TECHNICAL DATA

5722

Sylvania

TYPE 5722

NOISE GENERATING DIODE

RATINGS AND CHARACTERISTICS

Maximum Filament Voltage	5.5	Volts
Minimum Filament Voltage	2.0	Volts
Filament Current at 4.9 Volts	1.6	Amperes
Maximum DC Plate Voltage	200	Volts
Maximum Plate Current	35	Ma.
Maximum Plate Dissipation		
Continuous Service	3.5	Watts
Intermittent Service	5.0	Watts
Maximum On Period in 50% Duty Cycle	5	Min.
Direct Interelectrode Capacitances:**		
Plate to Filament	1.5	μμf

* *Horizontal operation permitted if Pins 1 and 2 are in vertical plane.*

** *With no external shield.*

PHYSICAL SPECIFICATIONS

Style	Miniature
Bulb	T 5 1/2
Diameter	3/4" Max.
Seated Height	1 7/8" Max.
Overall Length	2 1/8" Max.
Mounting	Vertical*

BASE PIN CONNECTIONS

Pin 1 - Plate
Pin 2 - No Connection
Pin 3 - Filament
Pin 4 - Filament
Pin 5 - No Connection
Pin 6 - Plate
Pin 7 - Filament Center

RMA Basing 5 CB

TYPICAL OPERATING CONDITIONS

Plate Voltage	150	Volts
Filament Voltage	Adjust to give desired Plate Current or Noise Output	

CIRCUIT APPLICATION

Sylvania Type 5722 is a tungsten filament diode designed for use as a noise generator at frequencies up to 400 or 500 mc. The filament center tap allows better RF grounding of the filament when used in the recommended circuit shown on a following page.

Since the tube has a tungsten filament the "shot effect" may be used as a standard noise source if sufficient plate voltage is applied to obtain saturation. The noise factor (NF) may be obtained from the equation NF = 20 IR where R is the total generator resistance and I is the diode plate current in amperes. To convert to decibels $NF_{db} = 10 \text{ Log}_{10} 20 IR$.

In use, the diode is coupled to the input of the amplifier under test and the filament voltage is increased until the noise output power is double that read without the diode. From the plate current reading and the generator resistance the noise factor can be calculated. Additional construction details may be obtained from the article "How Sensitive is Your Receiver", by Byron Goodman in the September 1947 issue of Q.S.T. and also "Coaxial Noise Diode" by H. Johnson, RCA Review, March, 1947, Volume VIII, No. 1.

The useful life is dependent on the operating voltages since the usual causes of failure are burnout or vaporization of the tungsten filament. A curve is given on a following page which shows this relationship.

