

10LD13/UBC81 DOUBLE DIODE TRIODE

GENERAL

The 10LD13/UBC81 is a miniature based, indirectly heated, Double Diode Triode. It is intended for use in AC/DC powered AM receivers having series connected heaters.

RATING

Heater Current	(amps)	I_h	0.1
Heater Voltage	(volts)	V_h	13.0
Maximum Anode Voltage (Triode)	(volts)	$V_a(\max)$	250
Maximum Anode Dissipation (Triode)	(watts)	$P_a(\max)$	1.0
Maximum Cathode Current	(mA)	$I_k(\max)$	5.0
Amplification Factor		μ	75* ←
Mutual Conductance	(mA/V)	g_m	1.4*
Maximum Mean Diode Current	(mA)	$I_{ad}(\max)$	0.8
Maximum Heater to Cathode Voltage	(volts r.m.s.)	$V_{h-k}(\max)$	150†

* At $V_a=100$ V ; $V_g = -0.7$ V ; $I_a = 0.8$ mA ←

† Measured with respect to the higher potential heater pin.

INTER-ELECTRODE CAPACITANCES (pF)

		§	†
Grid/Earth	C_{in}	2.3	3.1
Anode/Earth	C_{out}	2.4	3.2
Anode/Grid	$C_{a,g}$	1.9	2.1
Diode 1/Earth	$C_{a'd-E}$	1.8	2.8
Diode 2/Earth	$C_{a''d-E}$	1.9	2.8
Diode 1/Diode 2	$C_{a'd-a''d}$	0.29	0.31
Grid/Diode 1	$C_{g-a'd}$	0.0019	0.0033
Grid/Diode 2	$C_{g-a''d}$	0.0021	0.0040
Anode/Diode 1	$C_{a-a'd}$	0.0051	0.0065
Anode/Diode 2	$C_{a-a''d}$	0.018	0.027

Inter-electrode capacitances (continued overleaf)

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§ Inter-electrode capacities with holder capacity balanced out.

† Total inter-electrode capacity including a B9A ceramic holder without skirt or radial shield (Plessey holder type CP180014/1) ←

"Earth" denotes the electrodes of any second valve section and the remaining earthy potential electrodes of the section under measurement, heater and shield being joined to the cathode.

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

Indicates a change ←

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TYPICAL OPERATION—Resistance Coupled A.F. Amplifier (Cathode Self Bias)									
Supply Voltage	(V)	100	150	200	100	150	200	100	150
Anode Load Resistance	(k Ω)	100	100	100	220	220	220	220	220
Grid Resistance of following valve	(k Ω)	330	330	330	680	680	680	680	680
Cathode Self Bias Resistance	(k Ω)	3.3	2.2	2.2	5.6	3.9	3.9	3.9	3.9
Anode Current	(mA)	0.27	0.48	0.63	0.16	0.27	0.37	0.37	0.37
Voltage Amplification		36.5	41.5	42	41.5	49	48.5	48.5	48.5
Output Voltage (rms) for 0.5 μ A Grid Current	(V _{rms})	6	13.5	25.5	6	14	28.5	28.5	28.5
Second Harmonic Distortion	(%)	4.5	4.5	6.5	4	4	5.5	5.5	5.5
Third Harmonic Distortion	(%)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

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TYPICAL OPERATION—Resistance Coupled A.F. Amplifier (Grid Current Bias. Signal Source Impedance $Z_s = 0\Omega$)*									
Supply Voltage	(V)	V _{a(b)}	100	150	200	100	150	200	200
Anode Load Resistance	(k Ω)	R _a	100	100	100	220	220	220	220
Grid Resistance of following valve	(k Ω)	R _{g1}	330	330	330	680	680	680	680
Anode Current	(mA)	I _a	0.34	0.66	1.02	0.2	0.37	0.56	0.56
Voltage Amplification			39	44.5	48	44.5	51	54.5	54.5
Output for 2.5% Second Harmonic	(Vrms)	V _{out}	4	8.5	13	5.5	11.5	16.5	16.5
Third Harmonic at 2.5% Second	(%)		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Output for 5% Second Harmonic	(Vrms)	V _{out}	7	15	22.5	9	18	27.5	27.5

* The signal source impedance Z_s is coupled through a 0.05 μ F capacitance with a 10M Ω grid resistance.

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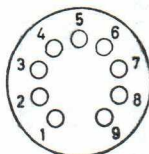
TYPICAL OPERATION—Resistance Coupled A.F. Amplifier (Grid Current Bias. Signal Source Impedance $Z_s = 200k\Omega$ *)									
	(V)	$V_a(b)$	100	150	200	100	150	200	Signal Source
Supply Voltage									
Anode Load Resistance	(k Ω)	R_a	100	100	100	220	220	220	220
Grid Resistance of following valve	(k Ω)	R_{g1}	330	330	330	680	680	680	680
Anode Current	(mA)	I_a	0.34	0.66	1.02	0.2	0.37	0.56	0.56
Voltage Amplification			32	36.5	39.5	36.5	42.5	44.5	44.5
Output for 2.5% Second Harmonic	(Vrms)	V_{out}	8.5	17.5	26	11	21.5	32	32
Third Harmonic at 2.5% Second	(%)		2.5	3	3	2.5	2.5	3	3

* The signal source impedance Z_s is coupled through a 0.05 μF capacitance with a 10 M Ω grid resistance.

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BASE—Noval (B9A)



Viewed from free end of pins

VALVE HOLDER—Ediswan Clix type VH599/901 series.

CONNECTIONS

Pin 1	Triode Anode	a
Pin 2	Control Grid	g
Pin 3	Cathode	k
Pin 4	Heater	h
Pin 5	Heater	h
Pin 6	Diode 1	a'd
Pin 7	Shield	s
Pin 8	Diode 2	a''d
Pin 9	Internal Connection	IC

Diode Pin 8 should be used for detection.

Indicates a change ←