

VARIABLE-MU R.F. PENTODE

EF89

Variable-mu pentode for use as r.f. or i.f. amplifier
in f.m./a.m. receivers.

HEATER

V_h	6.3	V
I_h	200	mA

CAPACITANCES

C_{in}	5.5	pF
C_{out}	5.1	pF
C_{a-g1}	<2	mpF
C_{g1-g2}	2.1	pF
C_{g1-h}	50	mpF

CHARACTERISTICS

V_a	250	250	V
V_{g3}	0	0	V
V_{g2}	85	100	V
V_{g1}	-1.0*	-2.0	V
I_a	9.0	9.0	mA
I_{g2}	3.2	3.0	mA
g_m	4.0	3.6	mA/V
r_a	>0.8	1.0	MΩ
μ_{g1-g2}	19	—	

*At this voltage grid current may occur. If this is not acceptable the negative bias voltage should be increased to -2.0V.

OPERATING CONDITIONS

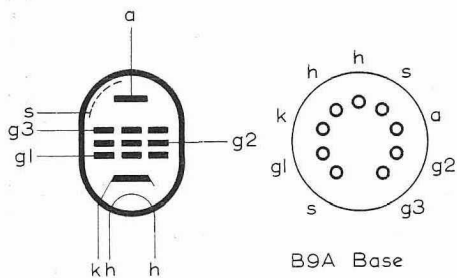
$V_a = V_b$	250	250	250	250	V
V_{g3}	0	0	0	0	V
R_{g2}	62	51	18†	18†	kΩ
V_{g1}	-0.5*	-2.0	-0.5*	-2.0	V
R_k	—	160	—	190	Ω
R_{g1}	10	—	10	—	MΩ
I_a	8.5	9.0	8.0	8.7	mA
I_{g2}	2.8	3.0	2.6	2.9	mA
g_m	4.4	3.5	4.2	3.5	mA/V
r_a	1.0	1.0	1.05	1.0	MΩ
R_{eq}	2.4	4.2	2.3	4.1	kΩ
$g_m (V_{g1} = -20V)$	220	240	230	230	μA/V
$r_{g1} (f = 50Mc/s)$	—	10	—	10	kΩ

*This voltage is produced by the grid current flowing through the grid resistor and the steady current of the diode. If this condition is not acceptable the negative grid bias should be increased to -2.0V.

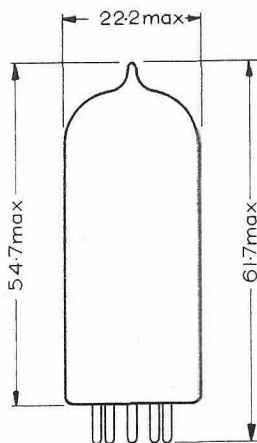
†Common screen-grid resistor for EF89 and ECH81 used as a frequency changer. The current through this resistor is 8.6mA at $V_{g1} = -2.0V$ and 9.8mA at $V_{g1} = -0.5V$.