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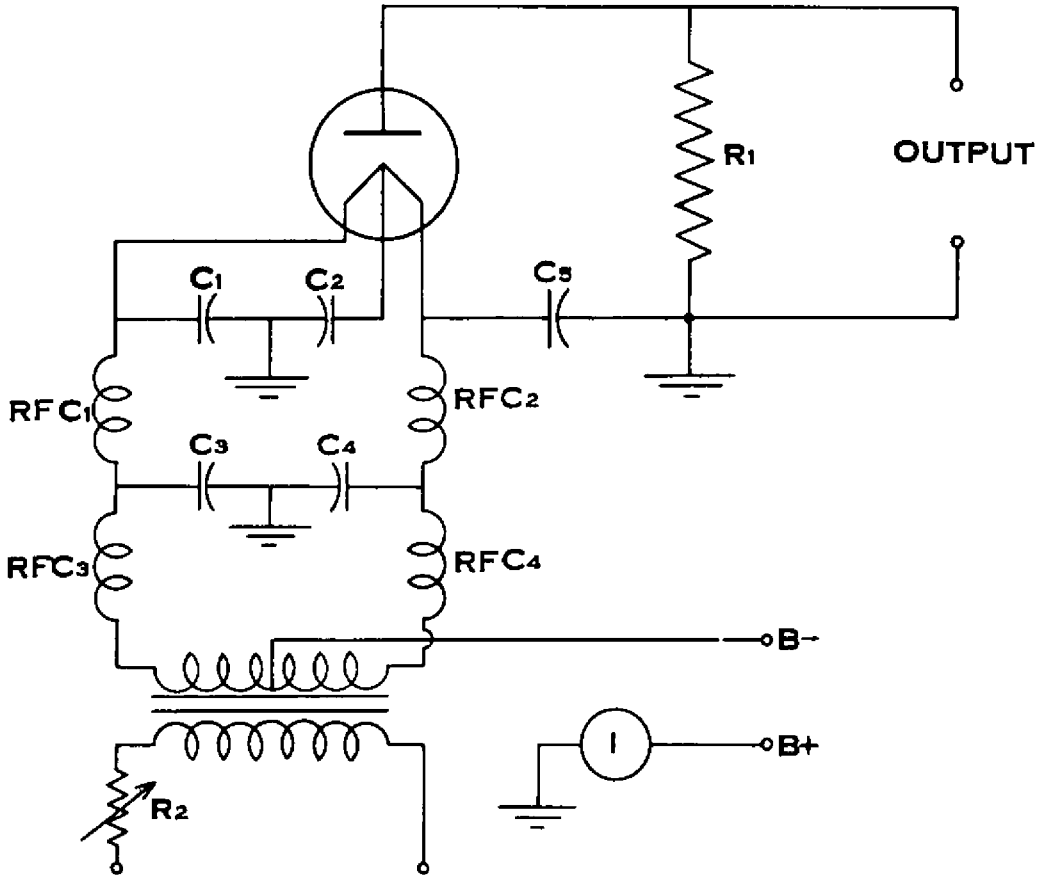
