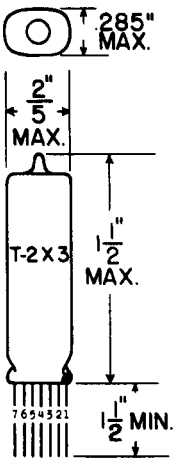
TUNG-SOL

DOUBLE DIODE

SUBMINIATURE TYPE

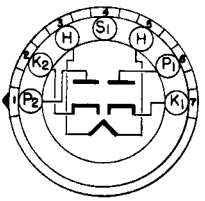


GLASS BULB

COATED UNIPOTENTIAL CATHODE

HEATER
6.3 VOLTS 0.15 AMP.
AC OR DC

ANY MOUNTING POSITION



BOTTOM VIEW
SUBMINIATURE — 8 FLEXIBLE LEADS

THE 5829WA IS A CATHODE-TYPE DOUBLE DIODE IN THE SUBMINIATURE CONSTRUCTION, CAPABLE OF OPERATION UP TO ABOUT 400 MC. AN INTERNAL SHIELD IS CONSTRUCTED BETWEEN THE TWO DIODE SECTIONS AND BROUGHT OUT ON A SEPARATE LEAD SO THAT ELECTRICALLY INDEPENDENT OPERATION CAN BE ASSURED. PRODUCT AVERAGE CONTROLS ON SUCH CHARACTERISTICS AS EMISSION AND FULL WAVE OPERATIONAL LOAD CURRENT ASSURE THAT THESE CRITICAL CHARACTERISTICS WILL REMAIN WELL CENTERED. SINCE IT MUST BE ABLE TO WITHSTAND SEVERE MECHANICAL TESTS TO MEET TEST SPECIFICATIONS, THE 5829WA IS ESPECIALLY SUITABLE FOR USE IN MILITARY AND INDUSTRIAL EQUIPMENT WHICH MAY BE SUBJECTED TO SEVERE SHOCK AND VIBRATION SUCH AS AIRBORNE COMMUNICATIONS EQUIPMENT.

DIRECT INTERELECTRODE CAPACITANCES

	WITHOUT SHIELD	
PLATE #1 TO ALL OTHER ELEMENTS (RATED)	2.6	μμf
MAXIMUM	3.5	μμf
MINIMUM	1.9	μμf
PLATE #2 TO ALL OTHER ELEMENTS (RATED)	2.3	μμf
MAXIMUM	3.3	μμf
MINIMUM	1.7	μμf
CATHODE #1 TO ALL OTHER ELEMENTS (RATED)	3.9	μμf
MAXIMUM	4.2	μμf
MINIMUM	2.4	μμf
CATHODE #2 TO ALL OTHER ELEMENTS (RATED)	3.9	μμf
MAXIMUM	4.6	μμf
MINIMUM	2.8	μμf
PLATE #1 TO PLATE #2 (RATED)	0.1	μμf
MAXIMUM	0.12	μμf
MINIMUM	0.06	μμf

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DIRECT INTERELECTRODE CAPACITANCES – CONT'D.

	WITHOUT SHIELD	
CATHODE #1 TO HEATER (RATED)	2.0	μμf
MAXIMUM	2.2	μμf
MINIMUM	1.1	μμf
CATHODE #2 TO HEATER (RATED)	2.0	μμf
MAXIMUM	2.5	μμf
MINIMUM	1.3	μμf

RATINGS
ABSOLUTE MAXIMUM VALUES

HEATER VOLTAGE	6.3±5%	VOLTS
MAXIMUM DC PLATE SUPPLY VOLTAGE (EACH SECTION)	130	VOLTS
MAXIMUM PEAK PLATE INVERSE VOLTAGE	360	VOLTS
MAXIMUM HEATER CATHODE VOLTAGE	±360	VOLTS
MAXIMUM DC OUTPUT CURRENT (EACH SECTION)	5.5	mA.
MAXIMUM PEAK PLATE CURRENT (EACH SECTION)	33	mA.
MAXIMUM SURGE CURRENT (EACH SECTION)	175	mA.
MAXIMUM BULB TEMPERATURE	220	°C
MAXIMUM ALTITUDE	60 000	FEET

