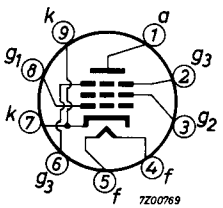
S.Q. TUBE

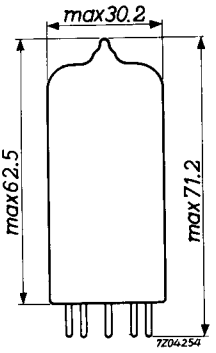
Special quality pentode designed for use as wide band output tube.

QUICK REFERENCE DATA			
Life test	10 000 hours		
Low interface resistance			
Mechanical quality	Shock and vibration resistant		
Base	Magnoval. Gold plated pins		
Heating	Indirect A.C. or D.C.; Parallel supply		
Heater voltage	V_f	6.3	V±5%
Heater current	I_f	600	mA
Anode current	I_a	50	mA
Mutual conductance	S	45	mA/V

DIMENSIONS AND CONNECTIONS Dimensions in mm

Base: Magnoval





CHARACTERISTICS

Column I Nominal value or setting of the tube
II Range values for equipment design: Initial spread
III Range values for equipment design: End of life

		I	II	III	
Heater voltage	V_f	6.3			V
Heater current	I_f	600			mA
Anode voltage	V_a	125			V
Grid No.3 voltage	V_{g_3}	0			V
Grid No.2 voltage	V_{g_2}	125			V
Grid No.1 voltage	$-V_{g_1}$	3			V
Anode current	I_a	50			mA
Grid No.2 current	I_{g_2}	5.5			mA
Mutual conductance	S	45			mA/V
Internal resistance	R_i	20			kΩ
Amplification factor	$\mu_{g_2g_1}$	30			
Input resistance	R_{g_1}	1			kΩ
Frequency = 50 MHz					
Anode supply voltage	V_{ba}	140			V
Grid No.3 voltage	V_{g_3}	0			V
Grid No.2 supply voltage	V_{bg_2}	140			V
Grid No.1 supply voltage	$+V_{bg_1}$	12			V
Cathode resistor	R_k	270			Ω
Anode current	I_a	50	48 - 52		mA
Grid No.2 current	I_{g_2}	5.5	4.5 - 6.5		mA
Grid No.1 to cathode voltage	$-V_{g_1k}$	3.0	2.3 - 3.7	1.8	V
Mutual conductance	S	45	38 - 52	ΔS = max.25%	mA/V
Negative grid current	$-I_g$			2	μA

CHARACTERISTICS (continued)

As triode (grid No.2 connected to anode)		I	
Anode voltage	V_a	125	V
Grid No.1 voltage	$-V_{g_1}$	3	V
Anode current	I_a	55.5	mA
Mutual conductance	S	50	mA/V
Internal resistance	R_i	600	Ω
Amplification factor	μ	30	

CAPACITANCES

Pentode connected		I	II	I	II	
		With shield		Without shield		
Anode to grid No.3, grid No.2, cathode and heater	C_{a/g_3g_2kf}	6.5	5.8- 7.2	4.0	3.6- 4.4	pF
Grid No.1 to grid No.3, grid No.2, cathode and heater	C_{g_1/g_3g_2kf}	18	15- 21	18	15- 20	pF
Grid No.1 to grid No.3, grid No.2, cathode and heater Cathode current I_k = 55.5 mA	C_{g_1/g_3g_2kf}	28		28		pF
Anode to grid No.1	C_{ag_1}	80	max. 120	110	max. 150	mpF
Triode connected (grid No.2 connected to anode)						
Anode to grid No.3, cathode and heater	C_{a/g_3kf}	10.5	9.4-11.6	7.8	7.0- 8.6	pF
Grid No.1 to grid No.3, cathode and heater	C_{g1/g_3kf}	11.8	10-13.6	11.8	10-13.6	pF
Anode to grid No.1	C_{ag_1}	6.2	5.5- 6.9	6.3	5.6- 7.0	pF
Cathode to heater	C_{kf}	6.0		6.0		pF

SHOCK AND VIBRATION RESISTANCE

The following test conditions are applied to assess the mechanical quality of the tube. These conditions are not intended to be used as normal operating conditions.