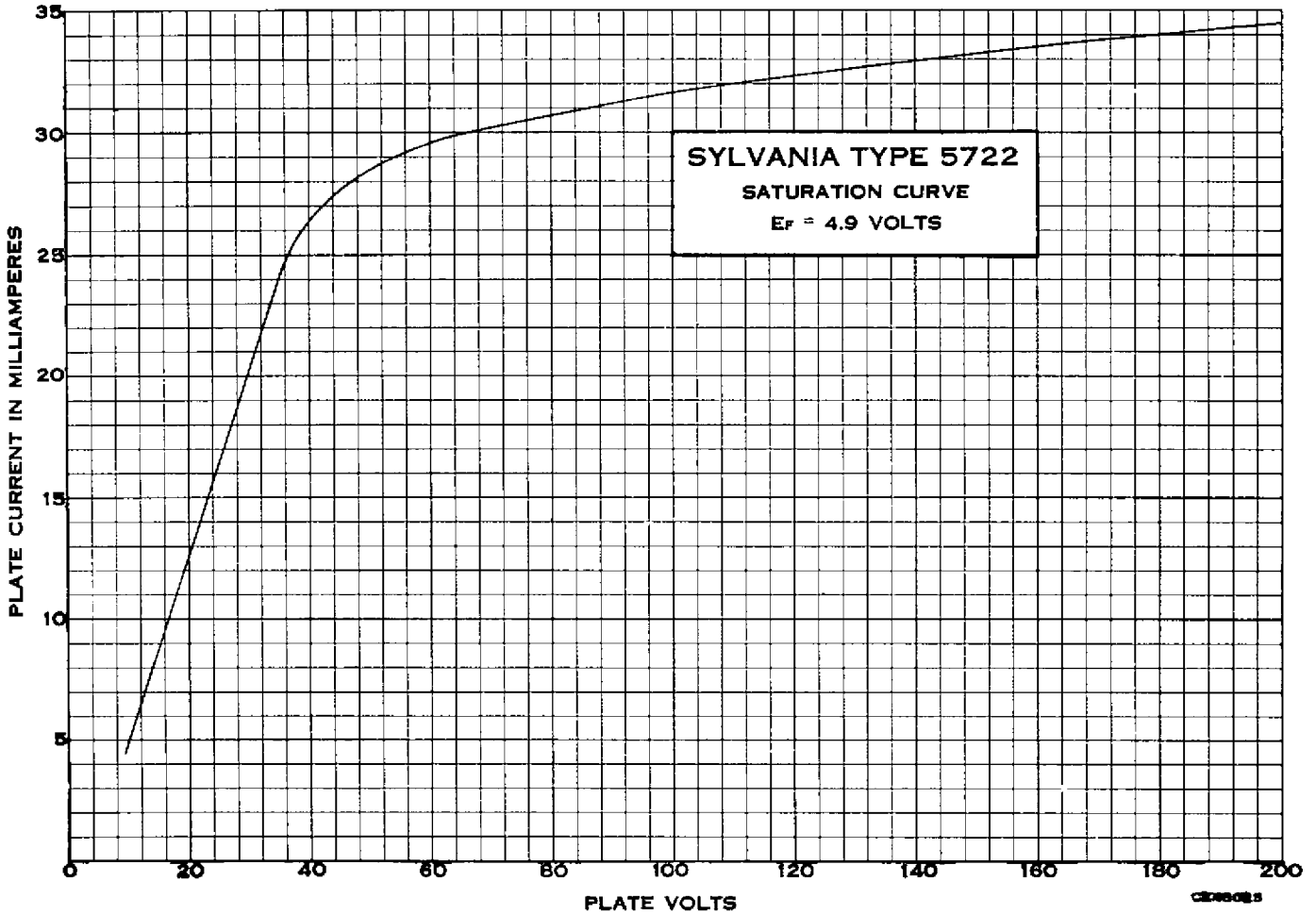
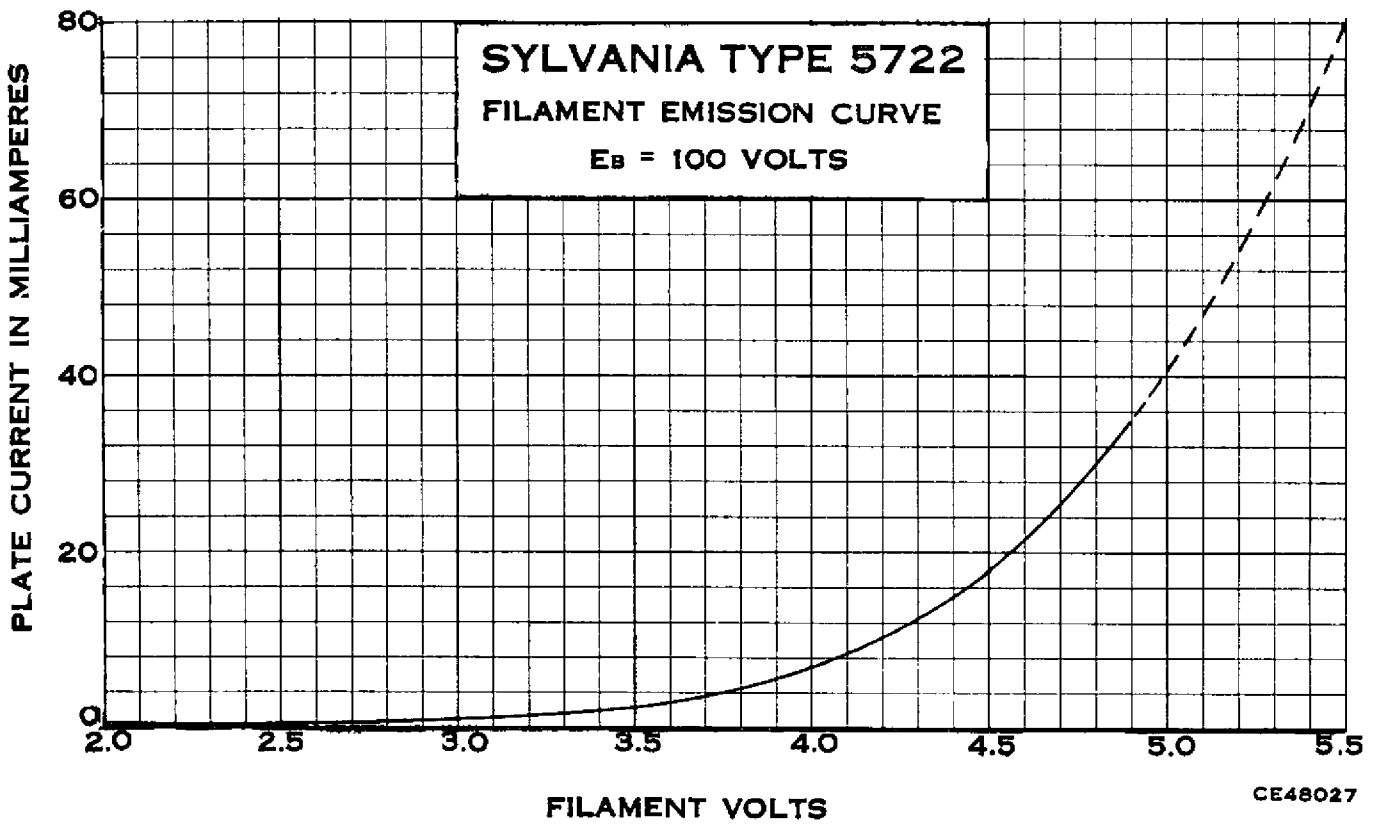
RECOMMENDED CIRCUIT

