



## ELECTRONIC TUBE REFERENCE

## 4016A

Power - Triode (over 1000V 100W) electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION

CONSTRUCTION

TRIODE

Pure-tungsten directly heated power triode for high-voltage Class B and Class C audio and RF service. Approximately 400 W plate dissipation and 4 kV plate capability support substantial transmitter or modulator stages through roughly 50 MHz.

## GENERAL CHARACTERISTICS

|                     |                   |                      |               |
|---------------------|-------------------|----------------------|---------------|
| BASE DESIGNATION    | —                 | BASE PINS            | —             |
| NOMINAL HEATER      | 14 V / 18 A       | PARALLEL HEATER      | — / —         |
| HEATING             | Direct            | SERIES OPERATION     | Not specified |
| CATHODE ARRANGEMENT | Separate cathodes | SECTION CONSTRUCTION | Similar       |

## SECTION RATINGS

|                                                                                                                           |                |
|---------------------------------------------------------------------------------------------------------------------------|----------------|
| SECTION 1 Triode                                                                                                          |                |
| PLATE RESISTANCE                                                                                                          | 15000 $\Omega$ |
| TRANSCONDUCTANCE                                                                                                          | 0.002 S        |
| AMPLIFICATION FACTOR                                                                                                      | 30             |
| MAXIMUM PLATE VOLTAGE                                                                                                     | 4000 V         |
| MAXIMUM PLATE DISSIPATION                                                                                                 | 400 W          |
| MAXIMUM GRID DISSIPATION                                                                                                  | 100 W          |
| MAXIMUM CATHODE CURRENT                                                                                                   | 300 mA         |
| <i>Published ratings and characteristics promoted where applicable; additional published data retained as parameters.</i> |                |

Standard Valves 4016A is a pure-tungsten directly heated triode intended for high-voltage power operation. The datasheet gives 4,000 V maximum direct anode voltage, 400 W maximum anode

dissipation, and Class B/Class C audio-frequency and radio-frequency operating conditions through 50 MHz.

## SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

# 1937 Standard Valves

Published test conditions and operating points. Values on this page are preserved as reported by this source.

## 1937 STANDARD VALVES

## Section 1 · Triode

| CHARACTERISTICS |                 |                         |
|-----------------|-----------------|-------------------------|
| PARAMETER       | PUBLISHED VALUE | CONDITION / NOTE        |
| Total Emission  | 12 A            | Published specification |

| CAPACITANCE                |                 |                         |
|----------------------------|-----------------|-------------------------|
| PARAMETER                  | PUBLISHED VALUE | CONDITION / NOTE        |
| Grid-Anode Capacitance     | 10 pF           | Published specification |
| Anode-Filament Capacitance | 2.5 pF          | Published specification |
| Grid-Filament Capacitance  | 10 pF           | Published specification |

| OTHER                                  |                 |                                                         |
|----------------------------------------|-----------------|---------------------------------------------------------|
| PARAMETER                              | PUBLISHED VALUE | CONDITION / NOTE                                        |
| Maximum Direct Anode Current           | 300 mA          | Published specification                                 |
| Maximum Frequency For Full Ratings     | 33 MHz          | Published specification                                 |
| Maximum Anode Voltage At 50 MHz        | 3500 V          | Frequency=50MHz                                         |
| Direct Anode Voltage                   | 4000 V          | ClassB; AFAmplifierOrModulator; BalancedTwoValveCircuit |
| Grid Bias                              | -100 V          | ClassB; AFAmplifierOrModulator; BalancedTwoValveCircuit |
| Zero-Signal Anode Current Per Valve    | 30 mA           | ClassB; AFAmplifierOrModulator; BalancedTwoValveCircuit |
| Maximum-Signal Anode Current Per Valve | 160 mA          | ClassB; AFAmplifierOrModulator; BalancedTwoValveCircuit |
| Anode Dissipation                      | 280 W           | ClassB; AFAmplifierOrModulator; BalancedTwoValveCircuit |
| Anode-to-Anode Load Resistance         | 23000 ohm       | ClassB; AFAmplifierOrModulator; BalancedTwoValveCircuit |

