

INCH-POUND
MIL-PRF-1/262H
14 March 2013
SUPERSEDING
MIL-PRF-1/262G
24 April 2007

PERFORMANCE SPECIFICATION SHEET

ELECTRON TUBE, RECEIVING

TYPE 6203

Inactive for new design
after 7 March 1997

This specification is approved for use by all Departments
and Agencies of the Department of Defense.

The requirements for acquiring the electron tube described
herein shall consist of this document and MIL-PRF-1.

DESCRIPTION: Rectifier, miniature, full wave, high vacuum.

Outline --- 6-3 (EIA).

Base --- E9-1.

Envelope --- T6-1/2.

Cathode --- Coated unipotential.

Base connections:

Pin No. --- 1 2 3 4 5 6 7 8 9
Element --- 2a nc nc h h nc k nc 1a

ABSOLUTE RATINGS:

| Parameter: | Ef | Epp/a | Ehk | R1 | C1 | Io | ib/a | i surge/a | TE | Alt |
|------------------|-----|---------------------|-------------|-------|-----|--------|------|-----------|-----|--------|
| Unit: | V | V ac | v | Ohm | μF | mA dc | mA | a | °C | ft |
| Maximum: | 6.9 | Note 1 | ±100, - 450 | --- | --- | Note 1 | 300 | 2.0 | 180 | Note 1 |
| Minimum: | 5.7 | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Test conditions: | 6.3 | 400 (see note 2) | --- | 5,800 | 8 | --- | --- | --- | --- | --- |

GENERAL

Qualification - Not required.

This specification sheet uses accept on zero defect sampling in accordance with MIL-PRF-1, table III.

MIL-PRF-1/262H

TABLE I. Requirements and tests.

| MIL-STD-1311 Method | Requirement or test | Notes | Conditions | Symbol | Limits | | Unit |
|------------------------|--|-------|---|----------|--------|-----|------------------|
| | | | | | Min | Max | |
| | <u>Conformance inspection, part 1</u> | | | | | | |
| 1231 | Emission (1) | 3 | $E_b = 50 \text{ V dc}$ | I_s | 165 | --- | mA dc |
| 1301 | Heater current | | | I_f | 830 | 970 | mA |
| 1353 | Operation of rectifiers | 4, 5 | $E_{hk} = E_o$ | I_o | 70 | --- | mA dc |
| 1336 | Heater-cathode leakage | | $E_{hk} = -450 \text{ V dc}$ | I_{hk} | --- | 75 | $\mu\text{A dc}$ |
| 1201 | Short and discontinuity detection | | | --- | --- | --- | --- |
| | <u>Conformance inspection, part 2</u> | | | | | | |
| 1211 | Insulation of electrodes | 3 | $E(a\text{-all}) = -500 \text{ V dc}$ | R | 10 | --- | Meg Ω |
| 1002 | Barometric pressure, reduced | 6 | Pressure = 55 ± 5 mmHg; voltage = 980 V ac | --- | --- | --- | --- |
| 1031 | High-frequency vibration | | No voltages | --- | --- | --- | --- |
| 1231 | Emission (2) | 3 | $E_f = 5.5 \text{ V};$ $E_b = 50 \text{ V dc}$ | I_s | 150 | --- | mA dc |
| 1121 | Base strain | | | --- | --- | --- | --- |
| 2126 | Envelope strain | | | --- | --- | --- | --- |
| 1041 | Shock | 6 | 450 G; $E_{pp}/a = 0$ | --- | --- | --- | --- |
| 1031 | Vibration-fatigue | 6 | | --- | --- | --- | --- |
| --- | Shock and vibration - fatigue test end points: | | | | | | |
| 1336 | Heater-cathode leakage | | | I_{hk} | --- | 150 | $\mu\text{A dc}$ |
| 1353 | Operation of rectifiers | | | I_o | 65 | --- | mA dc |
| 1105 | Permanence of marking | | | --- | --- | --- | --- |

See notes at end of table.

TABLE I. Requirements and tests - Continued.

