
ELECTRON TUBE DATA, SHEET
WESTERN ELECTRIC 410A ELECTRON TUBE



DESCRIPTION

The 410A is a three-electrode mercury-vapor thyatron with a negative control characteristic. This tube is designed for use in controlled rectifier or inverter circuits.

MAXIMUM RATINGS

Peak Anode Voltage 1500 volts
Average Cathode Current 8 amperes

FILE: THYRATRON SECTION

MAXIMUM RATINGS, ABSOLUTE VALUES

Peak Anode Voltage

Inverse 1500 volts
 Forward 1500 volts

Cathode Current

Peak 32 amperes
 Average 8 amperes
 Surge (maximum duration 0.1 second) 320 amperes
 Averaging Time 15 seconds

Negative Grid Voltage

Before Conduction 500 volts
 During Conduction 10 volts

Positive Grid Current, Average

(Averaging time - one cycle). 0.25 ampere

Condensed Mercury Temperature Limits +30 to +80 centigrade

ELECTRICAL DATA

	Min.	Bogey	Max.
Filament Voltage	2.37	2.5	2.62 volts
Filament Current at 2.5 volts	----	18	21 amperes
Filament Heating Time Required	60	----	---- seconds
Anode to Grid Capacitance	----	15	---- uuf.
Grid to Filament Capacitance	----	15	---- uuf.
Deionization Time, Approximate ¹			
$E_{bb}=1500$ volts; $I_b=16$ amperes; } $E_{cc}=-30$ volts; $THg=80C$; $Rg=50000$ ohms }	----	1500	---- microseconds
$E_{bb}=500$ volts; $I_b=16$ amperes; } $E_{cc}=-30$ volts; $THg=50C$; $Rg=50000$ ohms }	----	300	---- microseconds
Ionization Time, Approximate ²			
$E_{bb}=100$ volts; $THg=40C$; Grid Overvoltage=5 volts	----	15	---- microseconds
$E_{bb}=100$ volts; $THg=80C$; Grid Overvoltage=25 volts	----	2	---- microseconds
Anode Voltage Drop	----	12	---- volts

MECHANICAL DATA

Type of Cooling Convection
 Equilibrium Condensed Mercury Temperature
 Rise Above Ambient
 At Full Load (approximate). 28 Centigrade
 At No Load (approximate). 16 Centigrade
 Mounting Position Vertical, filament terminals down
 Net Weight, Approximate 1.8 pounds

1. Deionization time decreases with an increase in negative grid voltage or with a decrease in (a) condensed mercury temperature (THg) (b) grid resistance or (c) anode current immediately preceding the end of conduction.
2. Ionization time decreases with an increase in (a) anode voltage, (b) condensed mercury temperature (THg) or (c) grid overvoltage. Grid overvoltage is defined as the magnitude by which the applied voltage exceeds, in a positive direction, the critical grid voltage value. Critical grid voltage is the instantaneous value of grid voltage at the time when anode current starts to flow.

TYPICAL CONTROL CHARACTERISTICS
 SHADED AREA SHOWS RANGE OF CHARACTERISTICS,
 CONDENSED MERCURY TEMPERATURE AS SHOWN



