V.H.F. POWER TETRODE

QV06-20

Beam power tetrode rated for a maximum anode dissipation of 20W and suitable for use at frequencies up to 175Mc/s.

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

CATHODE Indirectly heated.

V_h	6.3	V
I_h	1.25	A

MOUNTING POSITION Any

CAPACITANCES (measured with the base sleeve connected to earth)

C_{a-g1}	<0.22	pF
C_{in}	13.5	pF
C_{out}	8.5	pF

CHARACTERISTICS (measured at $V_a = V_{g2} = 200V$: $I_a = 100mA$)

g_m	7.0	mA/V
μ_{g1-g2}	4.5	

COOLING

Natural cooling		
Maximum bulb temperature	220	°C

OPERATING CONDITIONS AS R.F. POWER AMPLIFIER OR OSCILLATOR (CLASS "C" TELEGRAPHY OR F.M. TELEPHONY)

Limiting Values

V_a max.	600	V
p_a max.	20	W
V_{g2} max.	250	V
p_{g2} max.	3.0	W
I_k max.	160	mA
$i_{k(pk)}$ max.	800	mA
V_{g1} max.	−150	V
I_{g1} max.	8.0	mA
*R_{g1-k} max.	30	kΩ
$v_{h-k(pk)}$ max.	±135	V

*At reduced input R_{g1-k} max. = 100kΩ

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Typical Operating Conditions

f	60	60	175	Mc/s
V_a	500	600	320	V
*V_{g2}	170	150	180	V
*V_{g1}	−66	−58	−51	V
I_a	135	112	140	mA
I_{g2}	10	10	10	mA←
I_{g1} (approx.)	5.0	5.0	4.0	mA←
$v_{in(pk)}$	84	73	64	V
$P_{load(driver)}$	0.6	0.6	5.0	W←
P_{out}	48	52	25	W
P_{load}	38	42	20	W

*When V_{g2} and/or V_{g1} are obtained by means of resistors (R_{g2} and R_{g1}) the anode input power and therefore the output power is likely to vary considerably from valve to valve. For optimum operating conditions it will be necessary therefore to make R_{g2} adjustable.

OPERATING CONDITIONS AS ANODE AND SCREEN-GRID MODULATED R.F. POWER AMPLIFIER (CLASS "C" TELEPHONY)

Limiting Values (carrier condition for modulation factor of 1)

V_a max.	480	V
p_a max.	13.5	W
V_{g2} max.	250	V
p_{g2} max.	2.0	W
I_k max.	130	mA
$i_{k(pk)}$ max.	600	mA←
V_{g1} max.	−150	V
I_{g1} max.	9.0	mA←
*R_{g1-k} max.	30	kΩ
$v_{h-k(pk)}$ max.	± 135	V

*At reduced input R_{g1-k} max. = 100 k Ω.

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Typical Operating Conditions

f	<60	Mc/s
V_a	400	V
*V_{g2}	150	V
*V_{g1}	−87	V
I_a	112	mA
I_{g2}	12	mA ←
I_{g1}	6.0	mA ←
$v_{in(pk)}$	107	V
$P_{load(driver}$	1.2	W ←
P_{out}	32	W
P_{load}	26	W
For 100% modulation		←
P_{mod}	25	W
$v_{g2(pk)}$	110	V

*When V_{g2} and/or V_{g1} are obtained by means of resistors (R_{g2} and R_{g1}) the anode input power and therefore the output power is likely to vary considerably from valve to valve. For optimum operating conditions it will be necessary therefore to make R_{g2} adjustable.

OPERATING CONDITIONS AS A.F. POWER AMPLIFIER OR MODULATOR (CLASS "AB1")

Limiting Values

V_a max.	600	V
p_a max.	20	W
V_{g2} max.	250	V
p_{g2} max.	3.0	W
I_k max.	140	mA
$i_{k(pk)}$ max.	450	mA
†R_{g1-k} max. (fixed bias)	100	kΩ
$v_{h-k(pk)}$ max.	±135	V

†Under these conditions fixed bias is recommended and the control grid resistor should not exceed the specified value of 100kΩ For higher values of control-grid resistance cathode bias is required. Under no circumstances should the total d.c. control-grid resistor exceed 500kΩ.