LIMITING VALUES

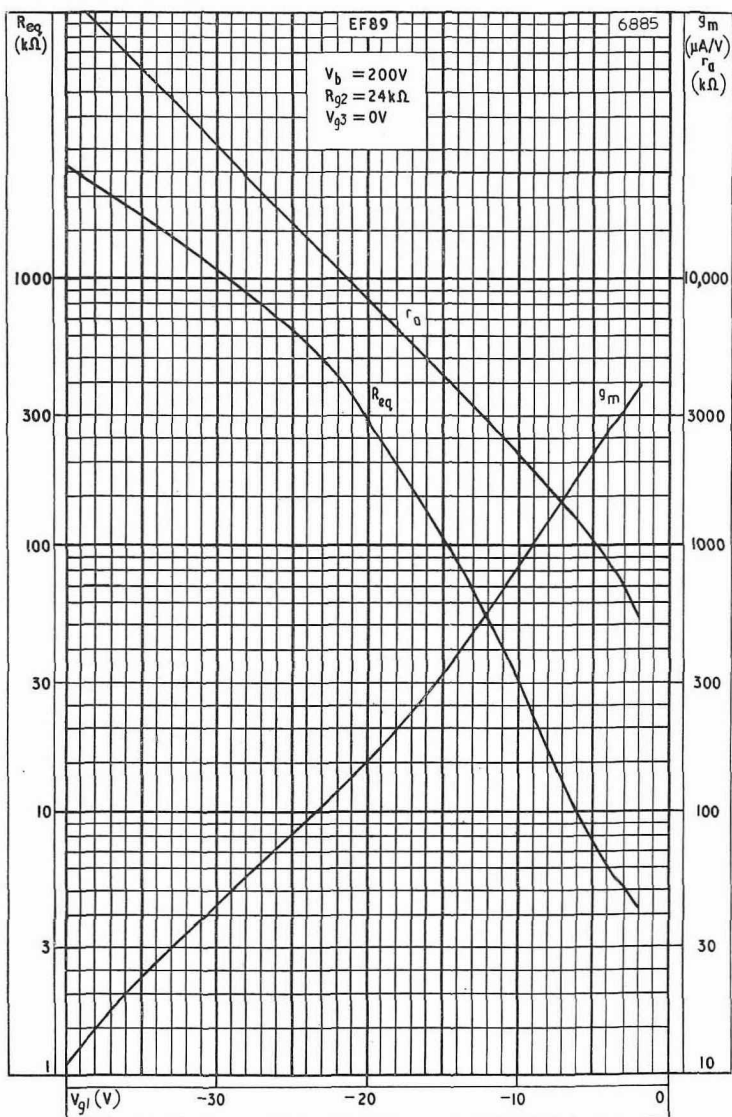
$V_{a(b)}$ max.	550	V
V_a max.	300	V
p_a max.	2.25	W
$V_{g2(b)}$ max.	550	V
V_{g2} max.	300	V
p_{g2} max.	450	mW
I_k max.	16.5	mA
R_{g1-k} max.	3.0	M Ω
R_{g3-k} max.	10	k Ω
V_{h-k} max.	100	V
R_{h-k} max.	20	k Ω



