TRIODE

TY5-500

Application: *R.F. industrial heating.*
Power output: *1.6kW continuous rating.*
Frequency: *50Mc/s at full rating.*
Construction: *Glass; radiation cooled anode.*

PRELIMINARY DATA

This data should be read in conjunction with GENERAL OPERATIONAL RECOMMENDATIONS—TRANSMITTING VALVES preceding this section of the handbook.

FILAMENT Thoriated tungsten

*V_f	5.0	V
I_f	32.5	A

*The filament has been designed to accept temporary fluctuations $^{+5}_{-10}$%

MOUNTING POSITION

Vertical only, base down

CAPACITANCES

C_{a-g}	5.1	pF
C_{g-f}	9.2	pF
C_{a-f}	0.2	pF

CHARACTERISTICS (measured at V_a = 4kV, I_a = 120mA)

g_m	3.3	mA/V
g_m (at V_a = 1.0kV, I_a = 2.3A)	10	mA/V
μ	21	

COOLING

Normally	Low velocity air flow
*At reduced input or with intermittent ratings	Natural

T_{seals} max.	220	°C
T_{bulb} max.	350	°C

*See examples in typical data.

ACCESSORIES

Socket	B8.700.51
Anode clip	40626

TY5-500

TRIODE

CLASS 'C' OSCILLATOR

With d.c. anode supply

LIMITING VALUES (absolute ratings)

f max.			50	Mc/s
V_a max.			5.0	kV
V_g max.			−1.25	kV
R_{g-f} max.			15	kΩ
Duty factor max.	1	0.5	0.2	
Averaging time max.	—	10	5.0	s
p_a max.	500	700	1000	W
I_a max.	560	780	1100	mA
p_g max.	85	95	110	W
I_g max. (at p_a max.)	210	290	420	mA

OPERATING CONDITIONS

Cooling	Additional	Natural		
f	≦50	≦50	≦50	Mc/s
Duty factor	1	0.5	0.2	
t_{on}	—	5.0	1.0	s
t_{off}	—	5.0	4.0	s
V_a	4.0	4.0	4.0	kV
I_a	490	650	825	mA
I_g	140	190	240	mA
p_a	450	630	900	W
η_a	77	76	73	%
R_{g-f}	2.7	2.0	1.7	kΩ
R_a	4.7	3.4	2.7	kΩ
Feedback ratio $\frac{V_{in(pk)}}{V_{a(pk)}}$	0.2	0.22	0.24	
P_{out}	1.5	2.0	2.4	kW
*P_{load}	1.2	1.6	1.9	kW

*0.85 (P_{out}–P_{drive})

TRIODE

TY5-500

CLASS 'C' OSCILLATOR

Anode supply single phase, full wave rectifier without smoothing filter.

LIMITING VALUES (absolute ratings)

f max.			50	Mc/s
V_a max.			4.5	kV
V_g max.			850	V
R_{g-f} max.			15	kΩ
Duty factor max.	1.0	0.5	0.2	
Averaging time max.	—	10	5.0	s
p_a max.	500	700	1000	W
I_a max.	450	630	900	mA
p_g max.	85	95	110	W
I_g max. (at p_a max.)	190	195	380	mA

OPERATING CONDITIONS

Cooling	Additional	Natural		
f	≦50	≦50	≦50	Mc/s
Duty factor	1.0	0.5	0.2	
t_{on}	—	5.0	1.0	s
t_{off}	—	5.0	4.0	s
$V_{tr(r.m.s.)}$	4.5	4.5	4.5	kV
V_a	4.05	4.05	4.05	kV
I_a	400	530	675	mA
I_g	125	165	210	mA
p_a	450	630	900	W
η_a	77	76	73	%
R_{g-f}	2.7	2.2	1.7	kΩ
R_a	5.9	4.3	3.5	kΩ
Feedback ratio $\frac{V_{in(pk)}}{V_{a(pk)}}$	0.16	0.17	0.18	
P_{out}	1.53	2.0	2.46	kW
*P_{load}	1.25	1.5	2.0	kW

*0.85 ($P_{out} - P_{drive}$)

TY5-500

TRIODE

CLASS 'C' OSCILLATOR

Anode supply from three phase half-wave rectifier.

