# SYLVANIA ELECTRIC

**RMA Registration Data**

# TYPE 5933

## TRANSMITTING BEAM PENTODE

The Type 5933 is a transmitting beam-pentode power amplifier designed to operate in applications where severe conditions of vibration and shock are encountered.

## MECHANICAL DATA

### GENERAL

| | |
|---|---|
| Cathode | coated, unipotential |
| Bulb | T-12 |
| Base | *(see drawing, Page 4)* |
| | Large 5-Pin, low-loss phenolic |
| Cap | C1-1, Small |
| Outline | *(see drawing, Page 4)* |
| Maximum Diameter | 1.70 inches |
| Maximum Overall Length | 4 11/16 inches |
| Maximum Seated Height | 4 1/16 inches |
| Mounting Position | any |
| Basing | 5AW |

*Pin Connections:*

Pin 1 .. heater
Pin 2 .. grid #2
Pin 3 .. grid #1
Pin 4 .. cathode, beam plates
Pin 5 .. heater

*Cap* .. plate

### RATINGS

| | | |
|---|---|---|
| Maximum Impact Acceleration(1) | 450 | g |
| Maximum Vibrational Acceleration for Extended Periods(2) | 2.5 | g |

## ELECTRICAL DATA

### GENERAL

| | | |
|---|---|---|
| Direct Interelectrode Capacitances: | | |
| Grid to Plate(3), maximum | 0.2 | μμf |
| Input | 12.0 | μμf |
| Output | 7.0 | μμf |
| Heater Voltage (ac or dc) | 6.3 | volts |
| Heater Current | 0.9 | amp |

### CHARACTERISTICS

| | | |
|---|---|---|
| Conditions: | | |
| Heater Voltage (ac or dc) | 6.3 | volts |
| Plate Voltage (dc) | 600 | volts |
| Grid #2 Voltage (dc) | 300 | volts |
| Grid #1 Voltage (dc) | -29 | volts |
| Plate Current (dc) | 36 | milliamps |
| Grid #2 Current, maximum (dc) | 4.0 | milliamps |

*(See Page 3 for all notes.)*

# TYPE 5933

RATINGS -- *Absolute System (Continuous Commercial Service)*

| | | |
|---|---|---|
| Maximum Frequency for Which Ratings Apply[4] | 60 | megacycles |
| Maximum Heater-Cathode Voltage | ±135 | volts |

*Audio-Frequency Power Amplifier and Modulator, Class $AB_2$*

| | | |
|---|---|---|
| Maximum Plate Voltage (dc) | 600 | volts |
| Maximum Grid #2 Voltage (dc) | 300 | volts |
| Maximum Plate Current[5], max.-signal conditions (dc) | 120 | milliamps |
| Maximum Plate Power Input[5], max.-signal conditions | 60 | watts |
| Maximum Grid #2 Power Input[5], max.-signal conditions | 3.5 | watts |
| Maximum Plate Dissipation | 25 | watts |

*Radio-Frequency Power Amplifier, Class-B Telephony*
*(Carrier conditions per tube for use with a maximum modulation factor of 1.0)*

| | | |
|---|---|---|
| Maximum Plate Voltage (dc) | 600 | volts |
| Maximum Grid #2 Voltage (dc) | 300 | volts |
| Maximum Plate Current (dc) | 80 | milliamps |
| Maximum Plate Power Input | 37.5 | watts |
| Maximum Grid #2 Power Input | 2.5 | watts |
| Maximum Plate Dissipation | 25 | watts |

*Plate-Modulated Radio-Frequency Power Amplifier, Class-C Telephony*
*(Carrier conditions per tube for use with a maximum modulation factor of 1.0)*

| | | |
|---|---|---|
| Maximum Plate Voltage (dc) | 475 | volts |
| Maximum Grid #2 Voltage (dc) | 300 | volts |
| Maximum Grid #1 Voltage (dc) | -200 | volts |
| Maximum Plate Current (dc) | 83 | milliamps |
| Maximum Grid #1 Current (dc) | 5 | milliamps |
| Maximum Plate Power Input | 40 | watts |
| Maximum Grid #2 Power Input | 2.5 | watts |
| Maximum Plate Dissipation | 16.5 | watts |

