5654

SHARP-CUTOFF PENTODE

"PREMIUM" TUBE

For RF and IF Broad-Band Applications

TENTATIVE DATA

RCA-5654 is a "premium" version of the sharp-cutoff pentode 6AK5. It is designed for use as an rf or if amplifier in high-frequency broad-band circuits of mobile and aircraft communications receivers and is especially constructed to give dependable performance under shock and vibration.

This tube features a grid-No.1 electrode treated to minimize grid emission, a pure-tungsten heater to give longer life under conditions of on-off switching, and a compact design in which special attention has been given to structural details which provide increased mount strength against shock and against vibration. In addition each tube is subjected to rigid controls and rigorous tests during manufacture to insure "premium" quality.

Like the 6AK5, the 5654 has high transconductance, low interelectrode capacitances, high input resistance, and high signal-to-noise ratio --features contributing to the suitability of this tube for rf and if applications.

GENERAL DATA

Electrical:

Heater, Pure Tungsten, for Unipotential Cathode:		
Voltage	6.3 ± 10%	volts
Current	0.175	ampere
Direct Interelectrode Capacitances:▲		
Grid No.1 to Plate	0.020 max.	μμf
Input	4.0	μμf
Output	2.85	μμf

Mechanical:

Mounting Position	Any
Maximum Overall Length	1-3/4"
Maximum Seated Length	1-1/2"
Length from Base Seat to Bulb Top (Excluding tip)	1-1/8" ± 3/32"
Maximum Diameter	3/4"
Bulb	T-5-1/2
Base	Small-Button Miniature 7-Pin (JETEC No.E7-1)

AMPLIFIER - CLASS A_1

Maximum Ratings, *Absolute Values*:

PLATE VOLTAGE	200 max.	volts
GRID-NO.2 (SCREEN) VOLTAGE	155 max.	volts
PLATE DISSIPATION	1.85 max.	watts
GRID-NO.2 INPUT	0.55 max.	watt
CATHODE CURRENT	20 max.	ma
PEAK HEATER-CATHODE VOLTAGE:		
Heater positive with respect to cathode	100 max.	volts
Heater negative with respect to cathode	100 max.	volts

Typical Operation and Characteristics:

Plate Voltage	120	180	volts
Grid-No.2 Voltage	120	120	volts
Cathode-bias Resistor	180	180	ohms
Plate Resistance (Approx.)	0.30	0.50	megohm
Transconductance	5000	5100	μmhos
Plate Current	7.5	7.7	ma
Grid-No.2 Current	2.5	2.4	ma
Grid-No.1 Voltage (Approx.) for plate current of 10 μamp	-8.5	-8.5	volts

Maximum Circuit Values:

Grid-No.1-Circuit Resistance	0.5 max.	megohm

Shock and Fatigue Tests:

Shock Test:		
Impact Acceleration	500 max.	g

Tubes are held rigid in three different positions in a Navy Type, High Impact (flyweight) Shock Machine and are subjected to the specified impact acceleration.

Fatigue Test:

Vibrational Acceleration	2.5 max.	g

Tubes are rigidly mounted and subjected to the specified maximum vibrational acceleration at 60 cycles per second for 32 hours in each of three positions.

Heater Cycling Life Test:

Cycles of Intermittent Operation at heater volts = 7.5	2000 min.	cycles

CHARACTERISTICS RANGE VALUES FOR EQUIPMENT DESIGN

	Note	*Min.*	*Max.*	
Heater Current	1	0.160	0.190	amp
Grid-No.1-to-Plate Capacitance	-	-	0.020	μμf
Input Capacitance	-	3.4	4.6	μμf
Output Capacitance	-	2.45	3.25	μμf
Plate Current	1,2	3.0	12.0	ma
Transconductance	1,2	3500	6500	μmhos
Reverse Grid Current	1,3	-	0.1	μamp

Note 1: With 6.3 volts ac on heater.

Note 2: With plate voltage of 120 volts, grid-No.2 voltage of 120 volts, and grid-No.1 voltage of -2 volts.

Note 3: With plate voltage of 120 volts, grid-No.2 voltage of 120 volts, grid-No.1 voltage of -2 volts, and grid-No.1 resistor of 0.1 megohm.

▲ According to RTMA Standard ET-109A with external shield No.316.

OPERATING NOTES

The *maximum ratings* in the tabulated data for the 5654 are limiting values above which the serviceability of the 5654 may be impaired from the viewpoint of life and satisfactory performance. Therefore, in order not to exceed these absolute ratings, the equipment designer has the responsibility of determining an average design value for each rating below the absolute value of that rating by an amount such that the absolute values will never be exceeded under any usual condition of supply-voltage variation, load variation, or manufacturing variation in the equipment itself.

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

5654-10-52
Photolithographed in U.S.A.

