

# SUBMINIATURE V.H.F. OUTPUT PENTODE

# DL73

*Subminiature output pentode suitable for  
v.h.f. applications in battery-operated equipment.*

This valve is primarily intended for use in communications equipment of the 'push to talk' type and its continuous life rating under typical supply voltage conditions is relatively short and is chiefly a function of hours of filament operation and filament temperature.

Under 'push to talk' conditions an operating life of about 200 hours may be expected.

## FILAMENT

Suitable for d.c. operation only

$V_f$	1.25	V
$I_f$	200	mA

## MOUNTING POSITION

Any

**Note** - Direct soldered connections to the leads of this valve must be at least 5mm from the seal and any bending of the valve leads must be at least 1.5mm from the seal.

If the valve is used with an earthed metal clip a decrease in output power of approximately 10% can be expected up to 200Mc/s.

## CAPACITANCES

	Shielded	Unshielded	
$C_{a-g1}$	< 0.15	< 0.1	pF
$C_{in}$	3.6	3.5	pF
$C_{out}$	3.9	3.0	pF

## CHARACTERISTICS

$V_a$	100	V
$V_{g2}$	100	V
$V_{g1}$	-9.0	V
$I_a$	15	mA
$I_{g2}$	3.8	mA
$g_m$	2.5	mA/V
$r_a$	16	k $\Omega$
$r_{g1-g2}$	6.0	

## OPERATING CONDITIONS AS A CLASS 'C' TELEGRAPHY R.F. OSCILLATOR

$f$	10	50	Mc/s
$V_a$	150	150	V
$V_{g2}$	75	75	V
$I_a$	17	17	mA
$I_{g2}$	7.0	7.0	mA
$I_{g1}$	1.0	1.0	mA
$R_{g1}$	22	18	k $\Omega$
$P_{load}$	1.4	1.4	W
$\eta_{load}$	55	55	%
$V_{a(pk)}$	130	—	V
$V_{g1(pk)}$	32	—	V



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### OPERATING CONDITIONS AS A CLASS 'C' TELEGRAPHY R.F. AMPLIFIER

#### Single valve

f	50	180	200	Mc/s
V <sub>a</sub>	150	150	150	V
V <sub>g2</sub>	75	75	75	V
V <sub>g1</sub>	-20	-20	-20	V
I <sub>a</sub>	17.3	18.3	18.6	mA
I <sub>g2</sub>	6.7	5.8	5.6	mA
I <sub>g1</sub>	1.0	0.9	0.8	mA
P <sub>load</sub>	1.6	1.3	1.2	W
η <sub>load</sub>	62	47	43	%

P<sub>drive</sub> measured at the control-grid is approximately 100mW at f=200Mc/s and does not include the power lost in the grid tuned circuit.

P<sub>load</sub> is approximately 1W at f=250Mc/s.

#### Two valves in push-pull

f	180	250	Mc/s
V <sub>a</sub>	150	150	V
V <sub>g2</sub>	75	75	V
V <sub>g1</sub>	-20	-20	V
I <sub>a</sub>	2×18.1	2×18.7	mA
I <sub>g2</sub>	2×5.6	2×5.0	mA
I <sub>g1</sub>	2×1.2	2×1.2	mA
P <sub>load</sub>	2.8	2.3	W
η <sub>load</sub>	52	41	%

#### Two valves parallel connected

f	180	Mc/s
V <sub>a</sub>	150	V
V <sub>g2</sub>	75	V
V <sub>g1</sub>	-20	V
I <sub>a</sub>	2×18.2	mA
I <sub>g2</sub>	2×5.6	mA
I <sub>g1</sub>	2×1.2	mA
P <sub>load</sub>	2.5	W
η <sub>load</sub>	46	%



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## OPERATING CONDITIONS AS FREQUENCY MULTIPLIER

### Doubler

f	50	Mc/s
V <sub>a</sub>	150	V
V <sub>g2</sub>	75	V
V <sub>g1</sub>	-35	V
I <sub>a</sub>	17.7	mA
I <sub>g2</sub>	6.2	mA
I <sub>g1</sub>	1.1	mA
P <sub>load</sub>	1.1	W
η <sub>load</sub>	42	%

### Treiber

f	50	Mc/s
V <sub>a</sub>	150	V
V <sub>g2</sub>	75	V
V <sub>g1</sub>	-70	V
I <sub>a</sub>	17.9	mA
I <sub>g2</sub>	5.8	mA
I <sub>g1</sub>	1.3	mA
P <sub>load</sub>	800	mW
η <sub>load</sub>	30	%

