3CZ3A

Half-Wave Vacuum Rectifier

Designed to minimize X-Radiation
– e_{bm} = 38,000 max. V
Warm-up Time = 4 sec.

ELECTRICAL CHARACTERISTICS – Bogey Values

Heater Voltage, ac or dc	E_h	3.15	V
Heater Current at E_h = 3.15 V	I_h	0.48	A
Warm-up Time	T_h	4	s
Direct Interelectrode Capacitance:[a]			
P to (K + IS + H)	$c_{p\text{-}all}$	1.6	pF
Instantaneous Tube Voltage Drop for Instantaneous Plate Current (i_b) = 7 mA	e_b	60	V

MECHANICAL CHARACTERISTICS

Maximum Overall Length	4.312in. (109.52 mm)
Maximum Seated Length	3.750in. (95.25 mm)
Maximum Diameter	1.188in. (30.17 mm)
Envelope	JEDEC T9
Top Cap	Small embossed (JEDEC C1-50)
Base	Ultra-Short Small-Wafer with External Barriers: 6-pin (JEDEC No. B6-253)
Terminal Diagram	JEDEC 8EZ
Type of Cathode	Coated Unipotential
Operating Position	Any

MAXIMUM RATINGS[b] – High Voltage Rectifier

For operation as a pulsed rectifier tube in a 525-line, 30-frame system[c]

Inverse Plate Voltage[d]			
Total DC and Peak (absolute max.)	$-e_{bm}$	38,000	V
DC (absolute max.)	$E_{b(av)}$	30,000	V
Plate Current:			
Peak (design max.)	i_{bm}	110	mA
Average (design max.)	$I_{b(av)}$	2.2	mA
Heater Voltage (absolute max.)	E_h	3.65	V
Heater Voltage (absolute min.)	E_h	2.65	V

[a] Measured without external shield in accordance with the current issue of EIA Standard RS-191B.
[b] As defined in the current issue of EIA Standard RS-239A.
[c] As described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations", Federal Communications Commission.
[d] This rating is applicable when the duration of the voltage pulse does not exceed 15% of one horizontal scanning cycle. In a 525-line, 30-frame system, 15% of one horizontal scanning cycle is 10μs.

OPERATING CONSIDERATIONS

Socket Connections. The base pins of the 3CZ3A fit the standard octal socket. Socket terminals 1, 3, 4, 5, 6, and 8 may be connected to terminal 7 or to a corona shield which connects to terminal 7. Terminals 4 and 6 may be used as tie points at or near cathode potential. Otherwise, do not use.

Measurement of Heater Voltage. It is recommended that a thermocouple rms voltmeter be used to measure heater voltage. The meter and its leads must be insulated to withstand 38,000 V. To minimize loading of the rectifier circuit during this measurement, stray capacitances to ground should be kept as low as possible.

X-RADIATION CHARACTERISTIC

X-Radiation, Maximum

Statistical Value Controlled On A Lot Sampling Basis *25mR/hr*

X-Radiation is measured in accordance with JEDEC Publication No. 67 A, "Recommended Practice for Measurement of X-Radiation from Receiving Tubes", and controlled in accordance with JEDEC Publication No. 73 A, "Recommended Practice for Quality Control of X-Radiation Emitted from High Voltage Rectifier and Shunt Regulator Receiving Tubes".

Operation of the 3CZ3A outside of the absolute values indicated above may result in either temporary or permanent

changes in the X-radiation characteristic of the tube. Equipment design must be such that these absolute values are not exceeded.

WARNING

X-Radiation

The high voltages associated with the 3CZ3A result in production of X-Radiation which may constitute a health hazard on prolonged exposure at close range unless the tube is adequately shielded. Equipment design must provide for this shielding.

Precautions must be exercised during the servicing of equipment employing the 3CZ3A to assure that the high voltage is adjusted to the recommended value and that any shielding components are replaced to their intended positions before the equipment is operated.

SHOCK HAZARD

The high voltages at which the 3CZ3A is operated can be extremely dangerous to the user or serviceman. Extreme care should be taken in the use of, and for the servicing and adjustment of, any high voltage circuit.

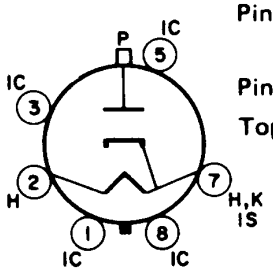
Precautions must be exercised during the replacement or servicing of the 3CZ3A in equipment to assure that the high voltage output terminal is properly grounded while inserting or removing the tube from its socket or while connecting or disconnecting the top cap connector.

THE EQUIPMENT MANUFACTURER SHOULD PROVIDE A WARNING LABEL IN AN APPROPRIATE POSITION ON THE EQUIPMENT TO ADVISE THE SERVICEMAN OF ALL PRECAUTIONS HEREIN.

3CZ3A

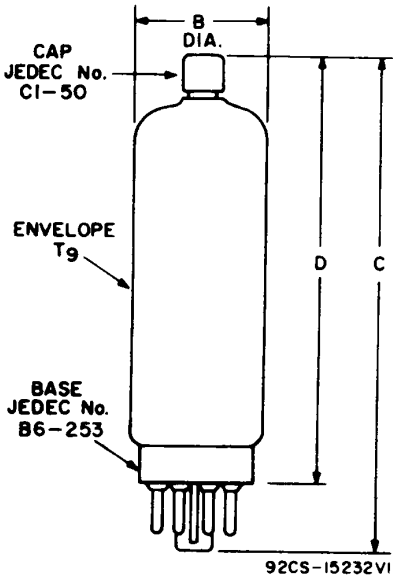
TERMINAL DIAGRAM – JEDEC 8EZ – Bottom View

Pin 1 – Do Not Use
Pin 2 – Heater
Pin 3 – Do Not Use
Pin 5 – Do Not Use



Pin 7 – Heater, Cathode, Internal Shield
Pin 8 – Do Not Use
Top Cap – Plate

DIMENSIONAL OUTLINE



DIMENSION	INCHES		MILLIMETERS	
	Min.	Max.	Min.	Max.
B	1.062*	1.188	26.98*	30.17
C	–	4.312	–	109.52
D	3.500	3.750	88.90	95.25
MILLIMETER DIMENSION DERIVED FROM INCH DIMENSION				
*Applies to the minimum diameter except in the area of the seal.				