

ELECTRONIC TUBE REFERENCE

4647

Power - Tetrode (NOT beam) (over 1000V 100W) electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION
CONSTRUCTION
TETRODE

High-power RF tetrode designed for continuous-wave and pulsed amplification to approximately 1 GHz. RCA documentation provides RF, pulse, cooling, and application-specific operating limits.

GENERAL CHARACTERISTICS

BASE DESIGNATION	—	BASE PINS	—
NOMINAL HEATER	3.7 V / 840 A	PARALLEL HEATER	— / —
HEATING	Direct	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION1 Tetrode	
AMPLIFICATION FACTOR	9
MAXIMUM PLATE VOLTAGE	32000 V
MAXIMUM SCREEN VOLTAGE	1500 V
MAXIMUM PLATE DISSIPATION	125000 W
MAXIMUM CATHODE CURRENT	23 A
Published maximum ratings/general electrical characteristics promoted directly; pulse, RF, capacitance, cooling, and service-specific values retained in TUBE_SECTION_PARAMETER.	

High-power RF tetrode for CW and pulsed amplification to 1000 MHz; type 4647. The RCA source was reviewed for heater/filament data, maximum ratings, RF and pulse operating conditions, capacitances, cooling requirements, and application-specific limits.

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

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

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Section 1 · Tetrode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum plate voltage	32000 V	PromotedValue
Maximum screen-grid voltage	1500 V	PromotedValue
Maximum plate dissipation	20000 W	PromotedValue
Maximum cathode/plate current	1.7 A	PromotedValue
Maximum Ceramic-Insulator Temperature	150 degC	Published datasheet value
Maximum Metal -Surface Temperature	100	Published datasheet value
Peak Positive-Pulse Grid-No.2 Voltage1.k . . 1500	1.5 A	Pulse
Grid-No.t Voltage	400 mA	Published datasheet value
Peak Plate Current	28 mA	Published datasheet value
Peak Grid-No.2 Current	2 mA	Published datasheet value
Peak Rectified Grid-No.t Current	2.5 mA	Published datasheet value
DC Plate Current	1.7 mA	Published datasheet value
DC Grid-No.2 Current	120 mA	Published datasheet value
DC Grid-No.1 Current	150 mA	Published datasheet value
In Class 8 service at 425 kHz with a rectangular waveshape pulse at a	8	Pulse
DC Plate Voltage	22000 V	Published datasheet value
DC Grid-No.1 Voltage	400 mA	Published datasheet value
DC Plate Current	23 mA	Published datasheet value

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate Dissipationm	125000 W	Published datasheet value
Grid-No.2 Dissipationm	1800 W	Published datasheet value
,,.,.~ Grid-No.t Dissipationm	1500 W	Published datasheet value
DC Grid-No.2 Voltage	1.1 A	Published datasheet value
DC Plate Current	13 mA	Published datasheet value
Plate Dissipationm	75000 W	Published datasheet value
Grid-No.2 Dissipationm	1300 W	Published datasheet value

CHARACTERISTICS		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Mu / amplification factor	9	PromotedValue
Heater/filament voltage	3.7 V	Nominal operating value
Heater/filament current	840 A	Nominal operating value
■ Pulsed Output up tc: 500 kW peak (4647)	500000 W	Pulse
■ Full Input to 1000 MHz (Each Type)	1000 MHz	Published datasheet value
■ Power Gain up to 28 d6 (Each Type)	28	Published datasheet value
Current, do operating,	840	Published datasheet value
Voltage at 840 A	3.7 V	Published datasheet value
Operating Voltage	60 V	Published datasheet value
Voltage Before Applying Plate Voltage	60 V	Published datasheet value
Mu-Factor (grid No.2 to grid No.1)	9	Published datasheet value
Grid No.1 to plate	0.3 pF	Published datasheet value
Grid No.1 to grid No.2 and cathode	680 pF	Published datasheet value
Plate to cathode and grid No.2	85 pF	Published datasheet value
Grid No.2 to cathode	130 pF	Published datasheet value
Grid No.2 to grid No.t	425 pF	Published datasheet value
Grid No.1 to cathode	255 pF	Published datasheet value
Minimum Storage Temperatureb	65	Published datasheet value

