

MINISTRY OF SUPPLY (S.R.D.E.)

Specification M.O.S./CV2240 incorporating MIL-E-1/34B Issue: 1 22.7.55. To be read in conjunction with K1006	<u>SECURITY</u>	
	<u>Specification</u> Unclassified	<u>Valve</u> Unclassified

<p><u>TYPE OF VALVE:</u> R.F. Beam Power Amplifier, transmitting</p> <p><u>CATHODE:</u> Directly heated</p> <p><u>ENVELOPE:</u> Glass unmetallised</p> <p><u>PROTOTYPE:</u> 3B4</p>	<p><u>MARKING</u></p> <p>See K1001/4 add 3B4</p>
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<u>RATING</u>		<u>BASE</u> BS448/B7G (Miniature button 7 pin)			
Filament Voltage (Parallel) (V)	1.25	Note	<u>Connections</u>		
Filament Voltage (Series) (V)	2.5		Pin	Electrode	
Filament Current (Parallel) (mA)	330		1	g2	
Filament Current (Series) (mA)	165		2	fct, g3, Int.sd.	
Max. Anode Voltage (I _a = 0) (V)	150		3	g1	
Max. Screen Voltage (I _{g2} = 0) (V)	135		4	-f	
Anode Current (mA)	25		5	+f	
Screen Current (mA)	1.5		6	fct, g3, Int.sd.	
Max. Anode Dissipation (W)	3		7	p.	
Max. Screen Dissipation (W)	1.1		Note	See Note D	
Mutual Conductance (mA/V)	1.85	B	<u>Dimensions (inches)</u> See BS448/B7G/2.1 Size ref. 2		
Max. Operating Frequency (Mc/s)	100				

<u>CAPACITANCES (pF)</u>				<u>Dimensions</u>	<u>Min.</u>	<u>Max.</u>
Cg1p (Max.)	0.16	C		seated height	-	1.7/8
cin. (nom)	4.5	C		diameter	5/8	3/4
Cout. (nom)	7.5	C		overall length	-	2 5/32
				<u>Mounting Position</u> Any		

<u>NOTES</u>						
A. Absolute maximum or minimum values.						
B. Measured at Va = 200 Vg2 = 150 Vg1 = -25						
C. Measured WITH metal screen						
D. For parallel filament connection pins 2 and 6 are negative and pins 4 and 5 are positive.						

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TESTS

Additional to or modifying those specified in the attached MIL-E-1/34B specification.

Ref.	Test	Conditions	AQL%	Insp. Level or Code	Sym.	Limits		Units
						Min.	Max.	
	Operation Peak Output voltage.	Ebb = 150 Vdc; Ec ₁ = 0; Ec ₂ = 135 Vdc; RL = 1000; Eg ₁ = 50 Vac; Rg ₁ = 55000; NOTE 3.	0.65	II	ep:	95	-	V
	Operation Screen Grid Current	Ebb = 150 Vdc; Ec ₁ = 0; Ec ₂ = 135 Vdc; RL = 1000; Eg ₁ = 50 Vac; Rg ₁ = 55000; NOTE 3	0.65	II	Ic ₂	5.5	14	mAdc
4.10.2.2.	Class C Amplifier	F = 100 Mc; Eb = Ec ₂ = 90 Vdc; Rg ₁ = 45,000; NOTE 5.	6.5	1A	Po	0.35	-	W
4.11.4.	Intermittent Life test end points	Activity	-	-	ADp	-	15	%
		Operation Screen Grid Current	-	-	Ic ₂	-	20	mAdc
		Operation Peak output voltage	-	-	ep.	85	-	V

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MIL-E-1/34B
17 December 1954
Superseding
MIL-E-1/34A
20 May 1953

INDIVIDUAL MILITARY SPECIFICATION SHEET
ELECTRON TUBE, RECEIVING, BEAM POWER AMPLIFIER

JAN-3B4

This specification sheet forms a part of the latest issue of Military Specification MIL-E-1.

Description: Filamentary RF Beam Power Amplifier

Rating:	Ef	Eb	Ec1	Ec2	Ib	Ic1	Pp	Pg2	Alt	F1
Absolute	V	Vdc	Vdc	Vdc	mAdc	mAdc	W	W	ft	Mc
Maximum:	1.438 Par. 2.875 Ser.	150	---	135	25	1.5	3	1.1	10,000	100
Minimum:	1.062 Par. 2.125 Ser.	---	-75	---	---	---	---	---	---	---

Test Cond.:	2.5 Vac	200	-25	150	---	---	---	---	---	---
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Cathode: Oxide Coated Filament
Base: Miniature Button 7-Pin, E7-1

Diameter: 3/4 in. max.
Height: 2-1/8 in. max.

Pin No.:	1	2	3	4	5	6	7
Elements	g2	fc1	g1	-1	+f	fc2	p
Note 1		g3				int.sd.	

Envelope: B-5-1/2

The following tests shall be performed:

For miscellaneous requirements, see Paragraph 3.3, Inspection Instructions for Electron Tubes.

