

6FD12/EBF89

DOUBLE DIODE R.F. PENTODE

Indirectly heated—for parallel operation



GENERAL

The 6FD12/EBF89 is a miniature based indirectly heated Double Diode Variable-Mu RF Pentode with a single cathode. It is intended for use as an RF Amplifier or IF Amplifier-Detector in AC powered A.M. only receivers having parallel connected heater chains.

RATING

Heater Voltage	(volts)	V_h	6.3
Heater Current	(amps)	I_h	0.3
<u>Pentode Section</u>			
Maximum Anode Supply Voltage	(volts)	$V_{a(b)max}$	550
Maximum Anode Voltage	(volts)	$V_{a(max)}$	300
Maximum Screen Supply Voltage	(volts)	$V_{g2(b)max}$	550
Maximum Screen Voltage ($I_a < 4$ mA)	(volts)	$V_{g2(max)}$	300
Maximum Screen Voltage ($I_a > 8$ mA)	(volts)	$V_{g2(max)}$	125
Maximum Anode Dissipation (watts)		$P_{a(max)}$	2.25
Maximum Screen Dissipation (mW)		$P_{g2(max)}$	450
Maximum Cathode Current (mA)		$I_{k(max)}$	16.5
Maximum Grid 1 Voltage	(volts)	$V_{g1(max)}$	— 1.3
Maximum Grid 1-Cathode Resistance	(M Ω)	R_{g1-k}	3.0
Maximum Grid 1-Cathode Resistance (Grid Current biasing)	(M Ω)	R_{g1-k}	22
Maximum Grid 3-Cathode Resistance	(k Ω)	R_{g3-k}	10
Maximum Heater-Cathode Resistance	(k Ω)	R_{h-k}	20

Rating (continued overleaf).

Indicates a change ←

6FD12/EBF89**DOUBLE DIODE R.F. PENTODE**

Indirectly heated—for parallel operation



Maximum Heater-Cathode Voltage	(volts)	V_{h-k}	100
Mutual Conductance	(mA/V)	g_m	3.8†
Anode Impedance	(M Ω)	r_a	1.0†
Inner Mu		μ_{g1-g2}	20†

† Measured at $V_a = 250$ V ; $V_{g2} = 100$ V ; $V_{g1} = -2.0$ V.Diode Section (each Diode)

Maximum Peak Inverse Voltage	(volts)	P.I.V.max	200
Maximum Mean Diode Current	(μ A)	$I_{d(av)}max$	800
Maximum Peak Diode Current	(mA)	$I_{d(pk)}max$	5.0

INTER-ELECTRODE CAPACITANCES (pF)

Anode/All	c_{out}	5.2
Grid 1/All	c_{in}	5.0
Anode/Grid 1	c_{a-g1}	<0.0025
Anode/Diode 1	$c_{a-a'd}$	<0.025 ←
Anode/Diode 2	$c_{a-a''d}$	<0.15 ←
Grid 1/Diode 1	$c_{g1-a'd}$	<0.001 ←
Grid 1/Diode 2	$c_{g1-a''d}$	<0.0008 ←
Grid 1/Heater	c_{g1-h}	0.05
Diode 1/Cathode	$c_{a'd-k}$	2.5
Diode 2/Cathode	$c_{a''d-k}$	2.5
Diode 1/Heater	$c_{a'd-h}$	<0.015
Diode 2/Heater	$c_{a''d-h}$	<0.003
Diode 1/Diode 2	$c_{a'd-a''d}$	<0.25

Indicates a change ←

6FD12/EBF89

DOUBLE DIODE R.F. PENTODE

Indirectly heated—for parallel operation



DIMENSIONS

Maximum Overall Length	(mm)	67.5
Maximum Diameter	(mm)	22.2
Maximum Seated Height	(mm)	60.5
Approximate Nett Weight	(ozs)	$\frac{1}{2}$
Approximate Packed Weight	(ozs)	$\frac{3}{4}$

