10FD12/UBF89
DOUBLE DIODE R.F. PENTODE
Indirectly heated—for series operation

GENERAL

The 10FD12/UBF89 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/DC powered A.M. only receivers having series connected heater chains.

RATING

Heater Current	(amps)	I_h	0.1
Heater Voltage	(volts)	V_h	19.0
Pentode Section			
Maximum Anode Supply Voltage	(volts)	$V_{a(b)max}$	550
Maximum Anode Voltage	(volts)	$V_{a(max)}$	250
Maximum Screen Supply Voltage	(volts)	$V_{g2(b)max}$	550
Maximum Screen Voltage (I_a <4 mA)	(volts)	$V_{g2(max)}$	250
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	(MΩ)	$R_{g1-k(max)}$	3.0
Maximum Grid 1-Cathode Resistance (Grid Current biasing)	(MΩ)	$R_{g1-k(max)}$	22
Maximum Grid 3-Cathode Resistance	(kΩ)	$R_{g3-k(max)}$	10
Maximum Heater-Cathode Resistance	(kΩ)	$R_{h-k(max)}$	20

Rating (continued overleaf).

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Maximum Heater-Cathode Voltage	(volts)	$V_{h-k(max)}$	100
Mutual Conductance	(mA/V)	g_m	4.5†
Anode Impedance	(kΩ)	r_a	600†
Inner Mu		μ_{g1-g2}	20†

† Measured at $V_a = 200$ V ; $V_{g2} = 100$ V ; $V_{g1} = -1.5$ V.

Diode Section (each Diode)

Maximum Peak Inverse Voltage	(volts)	P.I.V.max	200
Maximum Mean Anode Current	(μA)	$I_{a(av)max}$	800
Maximum Peak Anode	(mA)	$I_{a(pk)max}$	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	$c_{a-d'}$	<0.15
Anode/Diode 2	$c_{a-d''}$	<0.025
Grid 1/Diode 1	$c_{g1-d'}$	<0.0008
Grid 1/Diode 2	$c_{g1-d''}$	<0.001
Grid 1/Heater	c_{g1-h}	0.05
Diode 1/Cathode	$c_{d'-k}$	2.5
Diode 2/Cathode	$c_{d''-k}$	2.5
Diode 1/Heater	$c_{d'-h}$	<0.015
Diode 2/Heater	$c_{d''-h}$	<0.003
Diode 1/Diode 2	$c_{d'-d''}$	<0.25

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TENTATIVE

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	170	170	200	200
Grid 2 Resistance	(kΩ)	R_{g2}	27	21	47	30
Grid 1 Voltage	(volts)	V_{g1}	—0.5‡	—1.5	—0.5‡	—1.5
Cathode Resistance	(ohms)	R_k	—	105	—	105
Anode Current	(mA)	I_a	11.0	11.0	9.5	11.0
Grid 2 Current	(mA)	I_{g2}	3.4	3.4	2.8	3.3
Mutual Conductance	(mA/V)	g_m	5.0	4.5	5.0	4.5
Mutual Conductance, $V_{g1} = -20$ V.	(μA/V)	g_m	65	65	115	120
Anode Impedance	(kΩ)	r_a	450	450	600	600
Input Impedance	(kΩ)	R_{eq}	2.5	3.5	2.5	3.5

‡Produced by grid current flow in grid resistor and diode current. If not acceptable the bias should be increased to —1.5 V.

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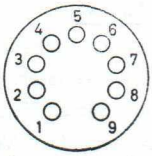
BASE—Noval (B9A)



Viewed from free end of pins

CONNECTIONS

Pin 1	Grid 2	g2
Pin 2	Grid 1	g1
Pin 3	Cathode, Shield	k, s
Pin 4	Heater	h
Pin 5	Heater	h
Pin 6	Anode	a
Pin 7	Diode 1	a′d
Pin 8	Diode 2	a″d
Pin 9	Grid 3	g3