

# TUNG-SOL

# PRODUCT BULLETIN

**INDUSTRIAL  
ELECTRON  
TUBE  
TYPE 8434**  
JULY 1963

## HYDROGEN DIODE

**DESCRIPTION** — The 8434 is an indirectly heated, hydrogen filled, half-wave diode designed for use in high voltage rectifier circuits. In comparison with mercury-vapor tubes, the 8434 is virtually temperature free, and is not subject to long warmup times or splash problems. Also when subjected to nuclear radiation, the gas filling does not act as a radioactive “keeper” as does mercury. Contrasted with solid state rectifiers, the 8434 can withstand high current and inverse voltage surges. Long life is assured by an internally connected hydrogen reservoir.

The 8434 is capable of delivering 1.8 amperes average at 20 kilovolts peak inverse voltage. It will function as a direct plug-in replacement for mercury-vapor types 6894 and 575A.

### ELECTRICAL DATA

	Min	Bogey	Max	
Heater Voltage .....	4.75	5.0	5.25	Volts
Heater Current — $E_t = 11.5$ Volts.....	9.5	11.5	13.8	Amperes
Cathode Heating Time.....	3	—	—	Minutes
Anode Voltage Drop.....	30	—	60	Volts
Initial Firing Voltage.....	—	—	100	Volts
Recurrent Firing Voltage.....	30	—	75	Volts

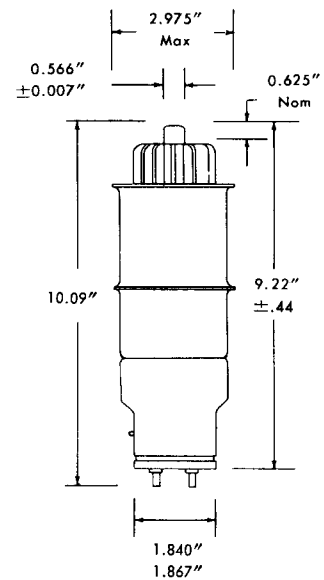
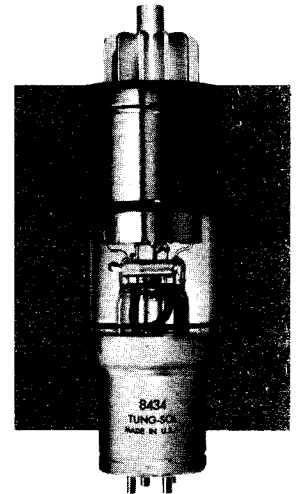
### MECHANICAL DATA

Type of Cooling.....	See Rating Graph. Convection or Forced Air — 50 cfm directed at top of radiator
Mounting Position .....	Horizontal or Vertical (Base Down)
Average Net Weight.....	1 Pound 14 Ounces
Dimensions .....	See Outline Drawing
Base .....	Skirted medium metal shell Jumbo, 4-pin With Bayonet
Anode Connection .....	Cap, See Outline Drawing

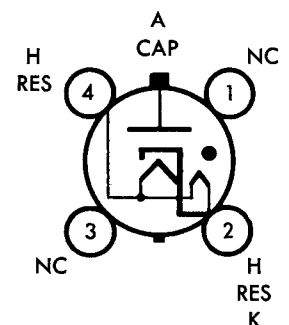
### RATINGS, ABSOLUTE VALUES

	Minimum	Maximum	
Peak Inverse Anode Voltage.....	—	20,000	Volts
Cathode Current			
Peak .....	—	8	Amperes
Average .....	—	1.8	Amperes
Surge — Maximum Duration 0.1 Second.....	—	60	Amperes
Averaging Time .....	—	15	Seconds
Ambient Temperature .....	−55	+75	Degrees Centigrade