TYPICAL OPERATING CONDITIONS AND CHARACTERISTICS
HALF-WAVE RECTIFIER

HEATER VOLTAGE	6.3	VOLTS
HEATER CURRENT	0.15	AMP.
MINIMUM TOTAL EFFECTIVE PLATE SUPPLY IMPEDANCE PER PLATE	400	OHMS
DC OUTPUT CURRENT PER PLATE	5	mA.
AVERAGE TUBE VOLTAGE DROP @ 15 mA PER PLATE	5	VOLTS

CHARACTERISTICS RANGE VALUES FOR EQUIPMENT DESIGN
E_f = 6.3V, $E_{pp/p}$ = 117Vdc, E_{hk} = 0V, R_L = 14000 Ohms, C_L = 8 μf
EXCEPT AS MODIFIED BELOW

	INITIAL				500 HOUR LIFE TEST		
	INDIVIDUAL MIN.	INDIVIDUAL MAX.	PROD. MIN.	AVG. MAX.	INDIVIDUAL MIN.	INDIVIDUAL MAX.	
HEATER CURRENT	138	162	---	---	135	165	mAdc
HEATER–CATHODE LEAKAGE (Ehk=±100 Vdc)	---	±10	---	---	---	±20	μAdc
INSULATION OF ELECTRODES (Ep TO ALL =- 300 Vdc)	100	---	---	---	50	---	MEGOHMS
PLATE CURRENT (Ebb =0, Rp =400)	2	20	---	---	---	---	μAdc
PLATE CURRENT DIFFERENCE BETWEEN SEC.	---	5.0	---	---	---	---	μAdc
GRID EMISSION (Es=6.5 Vdc)	15	---	16.5	---	---	---	μAdc

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SPECIAL REQUIREMENTS

	MIN.	MAX.	
LOW PRESSURE VOLTAGE BREAKDOWN			
(PRESSURE =55±5mm Hg, VOLTAGE=330 Vac)[A]	---	---	
VARIABLE FREQUENCY VIBRATION[B]			
(NO VOLTAGES, POST SHOCK AND VIBRATIONAL FATIGUE TEST END POINTS APPLY)	---	---	
SUBMINIATURE LEAD FATIGUE[C]	4	---	ARCS
SHOCK[D]			
(HAMMER ANGLE = 30°)	---	---	
VIBRATIONAL FATIGUE[E]			
(G=2.5; FIXED FREQUENCY; F=25MIN, 60MAX)	---	---	
POST SHOCK AND VIBRATIONAL FATIGUE TEST END POINTS			
HEATER CATHODE LEAKAGE	---	±15	μAdc
OPERATION	7.0	---	mAdc
SHORT AND CONTINUITY[F]	---	---	
GLASS STRAIN[G]	---	---	
HEATER CYCLING LIFE TEST			
(Ef=7.5V, Ehk=140Vac, Eb=0, 1 MIN ON 4 MIN OFF)	---	---	
HEATER CYCLING LIFE TEST END POINTS			
HEATER CATHODE LEAKAGE	---	±20	μAdc
INTERMITTENT LIFE TEST			
(T ENVELOPE= 220°C) [H,J]	---	---	

NOTES

[A] TUBE SHALL BE TESTED IN A CHAMBER UNDER THE CONDITIONS OF PRESSURE SPECIFIED. THE SPECIFIED VOLTAGE SHALL BE APPLIED BETWEEN THE LEADS OF ELEMENTS CARRYING B+ VOLTAGE AND THE ADJACENT LEADS. VOLTAGE SHALL BE OF A SINUSOIDAL WAVE FORM WITH F=60 CYCLES. TUBE SHOWING EVIDENCE OF CORONA OR ARCING SHALL BE CONSIDERED DEFECTIVE.

