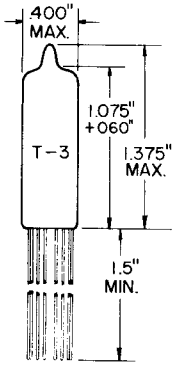
TUNG-SOL

TRIODE

SUBMINIATURE TYPE



GLASS BULB

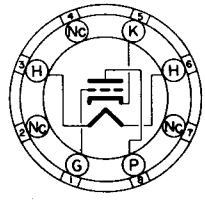
COATED UNIPOTENTIAL CATHODE

HEATER

6.3±5% VOLTS 0.15 AMP.

AC OR DC

ANY MOUNTING POSITION



BOTTOM VIEW
SUBMINIATURE BUTTON
8 LEAD BASE

8DK

THE 5718 IS A SUBMINIATURE MEDIUM-MU TRIODE DESIGNED FOR USE AS A HIGH FREQUENCY OSCILLATOR OR AS A GENERAL-PURPOSE AMPLIFIER. A POWER OUTPUT OF APPROXIMATELY 0.9 WATT CAN BE OBTAINED AT A FREQUENCY OF 500 MEGACYCLES

DIRECT INTERELECTRODE CAPACITANCES

	WITH SHIELD [A]	WITHOUT SHIELD	
GRID TO PLATE	1.3	1.4	$\mu\mu f$
INPUT	2.4	2.2	$\mu\mu f$
OUTPUT	2.4	0.7	$\mu\mu f$

[A] WITH EXTERNAL SHIELD OF 0.405 INCH INSIDE DIAMETER CONNECTED TO CATHODE

RATINGS

ABSOLUTE MAXIMUM VALUES

HEATER VOLTAGE	6.3±5%	VOLTS
MAXIMUM PLATE VOLTAGE	165	VOLTS
MAXIMUM NEGATIVE DC GRID VOLTAGE	55	VOLTS
MAXIMUM PLATE DISSIPATION	0.9	WATTS
MAXIMUM DC PLATE CURRENT	22	MA.
MAXIMUM DC GRID CURRENT	5.5	MA.
MAXIMUM HEATER-CATHODE VOLTAGE:		
HEATER POSITIVE WITH RESPECT TO CATHODE	200	VOLTS
HEATER NEGATIVE WITH RESPECT TO CATHODE	200	VOLTS
MAXIMUM BULB TEMPERATURE AT HOTTEST POINT	220	C

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TYPICAL OPERATING CONDITIONS AND CHARACTERISTICS

CLASS A_1 AMPLIFIER

HEATER VOLTAGE	6.3±5%	VOLTS
HEATER CURRENT	0.15	AMP.
PLATE VOLTAGE	100	VOLTS
CATHODE-BIAS RESISTOR	150	OHMS
AMPLIFICATION FACTOR	27	
PLATE RESISTANCE (APPROX.)	4650	OHMS
TRANSCONDUCTANCE	5800	μMHOS
PLATE CURRENT	8.5	MA.
GRID VOLTAGE (APPROX.) Ib = 10 μAMPS.	-7	VOLTS

UHF OSCILLATOR

PLATE VOLTAGE	150	VOLTS
PLATE CURRENT	20	MA.
FREQUENCY	500	MEGACYC.
POWER OUTPUT (APPROX.)	0.9	WATTS

CLASS A RESISTANCE - COUPLED AMPLIFIER

LOW IMPEDANCE DRIVE (APPROXIMATELY 200 OHMS)

R_L	R_{gf}	Ebb = 90 VOLTS			Ebb = 150 VOLTS			Ebb = 225 VOLTS		
		R_k	E_o	GAIN	R_k	E_o	GAIN	R_k	E_o	GAIN
0.10	0.10	2100	8.0	14	1800	13	16	1600	25	17
0.10	0.24	2700	11	15	2300	21	16	2100	33	17
0.24	0.24	5600	9.7	14	4700	19	16	4600	29	17
0.24	0.51	6800	12	15	6400	24	16	5800	37	17
0.51	0.51	12000	11	15	11000	20	16	10000	31	16
0.51	1.0	15000	14	15	13000	25	16	14000	40	16