QV06-20

V.H.F. POWER TETRODE

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Typical Operating Conditions (for two valves)

V_a	400	500	600	V
*V_{g2}	190	185	190	V
†V_{g1}	−40	−40	−45	V
$I_{a(o)}$	2×31	2×28	2×13	mA
I_a (max. sig.)	2×114	2×107	2×100	mA
$I_{g2(o)}$	2×1.2	2×1.0	2×0.5	mA
I_{g2} (max. sig.)	2×12.5	2×12.5	2×11.5	mA
$V_{in(g1-g1)}$ r.m.s.	56	56	64	V
P_{out}	55	70	82	W
R_{a-a}	4.0	5.0	7.0	kΩ
D_{tot}	8.0	8.0	8.0	%

*Obtained preferably from a separate source or from the anode supply using a voltage divider.

†Under these conditions fixed bias is recommended and the control grid resistor should not exceed the specified value of 100 kΩ. For higher values of control-grid resistance cathode bias is required. Under no circumstances should the total d.c. control-grid resistor exceed 500kΩ.

OPERATING CONDITIONS AS A.F. POWER AMPLIFIER OR MODULATOR (CLASS "AB2")

Limiting Values

V_a max.	600	V
p_a max.	20	W
V_{g2} max.	250	V
p_{g2} max.	3.0	W
p_{g1} max.	1.0	W
I_k max.	135	mA
$i_{k(pk)}$ max.	450	mA
*R_{g1-k} max. (fixed bias)	30	kΩ
$v_{h-k(pk)}$ max.	±135	V

*At reduced input R_{g1-k} max. = 100kΩ.

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QV06-20

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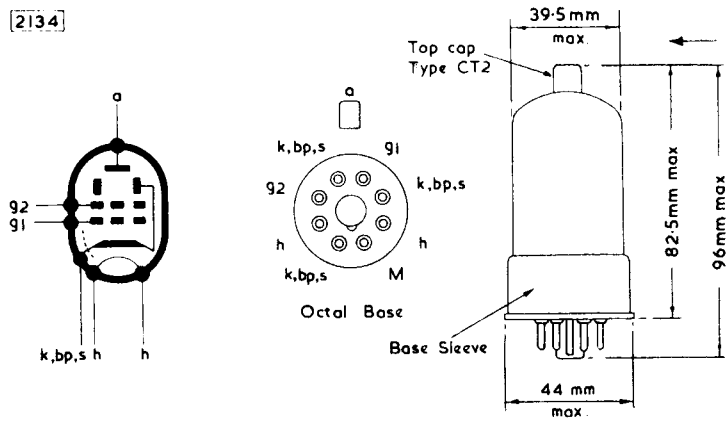
Typical Operating Conditions (for two valves)

V_a	400	500	600	V
*V_{g2}	175	175	165	V
†V_{g1}	–41	–44	–44	V
$I_{a(o)}$	2×16	2×13	2×11	mA
I_a (max. sig.)	2×116	2×121	2×103	mA
$I_{g2(o)}$	2×0.5	2×0.3	2×0.3	mA
I_{g2} (max. sig.)	2×9.0	2×9.0	2×8.5	mA
I_{g1} (max. sig.)	2×0.8	2×1.0	2×0.5	mA
$V_{in(g1-g1)r.m.s.}$	66	72	68	V
P_{out}	62	83	90	W
R_{a-a}	3.7	4.6	6.8	kΩ
D_{tot}	9.0	9.0	9.0	%

*Obtained preferably from a separate source, or from the anode supply using a voltage divider.

†Fixed bias is recommended.



