



ELECTRONIC TUBE REFERENCE

117Z3N

Rectifier - Half Wave electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION
CONSTRUCTION
RECTIFIER

Single-plate half-wave rectifier for line-operated electronic supplies. Its 117 V heater construction supports direct series operation from mains-powered equipment with modest DC output requirements.

GENERAL CHARACTERISTICS

BASE DESIGNATION	—	BASE PINS	7
NOMINAL HEATER	117 V / 40 mA	PARALLEL HEATER	— / —
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION 1 Rectifier	
PEAK INVERSE VOLTAGE	350 V
NOMINAL OUTPUT CURRENT	90 mA
PEAK FORWARD CURRENT	540 mA
FORWARD VOLTAGE DROP	22.5 V
<i>Published ratings and characteristics promoted from the approved French source.</i>	

117Z3N — Single-Plate Diode Rectifier

An indirectly heated, single-plate vacuum diode designed for half-wave rectifier applications, featuring a line-voltage heater for transformerless operation.

Overview

The **117Z3N** is a single-plate vacuum diode (diode monoplaque) designed for half-wave rectification (redresseur une alternance). It is characterized by a high-voltage heater rated at **117 V**, which allows the

tube's filament to be connected directly across standard AC power lines without requiring a step-down power transformer. The tube is constructed with an indirectly heated cathode, housed in a miniature glass envelope with a 7-pin base, and is rated for operation in any physical mounting position.

Physical Construction and Base Configuration

The 117Z3N is built using an **A 19-4** glass bulb and a **7 C 10** base. The physical dimensions of the device are compact, with a maximum diameter of **19 mm** and a maximum overall height of **60.3 mm**. The pins extend from the base with a maximum length of **7.14 mm**.

The tube utilizes a 7-pin layout with the following pin assignments, viewed from the bottom of the base:

Pin Number	Connection
Pin 1	Internal connection (Connexion interne)
Pin 2	Not connected (Non connectée)
Pin 3	Filament (Heater)
Pin 4	Filament (Heater)
Pin 5	Anode (Plate)
Pin 6	Cathode
Pin 7	Not connected (Non connectée)

The mounting position for this tube is completely unrestricted (**quelconque**), allowing for flexible physical orientation within a chassis.

Heater and Cathode Characteristics

The 117Z3N features an indirectly heated, coated cathode. The heater is designed for high-voltage, low-current operation to match standard line voltages:

Heater Parameter	Value
Filament Voltage (V_f)	117 V
Filament Current (I_f)	40 mA
Calculated Heater Power	4.68 W
Cathode Type	Indirectly heated

Because the heater operates at a high potential relative to ground, the insulation between the heater and cathode is rated to withstand significant voltage stress. The maximum peak heater-to-cathode voltage (V_{fk}) limits are:

- **Heater positive with respect to cathode:** 165 V max
- **Heater negative with respect to cathode:** 330 V max

Maximum Ratings

The maximum ratings of the 117Z3N are established under the **design-center system** (système des limites moyennes). Operating the tube beyond these limits may impair its performance or shorten its operating life:

Parameter	Maximum Rating
Peak inverse anode voltage ($V_{ai\ cr}$)	330 V max
Peak anode current ($I_{a\ cr}$)	340 mA max
Rectified current (I_{red})	90 mA max

Normal Operating Conditions and Performance

In typical applications, the 117Z3N is configured as a **half-wave rectifier** feeding a capacitor-input filter. The standard operating parameters are defined as follows:

Operating Parameter	Value
Anode supply voltage ($V_a\ N$)	117 V RMS (eff)
Minimum anode supply resistance ($R_a\ N$)	15 Ω min
Filter input capacitance	40 μ F
Rectified current (I_{red})	90 mA

Under these standard operating conditions, the output rectified voltage (V_{red}) varies depending on the load current:

- **At half load (45 mA):** 120 V
- **At full load (90 mA):** 100 V

The minimum anode supply resistance of 15 Ω is a critical parameter required to limit peak inrush and steady-state currents through the diode, protecting the cathode from damage when charging the 40 μ F input filter capacitor.

Technical Summary

The **117Z3N** is a compact, **7-pin miniature single-plate rectifier diode** designed for efficient half-wave rectification. Its primary distinguishing feature is its **117 V, 40 mA heater**, which permits direct line-voltage operation. With a maximum rectified current capability of **90 mA**, a peak inverse voltage

rating of **330 V**, and a compact **19 mm diameter** form factor, the 117Z3N provides a simple and space-saving solution for generating DC power directly from AC mains without requiring a power transformer.



SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1968 Mazda Belvu

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

1968 MAZDA BELVU

Section 1 · Rectifier

OTHER

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
AC Input Voltage	117 V	CapacitorInputFilter;40 uF

TUBE TINKER

An independent reference for electronic tubes, vacuum tubes,
and their source documents.

[Catalog](#) [Tube types](#) [Full books](#) [Blog](#) [Feedback & corrections](#)

© 2026 Tube Tinker