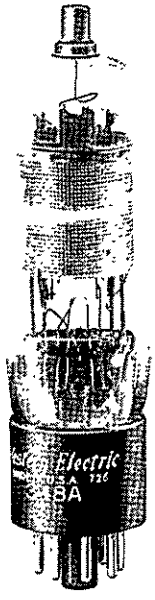
AB46.348A
Issue 2, February 1956
A.T.&T. Co. Standard

ELECTRON TUBE DATA SHEET
WESTERN ELECTRIC 348A ELECTRON TUBE



DESCRIPTION

The 348A is an indirectly heated cathode type pentode having a separate suppressor grid connection. It is intended for use in audio, carrier and radio-frequency voltage amplifiers, oscillators or modulators. It has special design features to minimize microphonic noise and hum. This tube, except for having a different base, top cap, heater voltage and current rating, is identical to the 310B.

CHARACTERISTICS

Heater Voltage		6.3 volts
Plate Current	E_b = 180 volts; E_{c2} = 135 volts; E_{c1} = -3 volts; E_{c3} = 0	5.5 milliamperes
Transconductance		1820 micromhos

File: General Purpose Section
Issue 3, 2-56

GENERAL CHARACTERISTICS

ELECTRICAL DATA

Heater Voltage	6.3 volts
Heater Current	0.50 ampere

Direct Interelectrode Capacitances	without external shield	with external shield (RETMA #311)
Grid to Plate (maximum)	0.016	*0.010 μμf
Input: g1 to (h+k+g2+g3+i.s.)	6.0	*7.0 μμf
Output: p to (h+k+g2+g3+i.s.)	13	*13 μμf

MECHANICAL DATA

Cathode	Coated unipotential
Bulb	ST12
Base	Small, 7-pin octal
Mounting Position	Any

Dimensions and pin connections shown in outline drawing on page 5

MAXIMUM RATINGS, Design-Center Values

Plate Voltage	250 volts
Screen Grid Voltage	180 volts
Plate Dissipation	2.0 watts
Screen Grid Dissipation	0.4 watt
Cathode Current	10 milliamperes
Heater-Cathode Voltage	30 volts

TYPICAL OPERATING CONDITIONS AND CHARACTERISTICS

Plate	135	180	250 volts
Screen Grid Voltage	135	135	135 volts
Control Grid Voltage	-3	-3	-3 volts
Suppressor Grid Voltage	0	0	0 volts
Plate Current	5.40	5.50	5.60 milliamperes
Screen Grid Current	1.20	1.18	1.17 milliamperes
Peak A-F Signal Voltage	3.00	1.50	2.10 volts
Plate Resistance	0.75	0.90	1.15 megohms
Transconductance	1800	1820	1840 micromhos
Load Resistance	20000	100000	100000 ohms
Power Output	250	150	310 milliwatts
Total Harmonic Distortion	8.5	6	6 per cent
Control Grid Voltage, Approximate, for Plate Current of 10 Microamperes	-9.5	-9.5	-9.5 volts

*With external shield (RETMA #311) connected to cathode pin.