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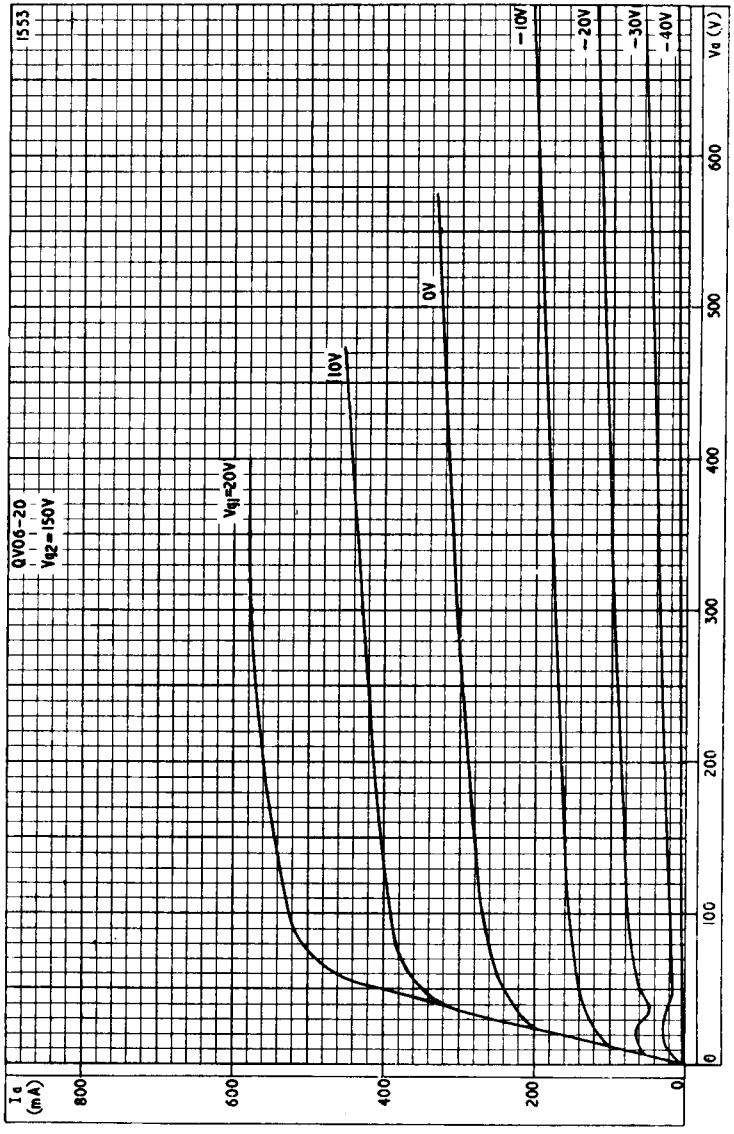