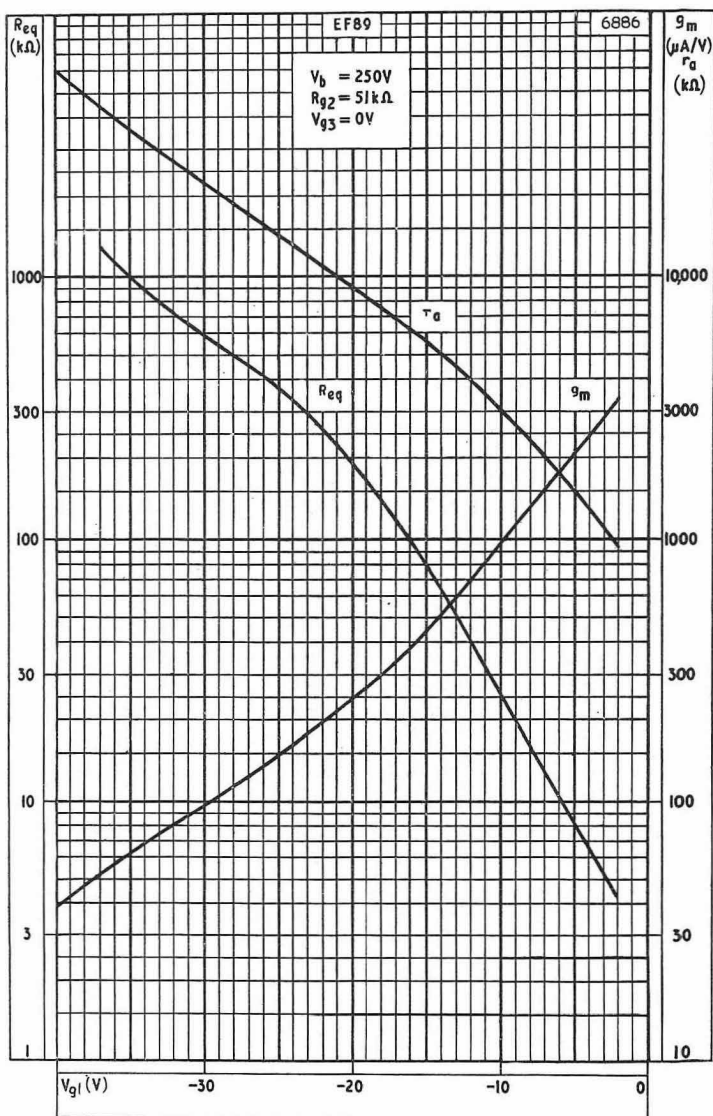
All dimensions in mm



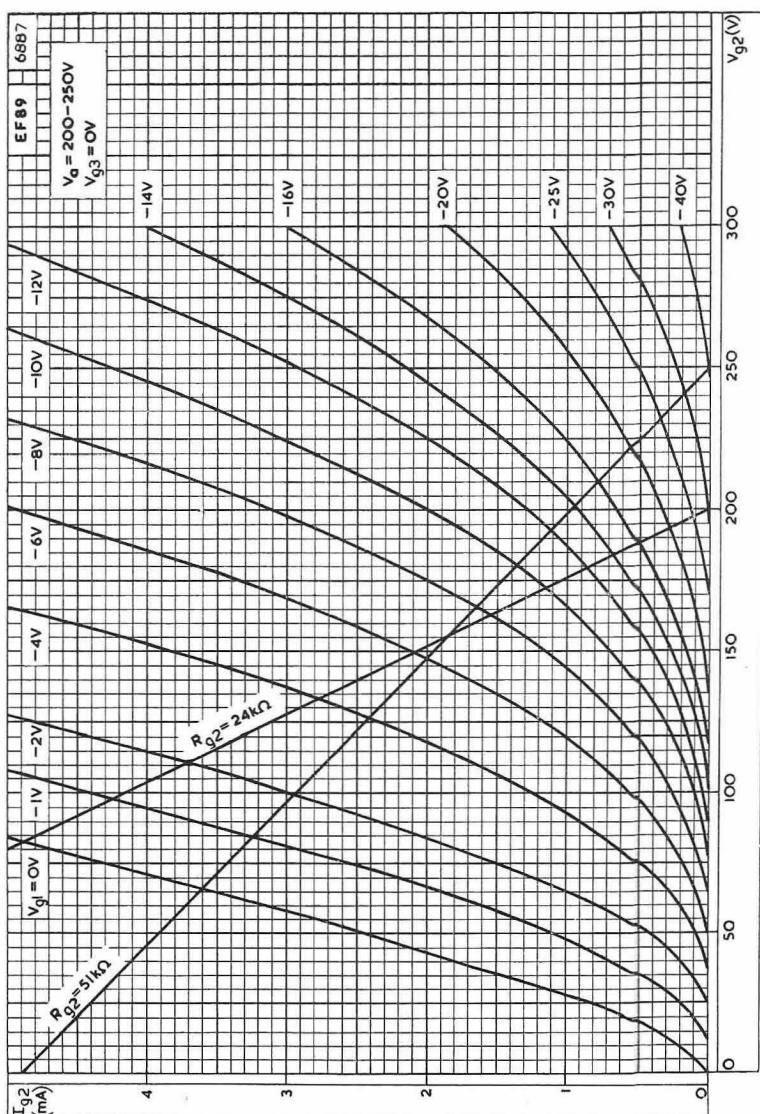
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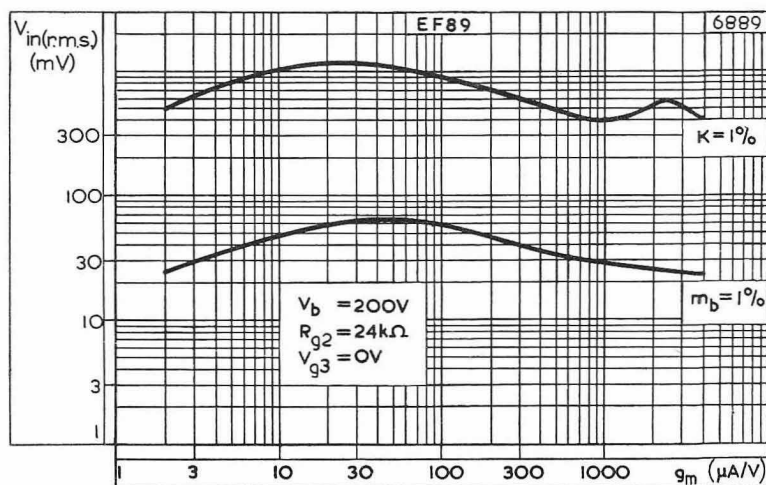
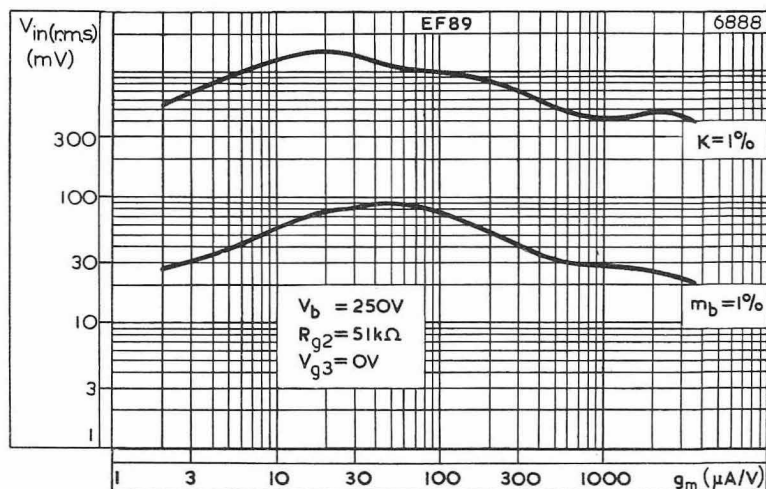
MUTUAL CONDUCTANCE, ANODE IMPEDANCE AND EQUIVALENT NOISE RESISTANCE PLOTTED AGAINST CONTROL-GRID VOLTAGE. $V_b = 200V$.