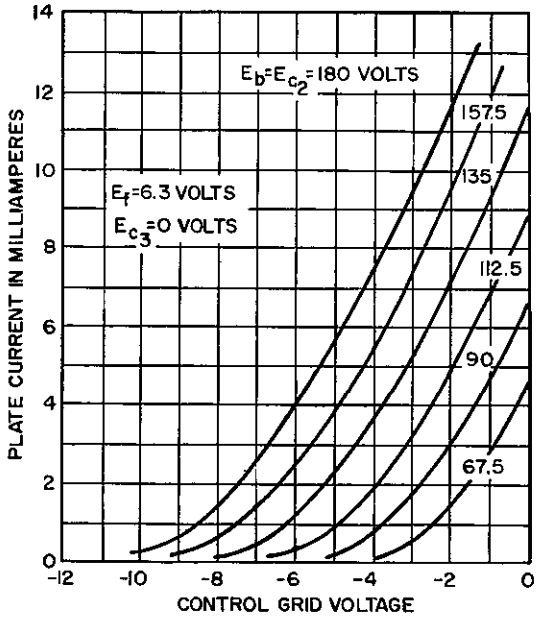
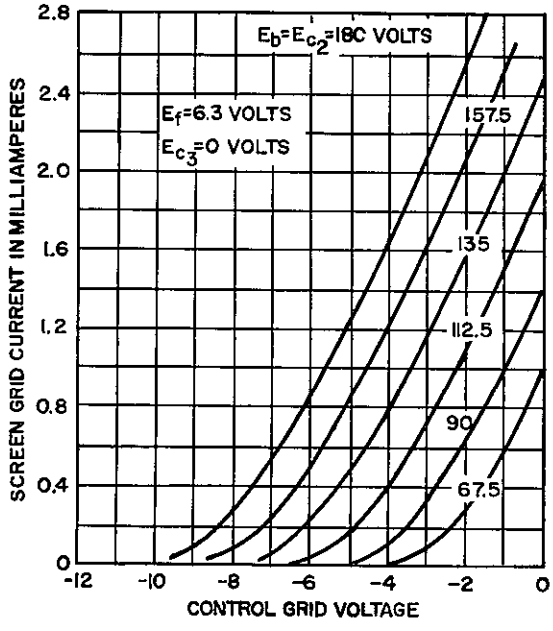
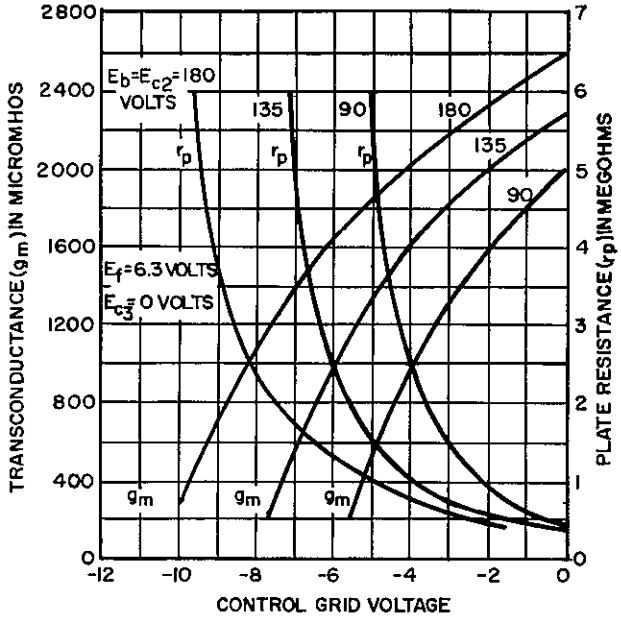
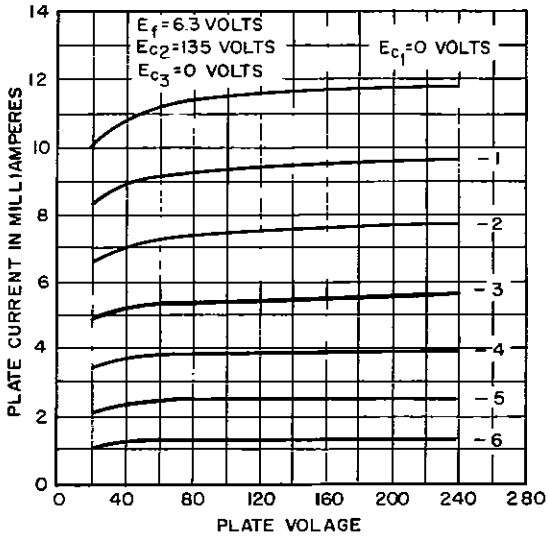
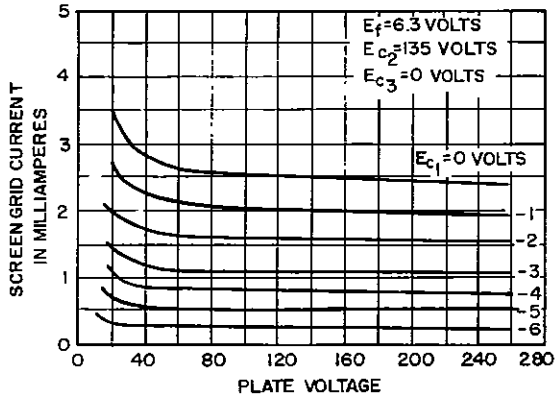


