INCH-POUND

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SUPERSEDING
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PERFORMANCE SPECIFICATION SHEET

ELECTRON TUBE, KLYSTRON
TYPE 6BM6A *

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 the latest issue of MIL-PRF-1.

DESCRIPTION: Reflex, separate cavity, pulse.

ABSOLUTE RATINGS:

Parameter:	Ef	Ec1	Ec2	Ec3	Er	Ik	Ehk	Pi	tk	Alt
Unit:	V	V dc	V dc	V dc	V dc	mA dc	V dc	W	sec	ft
Maximum:	6.9	+1.0	350	350	-700	29	+45	10	---	10,000
Minimum:	5.7	-500	---	---	-15	---	-45	---	120	---

PHYSICAL CHARACTERISTICS:

Dimensions:	See figure 1.
Cathode:	Coated unipotential.
Mounting position:	Any.

TEST CONDITIONS:

Parameter:	Ef	Ec1	Ec2	Ec3	Er
Unit:	V	V dc	V dc	V dc	V dc
Test condition 1:	6.3	0	325	325	Adj for max Po
Test condition 2:	6.3	0	300	300	Adj for max Po

See footnotes at end of table I.

GENERAL:

Qualification: Required.

* CAUTION: Tube not designed for applications where hysteresis may affect performance.

TABLE I. Testing and inspection.

Inspection	Method	Notes	Test	Conditions	Symbol	Limits		Unit
						Min	Max	
Conformance inspection, part 1		1/						
Electrode current (cathode)	1256	---	---	Ec2 = Ec3 = 325 V dc; Ec1 = 0; Er = 0	Ik	15	24	mA dc
Total reflector current (1)	4229	4/	---	Er = -90 V dc	Ir	---	5	µA dc
Heater current	1301	---	---		If	500	750	mA
Heater-cathode leakage	1336	---	---	Ehk = ± 45 V dc	Ihk	0	75	µA dc
Reflector voltage (1)	4213	5/	1		Er	-30	-70	V dc
Frequency (1)	---	5/	1		F	795	825	MHz
Power output (1)	4250	5/	1		Po	50	---	mW
Reflector voltage (2)	4213	6/	1		Er	-450	-550	V dc
Frequency (2)	---	6/	1		F	2,150	2,250	MHz
Power output (2)	4250	6/	1		Po	50	---	mW
Cathode emission	4214	7/	1		$\frac{\Delta ik}{Ik}$	---	15	%
Total reflector current (2)	4229	5/	1		Ir	---	50	µA dc
Reflector voltage (3)	4213	8/	2		Er	-20	-60	V dc
Frequency (3)	---	8/	2		F	1,130	1,170	MHz
Power output (3)	4250	8/	2		Po	10	---	mW
Total reflector current (3)	4229	8/	2		Ir	---	50	µA dc
Reflector voltage (4)	4213	9/	2		Er	-275	-355	V dc
Frequency (4)	---	9/	2		F	2,680	2,820	MHz
Power output (4)	4250	9/	2		Po	20	---	mW
Electrode current (cathode cutoff)	1256	---	---	Ec2 = Ec3 = 325 V dc; Er = 0; Ec1 = -150 V dc	Ik	---	5	mA dc

See footnotes at end of table.

TABLE I. Testing and inspection.

Inspection	Method	Notes	Test	Conditions	Symbol	Limits		Unit
						Min	Max	
Conformance inspection, part 2								
Secureness of base, cap, or insert	1101	10/	---		---	---	---	---
Low-frequency vibration	1031	---	---	No voltages	---	---	---	---
Time jitter	4318	3/ 11/	---	Prr = 4,000 (approximate)	tj	---	0.2	µs
Conformance inspection, part 3								
Life test	---	2/	1	Group C	t	500	---	hrs
Life-test end points:	---							
Power output (3)	4250	8/	2		Po	8	---	mW
Power output (4)	4250	9/	2		Po	16	---	mW

1/ Unless otherwise specified, the acceptance level for all tests listed under conformance inspection, part 1, shall be 1.0, inspection level II.

2/ Test tube with 1,000 MHz test cavity as specified on Drawing 166-JAN. Frequency approximately 1,000 MHz. Operate tube in N = 1 mode (1.75 cycles for complete transit). Adjust Er for maximum power output. Adjust output coupling loop for maximum power output.

3/ Test in signal generator TS-419/U, or equivalent.

4/ Static test; tube not oscillating.

5/ Test tube with 800 MHz test cavity as specified on Drawing 166-JAN. Adjust cavity to resonate at 800.5 MHz with standard plug as specified on Drawing 197-JAN. Operate tube in N = 1 mode (1.75 cycles for complete transit). Adjust Er for maximum power output. Adjust output coupling loop for maximum power output.