ANODE CURRENT PLOTTED AGAINST ANODE VOLTAGE FOR SCREEN-GRID VOLTAGE=150V

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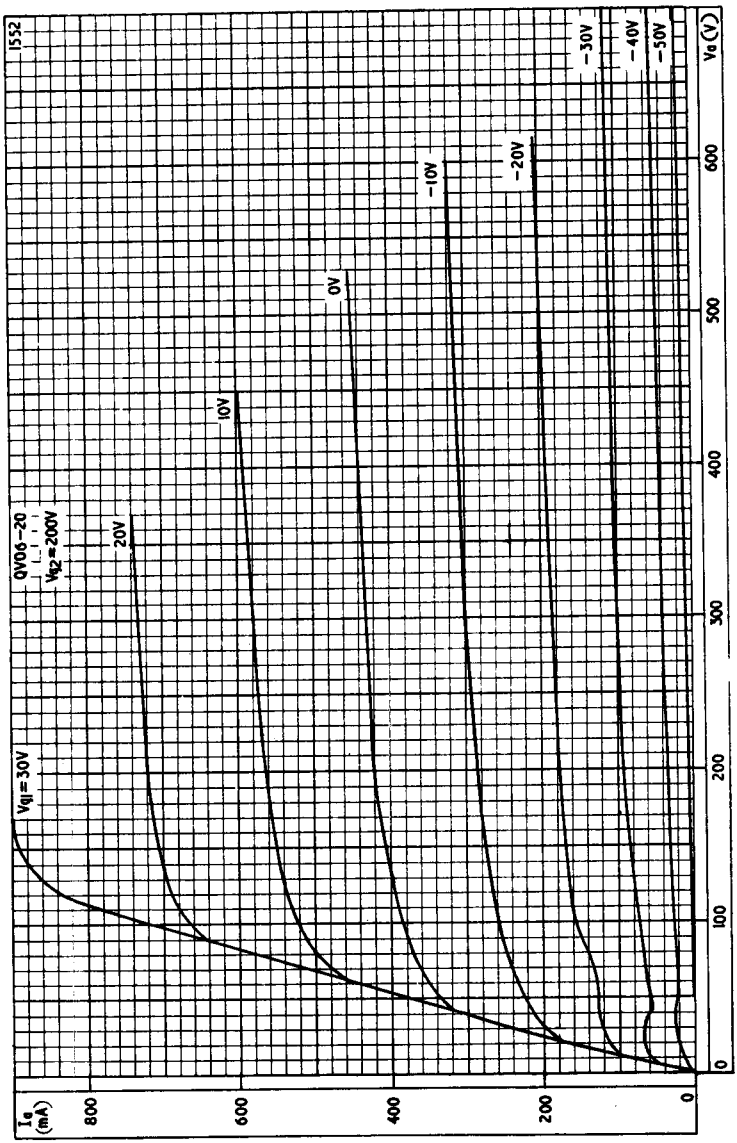

ANODE CURRENT PLOTTED AGAINST ANODE VOLTAGE FOR SCREEN-GRID VOLTAGE=200V

QV06-20

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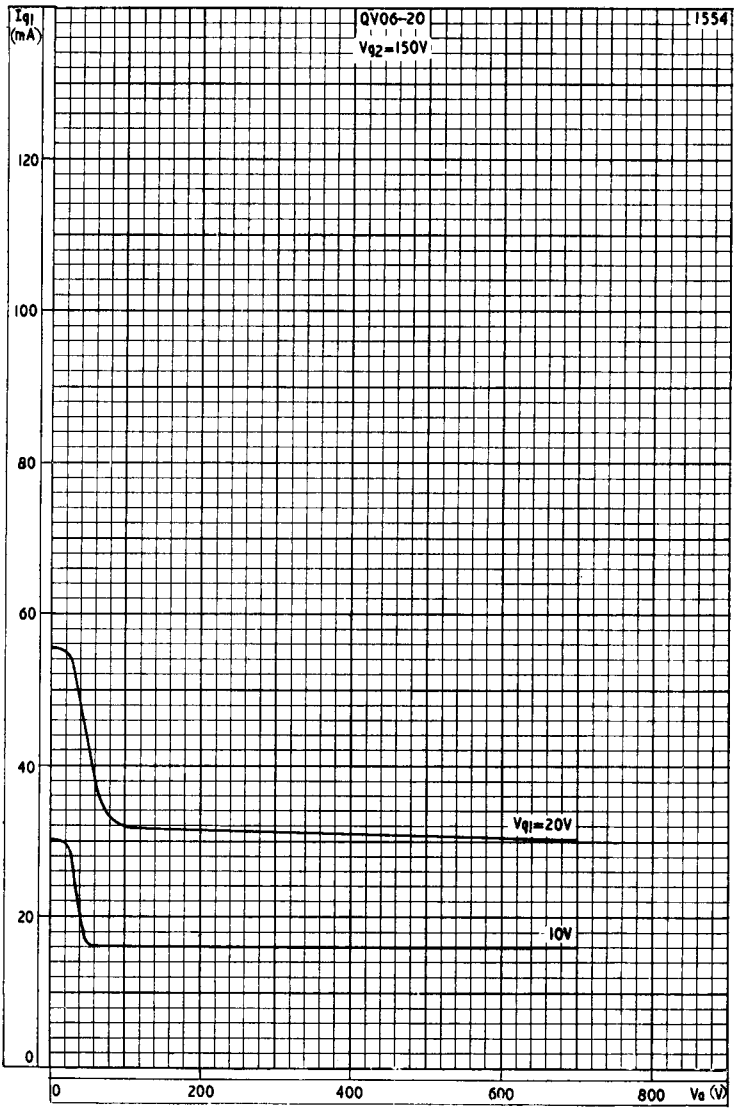