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Peak Positive-Pulse Plate Voltage ^h	32000 V	Pulse
duty factor ⁹ of 0.06 and a pulse duration ⁹ of 2000 microseconds	0.06 us	Pulse
Peak Positive-Pulse Plate Voltage ^h	30000 V	Pulse
Peak Positive-Pulse Grid-No.2 Voltage ^l	1400 V	Pulse
Peak Negative-Pulse Grid-No.1 Voltage ⁿ	225 V	Pulse
Peak Plate Current	25	Published datasheet value
Peak Grid-No.2 Current	1.3	Published datasheet value
Peak Rectified Grid-No.1 Current	2.5	Published datasheet value
DC Plate Current	1.5	Published datasheet value
DC Grid-No.2 Current	80 mA	Published datasheet value
DC Grid-No.1 Current	150 mA	Published datasheet value
Peak Driver Power Output (approx. ^l)	750	Published datasheet value
Output Circuit Efficiency (approx.)	95	Published datasheet value
Useful Peak Power Output	500000 W	Published datasheet value
DC Plate Voltage	20000 V	Published datasheet value
DC Grid-No.2 Voltage	1200 V	Published datasheet value
DC Plate Current	19	Published datasheet value
DC Grid-No.2 Current	8	Published datasheet value
DC Grid-No.1 Current	18	Published datasheet value
Driver Power (approx.)	500	Published datasheet value
Circuit Efficiency (approx. ^l)	95	Published datasheet value
Useful Power Output (approx.)	250000 W	Published datasheet value
DC Plate Voltage	16000 V	Published datasheet value
DC Plate Voltage	14000 V	Published datasheet value
DC Grid-No.2 Voltage	1000 V	Published datasheet value
DC Grid-No.1 Voltage	250 V	Published datasheet value

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Peak RF Grid-No.1 Voltage	280 V	Published datasheet value
DC Plate Current	11	Published datasheet value
DC Grid-No.2 Current	1.3	Published datasheet value
DC Grid-No.1 Current	1.3	Published datasheet value
Driver Power Output (approx.)	375	Published datasheet value
Output-Circuit Efficiency (approx.)	95	Published datasheet value
Useful Power Output (approx.)	100000 W	Published datasheet value
RCA Power Tubes", ICE-279A. During shipment the tube	279	Published datasheet value
ring surrounding the grid-No.1 terminal using four 10-32	10	Published datasheet value
6; Remove the wooden mounting plate from the tube by	6	Published datasheet value
8. Reattach the wooden mounting plate to the spring sup	8	Published datasheet value
3. Set tube down resting on mounting plate	3	Published datasheet value
5. Lift tube using the eye-bolts on the mounting plate. It is	5	Published datasheet value
1. Visually inspect the coolant separator and tube anode	1	Published datasheet value
3. Carefully insert the AJ2196 Plate Coolant Separator into	3	Published datasheet value
Power Dissipation in kW = 0.264 (GPM) (Tout – Tin)	264 W	Published datasheet value
plication Guide for RCA Power Tubes" 10E-279	10	Published datasheet value
Filament, Grid No. 1 and Grid No. 2 (Type 4647)	2	Published datasheet value
Filament	15	Published datasheet value
Filament Ground	15	Published datasheet value

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Grid No.1	17	Published datasheet value
Grid No.2	15	Published datasheet value
Filament, Grid No. 1 and Grid No. 2 (Type 4648)	2	Published datasheet value
Filament	20	Published datasheet value
Filament Ground 2.0	20	Published datasheet value
Grid No.1	23	Published datasheet value
Grid No.2	20	Published datasheet value
FILAMENT TERMINAL d	8	Published datasheet value
RF GRID No. 1	1	Published datasheet value
DETAIL OF RF INPUT CATHODE AND RF GRID NO. 1 TERMINAL	1	Published datasheet value
NAL, CONTACT SURFACES AND DC GRID NO. 1 TERMINAL	1	Published datasheet value