MILITARY SPECIFICATION SHEET

ELECTRON TUBE, RECEIVING

TYPE 6197

The complete requirements for procuring the electron tube described herein shall consist of this document and the latest issue of Specification MIL-E-1.

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

DESCRIPTION: Power pentode

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	---	k	g1	g2	h	h	a	g3 int sd	g2	g1

ABSOLUTE-MAXIMUM RATINGS:

Parameter:	Ef	Eb	Ec1	Ec2	Shield & Ec3	Pp	Pg2	Ehk	Ik	TE	Alt
Unit:	V	Vdc	Vdc	Vdc	Vdc	W	W	v	mAdc	°C	ft
Maximum:	6.3	300	0	250	0	7.5	2.5	180	50	200	(See note 1)
Minimum:	6.0	---	-50	---	---	---	---	---	---	---	---
TEST CONDITIONS:	6.3	250	-3.0	150	0	---	---	---	---	---	---

GENERAL:

Qualification - Required

Ⓒ denotes changes

METHOD	REQUIREMENT OR TEST	CONDITIONS	AQL (PERCENT DEFECTIVE)	INSPECTION LEVEL OR CODE	SYMBOL	LIMITS MIN	LIMITS MAX	UNIT
	Quality conformance inspection, part 1							
1256	Electrode current (1) (anode)		6.5	Code E	Ib	20	40	mAdc
1256	Electrode current (2) (anode)	Eb = 50 Vdc; Ec1 = 0; Ec2 = 100 Vdc	6.5	Code E	Ib	26	46	mAdc
1256	Electrode current (3) (anode)	Ec = -12 Vdc	6.5	Code E	Ib	---	100	µAdc
1266	Total grid current	Rg1 = 0.25 Meg	0.65	II	Ic1	---	-1.5	µAdc
1256	Electrode current (screen)		6.5	Code E	Ic2	5.0	9.0	mAdc
1306	Transconductance (1)		0.65	II	Sm	9,000	13,000	µmhos
1201	Short and discontinuity detection		0.4	II	---	---	---	---
	Quality conformance inspection, part 2							
1256	Electrode current (4) (anode)	Ebb = 150 Vdc; Ec1 = 0; Ec2 = 90 Vdc; Rb = 3,000 ohms; Rg2 = 470 Ohms	6.5	Code E	Ib	20	36	mAdc
(C) 1256	Electrode current (5) (anode)	Eb = 250 Vdc; Ec1 = 0; Ec2 = 150 Vdc; Rg1 = 0.47 Meg (see note 3 and figure 1)	1.0	II	Ib	28	---	mAdc
1301	Heater current		6.5	Code E	If	610	690	mAdc
(C) 1336	Heater-cathode leakage		2.5	I	Ihk	---	40	µAdc
(C) 1306	Transconductance (2)	Ef = 5.7 V	6.5	Code E	Sm	8,500		µmhos
---	Transconductance (screen)		6.5	Code E	Sg1-g2	1,700	2,900	µmhos
1246	Audio frequency noise	Esig = 150 mVac; Eb = Ec2 = 225 Vdc; Rg1 = 0.25 Meg; Rk = 150 ohms; Rg2 = 5,000 ohms; Rb = 10,000 ohms (see note 8)	6.5	Code E	---	---	---	---
1331	Direct-interelectrode capacitance		6.5	Code E	Cg1p	---	0.135	pF
					Cin	9.2	13.8	pF
					Cout	4.0	6.0	pF
1316	Amplification factor (triode)	Eb = Ec2 = 150 Vdc (g2 tied to anode)	6.5	Code E	Mu	19	25	---
---	Intermittent shorts	See note 4 and 9	2.5	I	---	---	---	---
1211	Insulation of electrodes		2.5	S4	R	100	---	Meg

METHOD	REQUIREMENT OR TEST	CONDITIONS	AQL (PERCENT DEFECTIVE)	INSP LEVEL OR CODE	ALLOWABLE DEFECTIVES PER CHARACTERISTIC		SYMBOL	LIMITS		UNIT
					1 ST SAMPLE	COMBINED SAMPLES		MIN	MAX	
	Quality conformance inspection, part 3									
1506	Heater-cycling life	Ef = 7.5 V; Ehk = 180 Vdc; Ec1 = Eb = Ec2 = 0: 1 min "on", 4 min "off"	---	---	---	---	---	---	---	---
1521	Survival-rate life	Intermittent life-test (2), or equivalent conditions	---	---	---	---	---	---	---	---
---	Survival-rate life-test end point	Short and discontinuity detection	---	---	---	---	---	---	---	---
1501	Intermittent life (1)	Eb = 300 Vdc; Ec2 = 150 Vdc; Ec1 = -50 Vdc; Ehk = 100 Vdc; Rg1 = 0.25 Meg; TA = room (see note 6)	---	---	---	---	---	---	---	---
1501	Intermittent life (2)	Eb = 250 Vdc; Ec2 = 250 Vdc; Ec1 = -8 Vdc; Ehk = 100 Vdc; Rg1 = 0.25 Meg; TA = room (see note 6)	---	---	---	---	---	---	---	---
---	Intermittent life-tests (1) and (2) end points (1,000 hours)	See note 5								
		Insulation of electrodes	---	---	2	4	R	50	---	Meg
		Intermittent shorts	---	---	2	4	---	---	---	---
		Short and discontinuity detection	---	---	1	2	---	---	---	---
		Cathode interface resistance of method 1511 (see note 2)	---	---	2	4	Ri	---	25	Ohms
		Electrode current (1) (anode)	---	---	2	4	Ib	18	---	mAdc
		Total grid current	---	---	2	4	Ic1	---	-2.0	µAdc
(C)		Heater-cathode leakage	---	---	2	4	Ihk	---	60	µAdc
		Combined defectives	---	---	5	10	---	---	---	---
(C)	Periodic-check test									
1031	Low-frequency vibration	Rb = 2,000 ohms (see note 7)	---	---	---	---	Eb	---	1,000	mVac