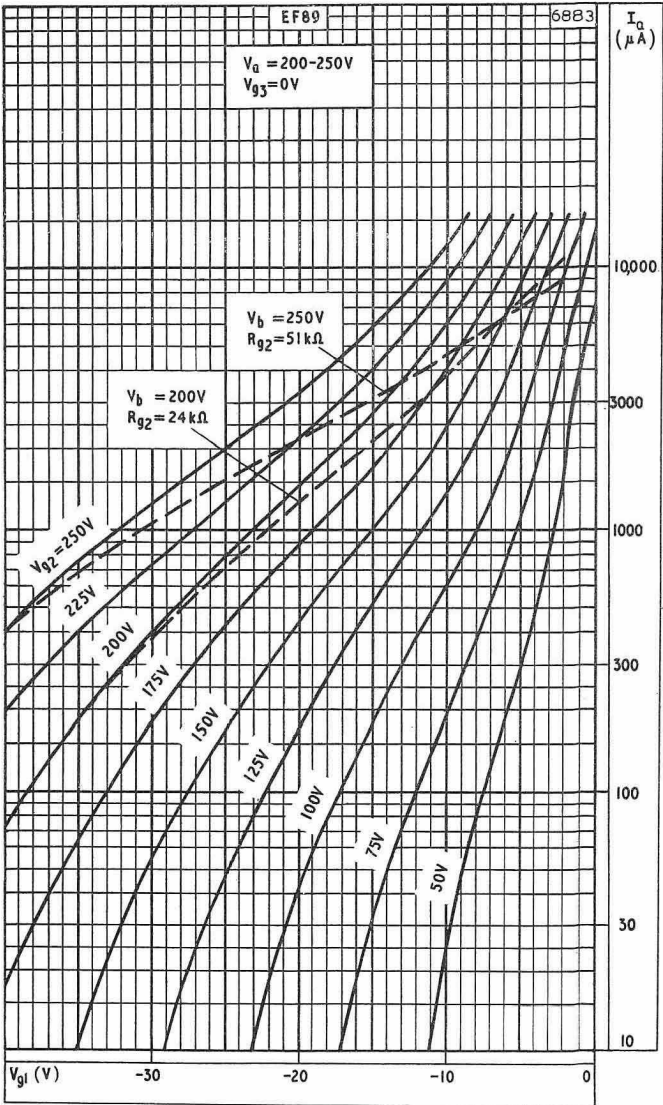
MUTUAL CONDUCTANCE, ANODE IMPEDANCE AND EQUIVALENT NOISE RESISTANCE PLOTTED AGAINST CONTROL-GRID VOLTAGE. $V_b = 250V$.