Ref.	Test	Conditions	AQL (%)	Insp. Level or Code	Sym.	LIMITS					Units	
						Min.				Max.		
Qualification Approval Tests												
3.1	Qualification Approval:	Required for JAN Marking	---	---								
---	Cathode:	Oxide Coated Filament	---	---								
3.4.3	Base Connections:		---	---								
Measurements Acceptance Tests Part 1, Note 2												
4.10.6.1	Grid Current:	t=120	0.65	II	Ic1:	0	---	---	---	-1.5	---	uAdc
4.10.4.1	Plate Current:		0.65	II	Ib:	13	---	---	---	26	---	mAdc
4.10.4.3	Screen Grid Current:		0.65	II	Ic2:	---	---	---	---	2	---	mAdc
---	Operation Peak Output Voltage:	Ebb=150Vdc; Ec1=0; Ec2=135Vdc; E1=1000; Egl=50Vac; Egl=55,000; Note 3	0.65	II	sp:	100	---	---	---	---	---	V
---	Operation Screen Grid Current:	Ebb=150Vdc; Ec1=0; Ec2=135Vdc; E1=1000; Egl=50Vac; Egl=55,000; Note 3	0.65	II	Ic2:	5.5	---	---	---	11	---	mAdc
---	Activity:	Ef=2.125Vac; Note 4	0.65	II	ΔEp:	---	---	---	---	7.5	---	%
4.9.1	Mechanical:	Envelope (6-3)	---	---								
Measurements Acceptance Tests Part 2												
4.10.8	Filament Current:	Ef=2.5V	6.5	1A	If:	150	---	---	---	180	---	mA
4.10.9	Transconductance:		6.5	1A	Sm:	1,000	---	---	---	2300	---	umhos
4.10.11.1	Triode Amplification Factor:	Eb=150Vdc; Tie screen to plate	6.5	1A	Mu:	2.7	---	---	---	4.7	---	
4.10.2.2	Class Q Amplifier:	F=100Mc; Eb=Ec2=90Vdc; Egl=45,000; Note 5	6.5	1A	Po:	0.5	---	---	---	---	---	W
4.10.6.6	Primary Screen Grid Emissions:	Eb=0; Ec2=127Vac; Ec1/Pg2=1W; t=300; Note 6	6.5	1A						.00		uAdc

JAN-3B4

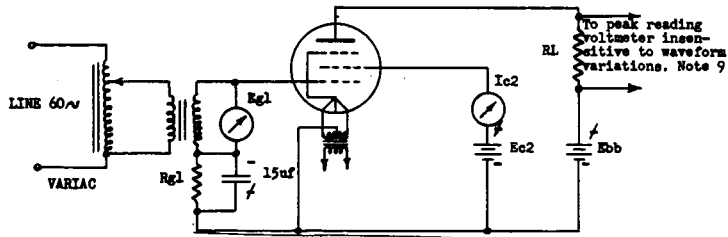
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Ref.	Test	Conditions	AQL(%)	Insp. Level or Code	Sym.	LIMITS				Units	
						Min.			Max.		
<u>Measurements Acceptance Test Part 2(Contd)</u>											
4.10.14	Capacitance:	Shield No. 316 Shield No. 316 Shield No. 316	6.5	1A	Cg1p: Cin: Cout:	— 3.5 6.0	— — —	— — —	0.16 5.5 9.0	— — —	unf unf unf
4.9.19.1	Vibration:	Ef=2.5Vdc; Ecl=-30Vdc; Rp=2000	6.5	1A	Ep:	—	—	—	500	—	mVac
Ref.	Test	Conditions	AQL(%)	Insp. Level or Code	Allowable Defectives per Characteristic		Sym.	LIMITS		Units	
					1st Sample	Combined Samples		Min.	Max.		
<u>Acceptance Life Tests</u>											
4.11.5	Intermittent Life Test:	Group B; Operation; Ebb=135Vdc; Ec2=90Vdc; Rl=1100; Ef=1.25Vac; Eg1=4Vac; Ecl=-30Vdc; Notes 7,8	—	—	—	—	t:	350	—	hrs	
4.11.4	Intermittent Life Test End Points:	Activity Operation Screen Grid Current Operation Peak Output Voltage	— — — —	— — — —	— — — —	— — — —	Δ Ep: Ic2: ep1	— — 85	15 15 —	% mAdc v	
<u>Packaging Information</u>											
4.9.18.1.1	Carton Drop:	(d) Package Group 1; Carton Size B									

Note 1: For parallel filament connection pins 2 and 6 are negative and pins 4 and 5 are positive.

Note 2: The AQL for the combined defectives for attributes in Measurements Acceptance Tests, Part 1, excluding Mechanical shall be one (1) percent. A tube having one (1) or more defects shall be counted as one (1) defective. MIL-STD-105, Inspection Level II shall apply.

Note 3: Operation at power line frequency as per circuit.



Power supplies and grid driving source to have negligible impedance at operating frequency.