MOUNTING POSITION—Unrestricted

TYPICAL OPERATION

Anode Voltage	(volts)	V_a	200	200	250	250
Grid 2 Resistance	(k Ω)	R_{g2}	47	30	82	56
Grid 1 Voltage	(volts)	V_{g1}	$-0.5\ddagger$	-1.5	$-0.5\ddagger$	-2.0
Cathode Resistance	(ohms)	R_k	—	105	—	170
Anode Current	(mA)	I_a	9.5	11	8.0	9.0
Grid 2 Current	(mA)	I_{g2}	2.8	3.3	2.2	2.7
Mutual Conductance	(mA/V)	g_m	5.0	4.5	4.7	3.8
Mutual Conductance, $V_{g1} = -20V$.	($\mu A/V$)	g_m	115	120	180	200
Anode Impedance	(M Ω)	r_a	0.6	0.6	0.8	1.0
Equivalent Noise Resistance	(k Ω)	R_{eq}	2.5	3.5	2.3	4.0

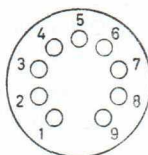
$\ddagger$ Produced by Grid Current flow in grid resistor and diode current. If not acceptable the bias should be increased to $-1.5V$ at $V_a=200V$ and $-2V$ at $V_a=250V$.



6FD12/EBF89

DOUBLE DIODE R.F. PENTODE

Indirectly heated—for parallel operation

BASE—Noval (B9A)

Viewed from free end of pins

CONNECTIONS

Pin 1	Grid 2	g_2
Pin 2	Grid 1	g_1
Pin 3	Cathode, Shield	k, s
Pin 4	Heater	h
Pin 5	Heater	h
Pin 6	Anode	a
Pin 7	Diode 2	a'' d
Pin 8	Diode 1	a' d
Pin 9	Grid 3	g_3

