

ELECTRONIC TUBE REFERENCE

CONSOLIDATED TECHNICAL DATA

1063A

1 SECTION
CONSTRUCTION
RECTIFIER

Rectifier - Half Wave electronic tube

Directly heated Philips mercury-vapour or gas-filled rectifier for industrial power conversion. Rated for approximately 700 V peak inverse voltage, 2 A average current, and 12 A peak current.

GENERAL CHARACTERISTICS

BASE DESIGNATION	—	BASE PINS	—
NOMINAL HEATER	1.9 V / 7 A	PARALLEL HEATER	— / —
HEATING	Direct	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION1 Rectifier	
PEAK INVERSE VOLTAGE	700 V
NOMINAL OUTPUT CURRENT	2 A
PEAK FORWARD CURRENT	12 A
WARM-UP TIME	60 s
Mercury-vapour and gas-filled industrial rectifier with directly heated oxide-coated filament.	

1063A — Three-Anode Mercury Vapour and Gas Filled Rectifying Tube

The **1063A** is a mercury vapour and gas-filled rectifying tube designed with three anodes. It is primarily utilized in industrial rectifier applications, capable of delivering up to 6 A per tube and supporting a maximum of 90 lead-acid (Pb) cells.

Mechanical Design and Physical Dimensions

The 1063A features a specialized physical construction consisting of a main bulb with three distinct glass arms housing the anodes. The tube is designed to be mounted exclusively in a vertical position with the base pointing downwards.

- **Base Type:** Edison base
- **Compatible Socket:** E3 000 22
- **Net Weight:** 440 g
- **Shipping Weight:** 2800 g
- **Maximum Diameter:** 125 mm
- **Body Height:** 221 mm
- **Maximum Overall Height:** 255 mm

The Edison base provides the electrical connections for the filament (marked as f). An auxiliary ignition electrode (marked as a_h) is located near the base and is connected via an M3 screw terminal.

Filament and Preheating Requirements

The tube incorporates a directly heated, oxide-coated filament designed for operation with an alternating current (A.C.) supply.

Proper operation of the mercury vapour and gas mixture requires strict adherence to preheating times before anode voltage is applied:

- **Recommended Preheating Time:** 1 minute
- **Minimum Urgent Preheating Time:** 30 seconds (permissible only when urgently required)
- **Post-Transport / Long Interruption Preheating Time (T_w):** 5 minutes

Electrical Characteristics and Ignition

The typical electrical operating parameters of the 1063A include a low arc voltage drop and a controlled ignition voltage:

- **Arc Voltage (V_{arc}):** 15 V
- **Typical Ignition Voltage (V_{ign}):** 70 V

To achieve the nominal ignition voltage of 70 V, an auxiliary D.C. supply unit capable of delivering approximately 100 V and 25 mA must be connected via a current-limiting resistor. The positive terminal of this auxiliary supply connects to the auxiliary ignition electrode (a_h), while the negative terminal connects to the cathode. The Philips Auxiliary Ignition Unit type E3 108 03 is recommended for this configuration.

If an auxiliary D.C. supply is not utilized, the auxiliary ignition electrode (a_h) must be connected directly to the cathode through a resistor with a minimum resistance of 5000 Ω . In this alternative configuration, the required ignition voltage increases to approximately 120 V.

Limiting Values

The operating limits of the 1063A must be maintained within the following absolute boundaries to ensure reliable operation:

Parameter	Value
Maximum Transformer Voltage (V_{tr})	250 V_{eff} (RMS)
Minimum Transformer Voltage (V_{tr})	130 V_{eff} (RMS)
Maximum Peak Inverse Anode Voltage ($V_{a\ inv_p}$)	700 V
Maximum Anode Current (I_a)	2 A
Maximum Peak Anode Current (I_{ap})	12 A
Operating Temperature Range (t_{Hg})	30 – 80 °C

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1999 Philips 0-D

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
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MinimumSeriesResistance	—	—
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CHARACTERISTICS

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
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TypicalArcVoltage	15 V	—
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IgnitionVoltage	70 V	With auxiliary ignition supply
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AlternateIgnitionVoltage	120 V	Auxiliary anode connected to cathode through ≥5 kohm
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