ELECTRONIC TUBE REFERENCE

7815AL

Power - Triode Single (under 10W) electronic tube

CONSOLIDATED TECHNICAL DATA
1 SECTION
CONSTRUCTION
TRIODE

High-reliability ceramic-metal planar triode designed for pulsed airborne service at frequencies extending to approximately 3 GHz.

General characteristics

BASE DESIGNATION	_	**BASE PINS**	_
NOMINAL HEATER	5.7 V / 950 mA	**PARALLEL HEATER**	_ / _
HEATING	Indirect	**SERIES OPERATION**	Not specified
CATHODE ARRANGEMENT	Separate cathodes	**SECTION CONSTRUCTION**	Similar

Section ratings

SECTION1 Triode

TRANSCONDUCTANCE	0.025 S
AMPLIFICATION FACTOR	100
MAXIMUM PLATE VOLTAGE	3500 V
MAXIMUM PLATE DISSIPATION	10 W
MAXIMUM GRID DISSIPATION	2 W
MAXIMUM CATHODE CURRENT	4.8 A

Promoted maximum ratings/characteristics populated from published headings; service-specific values retained in parameters.

Airline/high-reliability ceramic/metal planar triode for pulsed airborne service to 3 GHz.

SOURCE OPERATING CONDITIONS

1962 Eimac

SOURCE PDF

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

1962 EIMAC

Section 1 · Triode

OTHER		
PARAMETER	**PUBLISHED VALUE**	**CONDITION / NOTE**
Current, at [1]	**5.7 V**	Current, at 5.7 vOltS . . . v v v it s i s it e s e e e 0.95 A
Current, at [2]	**0.95 V**	Current, at 5.7 vOltS . . . v v v it s i s it e s e e e 0.95 A
Amplification Factor (Average) « v v v v v v v vt v it vttt it ii s oo ee e	**100**	Amplification Factor (Average) « v v v v v v v vt v it vttt it ii s oo ee e 100
Direct Interelectrode Capacitance (grounded cathode)	**2**	Direct Interelectrode Capacitance (grounded cathode)2,without heater voltage:
Published value	**2**	2. Capacitance values are for a cold tube as measured in a special shielded fixture.
RF POWER AMPLIFIER OR OSCILLATOR OPERATING CONDITIONS FOR THE [1]	**7815**	RF POWER AMPLIFIER OR OSCILLATOR OPERATING CONDITIONS FOR THE 7815AL and 7815RAL in
RF POWER AMPLIFIER OR OSCILLATOR OPERATING CONDITIONS FOR THE [2]	**7815**	RF POWER AMPLIFIER OR OSCILLATOR OPERATING CONDITIONS FOR THE 7815AL and 7815RAL in
Frequency	**1.09 GHz**	Frequency ... ... 1.090 GHz
DC PLATE VOLTAGE [1]	**3500 V**	DC PLATE VOLTAGE . . .. 3500 vOLTS Heater Voltage . .....¢.cou ... 5.7 V
DC PLATE VOLTAGE [2]	**5.7 V**	DC PLATE VOLTAGE . . .. 3500 vOLTS Heater Voltage . .....¢.cou ... 5.7 V
DCPlateVoltage . . . . .cv i e v,	**2000**	DCPlateVoltage . . . . .cv i e v, 2000 Vdc
PLATEPULSED [1]	**4500 V**	PLATEPULSED . . . . 4500 VOLTS DC Grid Voltage 75 Vde
PLATEPULSED [2]	**75 V**	PLATEPULSED . . . . 4500 VOLTS DC Grid Voltage 75 Vde