HIGH IMPEDANCE DRIVE (APPROXIMATELY 100K OHMS

R_L	R_{gf}	Ebb = 90 VOLTS			Ebb = 150 VOLTS			Ebb = 225 VOLTS		
		R_k	E_o	GAIN	R_k	E_o	GAIN	R_k	E_o	GAIN
0.10	0.10	2700	10	14	2100	19	16	1800	30	17
0.10	0.24	3400	13	15	2700	25	16	2300	38	17
0.24	0.24	6900	12	14	5800	22	16	5000	34	17
0.24	0.51	8400	14	15	7000	27	16	6300	41	17
0.51	0.51	13000	13	15	12000	24	16	11000	37	16
0.51	1.0	17000	16	15	16000	29	16	15000	45	16

1. E_o IS MAXIMUM RMS VOLTAGE OUTPUT FOR APPROXIMATELY 5% TOTAL HARMONIC DISTORTION.

2. GAIN IS MEASURED FOR AN OUTPUT VOLTAGE OF TWO VOLTS RMS.

3. R_k IS IN OHMS; R_L AND R_{gf} ARE IN MEGOHMS.

4. COUPLING CAPACITORS (C) SHOULD BE SELECTED TO GIVE DESIRED FREQUENCY RESPONSE. R_k SHOULD BE ADEQUATELY BY-PASSED.

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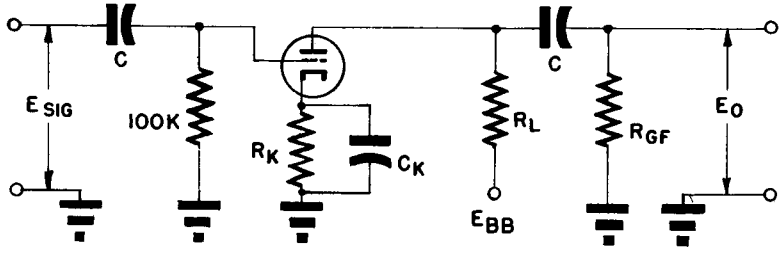

CHARACTERISTICS LIMITS

		MIN	MAX	
HEATER CURRENT:				
Ef = 6.3 VOLTS	INITIAL	140	160	MA.
	500 HR.	138	164	MA.
PLATE CURRENT				
Ef =6.3 V., Eb =100 V., Rk =150 OHMS (BY-PASSED)	INITIAL	6.0	11	MA.
TRANSCONDUCTANCE CHANGE WITH HEATER VOLTAGE				
DIFFERENCE BETWEEN TRANSCONDUCTANCE (1) AND TRANSCONDUCTANCE AT Ef = 5.7 VOLTS (OTHER CONDITIONS THE SAME) EXPRESSED AS A PERCENTAGE OF TRANSCONDUCTANCE (1)	INITIAL	---	10	PERCENT
	500 HR.	15	---	PERCENT
TRANSCONDUCTANCE (1)				
Ef = 6.3 V., Eb =100 V., Rk =150 OHMS (BY-PASSED)	INITIAL	4800	6800	μMHOS
TRANSCONDUCTANCE CHANGE WITH OPERATION				
DIFFERENCE BETWEEN TRANSCONDUCTANCE (1) INITIALLY AND AFTER OPERATION EXPRESSED AS A PERCENTAGE OF INITIAL VALUE	500-HR.	---	20	PERCENT
AVERAGE TRANSCONDUCTANCE CHANGE WITH OPERATION:				
AVERAGE OF VALUES FOR 'TRANSCONDUCTANCE CHANGE WITH OPERATION'	500-HR	---	15	PERCENT
AMPLIFICATION FACTOR:				
Ef =6.3 V., Eb =100 V., Rk =150 OHMS (BY-PASSED)	INITIAL	23	31	
PLATE CURRENT CUTOFF (1):				
Ef = 6.3 V., Eb =100 V., Ec =-7.0 VOLTS	INITIAL	---	100	μAMPS
PLATE CURRENT CUTOFF (2)				
Ef =6.3 V., Eb= 100 V., Ec=-4.0 VOLTS	INITIAL	20	---	μAMPS.
RF POWER OUTPUT:				
Ef =6.3 V., Eb =150 V., F =500 mc, Rg ADJUSTED FOR Ib =20 ma d-c	INITIAL	600	---	MW.