NOTES:

1. See "Reduced pressure (altitude) rating", and altitude, maximum peak voltage.
2. Test conditions: Ef = 5.7 V; Eb = 100 Vdc; Ib + Ec2 + Ic3 = 1.5 mAdc. Connect g2 and g3 to anode. Read at 500 and 1,000 hours only.
3. Grid No. 1 drive shall be 30 volts, peak to peak, square wave (50 percent duty cycle), 6,000 prr.
4. Test on a dc thyratron shorts set, or equivalent. Minimum sensitivity shall be as follows:

   2 K for short lasting 2 μs.
   100 K for short lasting 15 μs.
   2.5 Meg for short lasting 1,000 μs.

   Tubes shall not be rejected for heater-cathode shorts on this test.
5. For acceptance purposes, the results of intermittent life tests (1) and (2) are combined as one 20-tube sample. The acceptance numbers given apply to this total sample. In the event of life-test failures, a second sample of 10 tubes shall be run for each life test, and the resulting 40-tube total sample evaluated to the combined sample acceptance numbers.
6. For intermittent life tests (1) and (2), the sample size shall be 10 tubes per lot.
7. Tubes shall be vibrated perpendicular to a plane through pins 2 and 7.
8. The rejection level shall be set at the VU meter reading obtained during calibration.
9. Tap each tube six times - three times in each of two planes using a felt tapper consisting of a felt mallet head 1.0 inch (25.4 mm) in diameter and 1.0 inch (25.4 mm) long with 1/4 inch (6.35 mm) concentric hole securely glued flush with end of an 8 by 1/4 inch (203.2 by 6.35 mm) plastic rod. Weight of felt shall be approximately 3.0 grams.

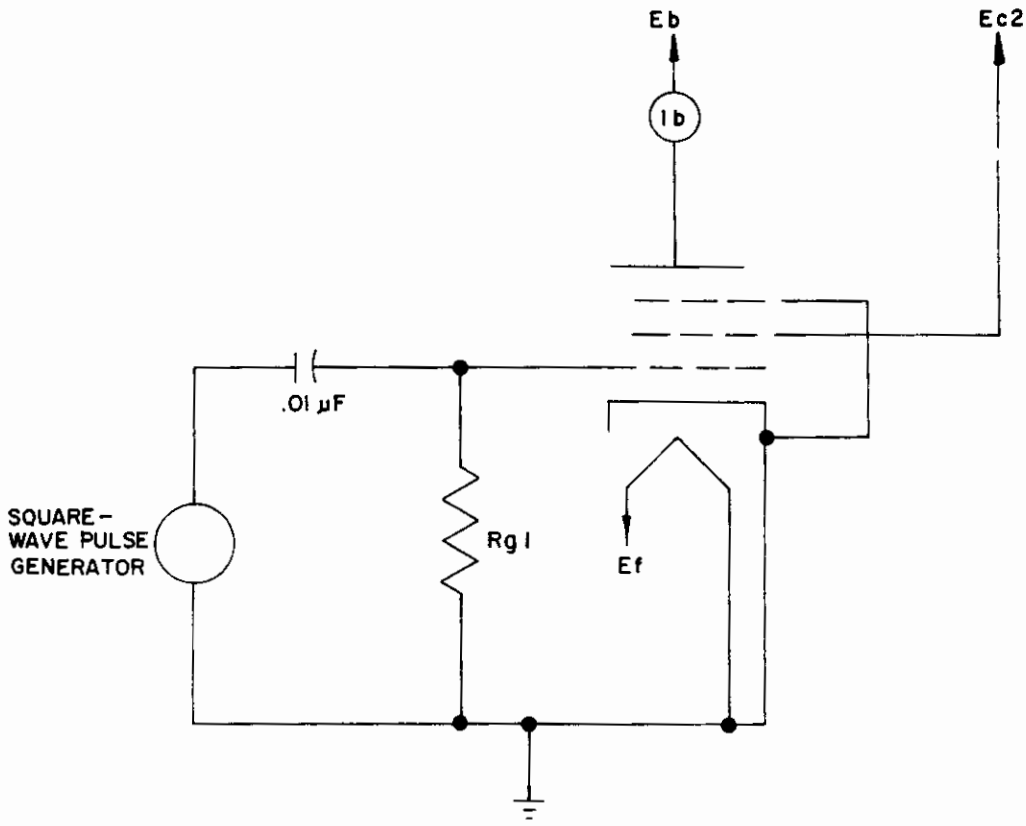
Custodians:
Army - EL
Navy - EC
Air Force - 85

Review activities:
Army - EL, MI
Navy -
Air Force - 11, 85
DSA - ES

User activities:
Army - MU, ME, WC, AV
Navy - AS, OS, MC, CG, SH
Air Force - 19

Preparing activity: Navy - EC

(Project 5960-2385)



© FIGURE 1. Peak anode current test with square-wave drive.

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