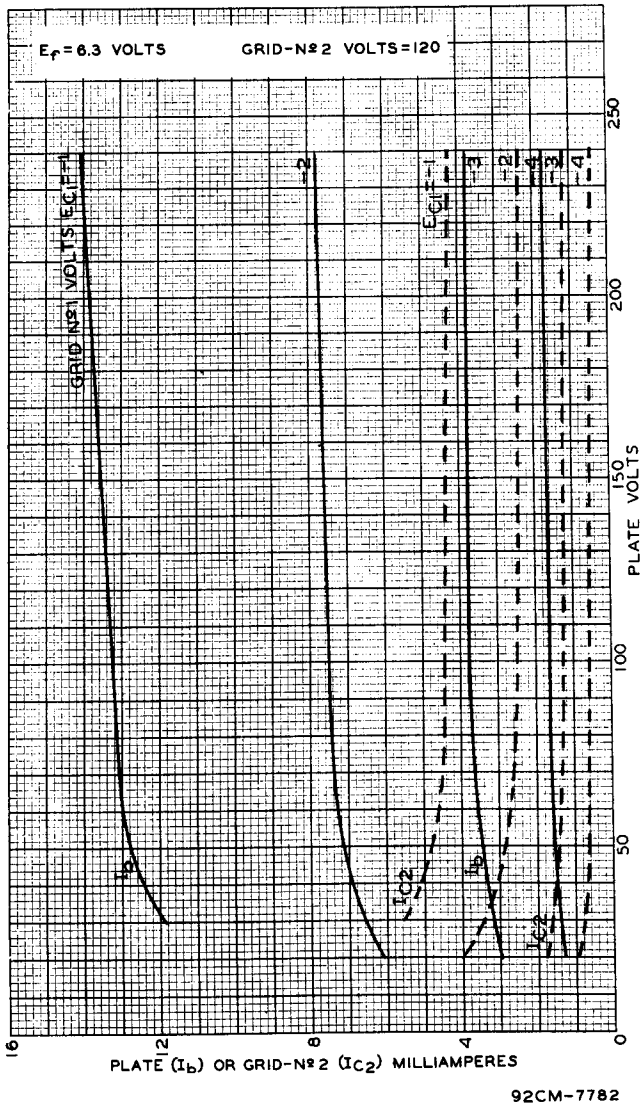


Fig. 1 - Average Plate Characteristics of 5654.

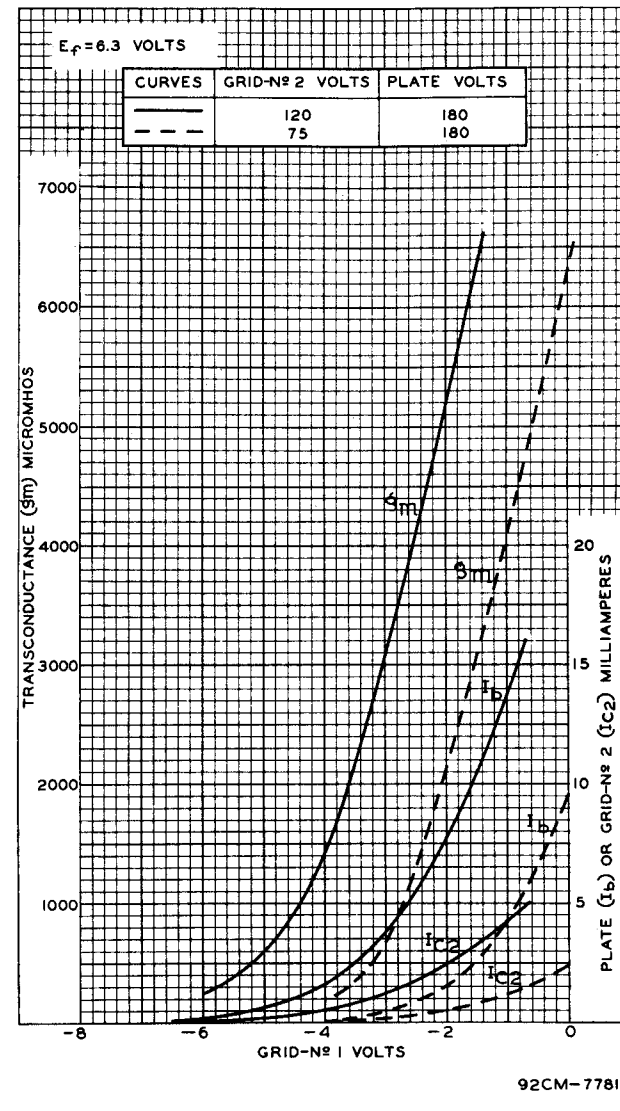
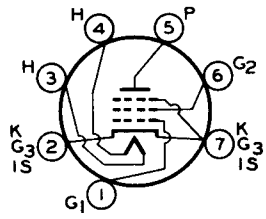
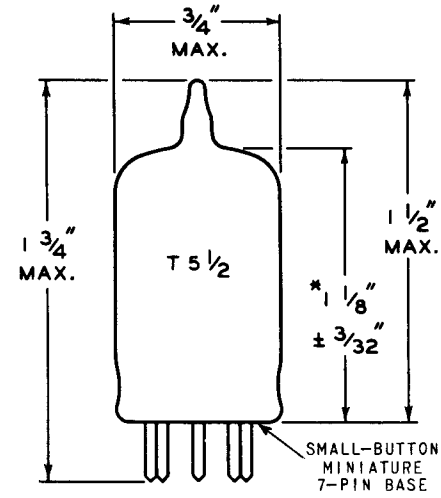


Fig. 2 - Average Characteristics of 5654.

SOCKET CONNECTIONS
Bottom View



PIN 1: GRID No.1
PIN 2: CATHODE, GRID No.3, INTERNAL SHIELD
PIN 3: HEATER
PIN 4: HEATER
PIN 5: PLATE
PIN 6: GRID No.2
PIN 7: CATHODE, GRID No.3, INTERNAL SHIELD



* MEASURED FROM BASE SEAT TO BULB-TOP LINE AS DETERMINED BY RING GAUGE OF 7/16" I.D.