

AMPEREX TUBE TYPE 6693

The 6693 is a single anode, high voltage, mercury vapor rectifier having ratings intermediate between the standard tube types 575A and 869B. It is particularly suitable for use in conjunction with modern power oscillator and amplifier tubes operating at high currents and lower voltages.

GENERAL CHARACTERISTICS

ELECTRICAL

| | |
|---|-------------------------------|
| Cathode | Directly heated, oxide coated |
| Filament Voltage | 5 volts ¹ |
| Filament Current | 11.5 amps |
| Heating Time (minimum) | 60 sec. ² |
| Tube Voltage Drop | 12 volts ³ |
| Equilibrium condensed mercury temperature rise over ambient (see curve) | |
| No Load | 19°C |
| Full Load | 21°C |

MECHANICAL

| | |
|---------------------|---------------------------------|
| Mounting Position | Vertical, base down |
| Max. Overall Length | 12 inches |
| Max. Seated Height | 11 5/16 inches |
| Max. Diameter | 2 27/32 inches |
| Plate Cap | Medium |
| Base | Super Jumbo, 4 pin with bayonet |
| Socket | Johnson 123-206 or equal ← |

- ¹ For optimum performance, a phase shift of $90^\circ \pm 30^\circ$ between the anode and filament voltages and use of a center tapped filament transformer are recommended.
- ² For average conditions, e.g. temperatures within limits and proper distribution of mercury. To insure proper distribution of mercury, upon installation and after a long interruption of service, a longer heating time is required before anode voltage is applied. In general, a time of 30 minutes will be sufficient.
- ³ Measured at an average anode current of 3 amps.

MAXIMUM RATINGS

| | | | |
|--|-----|-----|-----------|
| Peak Inverse Anode Voltage ⁴ | 15 | 2.5 | max. KV |
| Average Anode Current ⁵ | 3 | 5 | max. amps |
| Peak Anode Current | 12 | 20 | max. amps |
| Surge Anode Current for max. of 0.1 second | 120 | 200 | max. amps |

Relation Between Condensed Mercury Temperature, Ambient Temperature and Peak Inverse Voltage ⁶ (see curve)

| | | | | |
|----------------------------|-------|-------|-------|----|
| Peak Inverse Anode Voltage | 15 | 10 | 2.5 | KV |
| Condensed Mercury Temp. | 25-55 | 25-60 | 25-75 | °C |
| Ambient Temp. ⁷ | 15-35 | 15-40 | 15-55 | °C |

MAXIMUM OPERATING CONDITIONS

PEAK INVERSE ANODE VOLTAGE = 15 KV

(Transformer regulation and tube voltage drop are not included)

| Circuit Diagram | Type of Circuit | Max transformer sec. rms voltage (V _{tr}) KV | DC output voltage to filter (V _o) KV | Max DC output current to filter (I _o) Amps | Max DC output to filter (W _o) KW |
|-----------------|---|--|--|--|--|
| a. | Single-phase, full-wave, 2 tubes | 5.3 | 4.8 | 6 | 28.8 |
| b. | Single-phase, full-wave, 4 tubes | 10.6 | 9.6 | 6 | 57.6 |
| c. | Three-phase, half-wave, 3 tubes | 6.1 | 7.2 | 9 | 64.8 |
| d. | Three-phase, full-wave, 6 tubes | 10.6 | 14.4 | 9 | 129.6 |
| e. | Three-phase, double Y, 6 tubes parallel | 5.3 | 6.2 | 18 | 111.6 |
| f. | Four-phase, half-wave, 4 tubes | 5.3 | 6.7 | 12 | 80.4 |
| g. | Four-phase, full-wave, 8 tubes | 10.6 | 13.5 | 12 | 162.0 |

- ⁴ For supply frequency up to 150 cycles per second.
- ⁵ Averaged over 10-sec. interval
- ⁶ If the equipment is started at most twice daily it is permissible to apply high voltage at a condensed mercury temperature of 20°C.
- ⁷ With natural cooling, approx. values.

PEAK INVERSE VOLTAGE = 2.5 KV

(Transformer regulation and tube voltage drop are not included)

| Circuit Diagram | Type of Circuit | Max transformer sec. rms voltage (Vtr) KV | DC output voltage to filter (Vo) KV | Max DC output current to filter (Io) Amps | Max DC output to filter (Wo) KW |
|-----------------|----------------------------------|---|-------------------------------------|---|---------------------------------|
| a. | Single-phase, full-wave, 2 tubes | 0.88 | 0.79 | 10 | 7.9 |
| b. | Single-phase, full-wave, 4 tubes | 1.76 | 1.58 | 10 | 15.8 |
| c. | Three-phase, half-wave, 3 tubes | 1.02 | 1.19 | 15 | 17.9 |
| d. | Three-phase, full wave, 6 tubes | 1.76 | 2.38 | 15 | 35.8 |
| e. | Three-phase, double Y, 6 tubes | 0.88 | 1.03 | 30 | 30.9 |
| f. | Four-phase, half-wave, 4 tubes | 0.88 | 1.13 | 20 | 22.6 |
| g. | Four-phase, full-wave, 8 tubes | 1.76 | 2.26 | 20 | 45.2 |

TYPICAL OPERATING CONDITIONS
PEAK INVERSE VOLTAGE = MAX. 15 KV^B

| Circuit Diagram | Type of Circuit | No load transformer sec. rms voltage (Vtr) KV | DC output voltage to load ^a (Vo ₁) KV | Max DC output current (Io) Amps | DC output to load (Wo ₁) KW |
|-----------------|----------------------------------|---|--|---------------------------------|---|
| a. | Single-phase, full-wave, 2 tubes | 4.80 | 4.0 | 6 | 24 |
| b. | Single-phase, full-wave, 4 tubes | 9.60 | 8.0 | 6 | 48 |
| c. | Three-phase, half-wave, 3 tubes | 5.55 | 6.0 | 9 | 54 |
| d. | Three-phase, full-wave, 6 tubes | 9.60 | 12.0 | 9 | 108 |
| e. | Three-phase, double Y, 6 tubes | 4.80 | 5.15 | 18 | 93 |
| f. | Four-phase, half-wave, 4 tubes | 4.80 | 5.6 | 12 | 67 |
| g. | Four-phase, full-wave, 8 tubes | 9.60 | 11.2 | 12 | 134 |

^B This value corresponds to a nominal peak inverse anode voltage of 13.6 KV, allowing a line fluctuation of ± 10%.

^a Tube voltage drop and losses in transformer, filter, ammeter, etc. amounting to 8% of Vo₁ have already been deducted.

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