Indicates a change ←

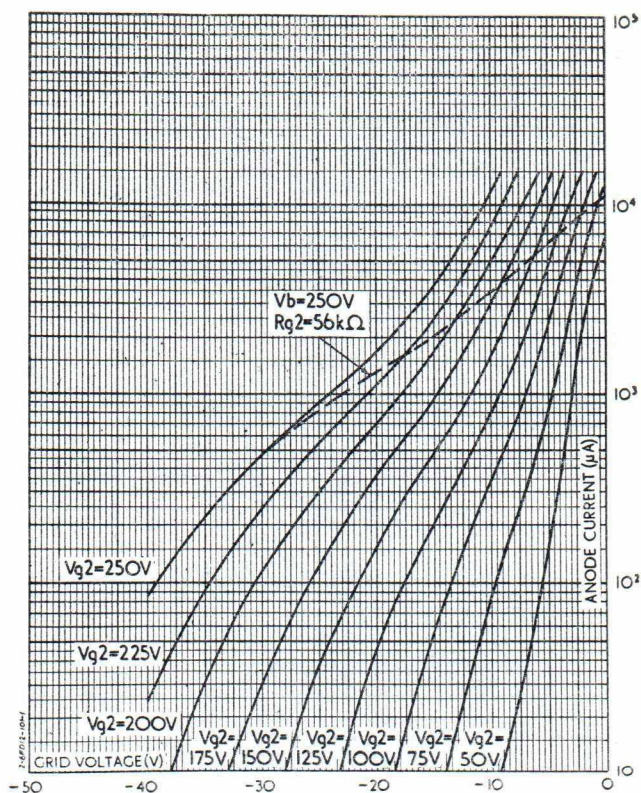
6FD12/EBF89

DOUBLE DIODE R.F. PENTODE

Indirectly heated—for parallel operation

AVERAGE CHARACTERISTIC CURVES : I_a/V_g

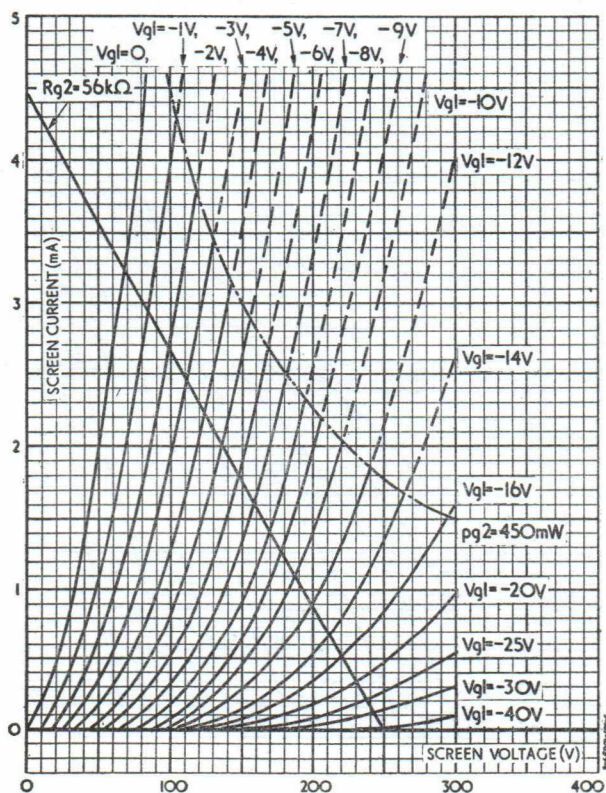
$V_a = 250V$



6FD12/EBF89

DOUBLE DIODE R.F. PENTODE

Indirectly heated—for parallel operation

AVERAGE CHARACTERISTIC CURVES: I_{g2}/V_{g2} $V_a = 250V$ 

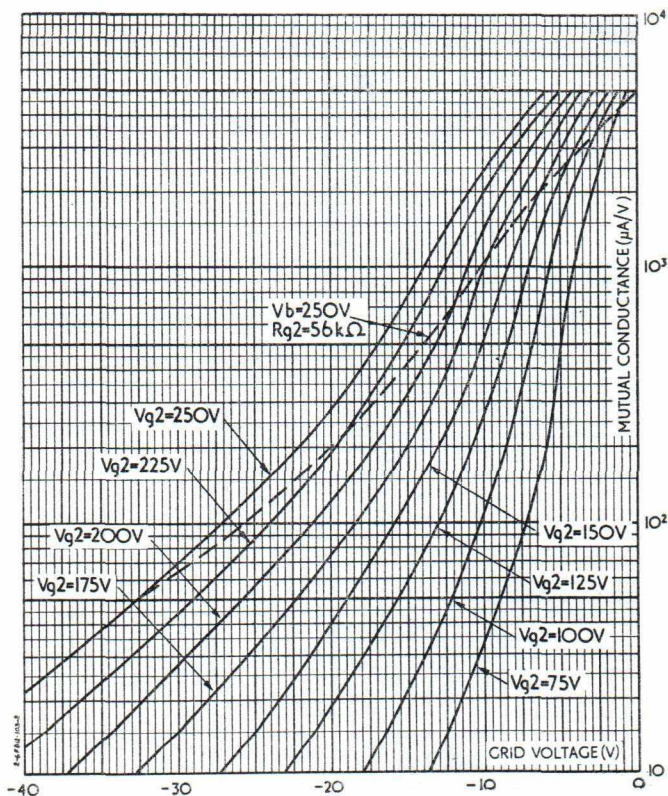
6FD12/EBF89

DOUBLE DIODE R.F. PENTODE

Indirectly heated—for parallel operation

AVERAGE CHARACTERISTIC CURVES: g_m/V_g

$V_a = 250V$



6FD12/EBF89

DOUBLE DIODE R.F. PENTODE

Indirectly heated—for parallel operation

AVERAGE CHARACTERISTIC CURVES: I_a , g_m , r_a/V_g $V_b = 250V$ $R_{g2} = 56k\Omega$ 