6/ Test tube with 2,200 MHz test cavity as specified on Drawing 166-JAN. Adjust cavity to resonate at 2,113.8 MHz with standard plug as specified on Drawing 197-JAN. Operate tube in N = 1 mode (1.75 cycles for complete transit). Adjust Er for maximum power output. Adjust output coupling loop for maximum power output.

7/ Reduce Ef to 5.7 V while tube is oscillating. The cathode emission shall not exceed the limit shown.

8/ Test tube with 1,150 MHz test cavity as specified on Drawing 166-JAN. Adjust cavity to resonate at 1,130.6 MHz with standard plug as specified on Drawing 197-JAN. Operate tube in N = 2 mode (2.75 cycles for complete transit). Adjust Er for maximum power output. Adjust output coupling loop for maximum power output.

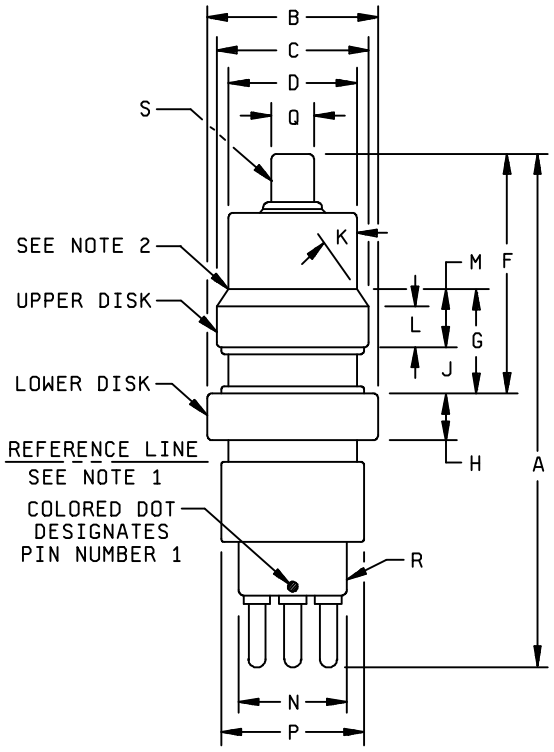
9/ Test tube with 2,750 MHz test cavity as specified on Drawing 166-JAN. Adjust cavity to resonate at 2,569.2 MHz with standard plug as specified on Drawing 197-JAN. Operate tube in N = 2 mode (2.75 cycles for complete transit). Adjust Er for maximum power output. Adjust output coupling loop for maximum power output.

10/ Water-immersion test omitted. Torque shall be applied between upper disk (g3) and molded portion of base and shall be 20 inch-pounds.

11/ Adjust Er tracking from minimum jitter over the range from 900 to 2,100 MHz. When recheck measurements are made at locations other than the point of manufacture, an addition of 0.05 µs shall be allowed on the specified limits.

12/ Changes from previous issue. Revision letters are not used in this revision to identify changes with respect to the previous issue, due to the extensiveness of the changes.

Ltr	Dimensions			
	Inches		Millimeters	
	Min	Max	Min	Max
Conformance inspection, part 1				
A	2.969	3.219	75.41	81.76
B	.990	1.000	25.15	25.40
C	.880	.890	22.35	22.61
F	1.375	1.500	34.93	38.10
M	.303	.323	7.70	8.20
Conformance inspection, part 2				
G	.560	.610	14.22	15.49
H	.250	.312	6.35	7.92
J	.257	.287	6.53	7.29
Conformance inspection, part 3				
D	---	.750	---	19.05
K	25°	35°	25°	35°
N	.610	.656	15.49	16.66
P	.807	.822	20.50	20.88
Q	.245	.255	6.22	6.48
R	Base: A4-76			
S	Cap: C1-3			
Nominal dimensions				
L	.250		6.35	



Pin connections	
1	g1
2	h
3	k
4	h
Lower disk	g2
Upper disk	g3
Cap	r

NOTES:

1. For dimensions below reference line refer to base A4-76.

2. Space between glass and upper disk edge or backing ring shall be .030 inch (0.76 mm) maximum. Conformance inspection, part 2, shall apply.

3. Diameters B and C shall be concentric within .025 inch (0.63 mm) TIR and shall form circular cylinder within a range of .006 inch (0.15 mm). Allowable radius at ends of cylinder shall be .030 inch (0.76 mm) maximum. Conformance inspection, part 2, shall apply.

4. Tube shall be tested in concentricity gauge specified on drawing 199-JAN. Gauge readings on diameters shall be as follows:

Diameter	Eccentricity
D	.050 max
N	.060 max
P	.060 max
Q	.040 max

5. All concentricity measurements shall be conformance inspection, part 2.

6. Pin No. 1 shall be identified by an index mark (colored dot or other.)

FIGURE 1. Outline drawing of electron tube type 6BMA.

Custodians:
Army - CR
Navy - EC
Air Force - 11
DLA - CC

Review activities:
Navy - AS, CG, MC, OS
Air Force - 17,

Preparing activity:
DLA - CC

Project (5960-3551-04)