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CHARACTERISTICS LIMITS - cont'd.

INTERELECTRODE CAPACITANCES:				
GRID TO PLATE (G TO P)	INITIAL	1.1	1.8	μμf
INPUT(G TO K+H)	INITIAL	1.6	2.8	μμf
OUTPUT (P TO K+H)	INITIAL	0.5	0.9	μμf
(MEASURED WITHOUT EXTERNAL SHIELD)				
NEGATIVE GRID CURRENT:				
Ef =6.3 V., Eb =150 V., Rk =380 OHMS				
(BY-PASSED), Rg = 1.0 MEG.	INITIAL	---	0.4	μAMPS.
	500 HR.	---	0.6	μAMPS.
HEATER-CATHODE LEAKAGE CURRENT:				
Ef =6.3 V., Ehk =100 V.,				
HEATER POSITIVE WITH RESPECT				
TO CATHODE	INITIAL	---	5	μAMPS.
	500 HR.	---	10	μAMPS.
HEATER NEGATIVE WITH RESPECT				
TO CATHODE	INITIAL	---	5	μAMPS.
	500 HR.	---	10	μAMPS.
INTERELECTRODE LEAKAGE RESISTANCE:				
Ef =6.3 V POLARITY OF APPLIED DC				
INTERELECTRODE VOLTAGE IS SUCH				
THAT NO CATHODE EMISSION RESULTS:				
GRID TO ALL AT 100 VOLTS DC	INITIAL	100	---	MEGOHMS
	500 HR.	50	---	MEGOHMS
PLATE TO ALL AT 300 VOLTS DC	INITIAL	100	---	MEGOHMS
	500 HR.	50	---	MEGOHMS
VIBRATIONAL NOISE OUTPUT VOLTAGE, RMS				
Ef =6.3 V., Ebb =100 V., Rk =150 OHMS				
(BY-PASSED), R_L = 10,000 OHMS,				
VIBRATIONAL ACCELERATION =15 G AT 40cps	INITIAL	---	25	MILLIV
GRID EMISSION CURRENT:				
Ef =7.5 V., Eb=100 V., Ecc=-7.0 V., Rg=1.0 MEG.	INITIAL	---	0.4	μAMPS.

THE INDICATED 500-HOUR VALUES ARE LIFE-TEST END POINTS FOR THE FOLLOWING CONDITIONS OF OPERATION: Ef=6.3 VOLTS, Eb=100 VOLTS, Rk=150 OHMS, Rg=1.0 MEG, Ehk=200 VOLTS WITH HEATER POSITIVE WITH RESPECT TO CATHODE, AND BULB TEMPERATURE= 220 C MINIMUM.

SPECIAL TESTS AND RATINGS

STABILITY LIFE TEST
STATISTICAL SAMPLE OPERATED FOR ONE HOUR TO EVALUATE AND CONTROL INITIAL VARIATIONS IN TRANSCONDUCTANCE.

SURVIVAL RATE LIFE TEST
STATISTICAL SAMPLE OPERATED FOR ONE HUNDRED HOURS TO EVALUATE AND CONTROL EARLY-LIFE ELECTRICAL AND MECHANICAL INOPERATIVES.

HEATER-CYCLING LIFE TEST
STATISTICAL SAMPLE OPERATED FOR 2000 CYCLES TO EVALUATE AND CONTROL HEATER-CATHODE DEFECTS. CONDITIONS OF TEST INCLUDE Ef=7.0 VOLTS CYCLED FOR ONE MINUTE ON AND FOUR MINUTES OFF, Eb=Ec=0 VOLTS, AND Ehk=140 VOLTS RMS.