Shock

The tube is subjected 5 times in each of 4 positions to an acceleration of 500 g supplied by an NRL shock machine with the hammer lifted over an angle of 30°.

Vibration

The tube is subjected during 32 hours in each of 3 positions to a vibration frequency of 50 Hz with an acceleration of 2.5 g.

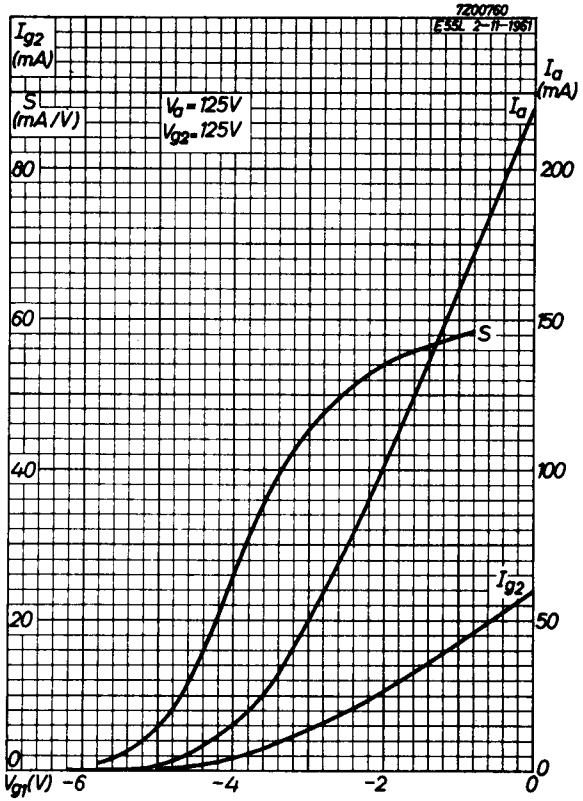
LIMITING VALUES (Absolute max. rating system)

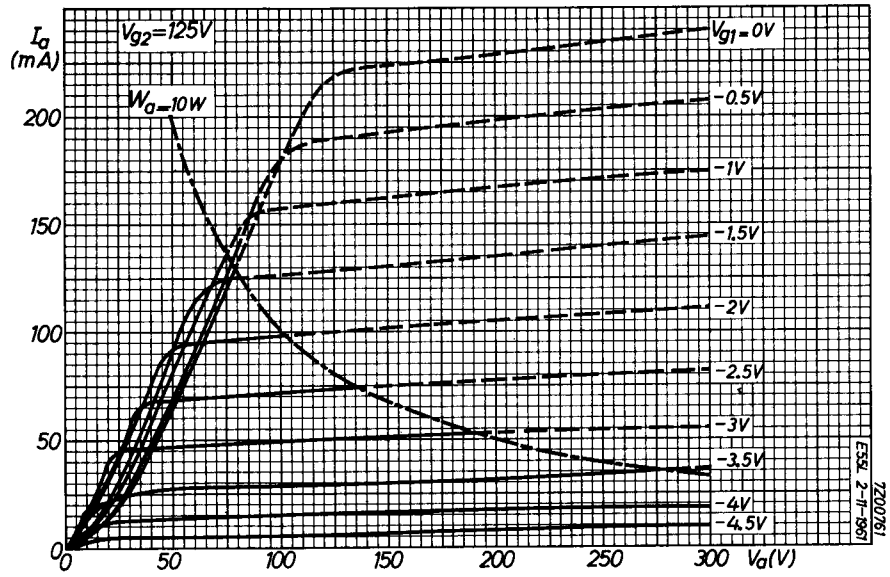
Anode voltage	V_{a_o}	max.	400	V
	V_a	max.	200	V
Anode dissipation	W_a	max.	10	W
Grid No.2 voltage	$V_{g_{2o}}$	max.	350	V
	V_{g_2}	max.	175	V
Grid No.2 dissipation	W_{g_2}	max.	1.5	W
Grid No.1 voltage, negative	$-V_{g_1}$	max.	55	V
positive	V_{g_1}	max.	0	V
Cathode current	I_k	max.	75	mA
Grid No.1 resistor	R_{g_1}	max.	125	kΩ
Voltage between cathode and heater	V_{kf}	max.	200	V
Bulb temperature	t_{bulb}	max.	180	°C

