



ELECTRONIC TUBE REFERENCE

10F3

Voltage - Pentode High Frequency (single) electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION
CONSTRUCTION
PENTODE

Ediswan/Mazda pentode documented for signal amplification service. The available manufacturer sheet supplies its electrical characteristics and operating information, but does not provide sufficiently explicit functional wording here to justify a narrower specialized classification.

GENERAL CHARACTERISTICS

BASE DESIGNATION	—	BASE PINS	—
NOMINAL HEATER	22 V / 100 mA	PARALLEL HEATER	— / —
HEATING	Indirect	SERIES OPERATION	Capable
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION 1 Pentode	
TRANSCONDUCTANCE	0.0065 S
MAXIMUM PLATE VOLTAGE	250 V
MAXIMUM SCREEN VOLTAGE	250 V
MAXIMUM PLATE DISSIPATION	1.6 W
MAXIMUM SCREEN DISSIPATION	0.4 W
<i>Ediswan/Mazda 10F3 indirectly heated screened HF pentode for 22 V, 100 mA series-heater receiver service, with B8A socket base (per manufacturer). Maximum operating plate 250 V and screen 250 V, plate dissipation 1.6 W and screen dissipation 0.4 W. Typical transconductance 6.5 mA/V at the specified operating point; it is not a maximum gm rating. Manufacturer documents interelectrode capacitances and says the tube is for replacement purposes.</i>	

10F3 — Screened H.F. Pentode

The **10F3** is a screened high-frequency (H.F.) pentode manufactured under the Mazda brand by Siemens Edison Swan Limited. It is an indirectly heated valve designed specifically for series operation and is designated for replacement purposes only.

Physical Characteristics and Basing

The 10F3 features a clear glass bulb and is designed to be mounted in any position without restriction. It utilizes a standard **B8A** base. The physical dimensions and weight specifications of the device are as follows:

- **Maximum Overall Length:** 67 mm
- **Maximum Seated Height:** 54 mm
- **Maximum Diameter:** 22 mm
- **Radius Over Location Key:** 12.25 mm
- **Approximate Net Weight:** 0.5 oz (1/2 oz)
- **Approximate Packed Weight:** 1 oz

Pin Connections

When viewed from the free end of the pins, the B8A base configuration provides the following connections:

Pin Number	Electrode Connection	Symbol
Pin 1	Heater	h
Pin 2	Anode	a
Pin 3	Shield	s
Pin 4	Suppressor grid	g3
Pin 5	Screen grid	<u>g2</u>
Pin 6	Control grid	g1
Pin 7	Cathode	k
Pin 8	Heater	h

Electrical Ratings and Operating Conditions

The 10F3 is designed for series heater strings, operating with a constant current. The electrical ratings and maximum limits specified for the device include:

Heater Specifications

- **Heater Current (I_h):** 0.1 A
- **Heater Voltage (V_h):** 22 V

Maximum Ratings

- **Maximum Anode Voltage ($V_{a(max)}$):** 250 V
- **Maximum Screen Voltage ($V_{[g2]}(/tubes/G2)(max)$):** 250 V
- **Maximum Anode Dissipation (P_a):** 1.5 W
- **Maximum Screen Dissipation ($P_{[g2]}(/tubes/G2)$):** 0.4 W

Typical Operating Point and Mutual Conductance

The mutual conductance (g_m) of the 10F3 is rated at **6.5 mA/V** under the following specific operating conditions:

- **Anode Voltage (V_a):** 200 V
- **Screen Voltage ($V_{[g2]}(/tubes/G2)$):** 200 V
- **Control Grid Voltage (V_{g1}):** -2.35 V
- **Anode Current (I_a):** 6 mA

Inter-electrode Capacitances

The capacitances of the 10F3 are documented under three distinct measurement conditions to account for the effects of the tube holder and external shielding. These conditions are:

1. **Balanced Out ($\dagger$):** Inter-electrode capacitances measured with the capacity of the holder balanced out.
2. **With Holder (q):** Total capacities including a Benjamin B8A moulded holder, measured at a frequency of 1 Mc/s.
3. **With Holder and Shield ($\ddagger$):** Total capacities including a Benjamin B8A moulded holder, measured at 1 Mc/s with an extra perpendicular shield.

The capacitance values for these conditions are detailed below:

Capacitance Parameter	Balanced Out ($\dagger$)	With Holder (q)	With Holder & Shield ($\ddagger$)
Grid-to-Earth (C_{in})	9.5 $\mu\mu\text{F}$	11.0 $\mu\mu\text{F}$	—
Anode-to-Earth (C_{out})	4.4 $\mu\mu\text{F}$	5.9 $\mu\mu\text{F}$	—
Grid-to-Anode (C_{ga})	—	0.006 $\mu\mu\text{F}$	0.005 $\mu\mu\text{F}$

Technical Summary

The Mazda **10F3** is a compact, indirectly heated screened H.F. pentode featuring a B8A base and a clear bulb. Operating with a 22 V, 0.1 A heater designed for series-run equipment, it provides a mutual conductance of 6.5 mA/V at an anode and screen potential of 200 V. With maximum anode and screen voltage ratings of 250 V, and maximum power dissipations of 1.5 W (anode) and 0.4 W (screen), the 10F3 serves as a specialized high-frequency pentode intended strictly for replacement applications.

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