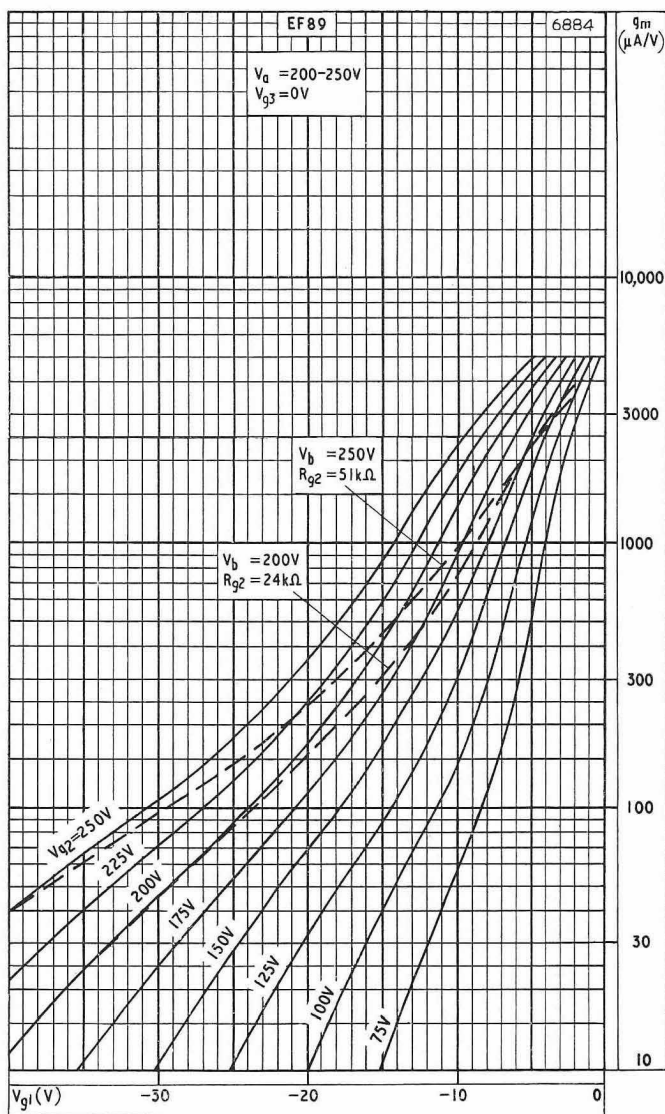
SCREEN-GRID CURRENT PLOTTED AGAINST SCREEN-GRID VOLTAGE
WITH CONTROL-GRID VOLTAGE AS PARAMETER



CROSS MODULATION AND MODULATION HUM CURVES



ANODE CURRENT PLOTTED AGAINST CONTROL-GRID VOLTAGE WITH
SCREEN-GRID VOLTAGE AS PARAMETER



MUTUAL CONDUCTANCE PLOTTED AGAINST CONTROL-GRID VOLTAGE
WITH SCREEN-GRID VOLTAGE AS PARAMETER