage ± 100 V)	2.0	—

Operating conditions limits.

Parameters, units	Nominal	
	min	max
Filament voltage, V	5.7	6.9
Cathode - heater voltage, V	—	± 200
Cathode current, mA	—	100
First grid voltage, negative, V	—	100
Power dissipation at the plate, W	—	35
Power dissipation at the second grid, W	—	5
First grid circuit resistance ,M Ω		
fixed bias	—	0.1
self - bias	—	0.51
Temperature at the most heated part of the envelope, K°	—	523

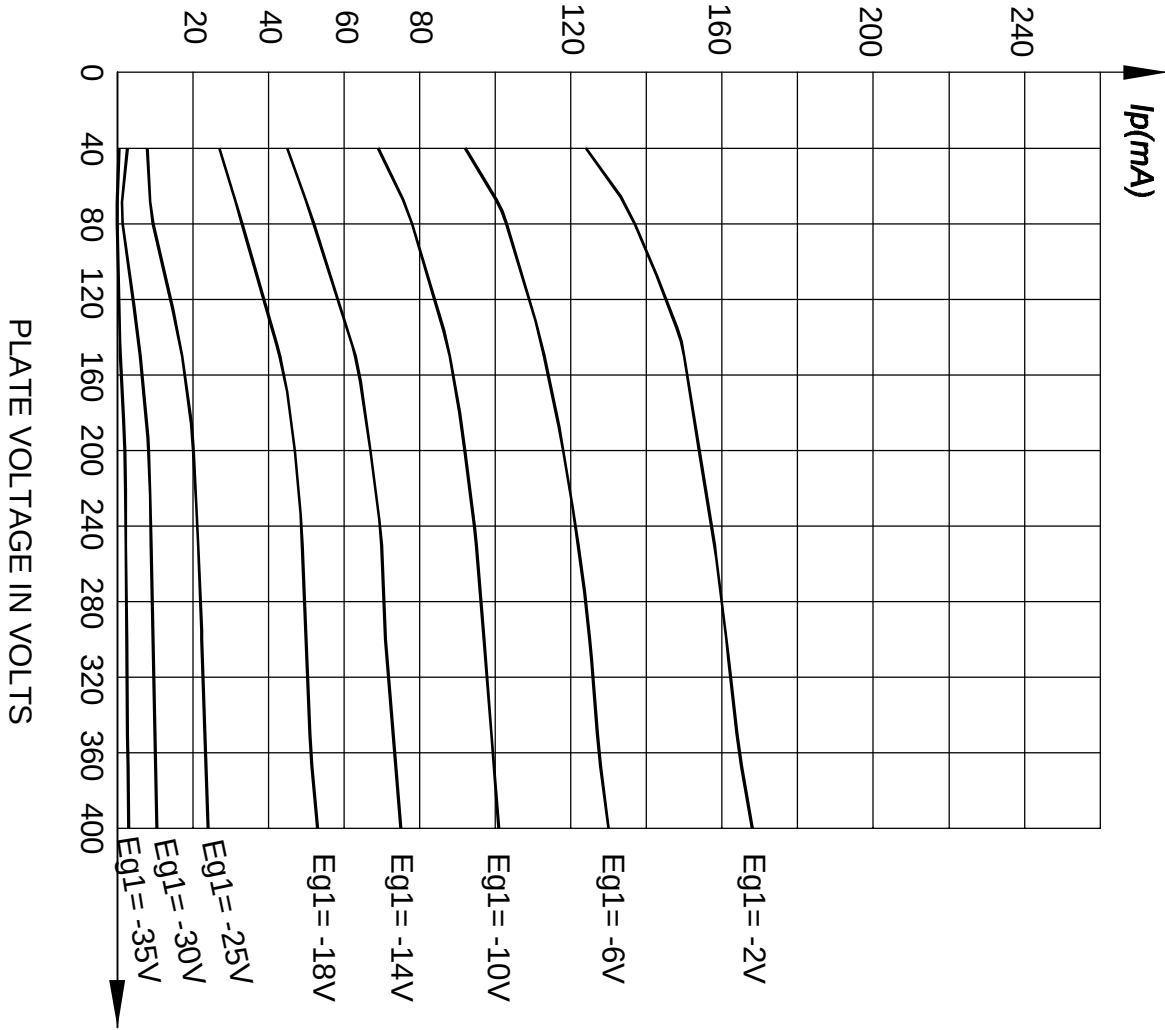
$I_p=f(E_{g1})$

$E_f=6.3V$



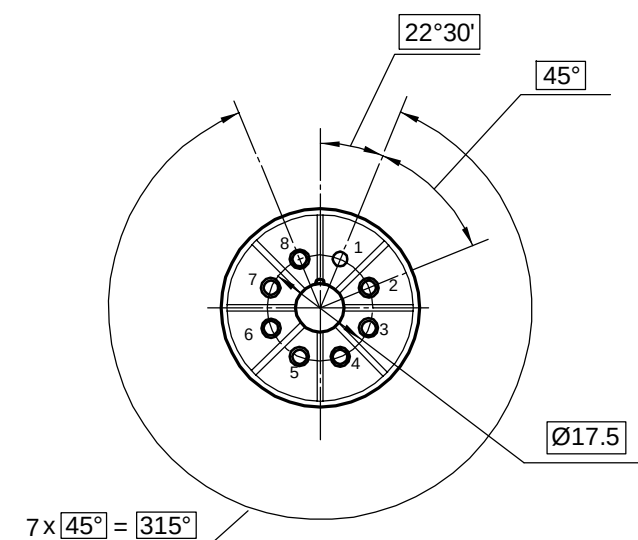
$I_p=f(E_p)$

$E_f=6.3V, E_{g2}=250V$

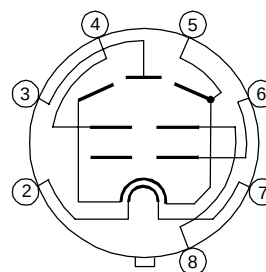


Vacuum tube 7591A Tung - Sol is a beam tetrode in the glass bulb with octal base, with equipotential cathode, designed to amplify low frequency power in the output stages of HI - FI audio.

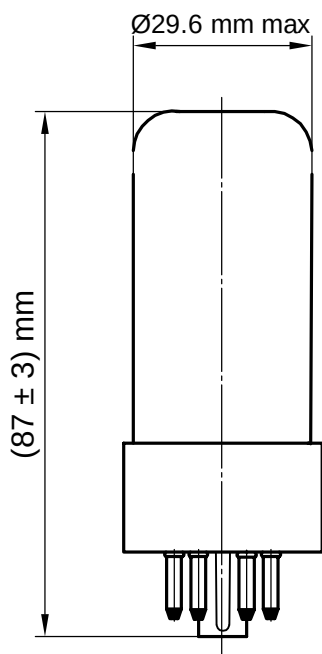
Pin arrangement



Electrode -to - lead connection diagram



Dimensions



Lead designation	Name of electrode
1	No
2, 7	Heater
3	Plate
4	Grid 2
5	Cathode, beam-forming screen
6	Grid 1
8	Grid 2

Parameters, conditions and units	Nominal	
	min	max
First grid reverse current, μA (at: filament voltage 6.3 V, plate voltage 300 V, first grid voltage minus 10.0 V, second grid voltage 300 V, first grid circuit resistance 0.3M Ω)	—	0.7
Heater current, A	0.7	0.9
Plate current, mA (at: filament voltage 6.3 V, plate voltage 300 V, first grid voltage minus 10.0 V, second grid voltage 300 V)	50	80
Second grid current, mA (at: filament voltage 6.3 V, plate voltage 300 V, first grid voltage minus 10.0 V, second grid voltage 300 V)	—	10
Output power, W (at: filament voltage 6.3 V, plate voltage 300 V, first grid voltage minus 10.0 V, second grid voltage 300 V, plate circuit resistance 3.0 k Ω first grid alternating voltage, efficacious 7.1 V)	7.0	—
First grid cut-off voltage, negative, V (at: filament voltage 6.3 V, plate voltage 300 V, second grid voltage 300 V,)	—	38
Slope of characteristic, mA/V (at: filament voltage 6.3 V, anode voltage 300 V, first grid voltage minus 10.0 V, second grid voltage 300 V)	8.4	11.4
Distortion factor, % (at: filament voltage 6.3 V, plate voltage 300 V, first grid voltage minus 10 V, second grid voltage 300 V, plate circuit resistance 3.0 k Ω, first grid alternating voltage, efficacious 7.1 V)	—	17.0
Cahtode - heater insulation resistance, M Ω (at: filament voltage 6.3 V, cathode -heater voltage ± 200 V)	6.6	—