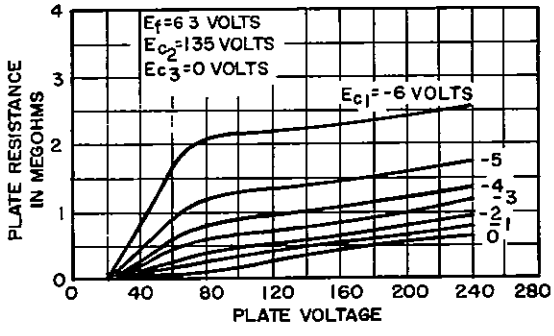
PLATE CURRENT IN MILLIAMPERES
CONTROL GRID VOLTAGE
Eb=Ec2=180 VOLTS
Ef=6.3 VOLTS
Ec3=0 VOLTS
157.5
135
112.5
90
67.5
14
12
10
8
6
4
2
0
-12
-10
-8
-6
-4
-2
0

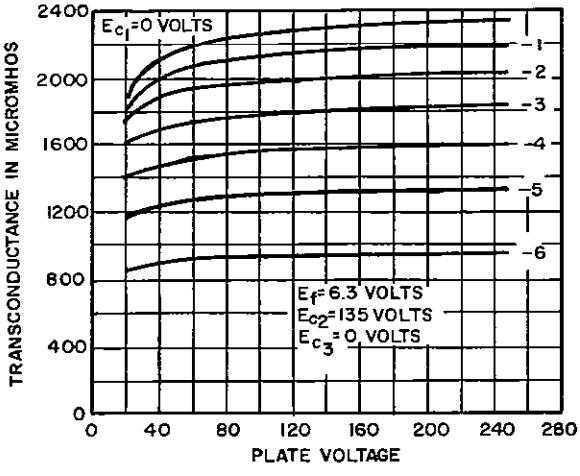

SCREEN GRID CURRENT IN MILLIAMPERES
CONTROL GRID VOLTAGE
Eb=Ec2=180 VOLTS
Ef=6.3 VOLTS
Ec3=0 VOLTS
157.5
135
112.5
90
67.5
2.8
2.4
2.0
1.6
1.2
0.8
0.4
0
-12
-10
-8
-6
-4
-2
0

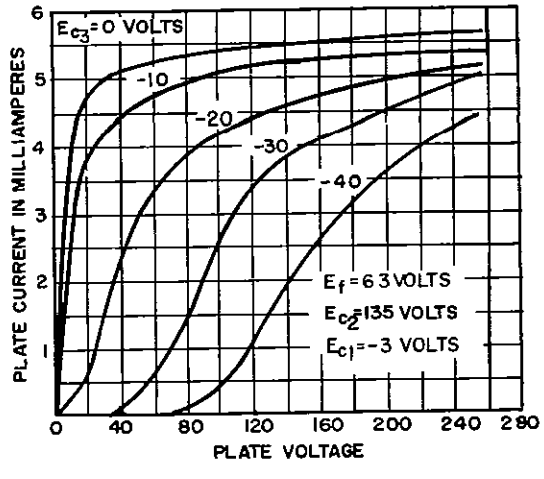

TRANSCONDUCTANCE(gm)IN MICROMHOS
PLATE RESISTANCE(rp)IN MEGOHMS
CONTROL GRID VOLTAGE
Eb=Ec2=180 VOLTS
Ef=6.3 VOLTS
Ec3=0 VOLTS
rp
gm
135
90
180
2800
2400
2000
1600
1200
800
400
0
7
6
5
4
3
2
1
0
-12
-10
-8
-6
-4
-2
0