*Radio-Frequency Power Amplifier and Oscillator, Class-C Telegraphy*
*(Key-down conditions per tube without amplitude modulation)*[6]

| | | |
|---|---|---|
| Maximum Plate Voltage (dc) | 600 | volts |
| Maximum Grid #2 Voltage (dc) | 300 | volts |
| Maximum Grid #1 Voltage (dc) | -200 | volts |
| Maximum Plate Current (dc) | 100 | milliamps |
| Maximum Grid #1 Current (dc) | 5 | milliamps |
| Maximum Plate Power Input | 60 | watts |
| Maximum Grid #2 Power Input | 3.5 | watts |
| Plate Dissipation | 25 | watts |

*(See Page 3 for all notes.)*

TYPICAL OPERATION

*Radio-Frequency Power Amplifier, Class-C Telegraphy*

| | | |
|---|---|---|
| Heater voltage (ac or dc) | 6.3 | volts |
| Plate Voltage (dc) | 600 | volts |
| Grid #2 Voltage (dc) | 200 | volts |
| Grid #1 Resistor | 10,000 | ohms |
| Grid #1 Current (dc) | 5 to 7 | milliamps |
| Plate Current, maximum (dc) | 100 | milliamps |
| Frequency | 15 | megacycles |
| Power Output (approx.) | 40 | watts |

*(1) Forces in any direction as applied by the Navy Type, High Impact Shock Machine for Electronic Devices, or its equivalent.*

*(2) Vibrational forces in any direction at 25 cycles per second for a period not exceeding 96 hours.*

*(3) External shield #312 connected to Pin 4.*

*(4) The tube may be operated at higher frequencies provided the maximum values of plate voltage and power input are reduced according to the data tabulated below. Special attention should be given to ventilation of the bulb at these higher frequencies.*

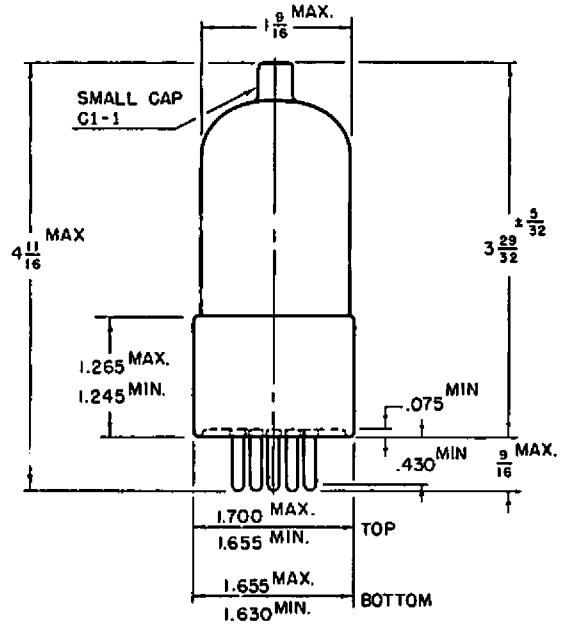
| | | | | |
|---|---|---|---|---|
| *Frequency* | *60* | *80* | *175* | *megacycles* |
| *Maximum permissible percentage of rated maximum plate voltage and plate input:* | | | | |
| *Class B* | *100* | *90* | *75* | *per cent* |
| *Class C, plate modulated or unmodulated* | *100* | *80* | *55* | *per cent* |

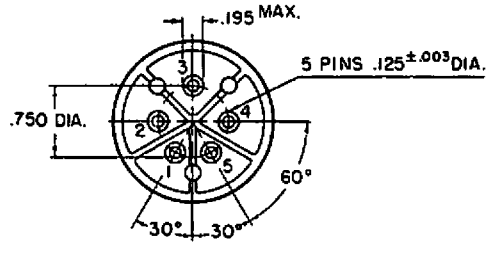
*(5) Averaged over any audio-frequency cycle of sine-wave form.*

*(6) Negative modulation may be used. Under such conditions the positive peak of the envelope must not exceed 115 percent of the carrier conditions.*

# TYPE 5933

OUTLINE & BASE




NOTE: FOR PIN ALIGNMENT USE GAGE NO. GA5-1