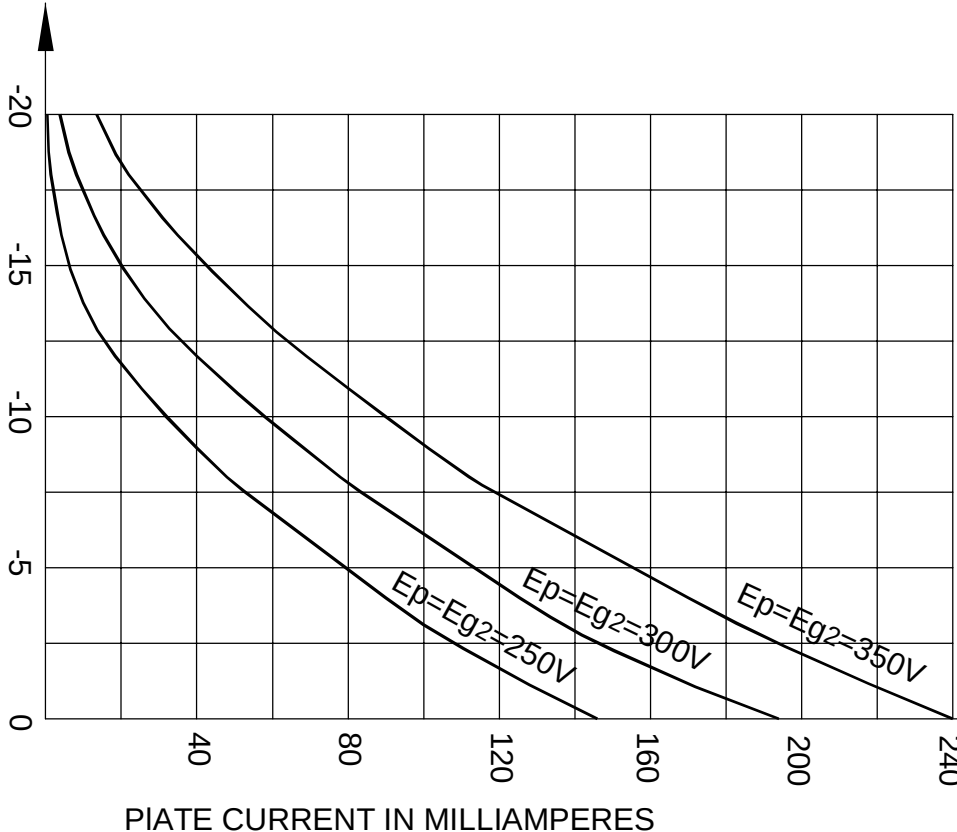
Operating conditions limits.

Parameters, units	Nominal	
	min	max
Filament voltage, V	5.7	7.0
Cathode - heater voltage, V	—	± 200
Cathode current, mA	—	90
Power dissipation at the plate, W	—	19
Power dissipation at the second grid, W	—	3.3
First grid circuit resistance ,M Ω		
fixed bias	—	0.3
self - bias	—	1.0
Temperature at the most heated part of the envelope, K°	—	513

$I_p=f(E_{g1})$

$E_f=6.3V$

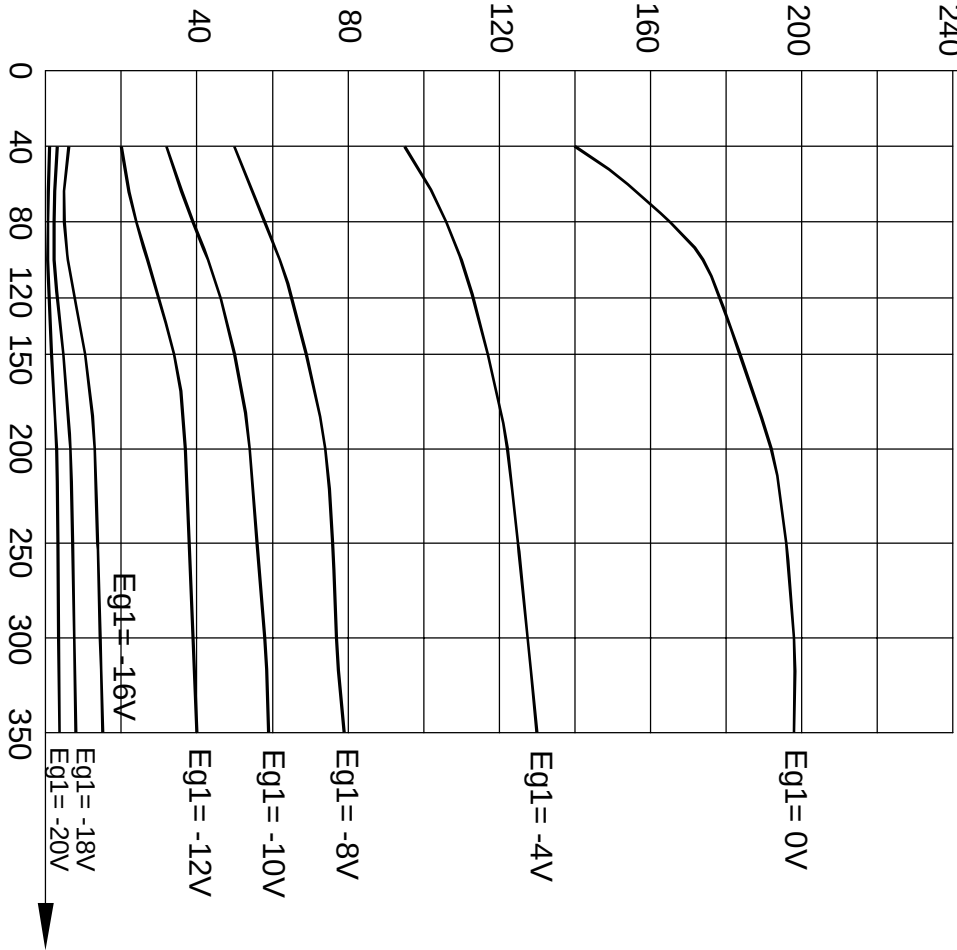
$I_p(mA)$



$I_p=f(E_p)$

$E_f=6.3V, E_{g2}=300V$

$I_p(mA)$

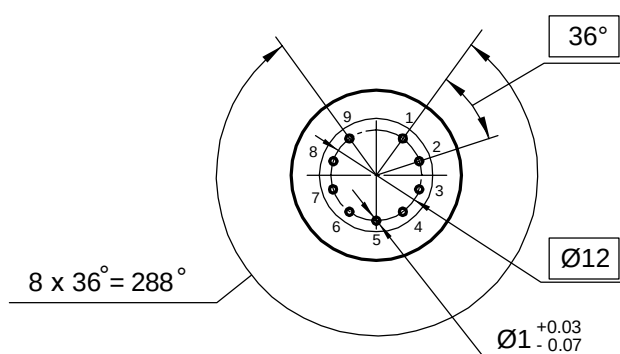


GRID VOLTAGE IN VOLTS

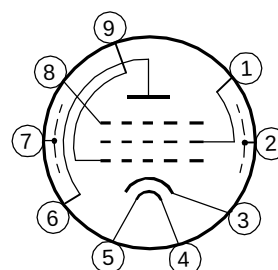
PLATE VOLTAGE IN VOLTS

Vacuum tube EF806SG Tung - sol gold is a miniature pentode with equipotential cathode, designed to work in the input stages of sound recording and sound reproducing equipment.

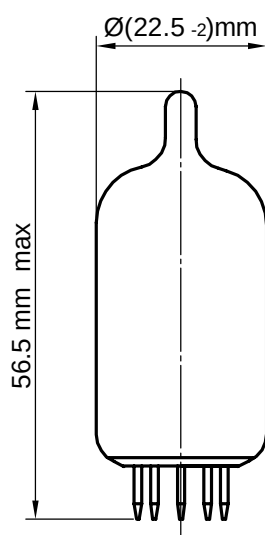
Pin arrangement



Electrode -to - lead connection diagram



Dimensions



Lead designation	Name of electrode
1	Grid 2
2, 7	Screen
3	Cathode
4, 5	Heater
6	Plate
8	Grid 3
9	Grid 1

Electrical parameters

Parameters, conditions and units	Nominal	
	min	max
First grid reverse current, μA (at: filament voltage 6.3 V, plate voltage 250 V, second grid voltage 140 V, resistance in cathode circuit 0.51 k Ω , resistance in first grid circuit 3 M Ω)	—	0.1
Heater current, mA	220	260
Plate current, mA (at: filament voltage 6.3 V, plate voltage 250 V, second grid voltage 140 V, resistance in cathode circuit 0.51 k Ω)	2.6	3.8
Second grid current, mA (at: filament voltage 6.3 V, plate voltage 250 V, second grid voltage 140 V, resistance in cathode circuit 0.51 k Ω)	0.45	0.8
Slope of characteristic, mA/V (at: filament voltage 6.3 V, plate voltage 250 V, second grid voltage 140 V, resistance in cathode circuit 0.51 k Ω)	1.6	2.4