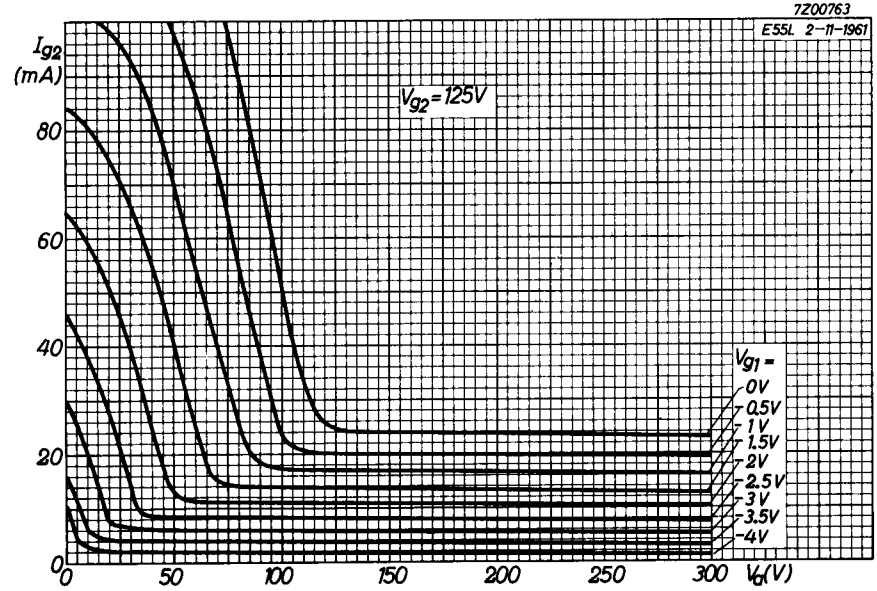
In applications where a long life is not required, I_k max. can be increased to 100 mA and t_{bulb} max. to 220 °C