CONTROL-GRID CURRENT PLOTTED AGAINST ANODE VOLTAGE FOR SCREEN-GRID VOLTAGE=150V

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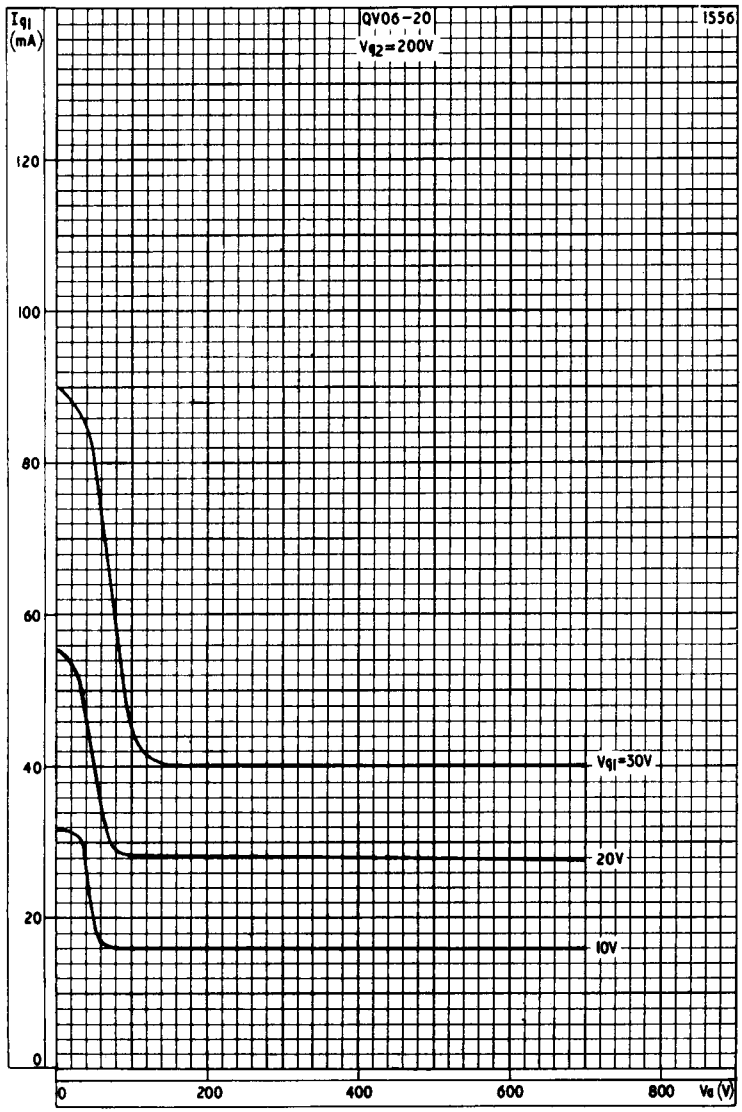

