



ELECTRONIC TUBE REFERENCE

3J187E

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

CONSOLIDATED TECHNICAL DATA

1 SECTION

CONSTRUCTION

TRIODE

Industrial power triode for Class C RF-heating oscillators, with Class B audio-amplifier or modulator service also specified. Its multi-kilowatt dissipation and output capability target large industrial RF generators.

GENERAL CHARACTERISTICS

BASE DESIGNATION	—	BASE PINS	—
NOMINAL HEATER	5 V / 100 A	PARALLEL HEATER	— / —
HEATING	Direct	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION 1 Triode	
TRANSCONDUCTANCE	0.022 S
AMPLIFICATION FACTOR	12
MAXIMUM PLATE VOLTAGE	6500 V
MAXIMUM PLATE DISSIPATION	4000 W
MAXIMUM GRID DISSIPATION	200 W
<i>Published maximum ratings and characteristics audited; remaining values retained densely in parameter table.</i>	

The 3J187E is an industrial power triode for class-C RF heating oscillators and class-B audio-frequency power-amplifier or modulator service.

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1962 ITT

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

1962 ITT

Section 1 · Triode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Filament voltage	5 V	Filament voltage 5 v
Nominal current	78 A	Nominal current 78 A
Cold filament resistance [1]	0 ohm	Cold filament resistance 0-0075 Q
Cold filament resistance [2]	-75 ohm	Cold filament resistance 0-0075 Q
Note [1]	1	Note 1.—For a filament supply regulated to -5 per cent.
Note [2]	-5	Note 1.—For a filament supply regulated to -5 per cent.
Mutual conductance Va = [1]	2 mA/V	Mutual conductance Va = 2kV: Vg = —75V 22 mA/V
Mutual conductance Va = [2]	-75 mA/V	Mutual conductance Va = 2kV: Vg = —75V 22 mA/V
Mutual conductance Va = [3]	22 mA/V	Mutual conductance Va = 2kV: Vg = —75V 22 mA/V
Grid to anode	29	Grid to anode 29 pF
Grid to filament	54	Grid to filament 54 pF
Anode to filament [1]	1	Anode to filament 1-5 pF
Anode to filament [2]	-5	Anode to filament 1-5 pF
Maximum radiator core temperature [1]	220	Maximum radiator core temperature 220 220 °C
Maximum radiator core temperature [2]	220	Maximum radiator core temperature 220 220 °C
Maximum seal temperature (Note [1])	2	Maximum seal temperature (Note 2) 180 220 °C
Maximum seal temperature (Note [2])	180	Maximum seal temperature (Note 2) 180 220 °C

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum seal temperature (Note [3])	220	Maximum seal temperature (Note 2) 180 220 °C
Note	2	Note 2.—To ensure that the stem seals are kept below the stated temperatures it is
necessary to direct into the grid flange a flow of cooling air of the order of	10	necessary to direct into the grid flange a flow of cooling air of the order of 10 to
Published value [1]	50	50 fe*/min (0,28 to 1,42 m3/min) dependent upon the circuit and frequency
Published value [2]	28	50 fe*/min (0,28 to 1,42 m3/min) dependent upon the circuit and frequency
Published value [3]	142	50 fe*/min (0,28 to 1,42 m3/min) dependent upon the circuit and frequency
Published value [1]	214	214-LVA-001A Filament connector, smaller
Published value [2]	1	214-LVA-001A Filament connector, smaller
Published value [1]	214	214-LVA-001B Filament connector, larger
Published value [2]	1	214-LVA-001B Filament connector, larger
Published value [1]	214	214-LYA-001C Grid connector
Published value [2]	1	214-LYA-001C Grid connector
direct voltage plus ripple) [1]	55 V	direct voltage plus ripple) 55 6-5 134
direct voltage plus ripple) [2]	6 V	direct voltage plus ripple) 55 6-5 134
direct voltage plus ripple) [3]	-5 V	direct voltage plus ripple) 55 6-5 134
direct voltage plus ripple) [4]	134 V	direct voltage plus ripple) 55 6-5 134
Maximum direct anode current [1]	2 mA	Maximum direct anode current 2 2 A
Maximum direct anode current [2]	2 mA	Maximum direct anode current 2 2 A
Maximum direct anode dissipation (continuous) [1]	3 kW	Maximum direct anode dissipation (continuous) 3 3 kw
Maximum direct anode dissipation (continuous) [2]	3 kW	Maximum direct anode dissipation (continuous) 3 3 kw
Maximum direct grid dissipation (continuous) [1]	200 W	Maximum direct grid dissipation (continuous) 200 200 w
Maximum direct grid dissipation (continuous) [2]	200 W	Maximum direct grid dissipation (continuous) 200 200 w