| PARAMETER                 | PUBLISHED VALUE | CONDITION / NOTE                                                        |
|---------------------------|-----------------|-------------------------------------------------------------------------|
| Maximum Output Two Valves | <b>700 W</b>    | ClassB; AFAmplifierOrModulator;<br>BalancedTwoValveCircuit              |
| Direct Anode Voltage      | <b>4000 V</b>   | ClassB; Telephony;<br>ModulatedCarrierAppliedToGrid;<br>Frequency=6MHz  |
| Direct Anode Current      | <b>120 mA</b>   | ClassB; Telephony;<br>ModulatedCarrierAppliedToGrid;<br>Frequency=6MHz  |
| Grid Bias                 | <b>-130 V</b>   | ClassB; Telephony;<br>ModulatedCarrierAppliedToGrid;<br>Frequency=6MHz  |
| Power Output              | <b>0.15 kW</b>  | ClassB; Telephony;<br>ModulatedCarrierAppliedToGrid;<br>Frequency=6MHz  |
| Anode Dissipation         | <b>0.33 kW</b>  | ClassB; Telephony;<br>ModulatedCarrierAppliedToGrid;<br>Frequency=6MHz  |
| Direct Anode Voltage      | <b>4000 V</b>   | ClassB; Telephony;<br>ModulatedCarrierAppliedToGrid;<br>Frequency=10MHz |
| Direct Anode Current      | <b>120 mA</b>   | ClassB; Telephony;<br>ModulatedCarrierAppliedToGrid;<br>Frequency=10MHz |
| Grid Bias                 | <b>-130 V</b>   | ClassB; Telephony;<br>ModulatedCarrierAppliedToGrid;<br>Frequency=10MHz |
| Power Output              | <b>0.14 kW</b>  | ClassB; Telephony;<br>ModulatedCarrierAppliedToGrid;<br>Frequency=10MHz |
| Anode Dissipation         | <b>0.34 kW</b>  | ClassB; Telephony;<br>ModulatedCarrierAppliedToGrid;<br>Frequency=10MHz |
| Direct Anode Voltage      | <b>4000 V</b>   | ClassB; Telephony;<br>ModulatedCarrierAppliedToGrid;<br>Frequency=33MHz |
| Direct Anode Current      | <b>120 mA</b>   | ClassB; Telephony;<br>ModulatedCarrierAppliedToGrid;<br>Frequency=33MHz |
| Grid Bias                 | <b>-130 V</b>   | ClassB; Telephony;<br>ModulatedCarrierAppliedToGrid;<br>Frequency=33MHz |
| Power Output              | <b>0.12 kW</b>  | ClassB; Telephony;<br>ModulatedCarrierAppliedToGrid;<br>Frequency=33MHz |

| PARAMETER            | PUBLISHED VALUE | CONDITION / NOTE                                                        |
|----------------------|-----------------|-------------------------------------------------------------------------|
| Anode Dissipation    | <b>0.36 kW</b>  | ClassB; Telephony;<br>ModulatedCarrierAppliedToGrid;<br>Frequency=33MHz |
| Direct Anode Voltage | <b>3500 V</b>   | ClassB; Telephony;<br>ModulatedCarrierAppliedToGrid;<br>Frequency=50MHz |
| Direct Anode Current | <b>100 mA</b>   | ClassB; Telephony;<br>ModulatedCarrierAppliedToGrid;<br>Frequency=50MHz |
| Grid Bias            | <b>-100 V</b>   | ClassB; Telephony;<br>ModulatedCarrierAppliedToGrid;<br>Frequency=50MHz |
| Power Output         | <b>0.1 kW</b>   | ClassB; Telephony;<br>ModulatedCarrierAppliedToGrid;<br>Frequency=50MHz |
| Anode Dissipation    | <b>0.25 kW</b>  | ClassB; Telephony;<br>ModulatedCarrierAppliedToGrid;<br>Frequency=50MHz |
| Direct Anode Voltage | <b>3000 V</b>   | ClassC; Telephony; AnodeModulated;<br>Frequency=6MHz                    |
| Direct Anode Current | <b>200 mA</b>   | ClassC; Telephony; AnodeModulated;<br>Frequency=6MHz                    |
| Grid Bias            | <b>-200 V</b>   | ClassC; Telephony; AnodeModulated;<br>Frequency=6MHz                    |
| Carrier Output       | <b>0.4 kW</b>   | ClassC; Telephony; AnodeModulated;<br>Frequency=6MHz                    |
| Anode Dissipation    | <b>0.2 kW</b>   | ClassC; Telephony; AnodeModulated;<br>Frequency=6MHz                    |
| Direct Anode Voltage | <b>3000 V</b>   | ClassC; Telephony; AnodeModulated;<br>Frequency=10MHz                   |
| Direct Anode Current | <b>200 mA</b>   | ClassC; Telephony; AnodeModulated;<br>Frequency=10MHz                   |
| Grid Bias            | <b>-200 V</b>   | ClassC; Telephony; AnodeModulated;<br>Frequency=10MHz                   |
| Carrier Output       | <b>0.375 kW</b> | ClassC; Telephony; AnodeModulated;<br>Frequency=10MHz                   |
| Anode Dissipation    | <b>0.225 kW</b> | ClassC; Telephony; AnodeModulated;<br>Frequency=10MHz                   |
| Direct Anode Voltage | <b>3000 V</b>   | ClassC; Telephony; AnodeModulated;<br>Frequency=33MHz                   |
|                      |                 |                                                                         |

