Electronic TUBES

5965-A
TWIN TRIODE
Five-Star Tube

★ ★ ★ ★ ★

FOR COMPUTER APPLICATIONS

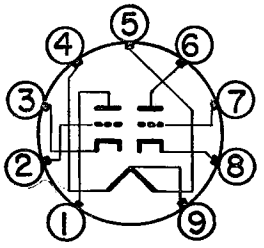
SHARP-CUTOFF CHARACTERISTIC **HIGH PERVEANCE**

DESCRIPTION AND RATING

The 5965-A is a miniature twin-triode primarily designed for service in computer applications. Each triode section features a high zero-bias plate current, a sharp-cutoff characteristic, and a separate cathode connection. In addition, the balance of the cutoff characteristic between the two sections is controlled. When used in "on-off" control applications, the 5965-A will maintain its emission capabilities after long periods of operation under cutoff conditions. The heater-cathode construction of the tube is designed for dependable service under conditions of intermittent operation.

The 5965-A, when operated under approved conditions, will exhibit a life of greater than 10,000 hours, averaged over a 100 tube lot, and based on the 10,000 hour end-of-life point shown under Special Tests and Ratings.

BASING DIAGRAM

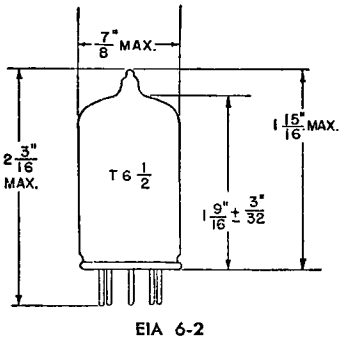


EIA 9A

TERMINAL CONNECTIONS

Pin 1—Plate (Section 2)
Pin 2—Grid (Section 2)
Pin 3—Cathode (Section 2)
Pin 4—Heater
Pin 5—Heater
Pin 6—Plate (Section 1)
Pin 7—Grid (Section 1)
Pin 8—Cathode (Section 1)
Pin 9—Heater Center Tap

PHYSICAL DIMENSIONS



EIA 6-2

GENERAL

ELECTRICAL

	Series	Parallel	
Cathode—Coated Unipotential			
Heater Voltage, AC or DC	12.6 ± 5%	6.3 ± 5%	Volts
Heater Current	0.225	0.45	Amperes
Direct Interelectrode Capacitances†			
Grid to Plate, Each Section		3.0	μμf
Input, Each Section		4.0	μμf
Output, Section 1		0.5	μμf
Output, Section 2		0.36	μμf
Heater to Cathode, Each Section		3.6	μμf
Grid to Grid, maximum		0.015	μμf
Plate to Plate, maximum		1.1	μμf

MECHANICAL

Mounting Position
- Preferred Orientation—Upright or with Plate Majors in Vertical Position
- Permissible Orientation—Any

Envelope—T-6½, Glass
Base—E9-1, Small Button 9-Pin

GENERAL ELECTRIC

MAXIMUM RATINGS

DESIGN-MAXIMUM VALUES, EACH SECTION

Plate Voltage	330	Volts
Peak Positive Pulse Plate Voltage	660	Volts
Positive DC Grid Voltage	0	Volts
Negative DC Grid Voltage	75	Volts
Peak Positive Grid Voltage‡	10	Volts
Peak Negative Grid Voltage	200	Volts
Plate Dissipation, each plate	2.2	Watts
Total Plate Dissipation, both plates	4.0	Watts
DC Grid Current	0.5	Milliamperes
Peak Grid Current‡	50	Milliamperes
DC Cathode Current	16.5	Milliamperes
Peak Cathode Current‡	180	Milliamperes
Heater-Cathode Voltage		
Heater Positive with Respect to Cathode		
DC Component	100	Volts
Total DC and Peak	200	Volts
Heater Negative with Respect to Cathode		
Total DC and Peak	200	Volts
Grid-Circuit Resistance		
With Fixed Bias	0.1	Megohms
With Cathode Bias	0.5	Megohms
Bulb Temperature at Hottest Point	150	C

Design-Maximum ratings are limiting values of operating and environmental conditions applicable to a bogey tube of a specified type as defined by its published data, and should not be exceeded under the worst probable conditions.

These values are chosen by the tube manufacturer to provide acceptable serviceability of the tube, taking responsibility for the effects of changes in operating conditions due to variations in the characteristics of the tube under consideration.

The equipment manufacturer should design so that initially and throughout life no design-maximum value for the intended service is exceeded with a bogey tube under the worst probable operating conditions with respect to supply-voltage variation, equipment component variation, variation in characteristics of all other tubes in the equipment, equipment control adjustment, load variation, signal variation, and environmental conditions.

AVERAGE CHARACTERISTICS

CLASS A_1 AMPLIFIER, EACH SECTION

Plate Voltage		150	Volts
Grid Voltage		−2.0	Volts
Amplification Factor		47	
Plate Resistance, approximate		6700	Ohms
Transconductance		7000	Micromhos
Plate Current		8.5	Milliamperes
Computer Service, Each Section			
Plate Voltage	100	150	Volts
Grid Current§, approximate	200	.....	Microamperes
Plate Current	17.8	.....	Milliamperes
Grid Voltage, maximum			
Ib = 150 Microamperes		−7.5	Volts

SPECIAL TESTS AND RATINGS

Cathode-Interface Impedance		
1000 Hour Life-Test End Point, Maximum¶	25	Ohms
10,000 Hour End-of-Life Point		
Plate Current, Each Section, Minimum #	3.5	Milliamperes

† Without external shield.

‡ Rating based on a pulse of 10-microseconds duration, 1-percent duty cycle, and 1000-cycle repetition rate.

§ Grid tied to +100 volts through 0.5-megohm resistor.

¶ Statistical sample operated for 1000 hours under the following conditions for each section: Ef = 6.3 volts, Eb = 150 volts, Ecc = −75 volts, Ehk = −100 volts, and Rg = 0.1 megohms. Cathode-interface impedance measured under the following conditions: Ef = 5.7 volts, Eb = 100 volts, and Ec adjusted for Ib = 2.5 milliamperes.

10,000 hour end-of-life point when operated under approved conditions. Plate current measured under the following conditions: Ef = 6.3 volts, Eb = 150 volts, and Ec = −2 volts.

ELECTRONIC COMPONENTS DIVISION

GENERAL ELECTRIC

Schenectady 5, N. Y.

PRINTED IN U.S.A.