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum direct grid current (Note [1])	3 mA	Maximum direct grid current (Note 3) 500 500 mA
Maximum direct grid current (Note [2])	500 mA	Maximum direct grid current (Note 3) 500 500 mA
Maximum direct grid current (Note [3])	500 mA	Maximum direct grid current (Note 3) 500 500 mA
Maximbm negative grid bias [1]	-1500	Maximbm negative grid bias —1500 —1500 \
Maximbm negative grid bias [2]	-1500	Maximbm negative grid bias —1500 —1500 \
Note	3 W	Note 3.—This figure is given for guidance. Grid dissipation is absolute rating.
Direct anode voltage S [1]	6 kV	Direct anode voltage S 6 6-5 kv
Direct anode voltage S [2]	6 kV	Direct anode voltage S 6 6-5 kv
Direct anode voltage S [3]	-5 kV	Direct anode voltage S 6 6-5 kv
Direct grid voltage – [1]	560 V	Direct grid voltage — 560 —650 -720 v
Direct grid voltage – [2]	-650 V	Direct grid voltage — 560 —650 -720 v
Direct grid voltage – [3]	-720 V	Direct grid voltage — 560 —650 -720 v
Direct anode current [1]	16 A	Direct anode current 16 15 18 A
Direct anode current [2]	15 A	Direct anode current 16 15 18 A
Direct anode current [3]	18 A	Direct anode current 16 15 18 A
Peak r.f. grid voltage [1]	760 V	Peak r.f. grid voltage 760 890 970 \
Peak r.f. grid voltage [2]	890 V	Peak r.f. grid voltage 760 890 970 \
Peak r.f. grid voltage [3]	970 V	Peak r.f. grid voltage 760 890 970 \
Direct grid current (Note [1])	4 mA	Direct grid current (Note 4) 100 (140) 130 (190) 150 (200) mA
Direct grid current (Note [2])	100 mA	Direct grid current (Note 4) 100 (140) 130 (190) 150 (200) mA
Direct grid current (Note [3])	140 mA	Direct grid current (Note 4) 100 (140) 130 (190) 150 (200) mA
Direct grid current (Note [4])	130 mA	Direct grid current (Note 4) 100 (140) 130 (190) 150 (200) mA
Direct grid current (Note [5])	190 mA	Direct grid current (Note 4) 100 (140) 130 (190) 150 (200) mA
Direct grid current (Note [6])	150 mA	Direct grid current (Note 4) 100 (140) 130 (190) 150 (200) mA

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Direct grid current (Note [7])	200 mA	Direct grid current (Note 4) 100 (140) 130 (190) 150 (200) mA
Grid dissipation {Note [1]}	4 W	Grid dissipation {Note 4) 25 55 55 w
Grid dissipation {Note [2]}	25 W	Grid dissipation {Note 4) 25 55 55 w
Grid dissipation {Note [3]}	55 W	Grid dissipation {Note 4) 25 55 55 w
Grid dissipation {Note [4]}	55 W	Grid dissipation {Note 4) 25 55 55 w
Grid resistor [1]	5	Grid resistor 5-6 5 4-8 kQ
Grid resistor [2]	-6	Grid resistor 5-6 5 4-8 kQ
Grid resistor [3]	5	Grid resistor 5-6 5 4-8 kQ
Grid resistor [4]	4	Grid resistor 5-6 5 4-8 kQ
Grid resistor [5]	-8	Grid resistor 5-6 5 4-8 kQ
Power input , g [1]	9 kW	Power input , g 9 17 kW
Power input , g [2]	17 kW	Power input , g 9 17 kW
Output power (oscillator) [1]	5 W	Output power (oscillator) 5-4 69 89 1397
Output power (oscillator) [2]	-4 W	Output power (oscillator) 5-4 69 89 1397
Output power (oscillator) [3]	69 W	Output power (oscillator) 5-4 69 89 1397
Output power (oscillator) [4]	89 W	Output power (oscillator) 5-4 69 89 1397
Output power (oscillator) [5]	1397 W	Output power (oscillator) 5-4 69 89 1397
Power into load at	85 W	Power into load at 85 per cent
transfer efficiency [1]	4	transfer efficiency 4-6 58 7-5 kW
transfer efficiency [2]	-6	transfer efficiency 4-6 58 7-5 kW
transfer efficiency [3]	58	transfer efficiency 4-6 58 7-5 kW
transfer efficiency [4]	7	transfer efficiency 4-6 58 7-5 kW
transfer efficiency [5]	-5	transfer efficiency 4-6 58 7-5 kW
Maximum direct anode current	2 mA	Maximum direct anode current 2 A
Maximum direct anode dissipation (intermittent)	5 kW	Maximum direct anode dissipation (intermittent) 5 kW
Maximum direct anode dissipation (continuous)	4 kW	Maximum direct anode dissipation (continuous) 4 kW

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum direct grid dissipation (continuous)	200 W	Maximum direct grid dissipation (continuous) 200 w
Maximum direct grid voltage	-1500 V	Maximum direct grid voltage —1500 A
Direct anode voltage	5 kV	Direct anode voltage 5 kv
Direct grid voltage —~	350 V	Direct grid voltage —~350 v
Direct anode current (zero signal) per valve	2 A	Direct anode current (zero signal) per valve 02 A
Direct anode current (maximum signal) per valve	19 mA	Direct anode current (maximum signal) per valve . 19 A
Load resistor, anode to anode	27	Load resistor, anode to anode 27 kQ
Peak a.f. grid to grid voltage	1040 V	Peak a.f. grid to grid voltage 1040 v
Grid drive power, approximately ([1]	2 W	Grid drive power, approximately (2 valves) 85 w
Grid drive power, approximately ([2]	85 W	Grid drive power, approximately (2 valves) 85 w
Direct grid current, per valve	80 mA	Direct grid current, per valve 80 mA