| PARAMETER            | PUBLISHED VALUE    | CONDITION / NOTE                                   |
|----------------------|--------------------|----------------------------------------------------|
| Direct Anode Current | <b>200 mA</b>      | ClassC; Telephony; AnodeModulated; Frequency=33MHz |
| Grid Bias            | <b>-200 V</b>      | ClassC; Telephony; AnodeModulated; Frequency=33MHz |
| Carrier Output       | <b>0.36 kW</b>     | ClassC; Telephony; AnodeModulated; Frequency=33MHz |
| Anode Dissipation    | <b>0.24 kW</b>     | ClassC; Telephony; AnodeModulated; Frequency=33MHz |
| Direct Anode Voltage | <b>2500 V</b>      | ClassC; Telephony; AnodeModulated; Frequency=50MHz |
| Direct Anode Current | <b>160 mA</b>      | ClassC; Telephony; AnodeModulated; Frequency=50MHz |
| Grid Bias            | <b>-150 V</b>      | ClassC; Telephony; AnodeModulated; Frequency=50MHz |
| Carrier Output       | <b>0.18 kW</b>     | ClassC; Telephony; AnodeModulated; Frequency=50MHz |
| Anode Dissipation    | <b>0.22 kW</b>     | ClassC; Telephony; AnodeModulated; Frequency=50MHz |
| Direct Anode Voltage | <b>4000 V</b>      | ClassC; Telegraphy; Unmodulated; Frequency=6MHz    |
| Direct Anode Current | <b>200 mA</b>      | ClassC; Telegraphy; Unmodulated; Frequency=6MHz    |
| Grid Bias Range      | <b>-400--300 V</b> | ClassC; Telegraphy; Unmodulated; Frequency=6MHz    |
| Carrier Output       | <b>0.5 kW</b>      | ClassC; Telegraphy; Unmodulated; Frequency=6MHz    |
| Anode Dissipation    | <b>0.3 kW</b>      | ClassC; Telegraphy; Unmodulated; Frequency=6MHz    |
| Direct Anode Voltage | <b>4000 V</b>      | ClassC; Telegraphy; Unmodulated; Frequency=10MHz   |
| Direct Anode Current | <b>200 mA</b>      | ClassC; Telegraphy; Unmodulated; Frequency=10MHz   |
| Grid Bias Range      | <b>-400--300 V</b> | ClassC; Telegraphy; Unmodulated; Frequency=10MHz   |
| Carrier Output       | <b>0.45 kW</b>     | ClassC; Telegraphy; Unmodulated; Frequency=10MHz   |
| Anode Dissipation    | <b>0.35 kW</b>     | ClassC; Telegraphy; Unmodulated; Frequency=10MHz   |
| Direct Anode Voltage | <b>4000 V</b>      | ClassC; Telegraphy; Unmodulated; Frequency=33MHz   |

| PARAMETER            | PUBLISHED VALUE | CONDITION / NOTE                                 |
|----------------------|-----------------|--------------------------------------------------|
| Direct Anode Current | 200 mA          | ClassC; Telegraphy; Unmodulated; Frequency=33MHz |
| Grid Bias Range      | -400--300 V     | ClassC; Telegraphy; Unmodulated; Frequency=33MHz |
| Carrier Output       | 0.4 kW          | ClassC; Telegraphy; Unmodulated; Frequency=33MHz |
| Anode Dissipation    | 0.4 kW          | ClassC; Telegraphy; Unmodulated; Frequency=33MHz |
| Direct Anode Voltage | 3500 V          | ClassC; Telegraphy; Unmodulated; Frequency=50MHz |
| Direct Anode Current | 160 mA          | ClassC; Telegraphy; Unmodulated; Frequency=50MHz |
| Grid Bias Range      | -350--250 V     | ClassC; Telegraphy; Unmodulated; Frequency=50MHz |
| Carrier Output       | 0.3 kW          | ClassC; Telegraphy; Unmodulated; Frequency=50MHz |
| Anode Dissipation    | 0.22 kW         | ClassC; Telegraphy; Unmodulated; Frequency=50MHz |



SOURCE DATA APPENDIX

## SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

# 1946 Standard Telephone and Cables

Published test conditions and operating points. Values on this page are preserved as reported by this source.

## 1946 STANDARD TELEPHONE AND CABLES

### Section 1 · Triode

| OTHER                        |                 |                  |
|------------------------------|-----------------|------------------|
| PARAMETER                    | PUBLISHED VALUE | CONDITION / NOTE |
| Maximum direct anode voltage | 4000 V          | —                |
| Maximum anode dissipation    | 400 W           | —                |
| Maximum grid dissipation     | 100 W           | —                |

## TUBE TINKER

An independent reference for electronic tubes, vacuum tubes, and their source documents.