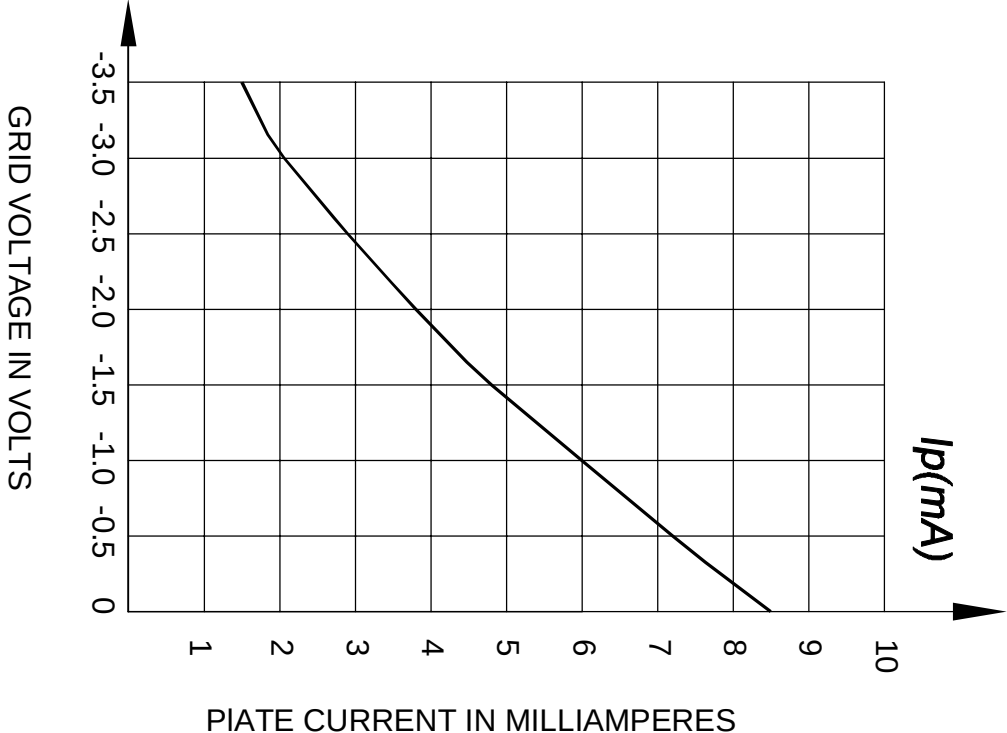
Limiting Values

Parameters, units	Nominal	
	min	max
Filament voltage, V	5.7	6.9
Plate voltage, V	—	300
Second grid voltage, V	—	200
Cathode - heater voltage, V	—	± 100
Cathode current, mA	—	6
Power dissipation at the plate, W	—	1
Power dissipation at the second grid, W	—	0.2
First grid circuit resistance, M Ω	—	3.0
Temperature at the most heated part of the envelope, K°	—	443

$I_p=f(E_{g1})$

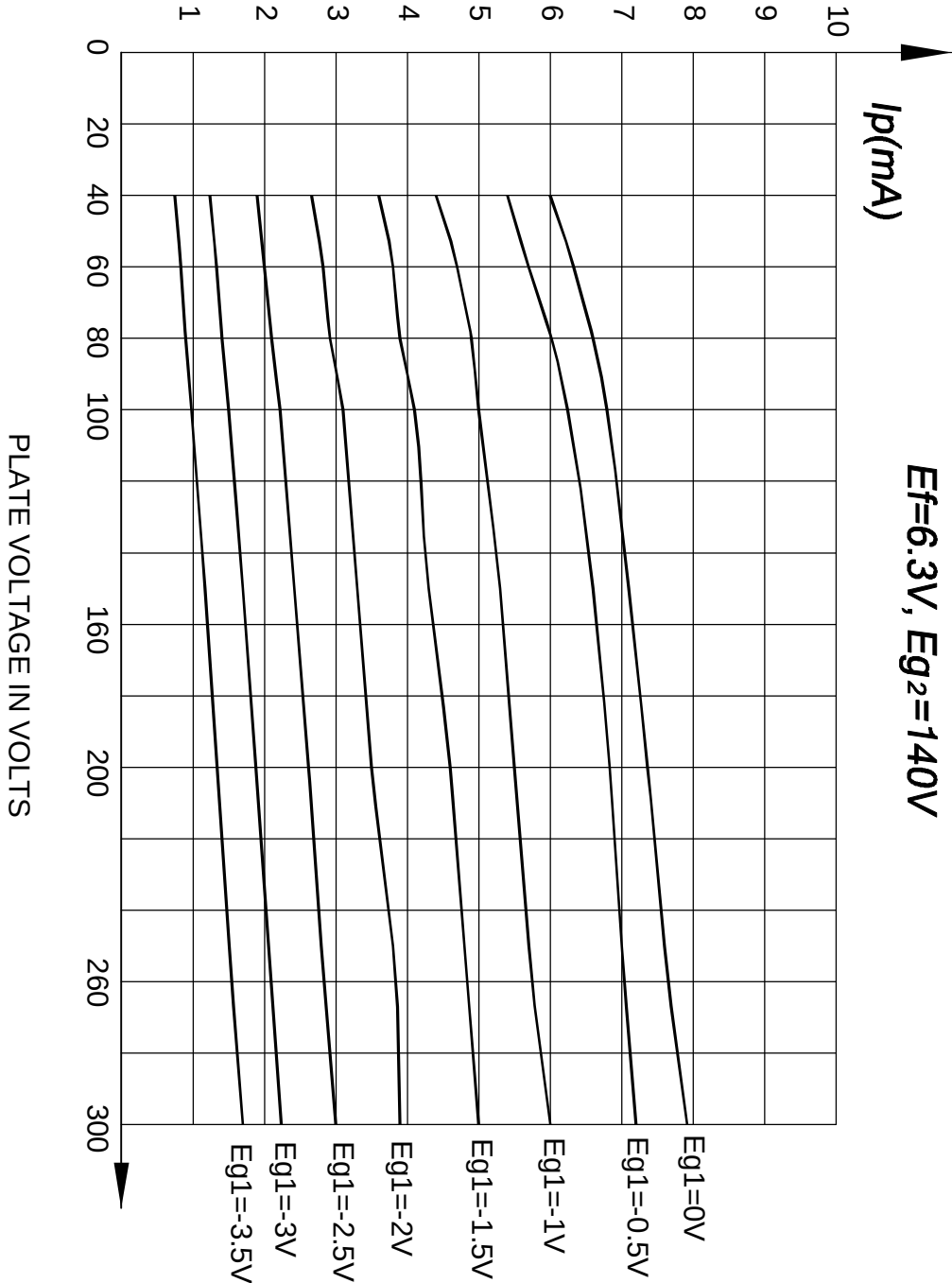
$E_f=6.3V, E_p=250V,$

$E_{g2}=140V$



$I_p=f(E_p)$

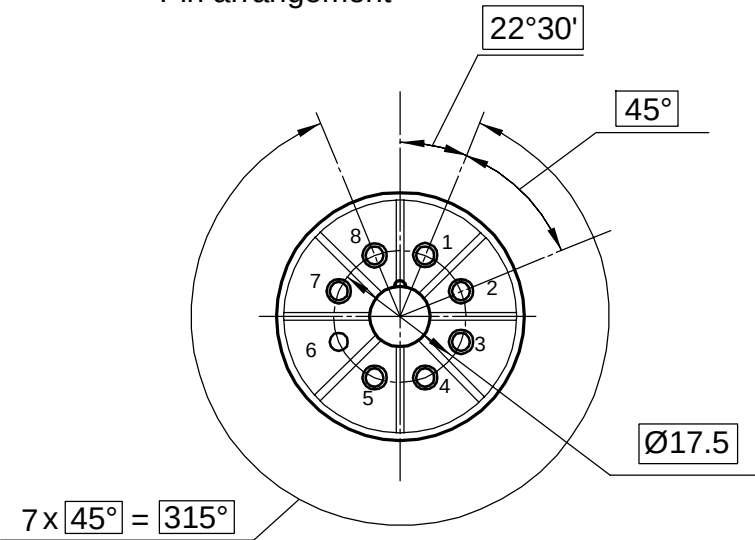
$E_f=6.3V, E_{g2}=140V$



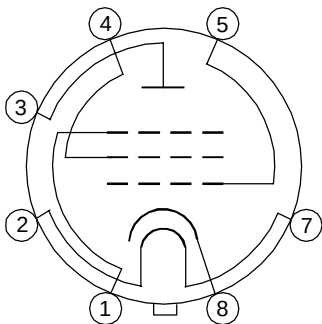
EL34B Tung-Sol

Vacuum tube EL34B Tung-Sol is a output pentod in the glass bulb, with equipotential cathode, designed to amplify low frequency power in the output stages of HI - FI audio.

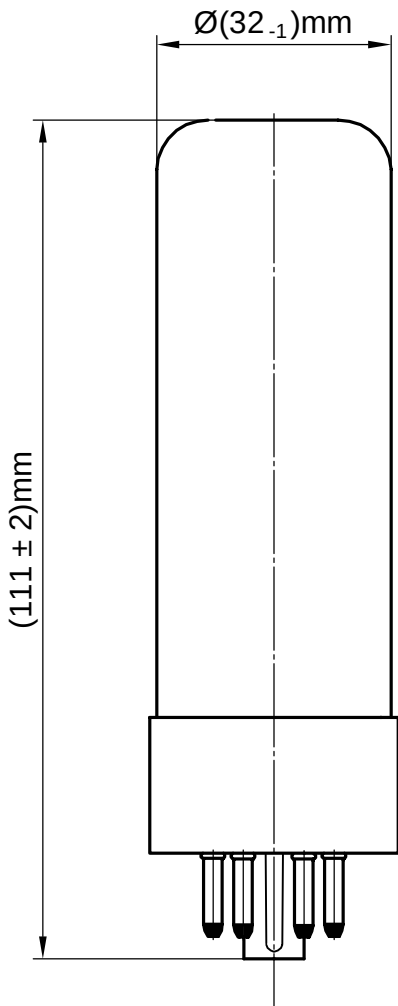
Pin arrangement



Electrode -to - lead connection diagram



Dimensions



Lead designation	Name of electrode
1	Grid 3
2, 7	Heater
3	Plate
4	Grid 2
5	Grid 1
6	No
8	Cathode

