

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 trans- former sec. rms voltage (Vtr) KV	DC output voltage to filter (Vo) KV	Max DC out- put current to filter (Io) Amps	Max DC out- put to filter (Wo) 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 trans- former sec. rms voltage (Vtr) KV	DC output voltage to filter (Vo) KV	Max DC out- put current to filter (Io) Amps	Max DC out- put 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 trans- former sec. rms voltage (Vtr) KV	DC output voltage to load ^a (Vo ₁) KV	Max DC out- put 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 $\pm 10\%$.

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

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