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
DC GRID VOLTAGE	**-150 V**	DC GRID VOLTAGE . . . . -150 VOLTS Poak Plate CumantT o
to cathode	**-700 V**	to cathode -700 VOLTS Pulse Duration. . ..o vvee
Grid positive to cathode [1]	**250 V**	Grid positive to cathode 250 VOLTS Useful Power Output (Approx.) 760
Grid positive to cathode [2]	**760 V**	Grid positive to cathode 250 VOLTS Useful Power Output (Approx.) 760
PULSE PLATE CURRENT	**3 A**	PULSE PLATE CURRENT ... ... 3.0 AMPERE PUTIAPRION) e e e eeeeee W
PULSE GRID CURRENT	**1.8 A**	PULSE GRID CURRENT . ... 1.8 AMPERE Plate-Pulsed Amplifier
DC CATHODE CURRENT [1]	**125 mA**	DC CATHODE CURRENT . . .. .. 125 MILLIAMPERES Frequency . ..., 1.1 GHz
DC CATHODE CURRENT [2]	**1.1 mA**	DC CATHODE CURRENT . . .. .. 125 MILLIAMPERES Frequency . ..., 1.1 GHz
AVERAGE PLATE DISSIPATION Heater Voltage	**57**	AVERAGE PLATE DISSIPATION Heater Voltage .. .. 57 V
Conduction and Convection Peak Plate Pulse Voltage	**2000**	Conduction and Convection Peak Plate Pulse Voltage . . . . 2000 Vdc
([1]	**781 W**	(781BAL) . . . . v o o v e 10 WATTS DCGridVoltage . ... v, -45 Vdc
([2]	**10 W**	(781BAL) . . . . v o o v e 10 WATTS DCGridVoltage . ... v, -45 Vdc
([3]	**-45 W**	(781BAL) . . . . v o o v e 10 WATTS DCGridVoltage . ... v, -45 Vdc
Forced Air Cooling({ [1]	**7815 W**	Forced Air Cooling({7815RAL). . 45 WATTS Peak Plate Current . . .. 1.8 a
Forced Air Cooling({ [2]	**45 W**	Forced Air Cooling({7815RAL). . 45 WATTS Peak Plate Current . . .. 1.8 a
Forced Air Cooling({ [3]	**1.8 W**	Forced Air Cooling({7815RAL). . 45 WATTS Peak Plate Current . . .. 1.8 a
GRID DISSIPATION (Average) [1]	**2 W**	GRID DISSIPATION (Average) . . . 2 WATTS Peak Grid Current .. .. 1.0 a
GRID DISSIPATION (Average) [2]	**1 W**	GRID DISSIPATION (Average) . . . 2 WATTS Peak Grid Current .. .. 1.0 a
DUTY FACTORT [1]	**33**	DUTY FACTORT . ..... 0033 Pulse Duration. . .. . 3.5 pus
DUTY FACTORT [2]	**3.5**	DUTY FACTORT . ..... 0033 Pulse Duration. . .. . 3.5 pus

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
PULSE DURATIONT [1]	**6**	PULSE DURATIONT . .. . 6 us DUty . it e e e e e e e e e e 0.001
PULSE DURATIONT [2]	**0.001**	PULSE DURATIONT . .. . 6 us DUty . it e e e e e e e e e e 0.001
FREQUENCY [1]	**3 GHz**	FREQUENCY ... ... 3 GHz DrivingPower ., ... 300 w
FREQUENCY [2]	**300 GHz**	FREQUENCY ... ... 3 GHz DrivingPower ., ... 300 w
Useful Power Output (Approx.) « «	**1800**	Useful Power Output (Approx.) « « . ... 1800 w
Published value [1]	**1**	1, For longer pulse duration or higher duty cycle, GaIN v e e e e 8 db
Published value [2]	**8**	1, For longer pulse duration or higher duty cycle, GaIN v e e e e 8 db
Heater Current at [1]	**5.7**	Heater Current at 5.7 vOIfS + v v v v i e v it et et e e ettt e n et anneas 0.87 1.02 A
Heater Current at [2]	**0.87**	Heater Current at 5.7 vOIfS + v v v v i e v it et et e e ettt e n et anneas 0.87 1.02 A
Heater Current at [3]	**1.02**	Heater Current at 5.7 vOIfS + v v v v i e v it et et e e ettt e n et anneas 0.87 1.02 A
Grid-Plate Capacitance2. . . . v oot v vttt i ittt [1]	**1.85 pF**	Grid-Plate Capacitance2. . . . v oot v vttt i ittt 1.85 2.10 pF
Grid-Plate Capacitance2. . . . v oot v vttt i ittt [2]	**2.1 pF**	Grid-Plate Capacitance2. . . . v oot v vttt i ittt 1.85 2.10 pF
Grid-Cathode Capacitance2. . . v v v v v vt vttt it i et ts s et an [1]	**5.6 pF**	Grid-Cathode Capacitance2. . . v v v v v vt vttt it i et ts s et an 5.60 7.00 pF
Grid-Cathode Capacitance2. . . v v v v v vt vttt it i et ts s et an [2]	**7 pF**	Grid-Cathode Capacitance2. . . v v v v v vt vttt it i et ts s et an 5.60 7.00 pF
Plate-Cathode Capacitance ..... e et ettt	**0.035 pF**	Plate-Cathode Capacitance ..... e et ettt --- 0.035 pF
Published value [1]	**1 mA**	1. Measured with 1 mA plate current and a plate voltage of 1000 vdc.
Published value [2]	**1 mA**	1. Measured with 1 mA plate current and a plate voltage of 1000 vdc.
Published value [3]	**1000 mA**	1. Measured with 1 mA plate current and a plate voltage of 1000 vdc.
Published value	**2**	2. Capacitance values as measured with a cold tube and in a8 shielded socket. When the cathode is heated to the pro-