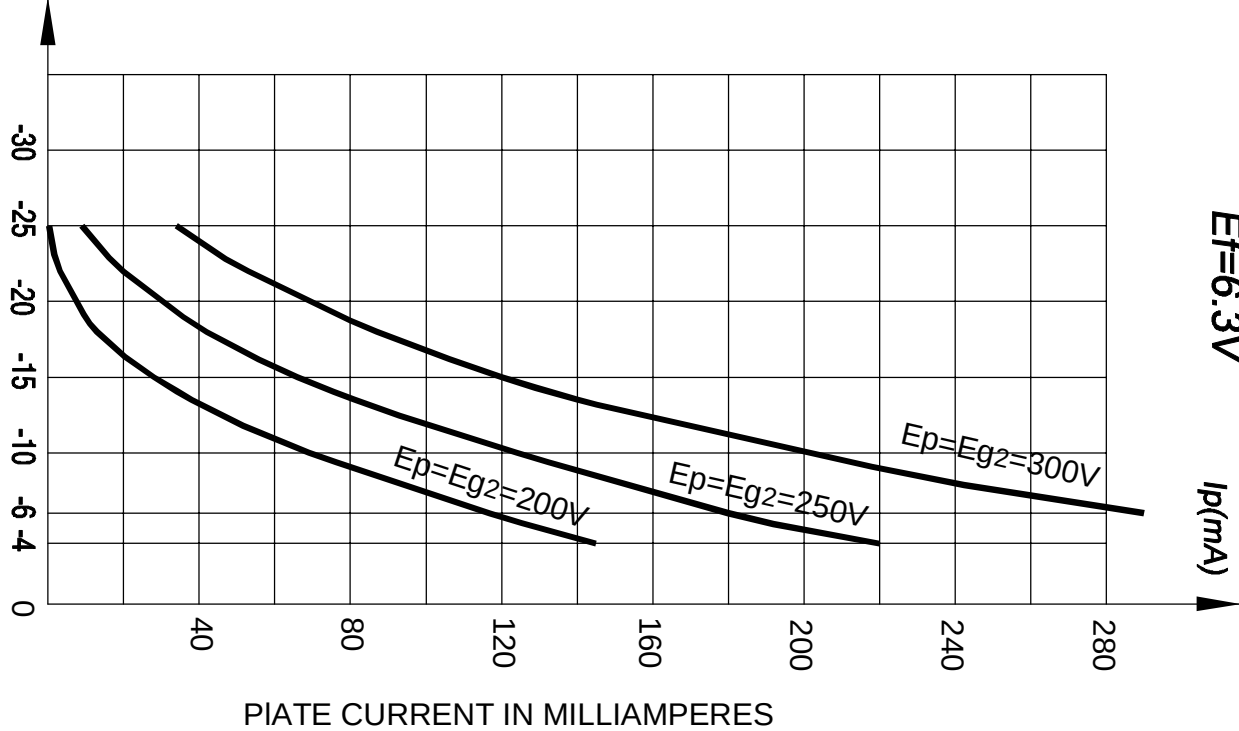
Parameters, conditions and units	Nominal	
	min	max
First grid reverse current, μA (at: filament voltage 6.3 V, plate voltage 250 V, first grid voltage minus 13.5 V, second grid voltage 265 V, first grid circuit resistance 0.51 M Ω)	—	1.5
Heater current, A	1.35	1.65
Plate current, mA (at: filament voltage 6.3 V, plate voltage 250 V, first grid voltage minus 13.5 V, second grid voltage 265 V)	80	130
Second grid current, mA (at: filament voltage 6.3 V, plate voltage 250 V, first grid voltage minus 13.5 V, second grid voltage 265 V)	10	20
Output power, W (at: filament voltage 6.3 V, plate voltage 250 V, first grid voltage minus 13.5 V, second grid voltage 265 V, plate circuit resistance 2.0 k Ω , first grid alternating voltage, efficacious 8.7 V)	8.5	—
First grid cut-off voltage, negative, V (at: filament voltage 6.3 V, plate voltage 250 V, second grid voltage 265 V)	—	38
Slope of characteristic, mA/V (at: filament voltage 6.3 V, anode voltage 250 V, first grid voltage minus 13.5 V, second grid voltage 265 V)	10	15
Distortion factor,% (at: filament voltage 6.3 V, plate voltage 265 V, first grid voltage minus 13.5 V, second grid voltage 265 V, plate circuit resistance 2.0 k Ω , first grid alternating voltage, efficacious 8.7 V)	—	13.5
Cahtode - heater insulation resistance, M Ω (at: filament voltage 6.3 V cathode -heater voltage ± 100 V)	2	—

Operating conditions limits

Parameters, units	Nominal	
	min	max
Filament voltage, V	5.5	7.0
Cathode - heater voltage, V	—	± 100
Cathode current, mA	—	150
Power dissipation at the plate, W	—	25
Power dissipation at the second grid, W	—	8
First grid circuit resistance, M Ω fixed bias	—	0.5
self - bias	—	0.7
Temperature at the most heated part of the envelope, K°	—	523

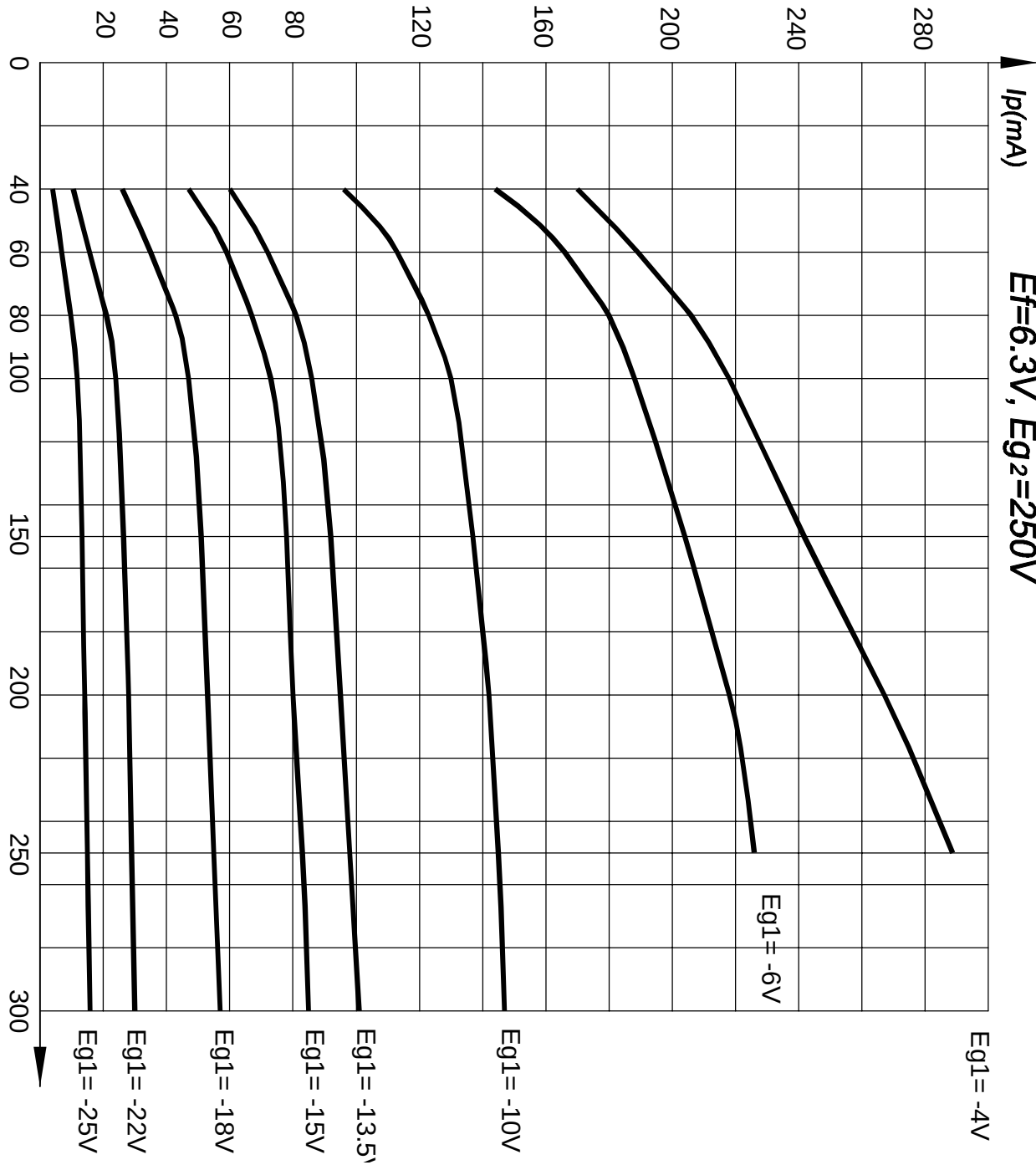
$I_p = f(E_{g1})$

$E_f = 6.3V$



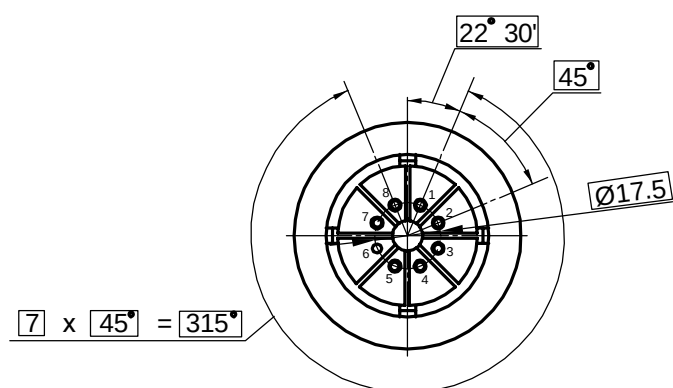
$I_p = f(E_p)$

$E_f = 6.3V, E_{g2} = 250V$

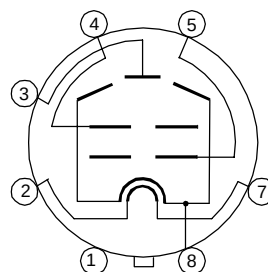


Vacuum tube KT120 Tung - Sol is a beam tetrode in the glass bulb with octal base, with equipotential cathode, designed to amplify low frequency power in the output stages of HI - FI audio.