| MIL-STD-1311 Method | Requirement or test | Notes | Conditions | Symbol | Limits | | Unit |
|------------------------|---|--------|---|------------------------|--------|------|-------|
| | | | | | Min | Max | |
| | <u>Conformance inspection, part 3</u> | | | | | | |
| 1506 | Heater-cycling life | | Ef = 7.5 V; Ehk = +100 V dc; Epp/a = 0; 1 min "on", 4 min "off" | --- | --- | --- | --- |
| --- | Heater-cycling life-test end point: | | | | | | |
| 1336 | Heater-cathode leakage | | Ehk = 450 V dc | lhk | --- | 150 | μA dc |
| 1501 | Intermittent life | 4, 7-8 | TA = room; TE = +180°C (min); Ehk = Eo | --- | --- | --- | --- |
| --- | Intermittent life-test end points (500 hours): | | | | | | |
| 1353 | Change in operation of rectifiers of individual tubes | | | $\frac{\Delta I_o}{t}$ | --- | 8.5 | % |
| 1301 | Heater current | | | If | 830 | 984 | mA |
| 1336 | Heater-cathode leakage | | | lhk | --- | 75 | μA dc |
| --- | Intermittent life-test end points (1,000 hours): | | | | | | |
| 1353 | Change in operation of rectifiers of individual tubes | | | $\frac{\Delta I_o}{t}$ | --- | 11.5 | % |
| 1301 | Heater current | | | If | 830 | 993 | mA |
| 1336 | Heater-cathode leakage | | | lhk | --- | 75 | μA dc |

NOTES:

- To simplify the application of the maximum rating to circuit design, absolute ratings are presented in chart form as rating charts I, II, III, and IV. Operating points should be so selected that the boundary limits on rating charts I, II, III, and IV are not exceeded under the worst probable operating conditions with respect to supply-voltage variation, equipment- component variation, equipment-control adjustment, and environmental conditions.

A brief description of each of the rating charts is given below. The values of ac supply voltage as presented refer to the unloaded supply voltages per anode.

- Rating chart I. This chart presents the maximum ratings for ac anode supply voltage and dc output current. The boundary FAEDG defines the limits for capacitor-input filter operation, and the boundary FABCDG defines the limits for choke-input filter operation.
- Rating chart II. This chart provides a convenient method for checking conformance with the maximum steady-state peak-anode current rating. Rating chart II applies to capacitor-input filter operation only.

TABLE I. Requirements and tests - Continued.

- (c) Rating chart III. This chart shows the minimum value of anode supply resistance (R_s) required to remain within the transient peak-anode current rating. The value of R_s should be such that it lies to the left of the line on the rating chart at the highest probable value of line voltage. Rating chart III applies to capacitor-input filter operation only.
 - (d) Rating chart IV. This chart presents the maximum ratings for anode-supply voltage and altitude. Rating chart IV refers to both capacitor-input filter and choke-input filter operation.
2. All values of $E_{pp/a}$ refer to the unloaded supply voltage. The ratings refer to rectifier operation with sinusoidal supply voltages within the frequency range of 25 to 1,000 Hz.
 3. Test each section separately.
 4. Adjust $Z_{p/a}$ in a full-wave circuit so that the TUT indicates $I_o = 75$ mA dc. TUT has a tube drop of $E_{td} = 22$ V dc at $I_s = 70$ mA dc per anode.
 5. This test shall be performed at the conclusion of the holding period.
 6. This test shall be conducted on the initial lot and thereafter on a lot approximately every 12 months. When one lot has passed, the 12-month rule shall apply. In the event of the lot failure, the lot shall be rejected and the succeeding lots shall be subjected to this test until a lot passes.
 7. In a full-wave life-test circuit the values specified for R1 and C1 may be considered as approximate and shall be adjusted initially to give not less than $I_o = 75$ mA dc and $I_{b/a} = 270$ ma with a TUT.
 8. Envelope temperature (TE) requirements, when measured in accordance with the temperature by conduction-band measurement (MIL-STD-1311, method 1226), will be satisfied if a TUT having bogey I_b (± 10 percent) under normal test conditions, is determined to operate at or above minimum specified temperature at any position in the life-test rack.