[B] SEE MIL-E-1C 4.9.20.3

[C] SEE MIL-E-1C 4.9.5.3

[D] SEE MIL-E-1C 4.9.20.5

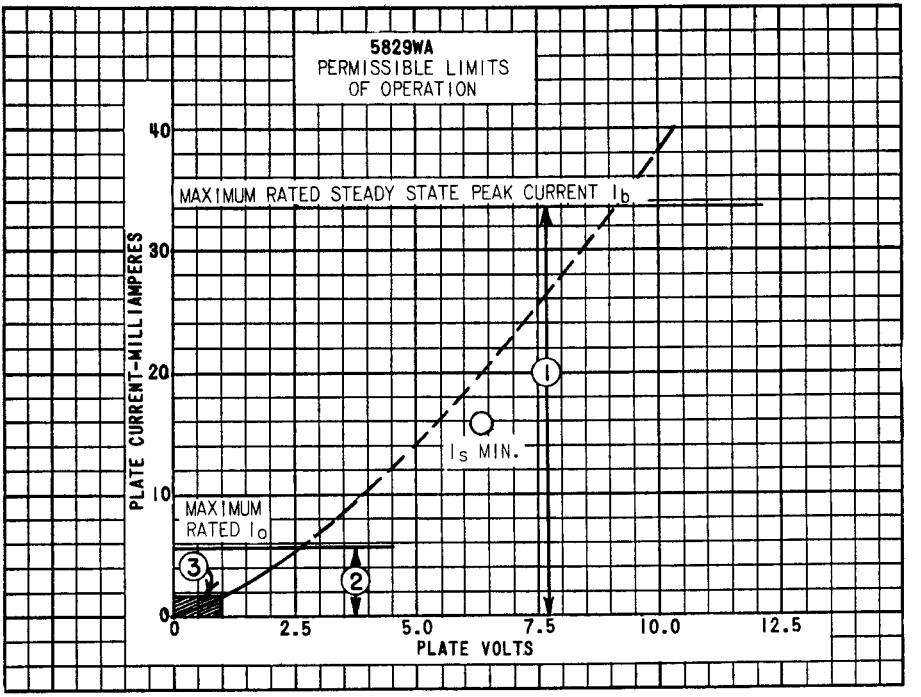
[F] SEE MIL-E-1C 4.7.5

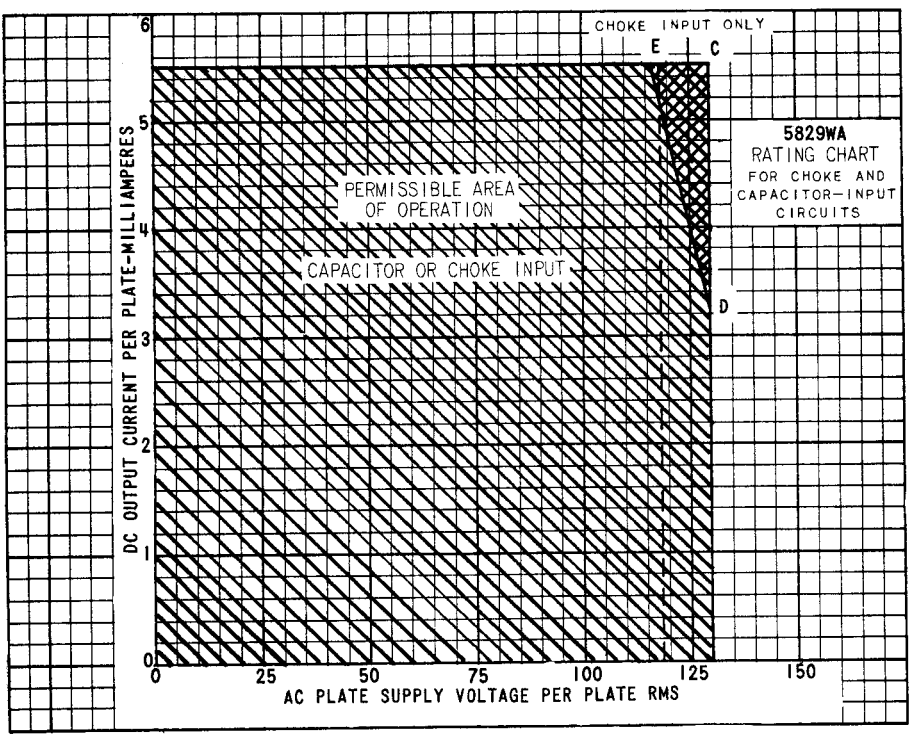
[G] GLASS STRAIN TEST PROCEDURE: ALL TUBES SUBJECTED TO THIS TEST SHALL HAVE BEEN SEALED A MINIMUM OF 48 HOURS PRIOR THERETO. ALL TUBES SHALL BE AT ROOM TEMPERATURE IMMEDIATELY PRIOR TO THIS TEST. THE ENTIRE TUBE SHALL BE IMMERSED IN WATER OF NOT LESS THAN 85°C FOR 15 SECONDS AND IMMEDIATELY THEREAFTER IMMERSED IN WATER OF NOT MORE THAN 5°C FOR 5 SECONDS. THE VOLUME OF WATER SHALL BE LARGE ENOUGH THAT THE TEMPERATURE WILL NOT BE APPRECIABLY EFFECTED BY THE TEST. THE METHOD OF SUBMERSION SHALL BE IN ACCORDANCE WITH DRAWING #245-JAN, AND SUCH THAT A MINIMUM OF HEAT IS CONDUCTED AWAY BY THE HOLDER USED. THE TUBES SHALL BE PLACED IN WATER SO THAT NO CONTACT IS MADE WITH THE CONTAINING VESSEL, NOR SHALL THE TUBES CONTACT EACH OTHER. AFTER THE 5-SECOND SUBMERSION PERIOD, THE TUBES SHALL BE REMOVED AND ALLOWED TO DRY AT ROOM TEMPERATURE ON A WOODEN SURFACE. AFTER DRYING AT ROOM TEMPERATURE FOR 48 HOURS, THE TUBES SHALL BE INSPECTED FOR EVIDENCE OF AIR LEAKS. ELECTRICAL REJECTS, OTHER THAN INOPERATIVES, MAY BE USED IN THE PERFORMANCE TEST.