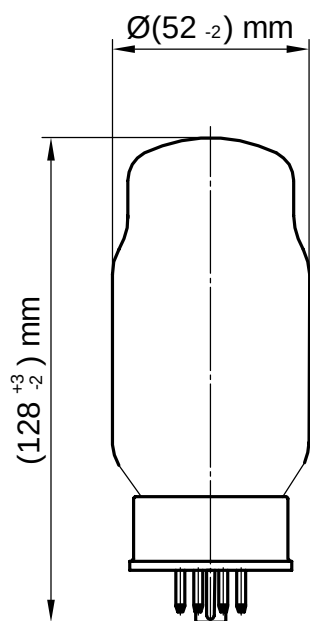
Pin arrangement



Electrode -to - lead connection diagram



Dimensions



Lead designation	Name of electrode
1	Outer metal screen
2, 7	Heater
3	Plate
4	Grid 2
5	Grid 1
6	No
8	Cathode, beam-forming screen

Electrical parameters

KT120 Tung - Sol

Parameters, conditions and units	Nominal	
	min	max
First grid reverse current, μA (at: filament voltage 6.3 V, plate voltage 400 V, first grid voltage minus 14.0 V, second grid voltage 225 V, first grid circuit resistance 0.51M Ω)	—	0.5
Heater current, A	1.65	1.95
Plate current, mA (at: filament voltage 6.3 V, plate voltage 400 V, first grid voltage minus 14.0 V, second grid voltage 225 V)	120	165
Second grid current, mA (at: filament voltage 6.3 V, plate voltage 400 V, first grid voltage minus 14.0 V, second grid voltage 225 V)	—	20
Output power, W (at: filament voltage 6.3 V, plate voltage 400 V, first grid voltage minus 14.0 V, second grid voltage 225 V, plate circuit resistance 3.0 k Ω first grid alternating voltage, efficacious 9.9 V)	18	—
First grid cut-off voltage, negative, V (at: filament voltage 6.3 V, plate voltage 400 V, second grid voltage 225 V,)	—	60
Slope of characteristic, mA/V (at: filament voltage 6.3 V, anode voltage 400 V, first grid voltage minus 14.0 V, second grid voltage 225 V)	11	—
Cahtode - heater insulation resistance, M Ω (at: filament voltage 6.3 V, cathode -heater voltage ± 300 V)	6.0	—

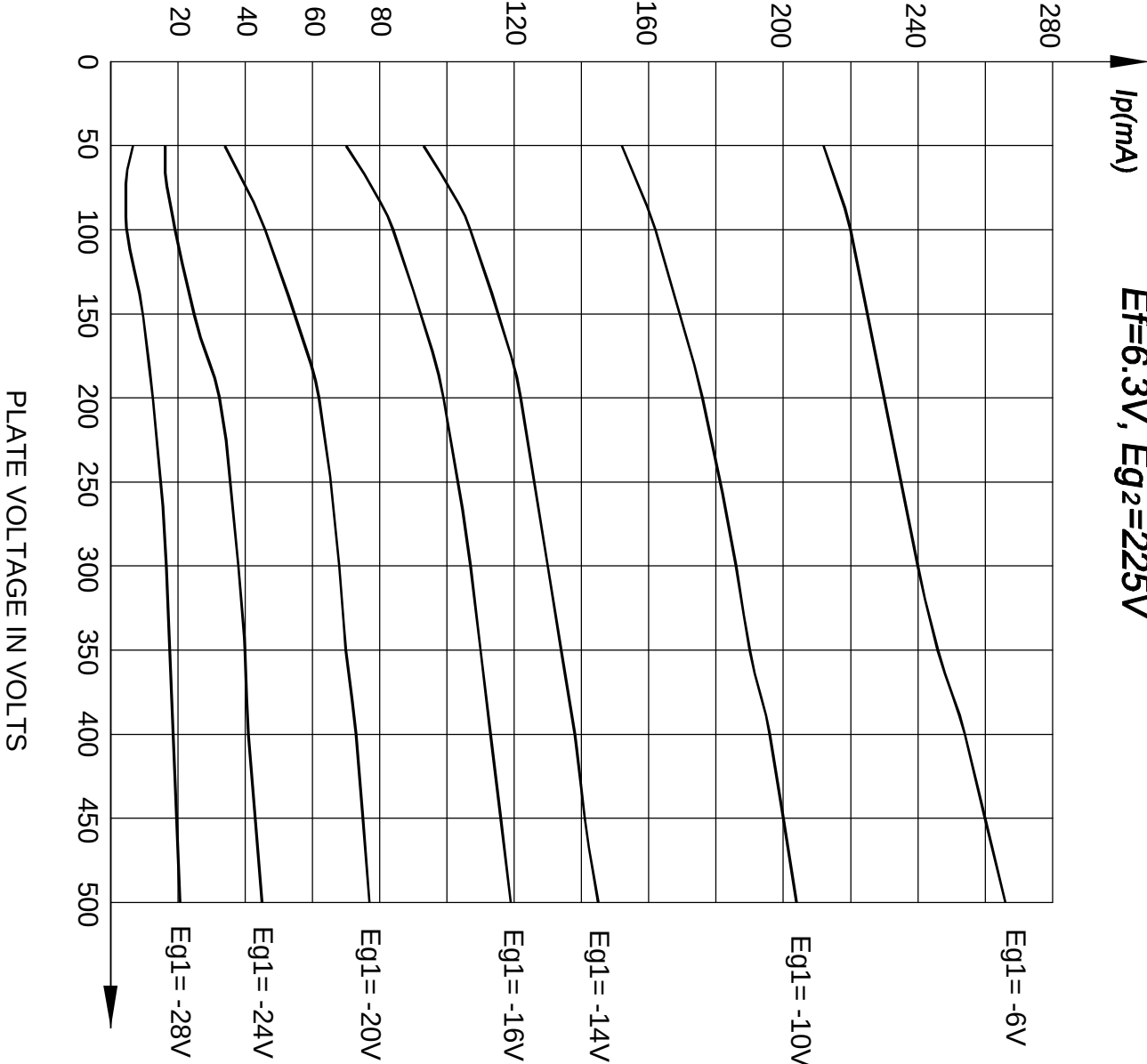
Operating conditions limits.

Parameters, units	Nominal	
	min	max
Filament voltage, V	6.0	6.6
Cathode - heater voltage, V	—	± 300
Cathode current, mA	—	250
First grid voltage, negative, V	—	200
Power dissipation at the plate, W	—	66
Power dissipation at the second grid, W	—	8
First grid circuit resistance ,M Ω	—	0.51
Temperature at the most heated part of the envelope, K°	—	523

$I_p = f(E_{g1})$
 $E_f = 6.3V$, $E_p = 400V$,
 $E_{g2} = 225V$

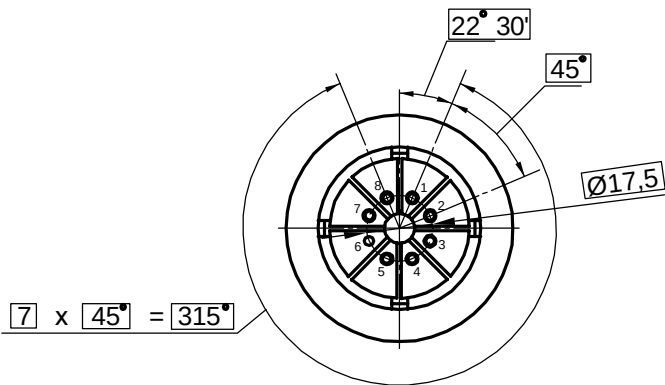


$I_p = f(E_p)$
 $E_f = 6.3V$, $E_{g2} = 225V$

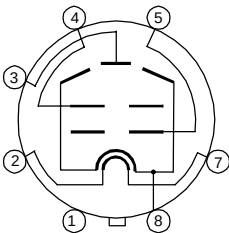


Vacuum tube KT150 Tung - Sol is a beam tetrode in original shape glass bulb with octal base,with equipotential cathode, designed to amplify low frequency power in the output stages of HI - FI audio.