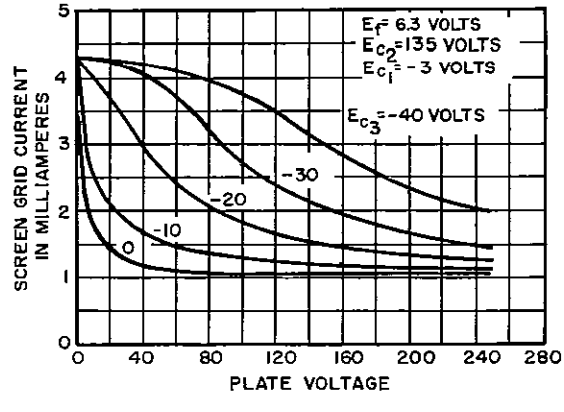

E_f=6.3 VOLTS
E_{c_2}=135 VOLTS
E_{c_3}=0 VOLTS
E_{c_1}=0 VOLTS
-1
-2
-3
-4
-5
-6
PLATE CURRENT IN MILLIAMPERES
PLATE VOLAGE


E_f=6.3 VOLTS
E_{c_2}=135 VOLTS
E_{c_3}=0 VOLTS
E_{c_1}=0 VOLTS
-1
-2
-3
-4
-5
-6
SCREEN GRID CURRENT IN MILLIAMPERES
PLATE VOLTAGE


E_f=6.3 VOLTS
E_{c_2}=135 VOLTS
E_{c_3}=0 VOLTS
E_{c_1}=-6 VOLTS
-5
-4
-3
-2
-1
0
PLATE RESISTANCE IN MEGOHMS
PLATE VOLTAGE


E_{c_1}=0 VOLTS
-1
-2
-3
-4
-5
-6
E_f=6.3 VOLTS
E_{c_2}=135 VOLTS
E_{c_3}=0 VOLTS
TRANSCONDUCTANCE IN MICROMHOS
PLATE VOLTAGE


E_{c_3}=0 VOLTS
-10
-20
-30
-40
E_f=6.3 VOLTS
E_{c_2}=135 VOLTS
E_{c_1}=-3 VOLTS
PLATE CURRENT IN MILLIAMPERES
PLATE VOLTAGE


E_f=6.3 VOLTS
E_{c_2}=135 VOLTS
E_{c_1}=-3 VOLTS
E_{c_3}=-40 VOLTS
-30
-20
-10
0
SCREEN GRID CURRENT IN MILLIAMPERES
PLATE VOLTAGE

