



ELECTRONIC TUBE REFERENCE

11E2

Power - Beam (NOT sweep) electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION
CONSTRUCTION
BEAMPOWER

Specialized beam-power valve for high-voltage pulse and modulation service, featuring low interelectrode capacitance and kilovolt-class series-modulation standoff rather than ordinary receiver output duty.

GENERAL CHARACTERISTICS

BASE DESIGNATION	—	BASE PINS	—
NOMINAL HEATER	— / —	PARALLEL HEATER	— / —
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION 1 Beam Power*No fixed ratings recorded.*

11E2 — Beam Power Amplifier

An indirectly heated beam power amplifier designed specifically for pulse amplification, break modulators, and series modulation applications.

Overview

The **11E2** (also designated as **11.E.2**) is a specialized beam power amplifier manufactured by the Radio Division of The Edison Swan Electric Company Ltd. (Mazda). Introduced for pulse amplification, this indirectly heated valve is characterized by its high peak voltage capabilities and robust design tailored for modulator service. It features a clear glass bulb, an international octal base, and an external side cap for the anode connection to safely handle high peak voltages.

Construction, Physical Dimensions, and Mounting

The 11E2 is constructed with a clear glass bulb and utilizes an **I.O.8.** (International Octal 8-pin) base. To facilitate high-voltage operation and prevent internal arcing, the anode is connected to an external **American Miniature** side cap rather than a base pin.

The physical dimensions and physical characteristics of the valve are as follows:

Physical Parameter	Value
Maximum Overall Length	86 mm
Maximum Seated Height	73 mm
Maximum Diameter	32 mm
Maximum Radius over Side Cap	25 mm
Approximate Net Weight	1.5 oz (1½ ozs)
Approximate Packed Weight	4 ozs

For proper operation and heat dissipation, the manufacturer specifies that the 11E2 must be mounted in a **vertical** position.

Heater and Pin Connections

The valve features an indirectly heated cathode. The heater is designed for AC or DC operation with the following nominal ratings:

- **Heater Voltage (V_h):** 6.3 V
- **Heater Current (I_h):** 0.9 A
- **Calculated Heater Power:** 5.67 W (calculated as $6.3\text{ V} \times 0.9\text{ A}$)

Pinout Configuration

The base connections, viewed from the free end of the pins (underside view), are arranged as follows:

Pin / Cap	Connection	Symbol
Pin 1	Blank	—
Pin 2	Heater	h
Pin 3	Blank	—
Pin 4	Screen Grid	<u>g2</u>
Pin 5	Control Grid	g1

Pin / Cap	Connection	Symbol
Pin 6	Blank	—
Pin 7	Heater	h
Pin 8	Cathode	k
Side Cap	Anode	a

The physical orientation of the side cap is indicated on the base diagram as being positioned on the side adjacent to the blank pins and heater connections (specifically aligned near the pin 6/7 region).

Electrical Characteristics and Ratings

The 11E2 is rated for demanding pulse applications, featuring a very high peak anode voltage limit alongside modest continuous dissipation ratings.

Absolute Maximum Ratings

- **Maximum Peak Anode Voltage (Pulse Rating) ($V_{a(pk)max}$):** 12,500 V
- **Maximum Screen Voltage ($V_{[g2]}(/tubes/G2)(max)$):** 550 V
- **Maximum Peak Anode Current ($I_{a(pk)max}$):** 1.0 A
- **Maximum Anode Dissipation ($W_{a(max)}$):** 5.0 W
- **Maximum Screen Dissipation ($W_{[g2]}(/tubes/G2)(max)$):** 1.0 W
- **Maximum Potential Heater/Cathode ($V_{h-k(max)}$):** 150 V DC

Inner Amplification Factor (Inner Mu)

The inner amplification factor ($\mu_{g1,[g2]}(/tubes/G2)$) represents the triode-connected amplification factor of the control grid relative to the screen grid. For the 11E2, this is:

- **Inner Mu ($\mu_{g1,[g2]}(/tubes/G2)$):** 9.0

This value is specifically measured under the following operating conditions:

- **Anode Voltage (V_a):** 200 V
- **Screen Voltage ($V_{[g2]}(/tubes/G2)$):** 200 V
- **Anode Current (I_a):** 25 mA

Inter-electrode Capacitances

The capacitances are measured with the remaining earthy potential electrodes and the heater joined to the cathode (denoted as "Earth"):

- **Anode to Earth ($C_{a,all}$):** 7.5 pF ($\mu\mu\text{F}$)

- **Anode to Control Grid ($C_{a,g1}$):** 0.2 pF ($\mu\mu\text{F}$)
- **Control Grid to Earth ($C_{g1,\text{all}}$):** 15.5 pF ($\mu\mu\text{F}$)

Applications and Operating Context

The 11E2 is primarily intended for use in **break modulators**, where its high peak anode voltage rating of 12,500 V and peak current capability of 1.0 A can be fully utilized in pulsed conditions.

Additionally, the valve can be employed in **series modulation** circuits. In such configurations, it is rated to operate with a standoff voltage of up to **3,000 volts**.

Because the continuous anode dissipation is limited to 5.0 watts and screen dissipation to 1.0 watt, the tube is not designed for high-power continuous-wave (CW) RF or heavy continuous Class A audio output service. Instead, its design is optimized for high-voltage, low-duty-cycle pulse applications where the average power remains within the specified limits while handling high peak voltages and currents.

Technical Summary

The **11E2** is a specialized, indirectly heated beam power amplifier designed by the Radio Division of The Edison Swan Electric Company Ltd. for pulse amplification and modulator service. Operating with a standard 6.3 V, 0.9 A heater, the tube is housed in a clear glass envelope with an I.O.8. octal base and an American Miniature top/side cap for the anode. It is capable of handling an exceptional peak pulse anode voltage of up to 12,500 V and a peak anode current of 1.0 A, while maintaining a low continuous anode dissipation rating of 5.0 W. With an inner μ of 9.0 and suitability for break modulators and series modulation (up to 3,000 V standoff), the 11E2 represents a highly focused solution for mid-century radar and pulse-modulation circuitry.

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1960 Mazda

Published test conditions and operating points. Values on this page are preserved as reported by this source.

1960 MAZDA

Section 1 · Beam Power

CHARACTERISTICS		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Anode-earth capacitance	7.5 pF	—
Anode-control-grid capacitance	0.2 pF	—
Control-grid-earth capacitance	15.5 pF	—
Series-modulation standoff voltage	3000 V	—

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