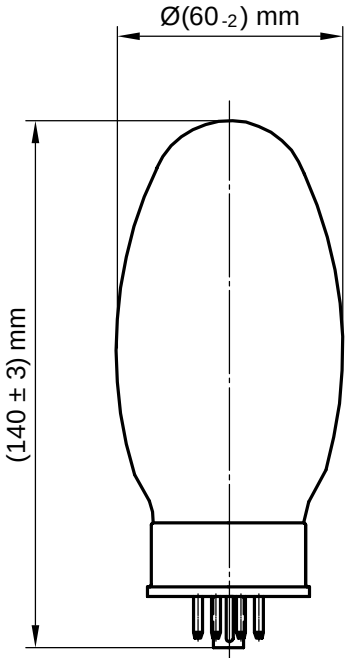
Pin arrangement



Electrode -to - lead connection diagram



Dimensions



Lead designation	Name of electrode
1	Outer metal screen
2, 7	Heater
3	Plate
4	Grid 2
5	Grid 1
6	Empty
8	Cathode, beam-forming screen

Electrical parameters

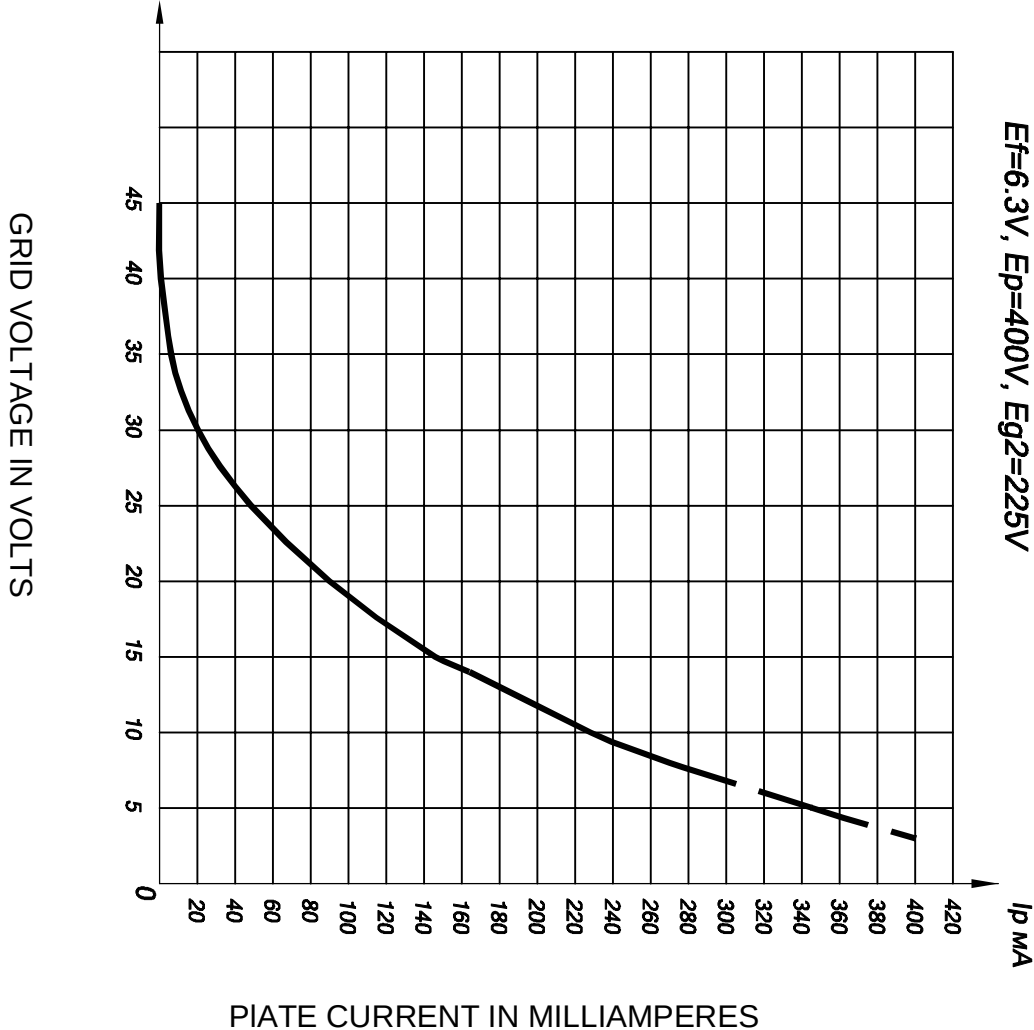
Parameters, conditions and units	Nominal	
	min	max
First grid reverse current, μA (at: filament voltage 6.3 V, plate voltage 400 V, first grid voltage minus 14.0 V, second grid voltage 225 V, first grid circuit resistance 0.51M Ω)	—	1.2
Heater current, A	1.75	2.0
Plate current, mA (at: filament voltage 6.3 V, plate voltage 400 V, first grid voltage minus 14.0 V, second grid voltage 225 V)	130	185
Second grid current, mA (at: filament voltage 6.3 V, plate voltage 400 V, first grid voltage minus 14.0 V, second grid voltage 225 V)	—	25
Output power, W (at: filament voltage 6.3 V, plate voltage 400 V, first grid voltage minus 14.0 V, second grid voltage 225 V, plate circuit resistance 3.0 k Ω , first grid alternating voltage, efficacious 9.9 V)	20	—
First grid cut-off voltage, negative, V (at: filament voltage 6.3 V, plate voltage 400 V, second grid voltage 225 V)	—	60
Slope of characteristic, mA/V (at: filament voltage 6.3 V, anode voltage 400 V, first grid voltage minus 14.0 V, second grid voltage 225 V)	12	—
Distortion factor, % (at: filament voltage 6.3 V, plate voltage 400 V, first grid voltage minus 14.0 V, second grid voltage 225 V, plate circuit resistance 3.0 k Ω , first grid alternating voltage, efficacious 9.9 V)	—	14.0
Cahtode - heater insulation resistance, M Ω (at: filament voltage 6.3 V, cathode -heater voltage ± 300 V)	6.0	—

Operating conditions limits

Parameters, units	Nominal	
	min	max
Filament voltage, V	6.0	6.6
Cathode - heater voltage, V	—	± 300
Cathode current, mA	—	275
First grid voltage, negative, V	—	200
Power dissipation at the plate, W	—	70
Power dissipation at the second grid, W	—	9
First grid circuit resistance, M Ω	—	0.51
Temperature at the most heated part of the envelope, K°	—	523

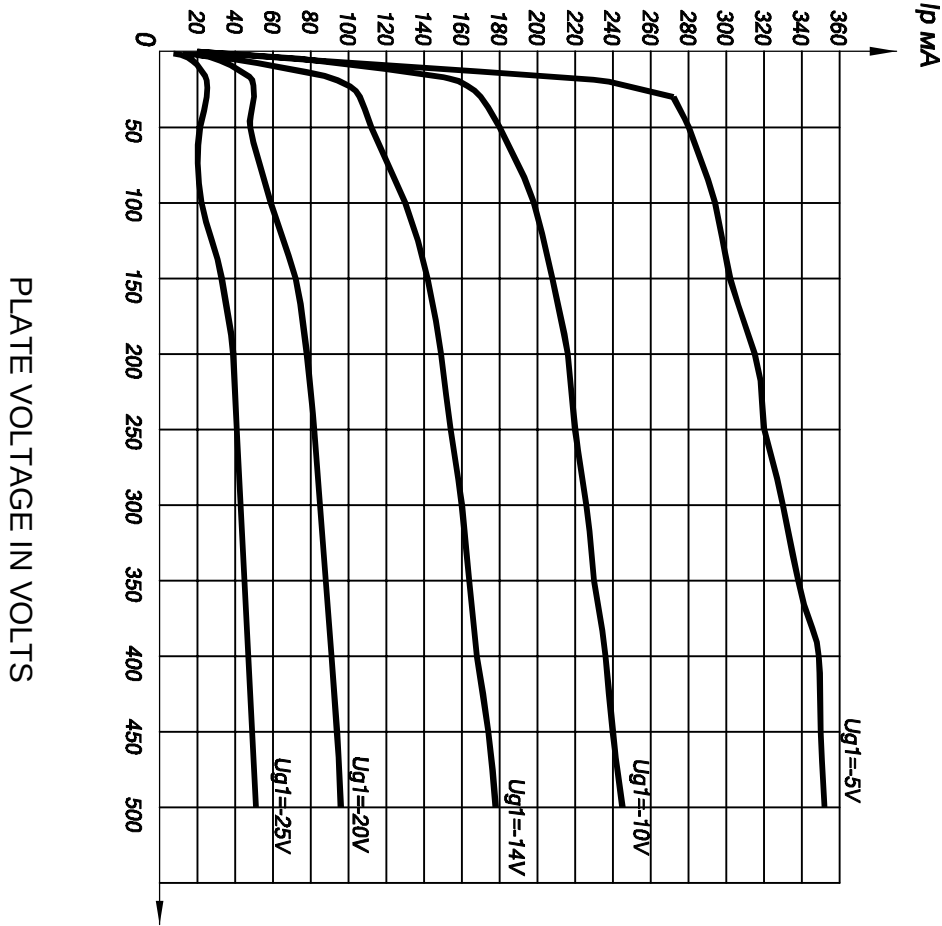
$I_p=f(E_{g1})$

$E_f=6.3V, E_p=400V, E_{g2}=225V$



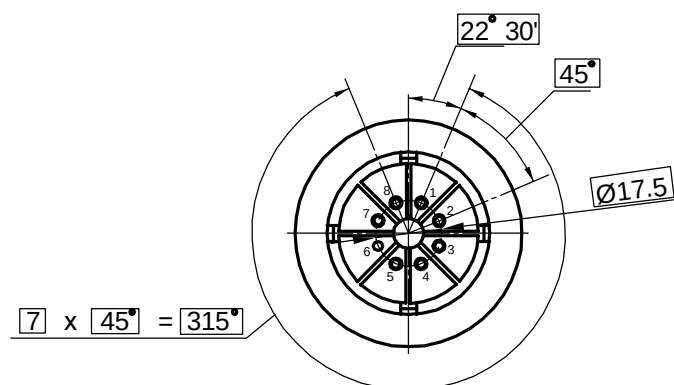
$I_p=f(E_p)$

$E_f=6.3V, E_{g2}=225V$

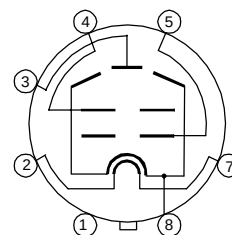


Vacuum tube KT170 Tung - Sol is a beam tetrode in original shape glass bulb with octal base, with equipotential cathode, designed to amplify low frequency power in the output stages of HI - FI audio.