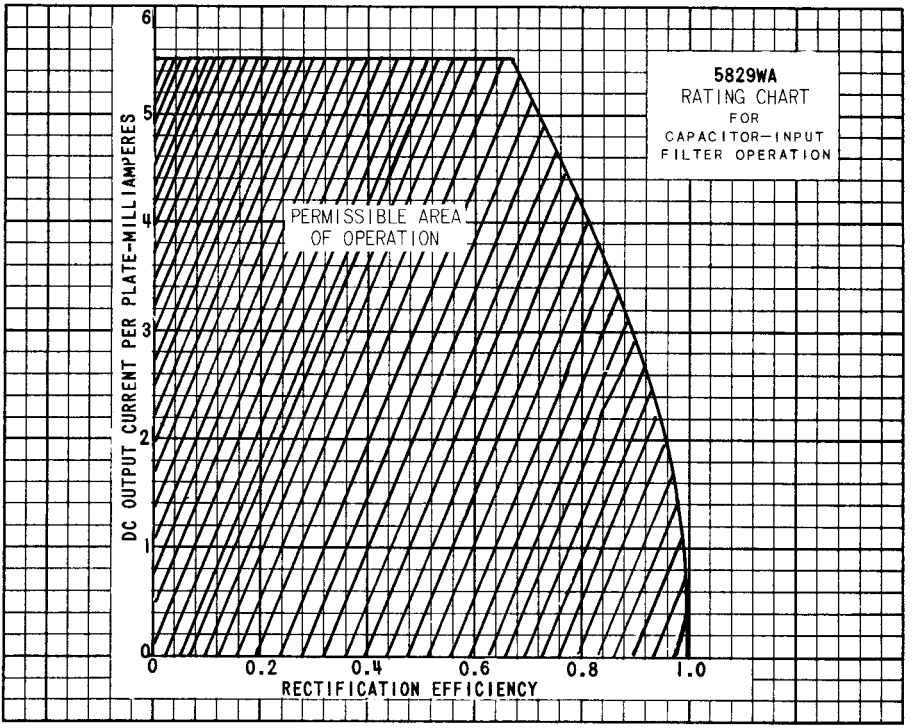
[H] ENVELOPE TEMPERATURE IS DEFINED AS THE HIGHEST TEMPERATURE INDICATED WHEN USING A THERMOCOUPLE OF #40BS OR SMALLER DIAMETER ELEMENTS WELDED TO A RING OF .025 INCH DIAMETER PHOSPHOR BRONZE PLACED IN CONTACT WITH THE ENVELOPE.