LIMITING VALUES (absolute ratings)

f max.			50	Mc/s
V_a max.			5.0	kV
V_g max.			−1.25	kV
R_{g-f} max.			15	kΩ
Duty factor max.	1.0	0.5	0.2	
Averaging time max.	—	10	5.0	s
p_a max.	500	700	1000	W
I_a max.	560	780	1100	mA
p_g max.	85	95	110	mA
I_g max. (at p_a max.)	210	290	420	mA

OPERATING CONDITIONS

Cooling	Additional	Natural		
f	≦50	≦50	≦50	Mc/s
Duty factor	1	0.5	0.2	
t_{on}	—	5.0	1.0	s
t_{off}	—	5.0	4.0	s
$V_{tr(r.m.s.)}$	3.4	3.4	3.4	kV
V_a	4.0	4.0	4.0	kV
I_a	480	640	820	mA
I_g	140	190	240	mA
p_a	450	630	900	W
η_a	77	76	73	%
R_{g-f}	2.7	2.0	1.7	kΩ
R_a	4.7	3.4	2.7	kΩ
Feedback ratio $\frac{V_{in(pk)}}{V_{a(pk)}}$	0.2	0.22	0.24	
P_{out}	1.5	2.0	2.4	kW
*P_{load}	1.2	1.6	1.9	kW

*0.85 ($P_{load} - P_{drive}$)

TRIODE

TY5-500

CLASS 'C' OSCILLATOR

Anode supply from transformer without intermediate rectifier.

LIMITING VALUES (absolute ratings)

f max.			50	Mc/s
$V_{tr(r.m.s.)}$ max.			5.0	kV
V_g max.			−850	V
R_{g-f} max.			15	kΩ
Duty factor max.	1	0.5	0.2	
Averaging time max.	—	10	5.0	s
p_a max.	500	700	1000	W
I_a max.	320	450	640	mA
p_g max.	85	95	110	W
I_g max. (at p_a max.)	110	155	220	mA

OPERATING CONDITIONS

Cooling	Additional	Natural		
f	≦50	≦50	≦50	Mc/s
Duty factor	1.0	0.5	0.2	
t_{on}	—	5.0	1.0	s
t_{off}	—	5.0	4.0	s
$V_{tr(r.m.s.)}$	4.5	4.5	4.5	kV
*I_a	280	420	600	mA
*I_g	80	120	170	mA
p_a	380	500	800	W
η_a	77	76	73	%
R_{g-f}	2.7	1.8	1.3	kΩ
R_a	4.3	2.9	2.0	kΩ
Feedback ratio $\frac{V_{in(pk)}}{V_{a(pk)}}$	0.18	0.22	0.25	
P_{out}	1.08	1.6	2.2	kW
**P_{load}	0.9	1.3	1.7	kW

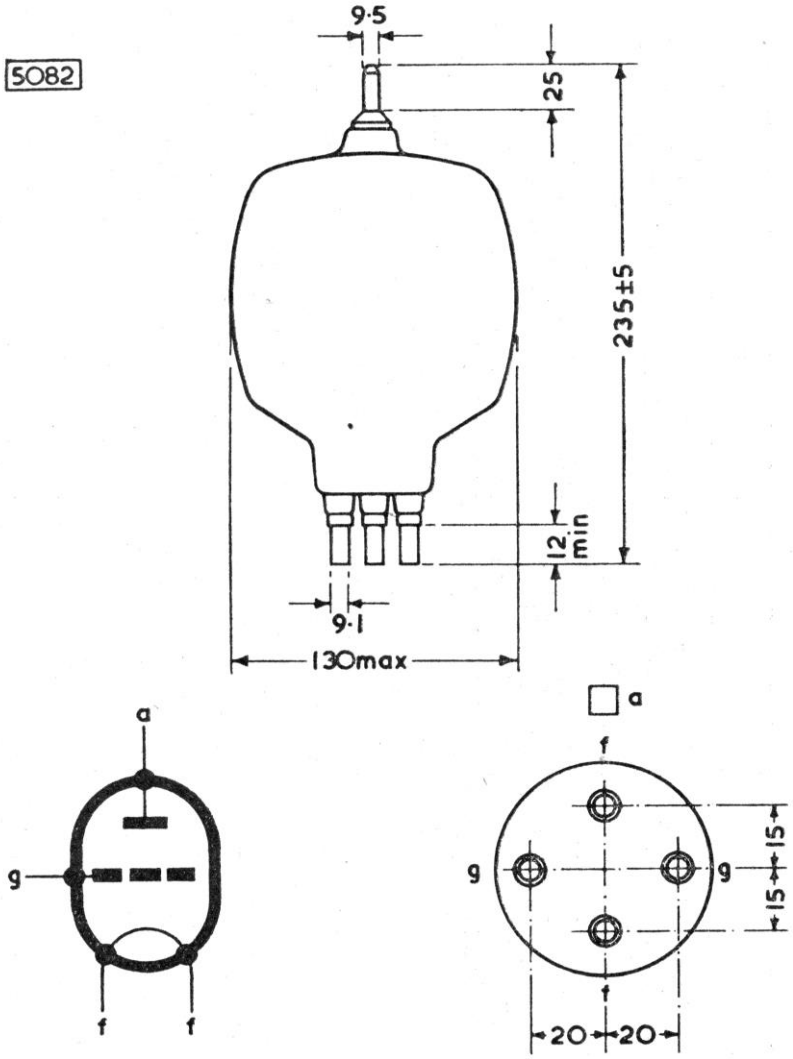
*Averaged over one cycle of supply frequency.