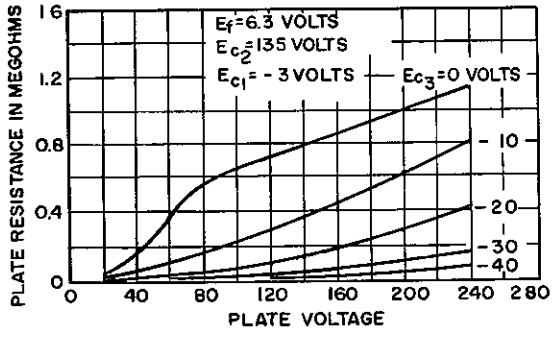
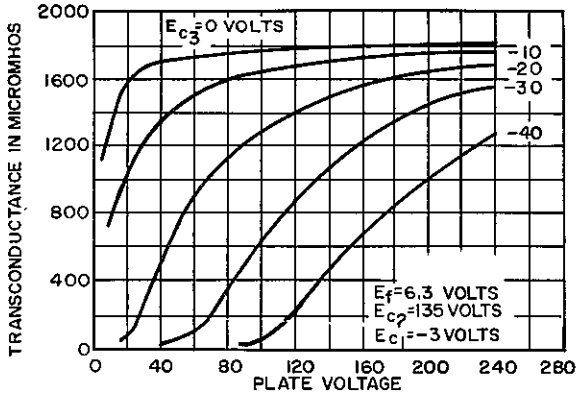
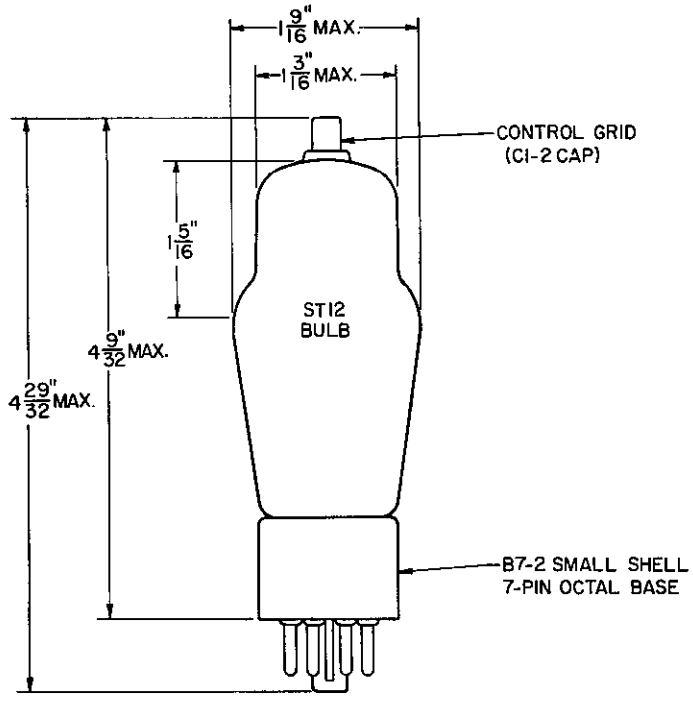
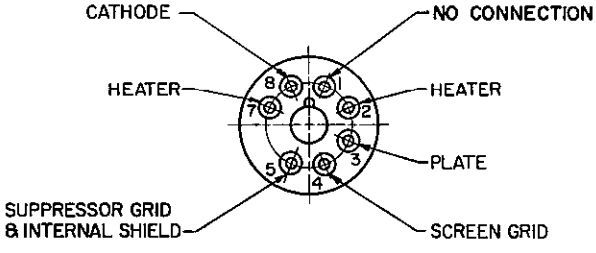


PLATE RESISTANCE IN MEGOHMS
1.6
1.2
0.8
0.4
0
0 40 80 120 160 200 240 280
PLATE VOLTAGE
Ef=6.3 VOLTS
Ec2=135 VOLTS
Ec1= - 3 VOLTS
Ec3=0 VOLTS
- 10
- 20
- 30
- 40


TRANSCONDUCTANCE IN MICROMHOS
2000
1600
1200
800
400
0
0 40 80 120 160 200 240 280
PLATE VOLTAGE
Ec3=0 VOLTS
-10
-20
-30
-40
Ef=6.3 VOLTS
Ec2=135 VOLTS
Ec1=-3 VOLTS


1 9/16" MAX.
1 3/16" MAX.
CONTROL GRID
(CI-2 CAP)
1 5/16"
ST12
BULB
4 9/32" MAX.
4 29/32" MAX.
B7-2 SMALL SHELL
7-PIN OCTAL BASE


CATHODE
NO CONNECTION
HEATER
HEATER
PLATE
SUPPRESSOR GRID
& INTERNAL SHIELD
SCREEN GRID
8
1
7
2
6
3
5
4

Western Electric

A development of Bell Telephone Laboratories, the research laboratories of the American Telephone and Telegraph Company and the Western Electric Company

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