

ELECTRONIC TUBE REFERENCE

1664

Rectifier - Half Wave electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION
CONSTRUCTION
RECTIFIER

Low-filament-power directly heated half-wave high-vacuum rectifier for small-current high-voltage supplies, providing approximately 4.3 kV peak inverse-voltage capability.

GENERAL CHARACTERISTICS

BASE DESIGNATION	2Z	BASE PINS	2
NOMINAL HEATER	1.4 V / 50 mA	PARALLEL HEATER	– / –
HEATING	Direct	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION1 Rectifier	
MAXIMUM CATHODE CURRENT	1 mA
PEAK INVERSE VOLTAGE	4300 V
NOMINAL OUTPUT CURRENT	1 mA
PEAK FORWARD CURRENT	6 mA
Promoted from printed maximum-rating/characteristic columns; additional published values retained in TUBE_SECTION_PARAMETER.	

1664 Half-Wave High-Vacuum Rectifier

Overview

The **1664** is a filamentary half-wave high-vacuum rectifier tube designed for low-current, high-voltage applications. It is characterized by an extremely low-power filament, requiring only **1.4 V** at **0.05 A**. The tube is designed with a **T-X** outline and utilizes a **2Z** base connection configuration. It is rated for a

maximum peak inverse voltage of **4,300 V** and a maximum DC output current of **1.0 mA**, making it suitable for specialized high-voltage rectification where power conservation is critical.

Physical Construction, Filament, and Basing

The 1664 features a filamentary cathode ("Fil") rather than an indirectly heated cathode. This direct-heating design allows for rapid warm-up and highly efficient thermal operation.

Filament Characteristics

- **Filament Voltage:** 1.4 V
- **Filament Current:** 0.05 A (50 mA)
- **Calculated Filament Power:** 1.4 V % 0.05 A = 0.07 W (70 mW)

This extremely low filament power consumption of 70 mW is a key feature of the 1664, allowing it to be operated in circuits with very limited power budgets.

Basing and Outline

The tube is housed in an envelope defined by the **T-X** outline drawing. It utilizes the **2Z** base connection diagram, which is configured as follows:

- **Filament Connections:** Two terminals located at the bottom of the base diagram, labeled **F**.
- **Plate Connection:** A single terminal located at the top of the diagram, labeled **P**.

This physical separation between the filament terminals at the bottom and the plate terminal at the top provides excellent electrical isolation, which is essential for preventing high-voltage breakdown or arcing between the high-potential anode and the low-potential filament circuit.

Electrical Ratings and Rectifier Service

The 1664 is designed specifically for half-wave rectifier service. Its electrical ratings are optimized for high-voltage, low-current power supplies. The maximum ratings and typical operating parameters for this service are:

Parameter	Value
Maximum RMS Supply Voltage	1,500 V
Maximum Peak Inverse Voltage (PIV)	4,300 V
Maximum Peak Plate Current	6 mA
Maximum DC Output Current	1.0 mA

These specifications indicate that the 1664 is intended for high-voltage, high-impedance circuits. The low maximum DC output current of 1.0 mA and peak current of 6 mA restrict its use to applications such as

electrostatic focus supplies, cathode-ray tube biasing, or other low-current, high-voltage anode supplies where efficiency and high-voltage isolation are paramount.

Technical Summary

The **1664** is a **half-wave high-vacuum rectifier** featuring a **1.4 V, 0.05 A filamentary cathode**, a **T-X outline**, and a **2Z base connection**. It is designed to operate with a **maximum RMS supply voltage of 1,500 V** and can withstand a **maximum peak inverse voltage of 4,300 V**. Under these conditions, it delivers a **maximum DC output current of 1.0 mA** with a **maximum peak current of 6 mA**. The physical separation of its plate and filament connections, combined with its exceptionally low calculated filament power of **0.07 W**, makes it an efficient choice for high-voltage, low-current rectification.

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

195X General Electric Essential Characteristics

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

195X GENERAL ELECTRIC ESSENTIAL CHARACTERISTICS

Section 1 · Rectifier

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
DC output current maximum	1 mA	HalfWave
Peak inverse voltage maximum	4300 V	HalfWave
RMS supply voltage maximum	1500 V	HalfWave
Peak current maximum	6 mA	HalfWave

TUBE TINKER

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