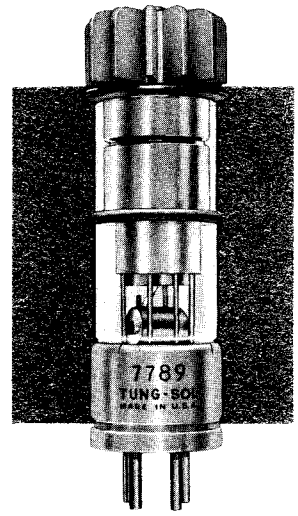
TUNG-SOL

PRODUCT BULLETIN

INDUSTRIAL ELECTRON TUBE TYPE 7789

JANUARY, 1963

HYDROGEN DIODE



DESCRIPTION The 7789 is an indirectly heated, hydrogen filled, half-wave diode designed for use in high-voltage rectifier circuits. The 7789 is a rugged diode that can handle higher voltage than comparable xenon-filled tubes, and is more efficient than vacuum rectifiers. An internally-connected hydrogen generator prevents gas clean-up.

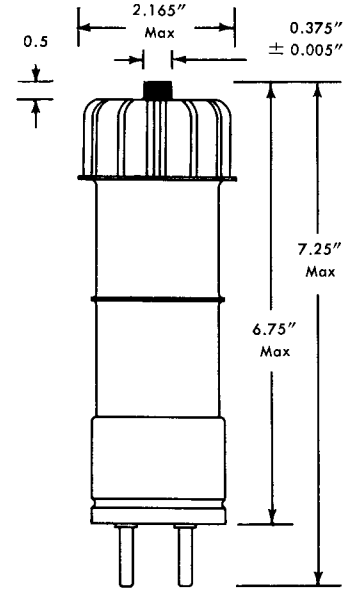
Contrasted with a solid state rectifier, the 7789 can withstand high current and inverse voltage surges. This diode also has the advantage of being temperature free and has a wide range of mounting positions as compared with mercury-vapor tubes. The 7789 is capable of delivering 0.4 ampere average at 15 kilovolts peak inverse voltage.

ELECTRICAL DATA

	Min	Bogey	Max	
Heater Voltage	4.75	5.00	5.25	Volts
Heater Current — E_f = 5.0 Volts	7.7	8.5	9.3	Amperes
Cathode Heating Time	3	—	—	Minutes
Anode Voltage Drop	30	40	50	Volts
Initial Firing Voltage	—	—	70	Volts
Recurrent Firing Voltage	30	—	50	Volts

MECHANICAL DATA

Type of Cooling	Convection
Mounting Position	Horizontal or Vertical (Base Down)
Average Net Weight	12 Ounces
Dimensions	See Outline Drawing
Base	JEDEC A4-81
Anode Connection	See Outline Drawing

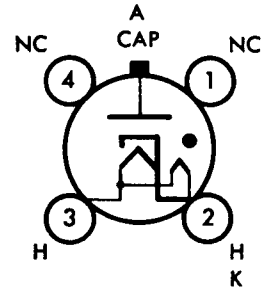


OUTLINE DRAWING

RATINGS, ABSOLUTE VALUES

	SHUNT DIODE SERVICE		RECTIFIER SERVICE		
	Minimum	Maximum	Minimum	Maximum	
Peak Inverse Anode Voltage	—	10,000	—	15,000	Volts
Cathode Current					
Peak	—	150	—	1.6	Amperes
Average	—	0.2	—	0.4	Ampere
RMS	—	5.5	—	—	Amperes
Fault — 0.1 Second Maximum Duration	—	200	—	30	Amperes
Averaging Time	—	—	—	15	Seconds
Ambient Temperature	−55	+75	−55	+75	Degrees Centigrade
Altitude	—	10,000	—	10,000	Feet

CAUTION — In order to avoid damage to tube, the cathode connection must be made to pin 2 only.



(SEE CAUTION NOTE)

BASIC DIAGRAM
BOTTOM VIEW

MAXIMUM RATING CHART *

FIG.	CIRCUIT	TRANSFORMER	NO. OF TUBES	A-C SECONDARY VOLTAGE E_{RMS} VOLTS	D-C OUTPUT — APPROX E_{DC} VOLTS	D-C OUTPUT — APPROX I_{DC} AMPS	RIPPLE VOLTS RMS	RIPPLE FREQ
1	Half-wave 1-phase	1-phase	1	10,500	4,800	0.4	5,250	f
2	Full-wave 1-phase	1-phase C-T	2	5,250	4,800	0.8	2,250	2f
3	Bridge circuit 1-phase	1-phase	4	10,500	9,500	0.8	4,500	2f
4	Half-wave 3-phase	Delta-Wye	3	6,150	7,200	1.2	1,300	3f
5	Full-wave 3-phase	Delta-Wye	6	6,150	14,300	1.2	600	6f
6	Full-wave 3-phase	Delta-Delta	6	10,500	14,300	1.2	600	6f
7	Half-wave 6-phase (3-phase supply)	Delta-Star	6	5,250	7,200	2.4	290	6f

For figure references see STANDARD RECTIFIER CIRCUITS AND RATINGS sheet.

The 7789 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.

* Values for Figure 1 assume pure resistive load. Values for all other Figures assume infinite inductance choke input filter.