RATING CHART I

ABSOLUTE-MAXIMUM RATINGS

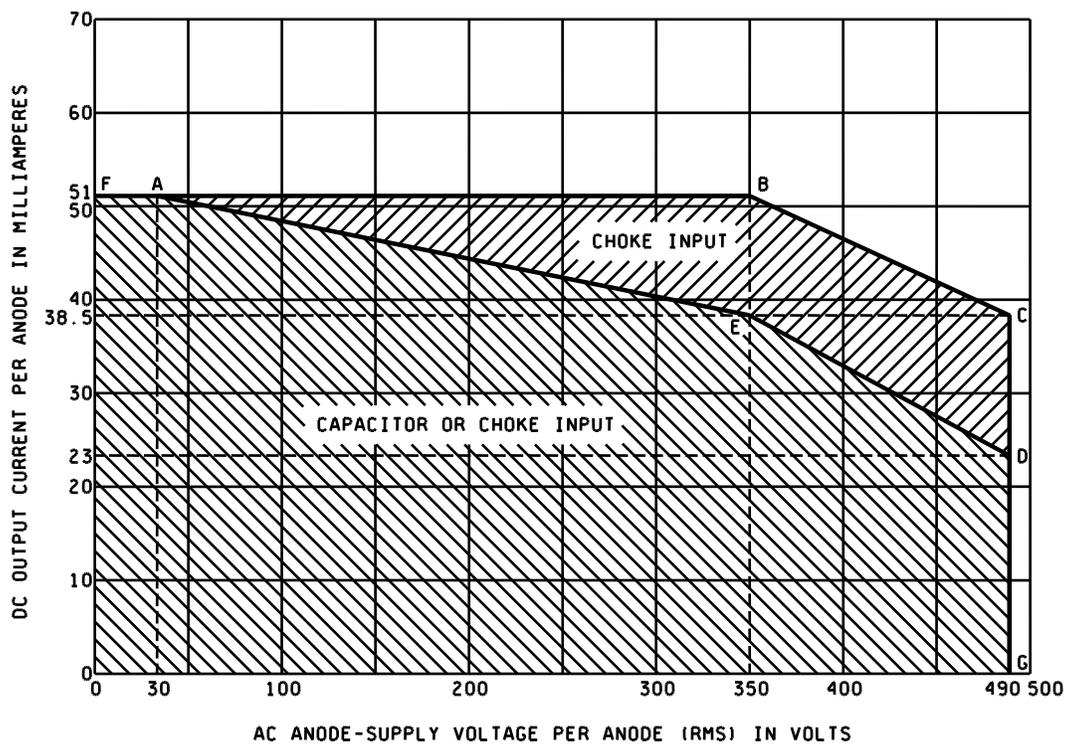


FIGURE 1. Rating chart I.

RATING CHART II

ABSOLUTE-MAXIMUM RATINGS

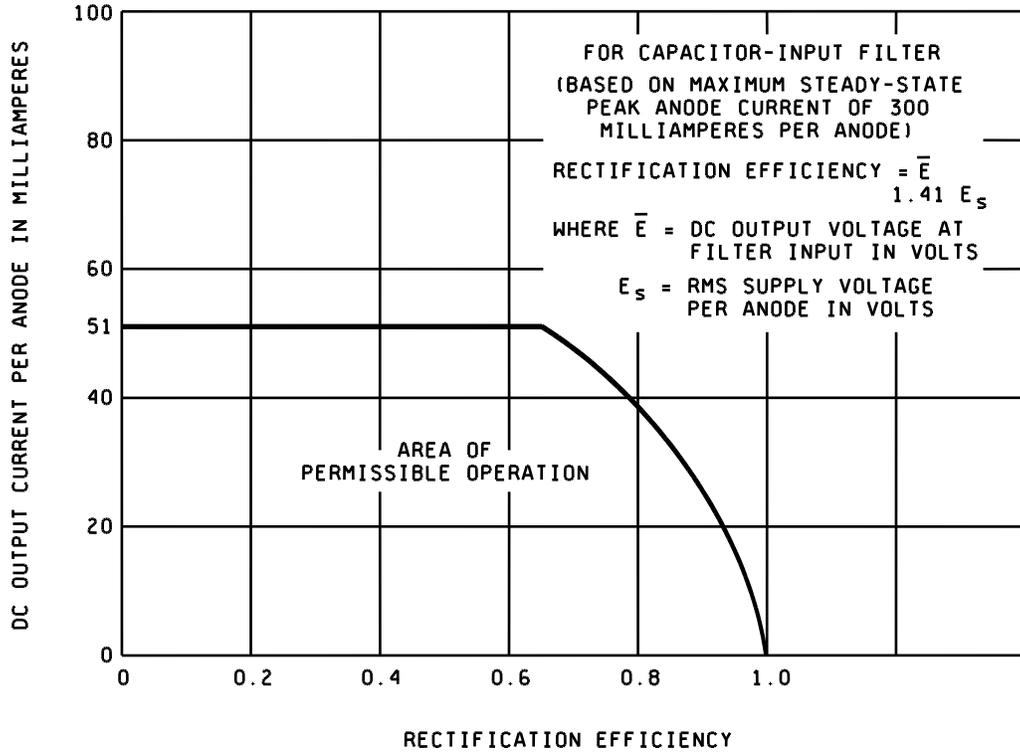


FIGURE 2. Rating chart II.