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
per temperature the grid-cathode capacitance will increase by approximately	**1 pF**	per temperature the grid-cathode capacitance will increase by approximately 1 pF due to thermal expansion of the
drawing. Electrical contact to the cathode, grid, The maximum plate dissipation of the	**7815**	drawing. Electrical contact to the cathode, grid, The maximum plate dissipation of the 7815AL
anode and also the heater should be restricted to is	**10 W**	anode and also the heater should be restricted to is 10 watts average power. This can be accomp-
tubes. Dimensional changes due to normal varia- sipation of the [1]	**7815**	tubes. Dimensional changes due to normal varia- sipation of the 7815RAL in pulse service is 45
tubes. Dimensional changes due to normal varia- sipation of the [2]	**45**	tubes. Dimensional changes due to normal varia- sipation of the 7815RAL in pulse service is 45
possible tube life. Depending on pulse width, tion capability of these tubes is	**2 W**	possible tube life. Depending on pulse width, tion capability of these tubes is 2.0 watts. For
oscillation and the amount of driving power di- safe operating temperatures in	**50**	oscillation and the amount of driving power di- safe operating temperatures in 50 ms or less.
heating, which depends on operating frequency	**7815**	heating, which depends on operating frequency 7815RAL contain an arc-resistant cathode. Per-
to cathode capacitance will be	**15**	to cathode capacitance will be 15%, or more, forward current. For pulse service the peak cur-
PLATE VOLTAGE (V) CURVE #MA	**2373 mA**	PLATE VOLTAGE (V) CURVE #MA-2373

SOURCE OPERATING CONDITIONS

SOURCE PDF

1975 Eimac Tube Manual

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

1975 EIMAC TUBE MANUAL

Section 1 · Triode

CHARACTERISTIC		
PARAMETER	**PUBLISHED VALUE**	**CONDITION / NOTE**
Heater Current Range	**870 mA–1.02 A**	—
Cathode Heating Time	**60 s**	—
Airline High Reliability Processing	**1 boolean**	—

CAPACITANCE		
PARAMETER	**PUBLISHED VALUE**	**CONDITION / NOTE**
Input Capacitance	**6.3 pF**	—
Output Capacitance	**0.035 pF**	—
Grid-Plate Capacitance	**1.98 pF**	—

OTHER		
PARAMETER	**PUBLISHED VALUE**	**CONDITION / NOTE**
Frequency Maximum	**3 GHz**	—
Pulse Plate Voltage Maximum	**3500 V**	PlatePulsed
Pulse Current Maximum	**4.8 A**	PulseModulator
Pulse Duration Maximum	**6 us**	—
Duty Factor Maximum	**0.0033**	—
Pulse Cathode Current Maximum	**4.8 A**	—

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Section 1 · Triode

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PARAMETER	**PUBLISHED VALUE**	**CONDITION / NOTE**
Heater Current Range	**870 mA–1.02 A**	—

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Cathode Heating Time	**60 s**	—
Airline High Reliability Processing	**1 boolean**	—

CAPACITANCE

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Input Capacitance	**6.3 pF**	—
Output Capacitance	**0.035 pF**	—
Grid-Plate Capacitance	**1.98 pF**	—

OTHER

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Frequency Maximum	**3 GHz**	—
Pulse Plate Voltage Maximum	**3500 V**	PlatePulsed
Pulse Current Maximum	**4.8 A**	PulseModulator
Pulse Duration Maximum	**6 us**	—
Duty Factor Maximum	**0.0033**	—
Pulse Cathode Current Maximum	**4.8 A**	—

Tube Tinker

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