ELECTRONIC TUBE REFERENCE

1823

Rectifier - Half Wave electronic tube

CONSOLIDATED TECHNICAL DATA
1 SECTION
CONSTRUCTION
RECTIFIER

Philips directly heated high-vacuum rectifier for receiving-equipment supplies, providing approximately 60 mA rectified DC output under published AC anode-voltage conditions.

General characteristics

BASE DESIGNATION	–	**BASE PINS**	–
NOMINAL HEATER	4 V / 1 A	**PARALLEL HEATER**	– / –
HEATING	Direct	**SERIES OPERATION**	Not specified
CATHODE ARRANGEMENT	Separate cathodes	**SECTION CONSTRUCTION**	Similar

Section ratings

SECTION1 Rectifier

MAXIMUM PLATE VOLTAGE	500 V
NOMINAL OUTPUT CURRENT	60 mA

Published electrical data extracted from supplied datasheet.

1823 — High Vacuum Full-Wave Rectifying Valve

The **1823** is a high vacuum full-wave rectifying valve designed by Philips for power supply applications. As a full-wave rectifier, it contains two independent anode structures sharing a common filament supply, allowing it to rectify both halves of an alternating current (AC) input cycle to produce a direct current (DC) output.

Physical Dimensions and Construction

The 1823 is constructed within a glass envelope with maximum physical dimensions of **116 mm** in height and **53 mm** in diameter. The internal structure consists of a high-vacuum environment housing a directly heated filament and two separate anodes (plates). This dual-anode configuration is optimized for full-wave rectification in conventional center-tapped transformer power supply circuits.

Filament and Heating Characteristics

The 1823 features a directly heated cathode system. The filament is designed for AC operation, typically connected in a parallel configuration with other heater or filament circuits in the equipment.

The electrical requirements for the filament are:

- **Filament Voltage (Vf):** 4 V
- **Filament Current (If):** 1 A

Using these parameters, the calculated power consumption of the filament is:

- **Calculated Filament Power:** 4 W (derived from 4 V multiplied by 1 A)

This 4-watt filament heating power is typical for rectifiers of this class, providing the necessary thermionic emission from the directly heated filament wire to support the rated rectified output current.

Base and Pin Configuration

The valve utilizes a standard **Base A** configuration. The base features four pins, which are assigned to the internal electrodes as follows:

Pin Number	Connection	Symbol
1	Anode 1	a1
2	Filament 2	f2
3	Filament 1	f1
4	Anode 2	a2

The filament connections are brought out to pins 2 and 3, while the two anodes are connected to pins 1 and 4. This layout ensures adequate physical separation between the high-voltage anode connections and the low-voltage filament supply.

Operating Characteristics and Limiting Values

The 1823 is designed to operate under specific electrical limits to ensure reliable performance and prevent damage to the valve's internal structure. The primary operating limits specified for this rectifier are:

- **Maximum Transformer Voltage (Vtr):** 2 x 500 Veff (root-mean-square)
- **Maximum Rectified Current (Io):** 60 mA

The maximum transformer voltage rating of 2 x 500 Veff indicates that the valve can safely handle an AC input of up to 500 V RMS per anode when used in a center-tapped transformer circuit. Under these operating conditions, the maximum continuous DC output current (rectified current) must not exceed 60 mA.

Technical Summary

The **1823** is a classic **directly heated, high vacuum full-wave rectifier** housed in a **116 x 53 mm** glass envelope with a **Base A** 4-pin base. Operating with a **4 V, 1 A** filament supply, it is capable of rectifying AC voltages up to a maximum transformer voltage of **2 x 500 Veff**, delivering a maximum rectified DC output current of **60 mA**. Its simple four-pin layout and robust high-voltage ratings make it a reliable component for moderate-power vacuum tube power supplies.

SOURCE OPERATING CONDITIONS

1999 Philips 0-D

SOURCE PDF

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

1999 PHILIPS 0-D

Section 1 · Rectifier

OTHER

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater voltage	**4 V**	Nominal
Heater current	**1 A**	Nominal
A.C. anode voltage	**500 V**	Maximum
Rectified current	**60 mA**	Maximum

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