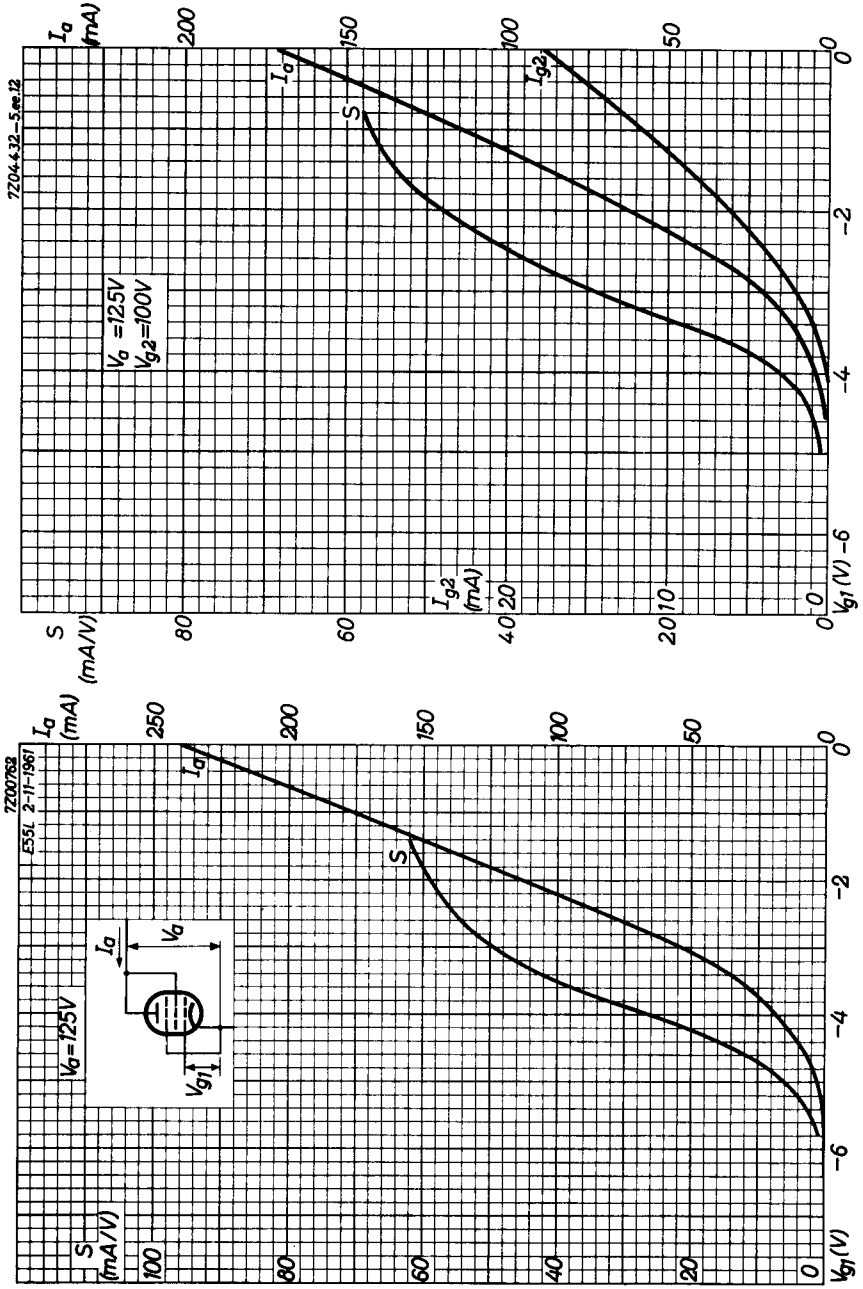
OPERATING CONDITIONS

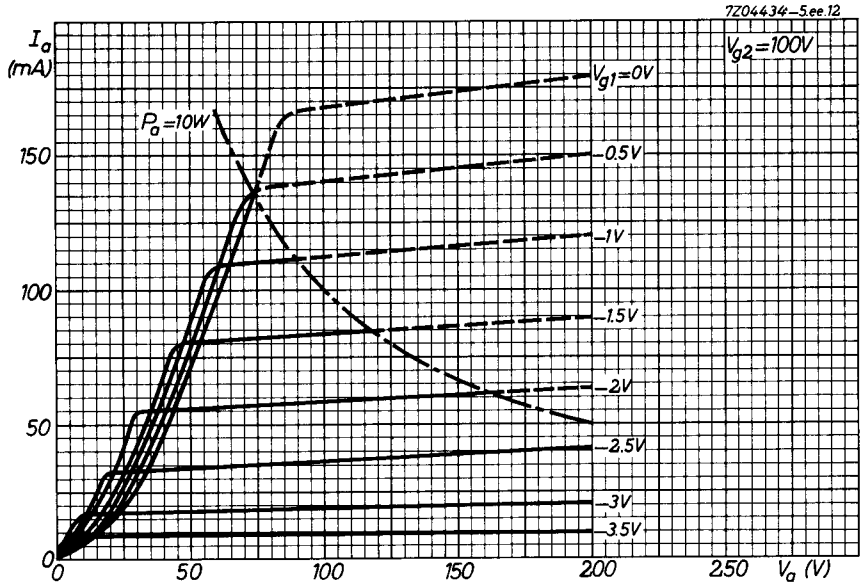
Anode supply voltage	V_{ba}	140	V
Grid No.2 supply voltage	V_{bg_2}	140	V
Grid No.3 voltage	V_{g_3}	0	V
Grid No.1 supply voltage	$+V_{bg_1}$	12	V
Cathode resistor	R_k	270	Ω
Anode current	I_a	50	mA
Grid No.2 current	I_{g_2}	5.5	mA
Mutual conductance	S	45	mA/V