RATING CHART III
ABSOLUTE-MAXIMUM RATINGS

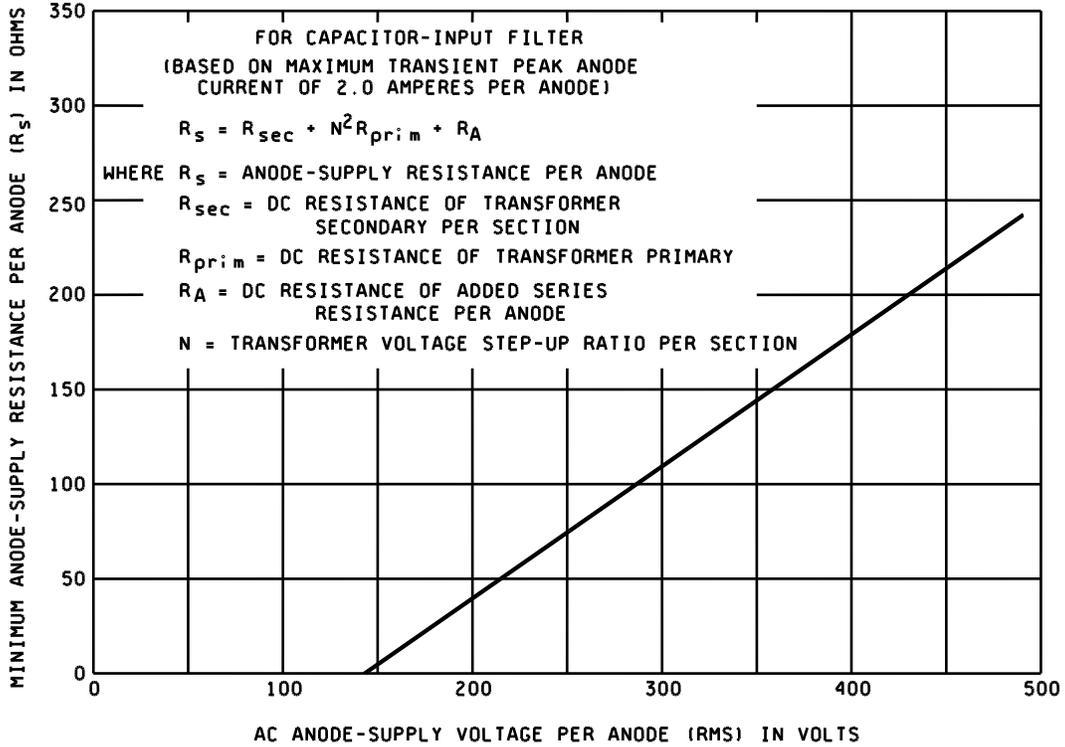


FIGURE 3. Rating chart III.

RATING CHART IV

ABSOLUTE-MAXIMUM RATINGS

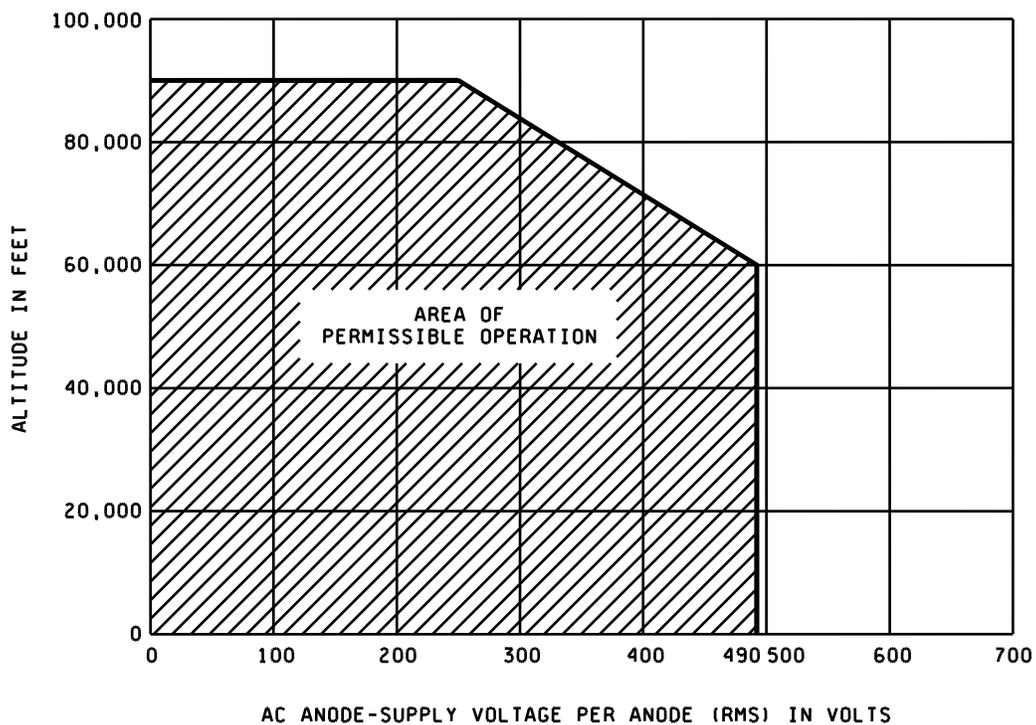


FIGURE 4. Rating chart IV.

Referenced documents. In addition to MIL-PRF-1, this document references MIL-STD-1311.

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Navy - EC
Air Force - 85
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Preparing activity:

DLA - CC
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Review activities:

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Air Force - 99

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