**CAUTION** — The Cathode connection should be made to Pin 2 in order not to damage tube.



### OUTLINE DRAWING



(SEE CAUTION NOTE)  
**BOTTOM VIEW**

# TYPE 8434

## MAXIMUM RATING CHART

FIG.	CIRCUIT	TRANSFORMER	NO. OF TUBES	*	A-C SECONDARY VOLTAGE $E_{RMS}$ Kilovolts	D-C OUTPUT — APPROX		RIPPLE	
						$E_{DC}$ Kilovolts	$I_{DC}$ AMPS	KILOVOLTS RMS	FREQ
1	Half-wave 1-phase	1-phase	1	A	10.5	4.75	1.5	5.25	f
				B	12.5	5.75	1.8	6.25	
2	Full-wave 1-phase	1-phase C-T	2	A	5.25	4.75	3.0	2.25	2f
				B	6.25	5.75	3.6	2.8	
3	Bridge circuit 1-phase	1-phase	4	A	10.5	9.5	3.0	4.5	2f
				B	12.5	11.5	3.6	5.6	
4	Half-wave 3-phase	Delta-Wye	3	A	6.15	7.2	4.5	1.3	3f
				B	7.35	8.6	5.4	1.55	
5	Full-wave 3-phase	Delta-Wye	6	A	6.15	14.3	4.5	0.6	6f
				B	7.35	17.2	5.4	0.72	
6	Full-wave 3-phase	Delta-Delta	6	A	10.5	14.3	4.5	0.6	6f
				B	12.5	17.2	5.4	0.72	
7	Half-wave 6-phase (3-phase supply)	Delta-Star	6	A	5.25	7.2	9.0	0.29	6f
				B	6.25	8.6	10.8	0.35	

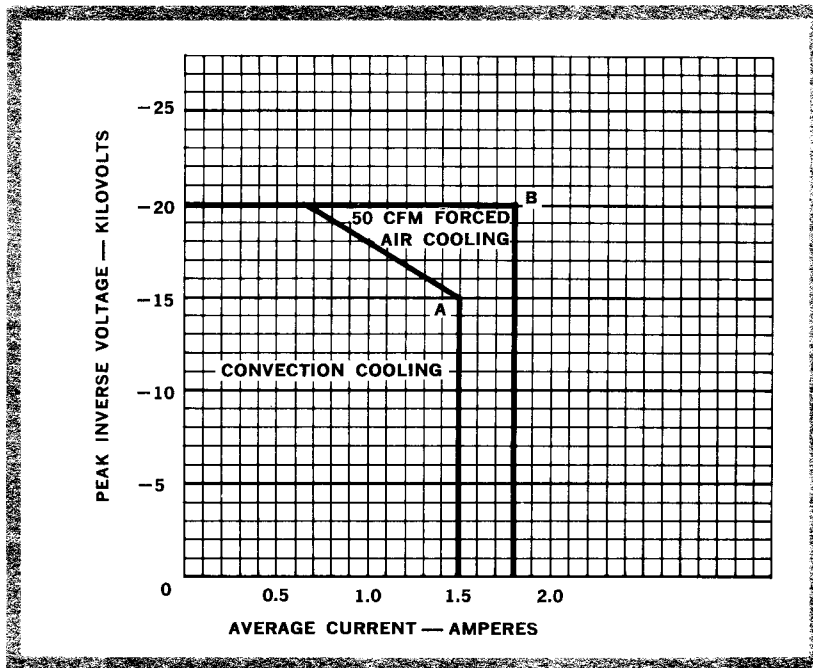
\*See RATING GRAPH

- A: Convection cooled, at maximum tube ratings
- B: Forced air cooled at maximum voltage ratings
- C: Forced air cooled at maximum current ratings

For figure references see STANDARD RECTIFIER CIRCUITS AND RATINGS sheet.

The 8434 should be protected from transient voltages in excess of the maximum rating by spark gaps installed either directly across the tube or across each plate transformer secondary leg.

## RATING GRAPH



TUNG-SOL ELECTRIC INC., ONE SUMMER AVENUE, NEWARK 4, NEW JERSEY