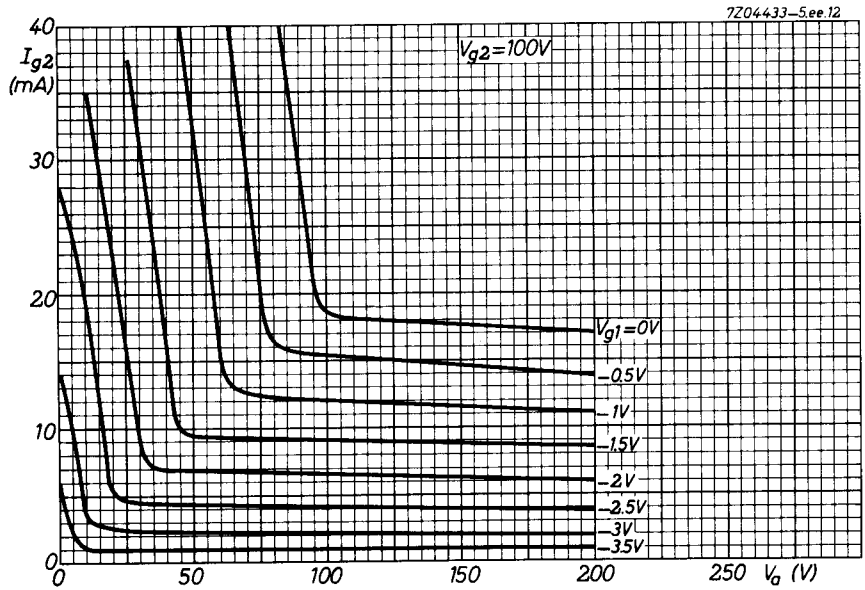


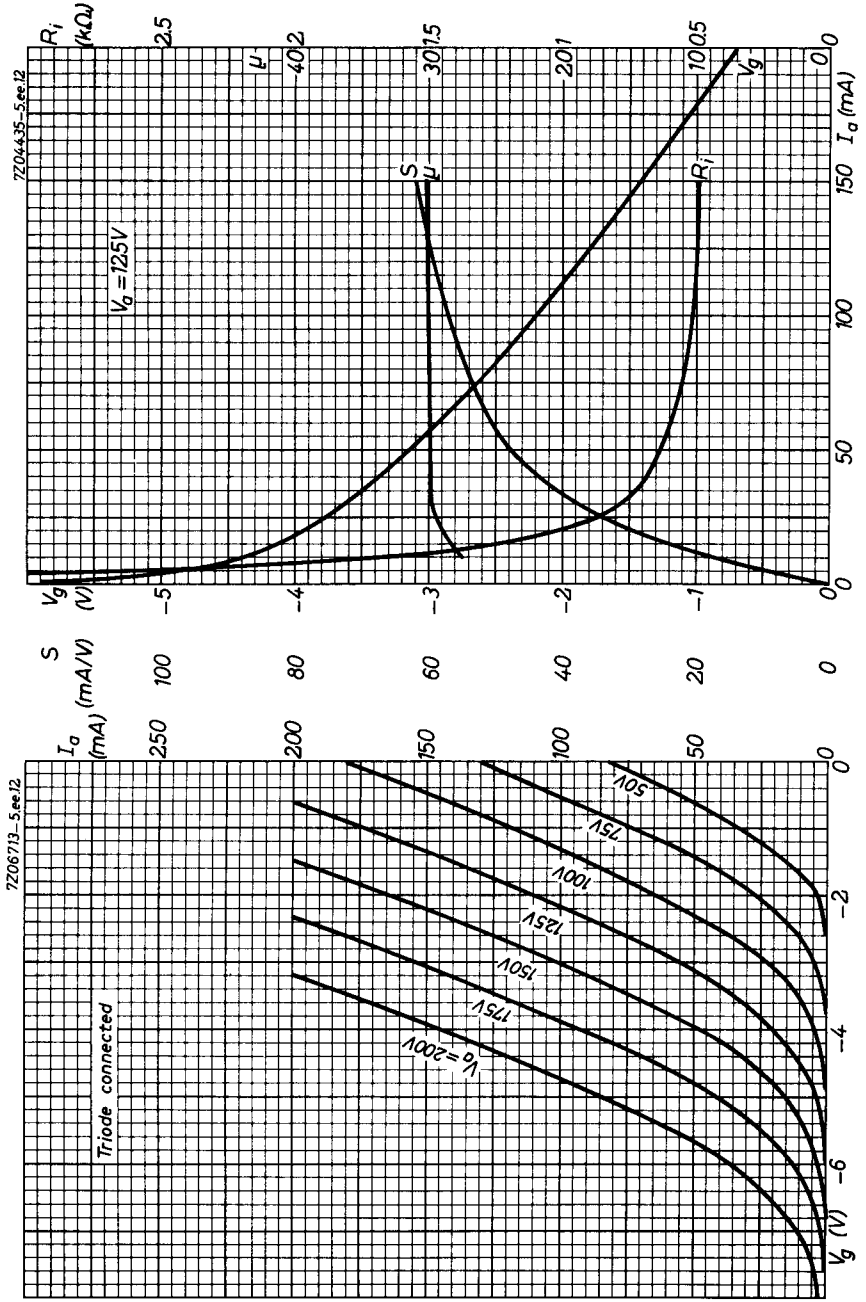

I_a (mA)
V_{g2}=125V
W_a=10W
V_{g1}=0V
-0.5V
-1V
-1.5V
-2V
-2.5V
-3V
-3.5V
-4V
-4.5V
0
50
100
150
200
250
300
V_a(V)
E55L 2-11-1961
7Z00761

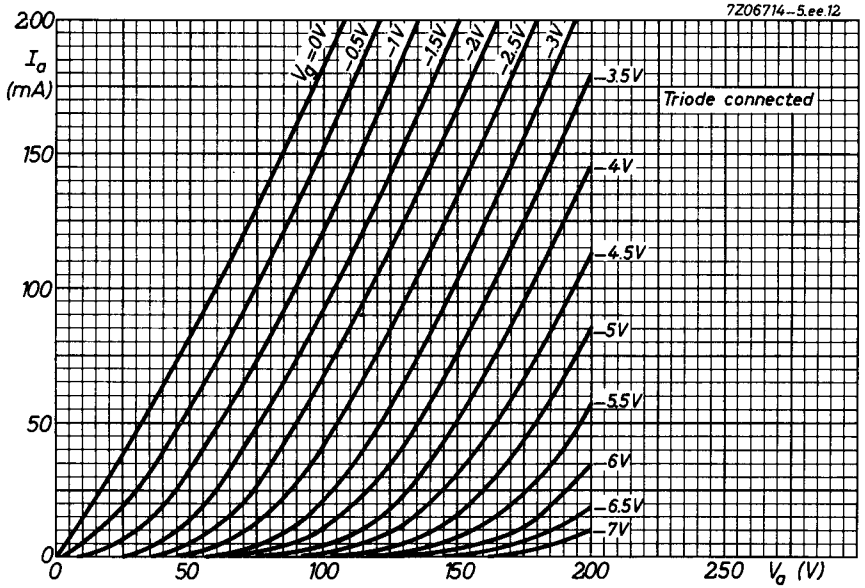

7Z00763
E55L 2-11-1961
I_{g2} (mA)
V_{g2}=125V
V_{g1} =
0V
0.5V
1V
1.5V
2V
2.5V
3V
3.5V
-4V
0
20
40
60
80
50
100
150
200
250
300
V_a(V)


7204432-5.ne.12
I_a (mA)
V_a =12.5V
V_{g2}=100V
I_a
S
I_{g2}
S (mA/V)
I_{g2} (mA)
V_{g1} (V)
7200762
E55L 2-11-1961
V_a=125V
V_a
V_{g1}


7Z04434-5.ee.12
I_a (mA)
V_{g2}=100V
P_a=10W
V_{g1}=0V
-0.5V
-1V
-1.5V
-2V
-2.5V
-3V
-3.5V
0
50
100
150
200
250
V_a (V)


7Z04433-5.ee.12
I_{g2} (mA)
V_{g2}=100V
V_{g1}=0V
-0.5V
-1V
-1.5V
-2V
-2.5V
-3V
-3.5V
0
10
20
30
40
50
100
150
200
250
V_a (V)


7Z04435–5.ee.12
V_a = 125V
R_i (kΩ)
μ
S
V_g (V)
I_a (mA)
7Z06713–5.ee.12
Triode connected
I_a (mA)
S (mA/V)
V_g (V)
V_a = 200V
175V
150V
125V
100V
75V
50V


7Z06714-5.ee.12
200
I_a (mA)
150
100
50
0
0
50
100
150
200
250
V_a (V)
V_g = 0V
-0.5V
-1V
-1.5V
-2V
-2.5V
-3V
-3.5V
-4V
-4.5V
-5V
-5.5V
-6V
-6.5V
-7V
Triode connected

PHILIPS

Data handbook

Electronic components and materials

E55L

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