Electronic TUBES

6B10

DUPLEX-DIODE TWIN TRIODE

FOR TV HORIZONTAL PHASE-DETECTOR AND HORIZONTAL OSCILLATOR APPLICATIONS

DESCRIPTION AND RATING

The 6B10 is a COMPACTRON device containing two diodes and two triodes. The triode sections have separate cathodes and the diode sections have a common cathode. The diodes are intended for horizontal phase-detector service and the triodes for horizontal oscillator service.

GENERAL

ELECTRICAL

Cathode—Coated Unipotential
Heater Characteristics and Ratings (Design-Maximum Rating System)

	Series Heater Operation*	Parallel Heater Operation*	
Heater Voltage, AC or DC	6.3†	6.3±0.6	Volts
Heater Current	0.6±0.04	0.6‡	Ampere
Heater Warm-up Time§	11	——	Seconds

Direct Interelectrode Capacitances¶

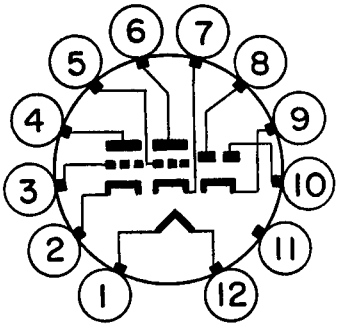
	Section 1	Section 2	
Triode Grid to Plate: (Tg to Tp)	1.5	1.5	pf
Triode Input: Tg to (h+Tk+i.s.)	1.7	1.8	pf
Triode Output: Tp to (h+Tk+i.s.)	1.6	0.6	pf
Triode Plate to Plate: (T1p to T2p)	0.9		pf
Diode-Number 1 Plate to Diode Cathode, Heater, and Internal Shield: D1p to (Dk+h+i.s.)	1.9		pf
Diode-Number 2 Plate to Diode Cathode, Heater, and Internal Shield: D2P to (Dk+h+i.s.)	1.8		pf
Diode-Number 1 Plate to Diode-Number 2 Plate: (D1p to D2p)	0.7		pf
Triode Grid to Diode-Number 1 Plate: (Tg to D1p)	0.015	0.005	pf
Triode Grid to Diode-Number 2 Plate: (Tg to D2p)	0.02	0.005	pf

MECHANICAL

Mounting Position—Any
Envelope—T-9, Glass
Base—E12-70, Button 12-Pin

GENERAL ELECTRIC

BASING DIAGRAM



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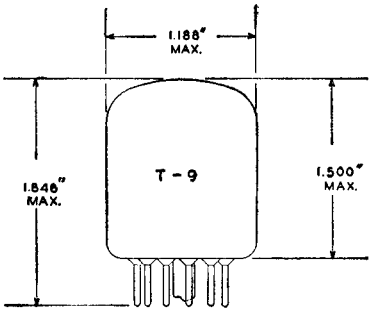
TERMINAL CONNECTIONS

Pin 1—Heater
Pin 2—Triode Cathode (Section 2)
Pin 3—Triode Grid (Section 2)
Pin 4—Triode Plate (Section 2)
Pin 5—Triode Grid (Section 1)
Pin 6—Triode Plate (Section 1)
Pin 7—Triode Cathode (Section 1)
Pin 8—Diode Number 2 Plate
Pin 9—Diode Cathode
Pin 10—Diode Number 1 Plate
Pin 11—Internal Shield
Pin 12—Heater

PHYSICAL DIMENSIONS



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MAXIMUM RATINGS

DESIGN-MAXIMUM VALUES, EACH SECTION

Plate Voltage	330 Volts
Plate Dissipation	3.0 Watts
DC Cathode Current	20 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	0.25 Megohm
With Cathode Bias	1.0 Megohm
Diode Current for Continuous Operation, Each Diode	5.0 Milliamperes

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. The tube manufacturer chooses these values to provide acceptable serviceability of the tube, taking responsibility for the effects of changes in operating conditions due to variations in 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.

CHARACTERISTICS AND TYPICAL OPERATION

AVERAGE CHARACTERISTICS, EACH SECTION

Plate Voltage	250 Volts
Grid Voltage	−8.0 Volts
Amplification Factor	18
Plate Resistance, approximate	7200 Ohms
Transconductance	2500 Micromhos
Plate Current	10 Milliamperes
Grid Voltage, approximate	
Ib = 50 Microamperes	−20 Volts
Average Diode Current, Each Diode	
With 5 Volts DC Applied	20 Milliamperes

* For parallel heater operation, the equipment designer shall design the equipment so that the heater voltage is centered at the specified bogey value, with heater supply variations restricted to maintain heater voltage within the specified tolerance. For series heater operation, the equipment designer shall design the equipment so that heater current is centered at the specified bogey value, with heater supply variations restricted to maintain heater current within the specified tolerance.

† Heater voltage at bogey heater current.

‡ Heater current at bogey heater voltage.

§ The time required for the voltage across the heater to reach 80 percent of its rated value after applying 4 times rated heater voltage to a circuit consisting of the tube heater in series with a resistance equal to 3 times the rated heater voltage divided by the rated heater current.

¶ Without external shield.

ELECTRONIC COMPONENTS DIVISION

GENERAL ELECTRIC

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PRINTED IN U.S.A.