CONTROL-GRID CURRENT PLOTTED AGAINST ANODE VOLTAGE FOR SCREEN-GRID VOLTAGE=200V

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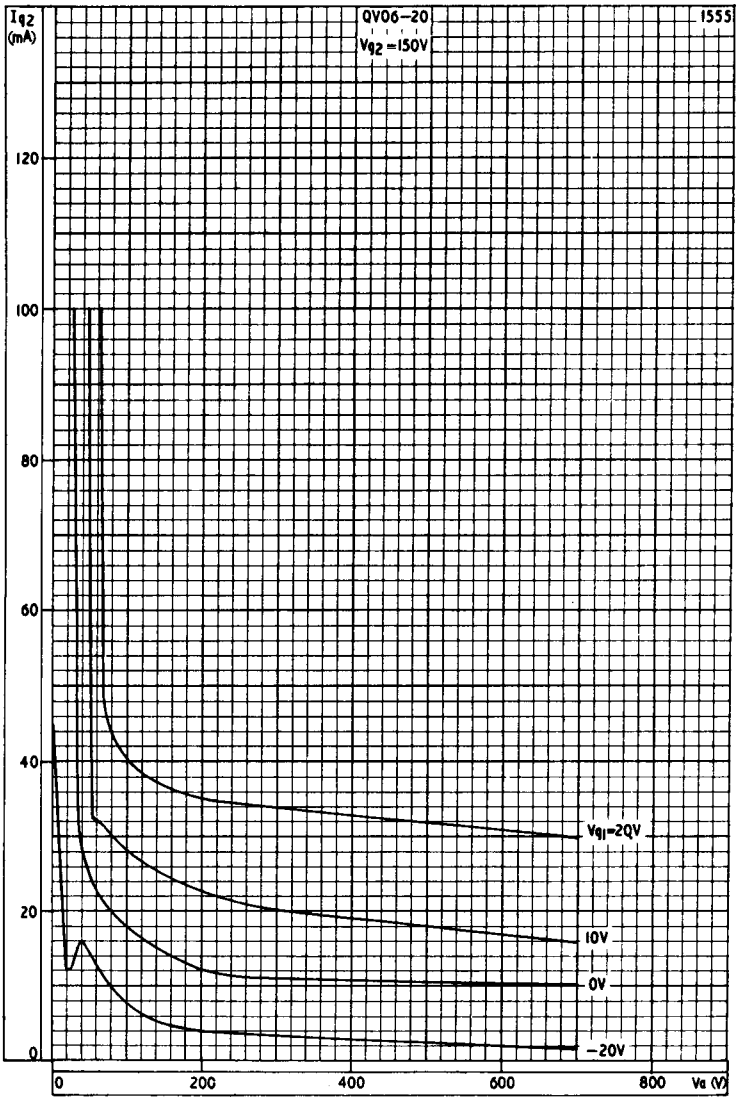

SCREEN-GRID CURRENT PLOTTED AGAINST ANODE VOLTAGE FOR SCREEN-GRID VOLTAGE=150V

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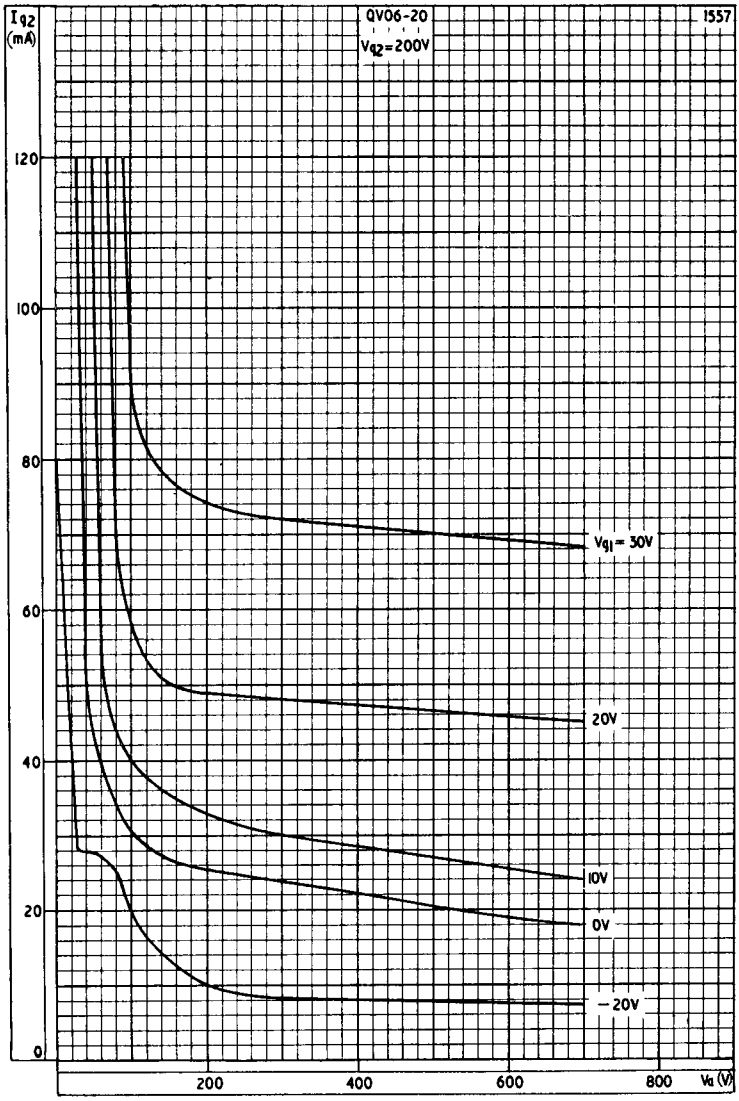