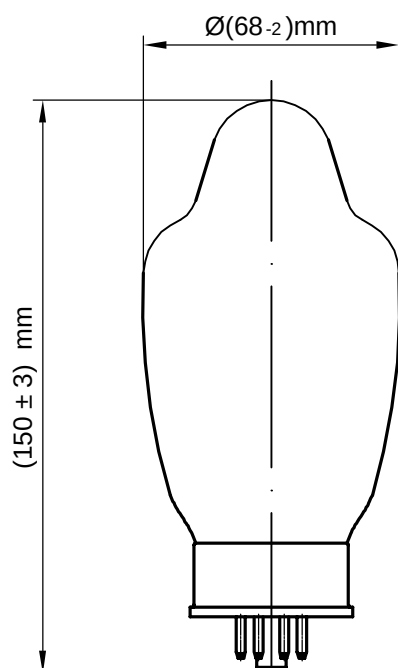
Pin arrangement



Electrode -to - lead connection diagram



Dimensions



Lead designation	Name of electrode
1	Outer metal screen
2, 7	Heater
3	Plate
4	Grid 2
5	Grid 1
6	Empty
8	Cathode, beam-forming screen

Electrical parameters

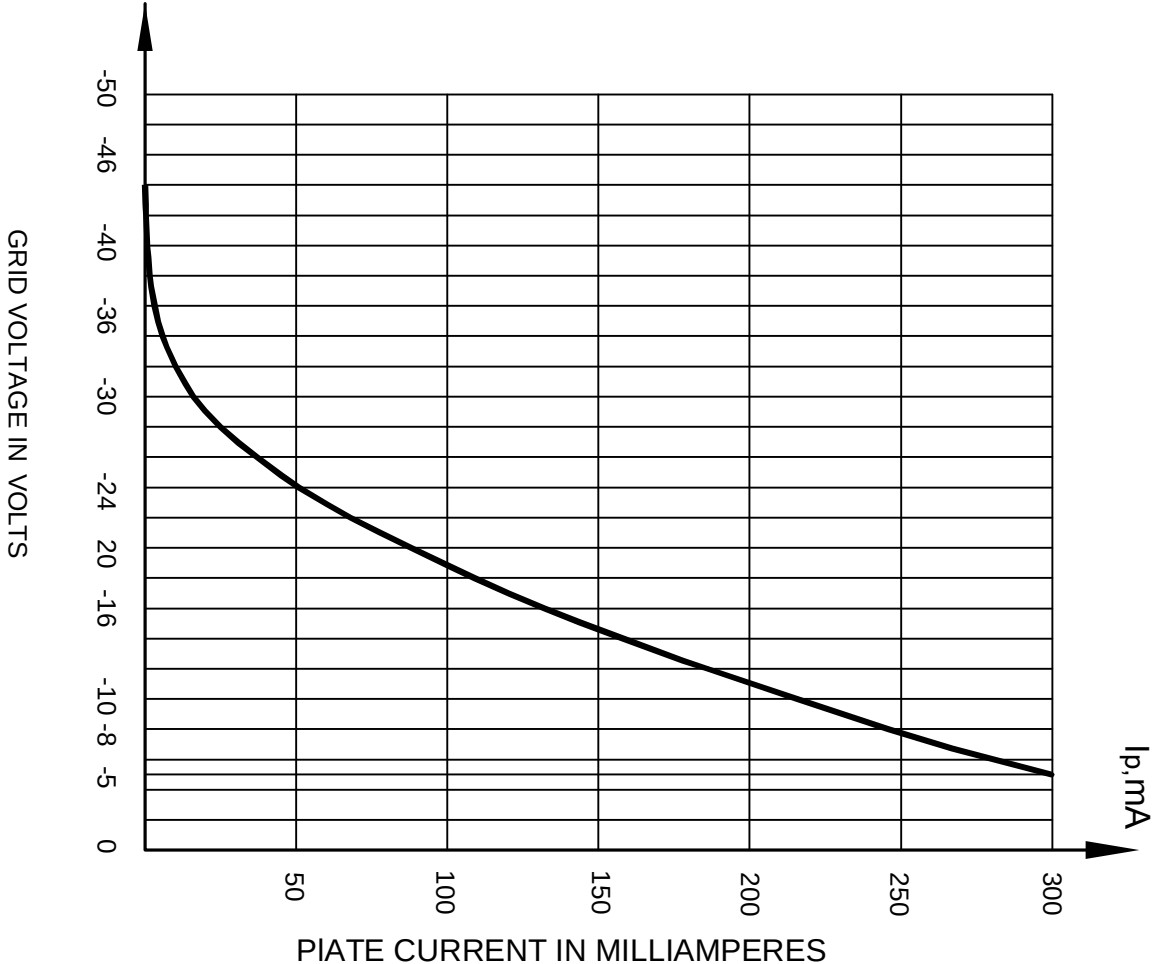
Parameters, conditions and units	Nominal	
	min	max
First grid reverse current, μA (at: filament voltage 6.3 V plate voltage 400 V, first grid voltage minus 14.0 V, second grid voltage 225 V, first grid circuit resistance 0.51M Ω)	—	1.2
Heater current, A	1.75	2.0
Plate current, mA (at: filament voltage 6.3 V plate voltage 400 V, first grid voltage minus 14.0 V, second grid voltage 225 V)	155	210
Second grid current, mA (at: filament voltage 6.3 V plate voltage 400 V, first grid voltage minus 14.0 V, second grid voltage 225 V)	—	25
Output power, W (at: filament voltage 6.3 V plate voltage 400 V, first grid voltage minus 14.0 V, second grid voltage 225 V, plate circuit resistance 3.0 k Ω first grid alternating voltage, efficacious 9.9 V)	24	—
First grid cut-off voltage, negative, V (at: filament voltage 6.3 V plate voltage 400 V, second grid voltage 225 V)	—	60
Slope of characteristic, mA/V (at: filament voltage 6.3 V anode voltage 400 V, first grid voltage minus 14.0 V, second grid voltage 225 V)	14	—
Distortion factor, % (at: filament voltage 6.3 V, plate voltage 400 V, first grid voltage minus 14.0 V, second grid voltage 225 V, plate circuit resistance 3.0 k first grid alternating voltage, efficacious 9.9 V)	—	15.0
Cahtode - heater insulation resistance, M Ω (at: filament voltage 6.3 V cathode -heater voltage ± 300 V)	6.0	—

Operating conditions limits

Parameters, units	Nominal	
	min	max
Filament voltage, V	6.0	6.6
Cathode - heater voltage, V	—	± 300
Cathode current, mA	—	300
First grid voltage, negative, V	—	200
Power dissipation at the plate, W	—	85
Power dissipation at the second grid, W	—	11
First grid circuit resistance, M Ω	—	0.51
Temperature at the most heated part of the envelope, K $^{\circ}$	—	523