SHOCK RATING--450 G
STATISTICAL SAMPLE SUBJECTED TO FIVE IMPACT ACCELERATIONS OF 450 G IN EACH OF FOUR DIFFERENT POSITIONS. THE ACCELERATING FORCES ARE APPLIED BY THE NAVY-TYPE, HIGH IMPACT (FLYWEIGHT) SHOCK MACHINE FOR ELECTRONIC DEVICES OR ITS EQUIVALENT.

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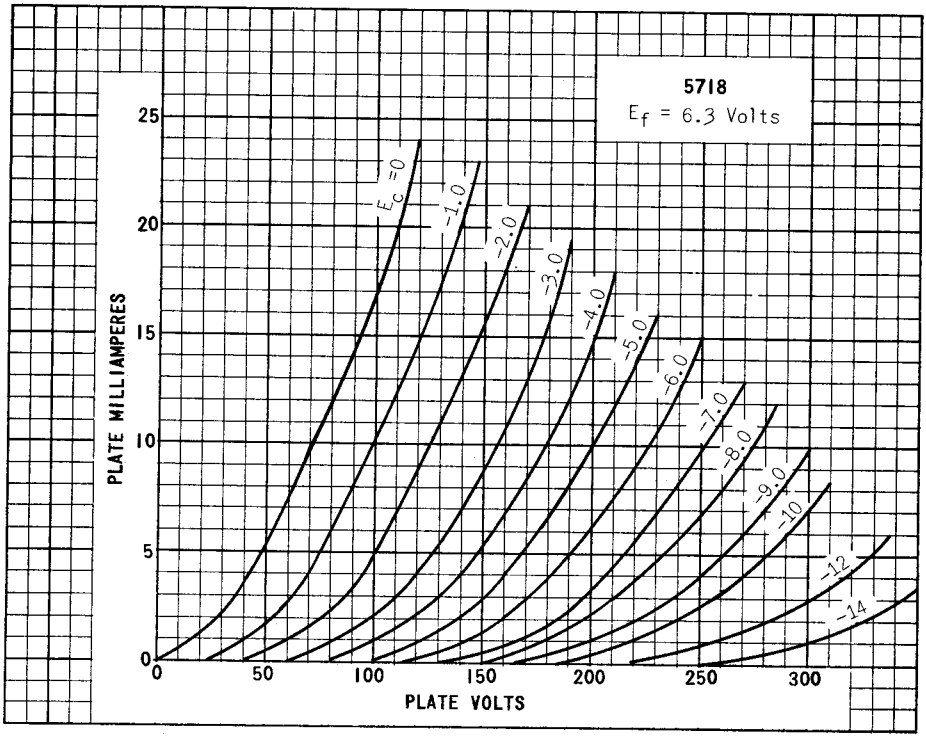
SECIAL TESTS AND RATINGS - cont'd.

FATIGUE RATING--2.5 G
STATISTICAL SAMPLE SUBJECTED TO VIBRATIONAL ACCELERATION OF 2.5 G FOR 32 HOURS MINIMUM IN EACH OF THREE DIFFERENT POSITIONS. THE SINUSOIDAL VIBRATION IS APPLIED AT A FIXED FREQUENCY BETWEEN 25 AND 60 CYCLES PER SECOND.

ALTITUDE RATING--60,000 FEET
STATISTICAL SAMPLE SUBJECTED TO PRESSURE OF 55 MILLIMETERS OF MERCURY TO EVALUATE AND CONTROL ARCING AND CORONA.

NOTE:
THE CONDITIONS FOR SOME OF THE INDICATED TESTS HAVE DELIBERATELY BEEN SELECTED TO AGGRAVATE TUBE FAILURES FOR TEST AND EVALUATION PURPOSES. IN NO SENSE SHOULD THESE CONDITIONS BE INTERPRETED AS SUITABLE CIRCUIT OPERATING CONDITIONS.
IN THE DESIGN OF MILITARY EQUIPMENT EMPLOYING THIS TUBE, REFERENCE SHOULD BE MADE TO THE APPROPRIATE MIL-E-1 SPECIFICATION.