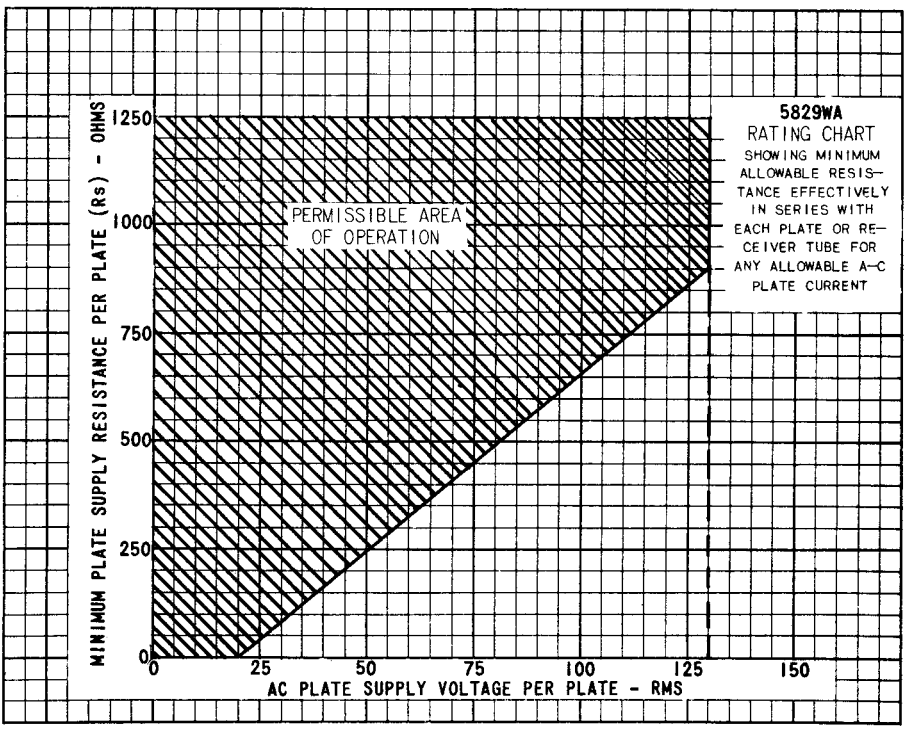
[J] IN FULL-WAVE LIFE TEST CIRCUIT, THE VALUES OF RL AND CL GIVEN IN THE TEST CONDITIONS SHALL BE CONSIDERED AS APPROXIMATE AND SHALL BE ADJUSTED INITIALLY TO GIVE Io EQUAL TO OR GREATER THAN 10 mAdc WITH Ib EQUAL TO OR GREATER THAN 25 mA. Ehk = 117 vac.

[E] SEE MIL-E-1C 4.9.20.6


5829WA
PERMISSIBLE LIMITS
OF OPERATION
MAXIMUM RATED STEADY STATE PEAK CURRENT I_b
I_s MIN.
MAXIMUM
RATED I_o
PLATE CURRENT-MILLIAMPERES
PLATE VOLTS
0
10
20
30
40
2.5
5.0
7.5
10.0
12.5
1
2
3


CHOKE INPUT ONLY
E
C
D
5829WA
RATING CHART
FOR CHOKE AND
CAPACITOR-INPUT
CIRCUITS
PERMISSIBLE AREA
OF OPERATION
CAPACITOR OR CHOKE INPUT
DC OUTPUT CURRENT PER PLATE-MILLIAMPERES
AC PLATE SUPPLY VOLTAGE PER PLATE RMS
0
1
2
3
4
5
6
25
50
75
100
125
150


5829WA
RATING CHART
FOR
CAPACITOR—INPUT
FILTER OPERATION
PERMISSIBLE AREA
OF OPERATION
DC OUTPUT CURRENT PER PLATE-MILLIAMPERES
0
1
2
3
4
5
6
0
0.2
0.4
0.6
0.8
1.0
RECTIFICATION EFFICIENCY


5829WA
RATING CHART
SHOWING MINIMUM
ALLOWABLE RESIS-
TANCE EFFECTIVELY
IN SERIES WITH
EACH PLATE OR RE-
CEIVER TUBE FOR
ANY ALLOWABLE A-C
PLATE CURRENT
PERMISSIBLE AREA
OF OPERATION
MINIMUM PLATE SUPPLY RESISTANCE PER PLATE (Rs) - OHMS
0
250
500
750
1000
1250
0
25
50
75
100
125
150
AC PLATE SUPPLY VOLTAGE PER PLATE - RMS

5829WA
PREMIUM TUBE

TENTATIVE DATA