SCREEN-GRID CURRENT PLOTTED AGAINST ANODE VOLTAGE FOR SCREEN-GRID VOLTAGE=200 V

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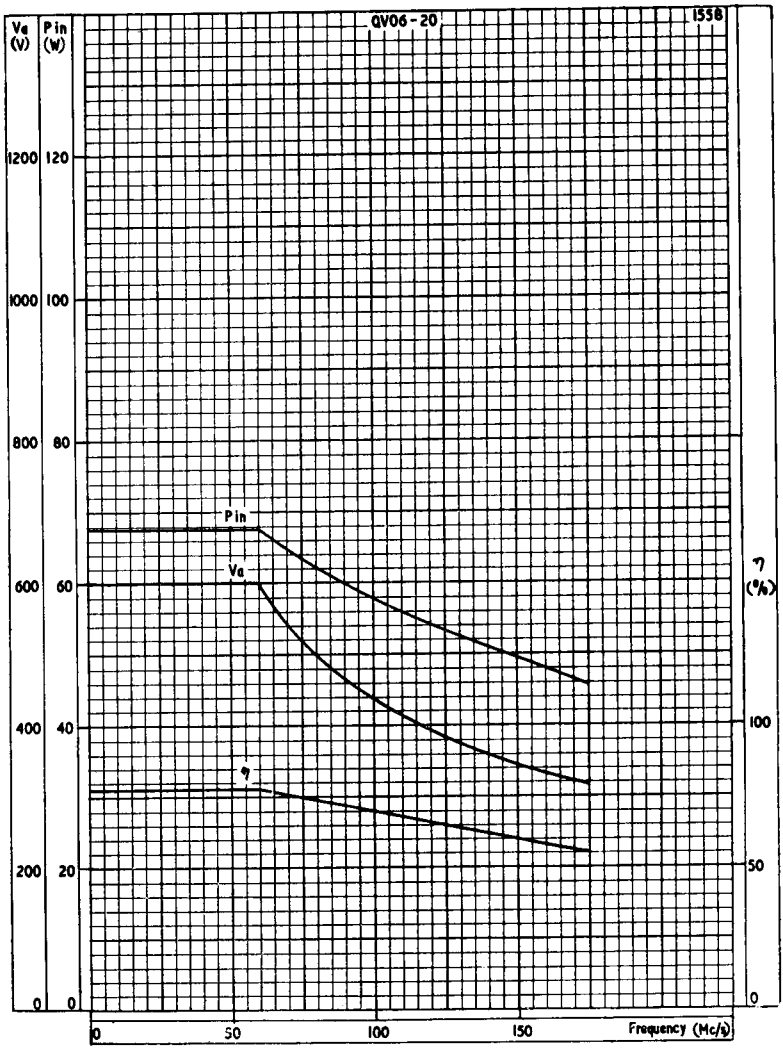

FREQUENCY CHARACTERISTICS