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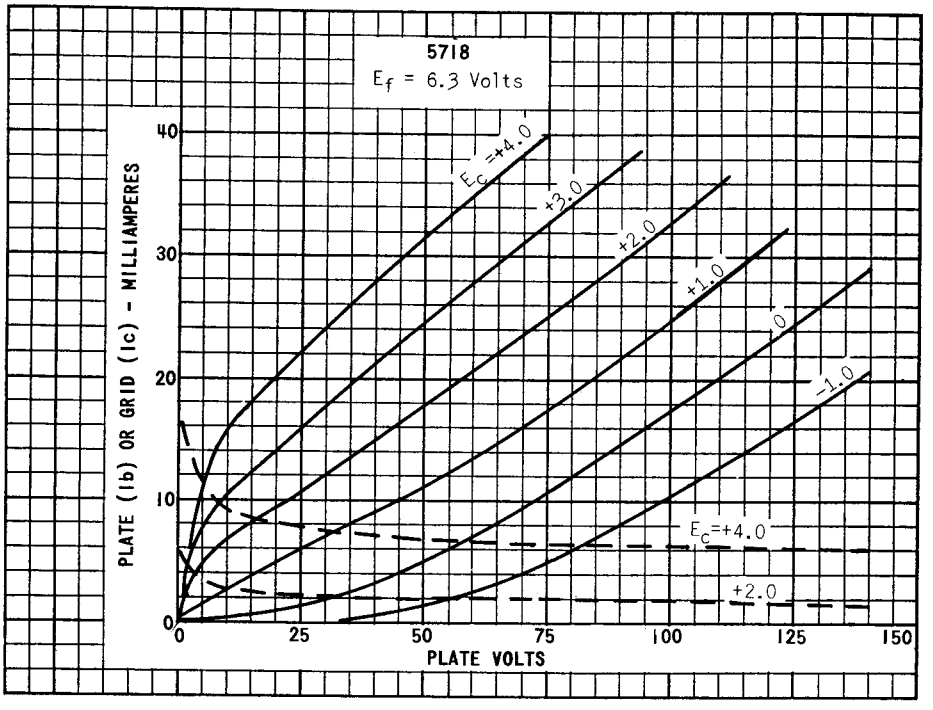
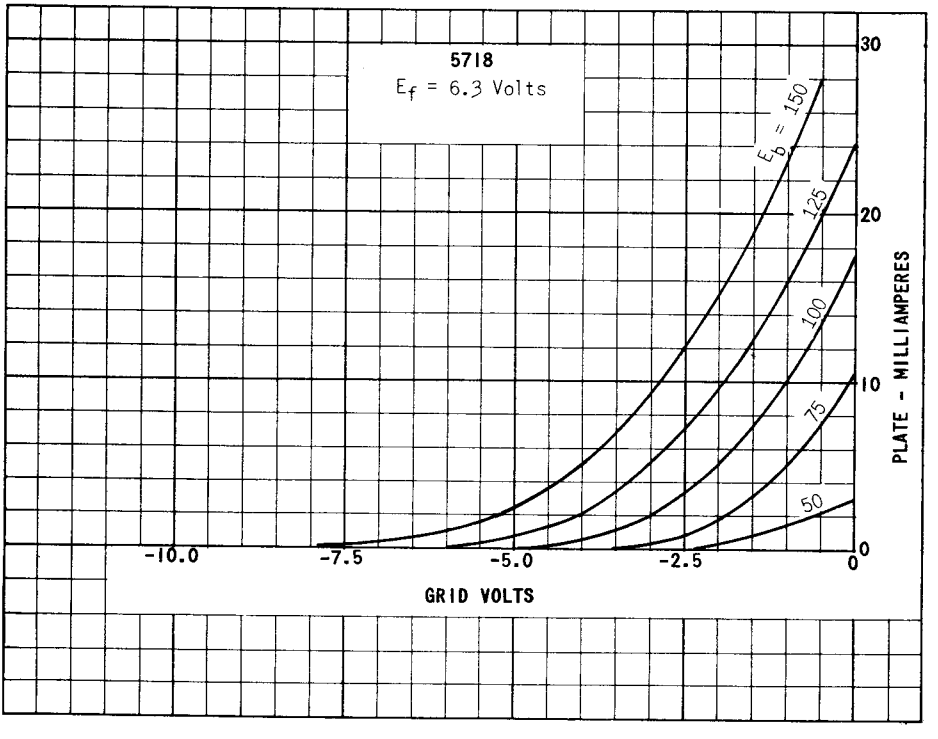
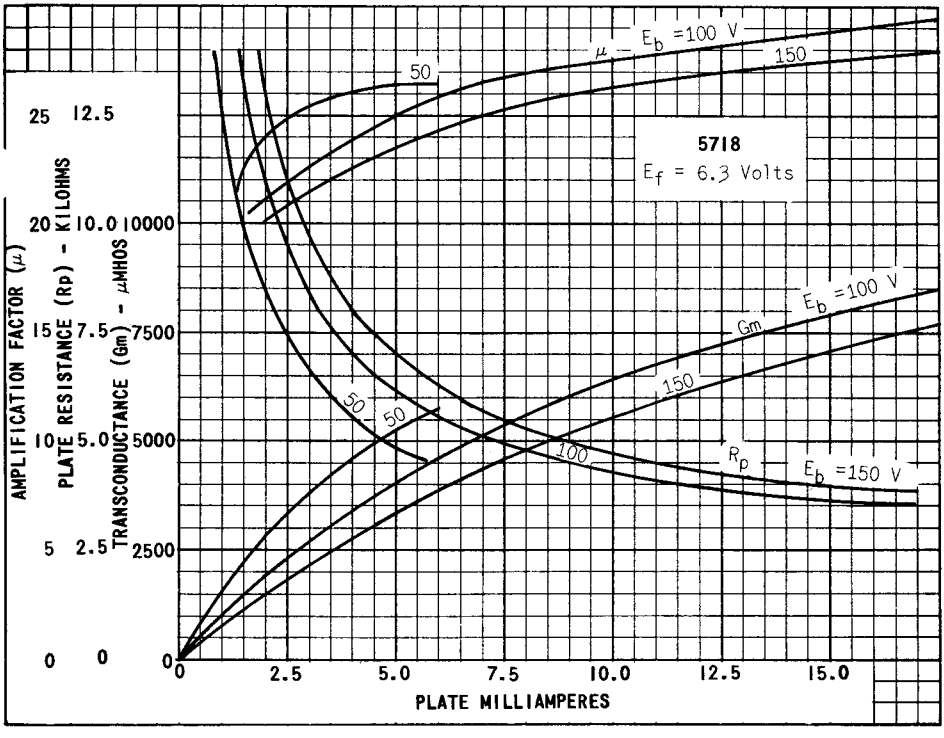

5718
E_f = 6.3 Volts
PLATE (Ib) OR GRID (Ic) - MILLIAMPERES
PLATE VOLTS
E_c=+4.0
+3.0
+2.0
+1.0
0
-1.0
E_c=+4.0
+2.0
0
10
20
30
40
0
25
50
75
100
125
150


5718
E_f = 6.3 Volts
PLATE - MILLIAMPERES
GRID VOLTS
E_b = 150
125
100
75
50
0
10
20
30
-10.0
-7.5
-5.0
-2.5
0


5718
E_f = 6.3 Volts
μ — E_b =100 V
150
50
Gm
E_b =100 V
150
50
50
100
R_p
E_b =150 V
AMPLIFICATION FACTOR (μ)
PLATE RESISTANCE (Rp) - KILOHMS
TRANSCONDUCTANCE (Gm) - μMHOS
25 12.5
20 10.0 10000
15 7.5 7500
10 5.0 5000
5 2.5 2500
0 0 0
0 2.5 5.0 7.5 10.0 12.5 15.0
PLATE MILLIAMPERES