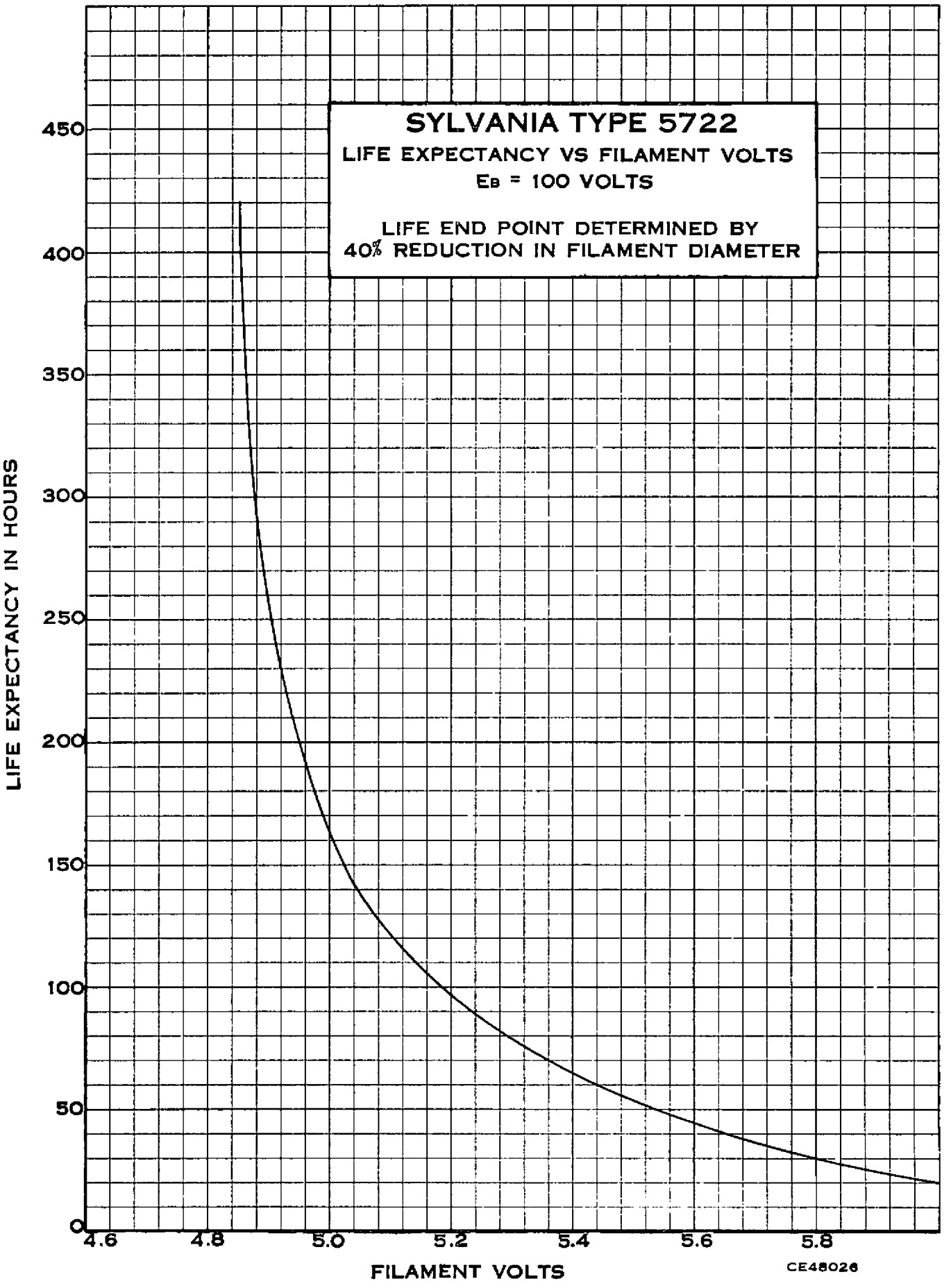


PARTS LIST

C_1, C_2, C_3, C_4, C_5	500 μμf
RFC_1, RFC_2	6 Turns #16 Enamel Wire on 3/16" Air Core
RFC_3, RFC_4	30 Turns #16 Enamel Wire on 3/8" O.D., 1/4" I.D. Bakelite Coil Form With Powdered Iron Core
R_1	50 to 300 Ohms as Required to Match Load
R_2	Filament Voltage Control


SYLVANIA TYPE 5722
SATURATION CURVE
Ef = 4.9 VOLTS
PLATE CURRENT IN MILLIAMPERES
35
30
25
20
15
10
5
0
20
40
60
80
100
120
140
160
180
200
PLATE VOLTS


SYLVANIA TYPE 5722
FILAMENT EMISSION CURVE
EB = 100 VOLTS
PLATE CURRENT IN MILLIAMPERES
80
60
40
20
0
2.0
2.5
3.0
3.5
4.0
4.5
5.0
5.5
FILAMENT VOLTS
CE48027


SYLVANIA TYPE 5722
LIFE EXPECTANCY VS FILAMENT VOLTS
EB = 100 VOLTS
LIFE END POINT DETERMINED BY
40% REDUCTION IN FILAMENT DIAMETER
LIFE EXPECTANCY IN HOURS
450
400
350
300
250
200
150
100
50
0
4.6
4.8
5.0
5.2
5.4
5.6
5.8
FILAMENT VOLTS
CE48026