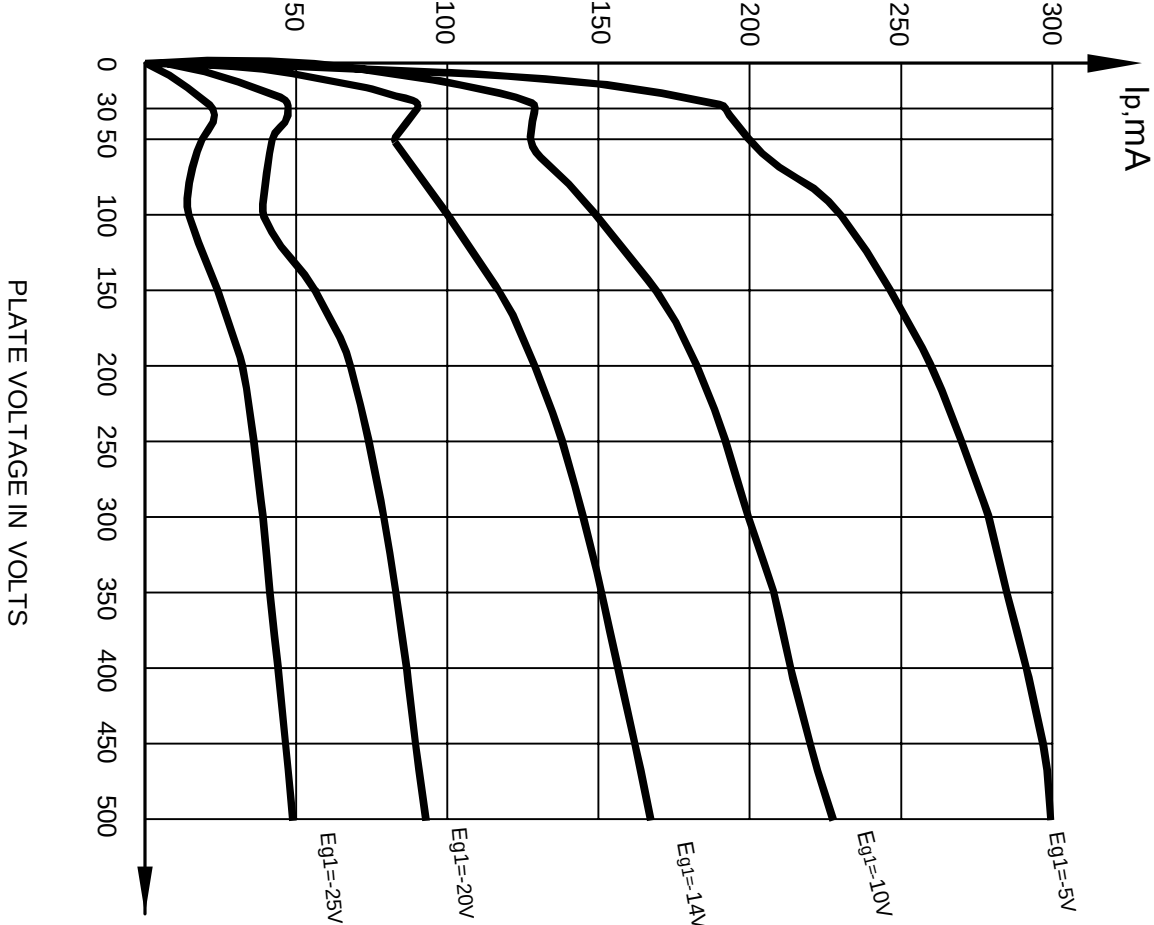
$I_p = f(E_{g1})$

$E_f = 6.3V$, $E_p = 400V$, $E_{g2} = 225V$



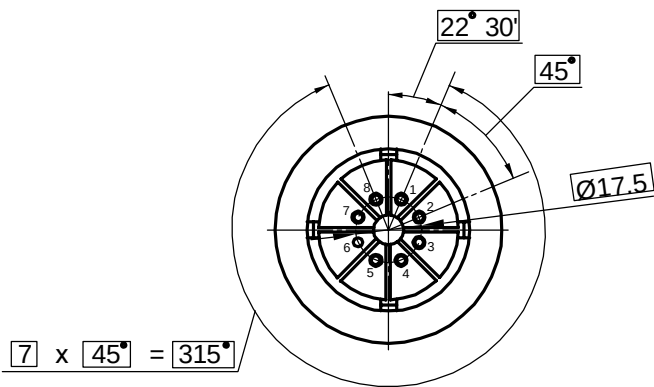
$I_p = f(E_p)$

$E_f = 6.3V$, $E_{g2} = 225V$

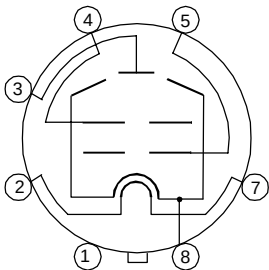


Vacuum tube KT66 Tung - Sol is a beam tetrode in the glass bulb with octal base,with equipotential cathode, designed to amplify low frequency power in the output stages of HI - FI audio.

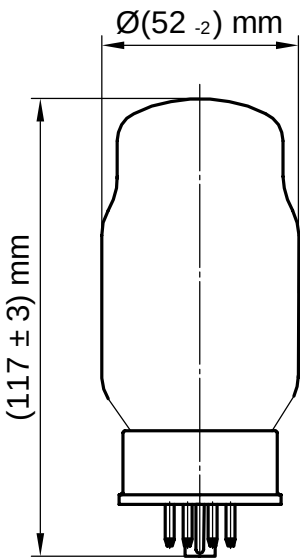
Pin arrangement



Electrode -to - lead connection diagram



Dimensions



Lead designation	Name of electrode
1	Outer metal screen
2, 7	Heater
3	Plate
4	Grid 2
5	Grid 1
6	No
8	Cathode, beam-forming screen

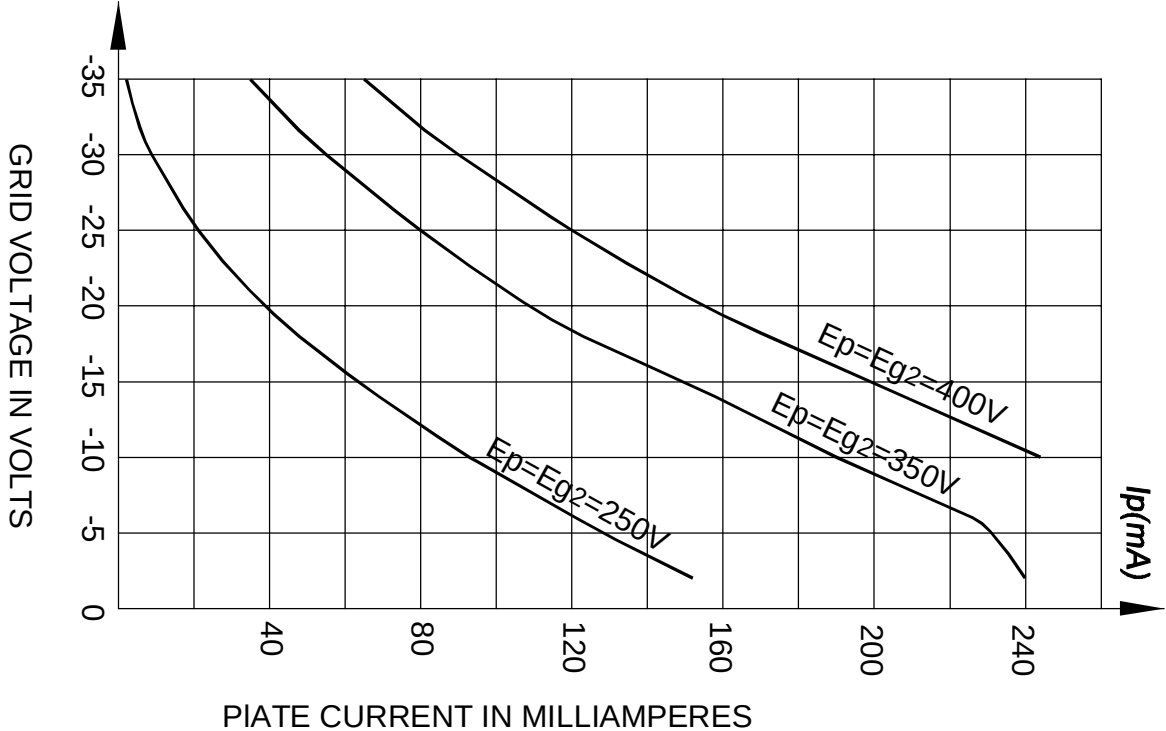
Parameters, conditions and units	Nominal	
	min	max
First grid reverse current, μA (at: filament voltage 6.3 V, plate voltage 350 V, first grid voltage minus 18.0 V, second grid voltage 250 V, first grid circuit resistance 0.1M Ω)	—	0.7
Heater current, A	0.845	1.06
Plate current, mA (at: filament voltage 6.3 V, plate voltage 350 V, first grid voltage minus 18.0 V, second grid voltage 250 V)	42	72
Second grid current, mA (at: filament voltage 6.3 V, plate voltage 350 V, first grid voltage minus 18.0 V, second grid voltage 250 V)	—	6.0
Output power, W (at: filament voltage 6.3 V, plate voltage 350 V, first grid voltage minus 18.0 V, second grid voltage 250 V, plate circuit resistance 4.2 k Ω first grid alternating voltage, efficacious 12.7 V)	8	—
First grid cut-off voltage, negative, V (at: filament voltage 6.3 V, plate voltage 350 V, second grid voltage 250 V,)	—	60
Slope of characteristic, mA/V (at: filament voltage 6.3 V, anode voltage 350 V, first grid voltage minus 18.0 V, second grid voltage 250 V)	4.2	7.0
Distortion factor,% (at: filament voltage 6.3 V, plate voltage 350 V, first grid voltage minus 18.0 V, second grid voltage 250 V, plate circuit resistance 4.2 k Ω first grid alternating voltage, efficacious 12.7 V)	—	16.0
Cahtode - heater insulation resistance, M Ω (at: filament voltage 6.3 V, cathode -heater voltage ± 100 V)	2.0	—

Operating conditions limits

Parameters, units	Nominal	
	min	max
Filament voltage, V	5.7	6.9
Cathode - heater voltage, V	—	± 200
Cathode current, mA	—	100
First grid voltage, negative, V	—	100
Power dissipation at the plate, W	—	30
Power dissipation at the second grid, W	—	5
First grid circuit resistance, M Ω fixed bias	—	0.1
self - bias	—	0.51
Temperature at the most heated part of the envelope, K°	—	523

$I_p=f(E_{g1})$

$E_f=6.3V$



$I_p=f(E_p)$

$E_f=6.3V, E_{g2}=250V$