**0.85 (P_{out} − P_{drive})

TRIODE

TY5-500

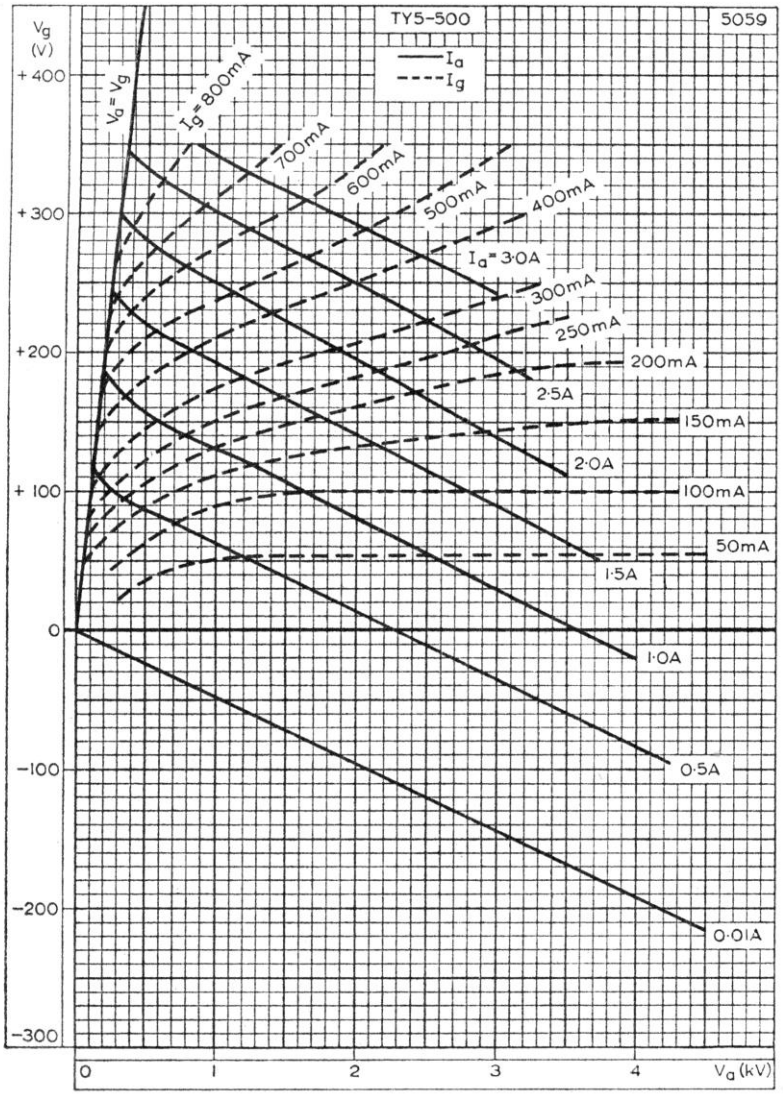
5082



All dimensions in mm

TY5-500

TRIODE



CONSTANT CURRENT CURVES