## OPERATING CONDITIONS AS SINGLE VALVE CLASS 'A' AMPLIFIER

V <sub>a</sub>	120	150	V
V <sub>g2</sub>	90	90	V
V <sub>g1</sub>	-8.8	-8.5	V
I <sub>a(0)</sub>	12	13	mA
I <sub>a</sub> (max. sig.)	11.6	12.8	mA
I <sub>g2(0)</sub>	2.5	2.3	mA
I <sub>g2</sub> (max. sig.)	6.6	6.3	mA
R <sub>a</sub>	9.0	10	kΩ
V <sub>in(r.m.s.)</sub> (P <sub>out</sub> =50mW)	1.3	1.2	V
P <sub>out</sub>	730	900	mW
V <sub>in(r.m.s.)</sub>	6.9	6.5	V
D <sub>tot</sub>	10	10	%

## LIMITING VALUES

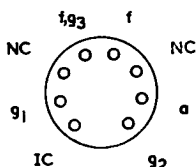
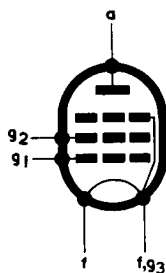
V <sub>a</sub> max.	150	V
p <sub>a</sub> max.	2.0	W
V <sub>g2</sub> max.	150	V
p <sub>g2</sub> max.	700	mW
I <sub>k</sub> max.	25	mA
R <sub>g1-f</sub> max.	2.2	MΩ
V <sub>f</sub> max. (absolute)	1.35	V
V <sub>g1</sub> max.:—r.f. amplifier	-30	V
frequency doubler	-35	V
frequency trebler	-70	V



# DL73

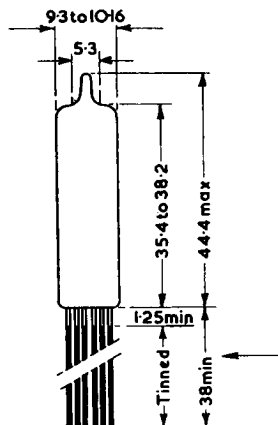
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B 8D/F Base

All dimensions in mm

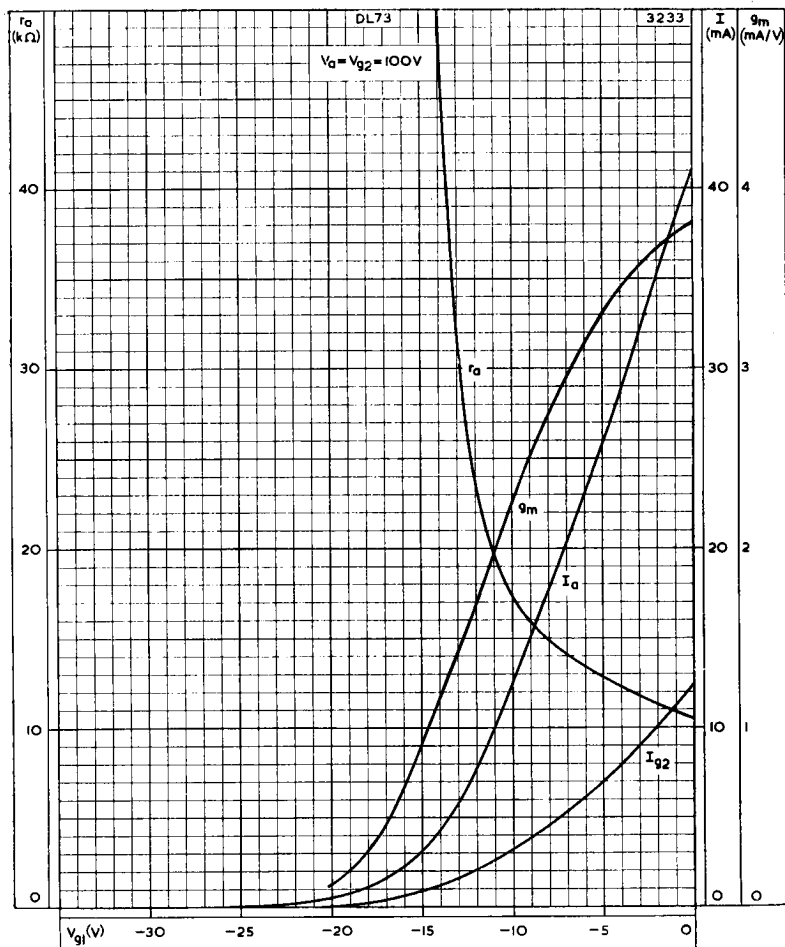


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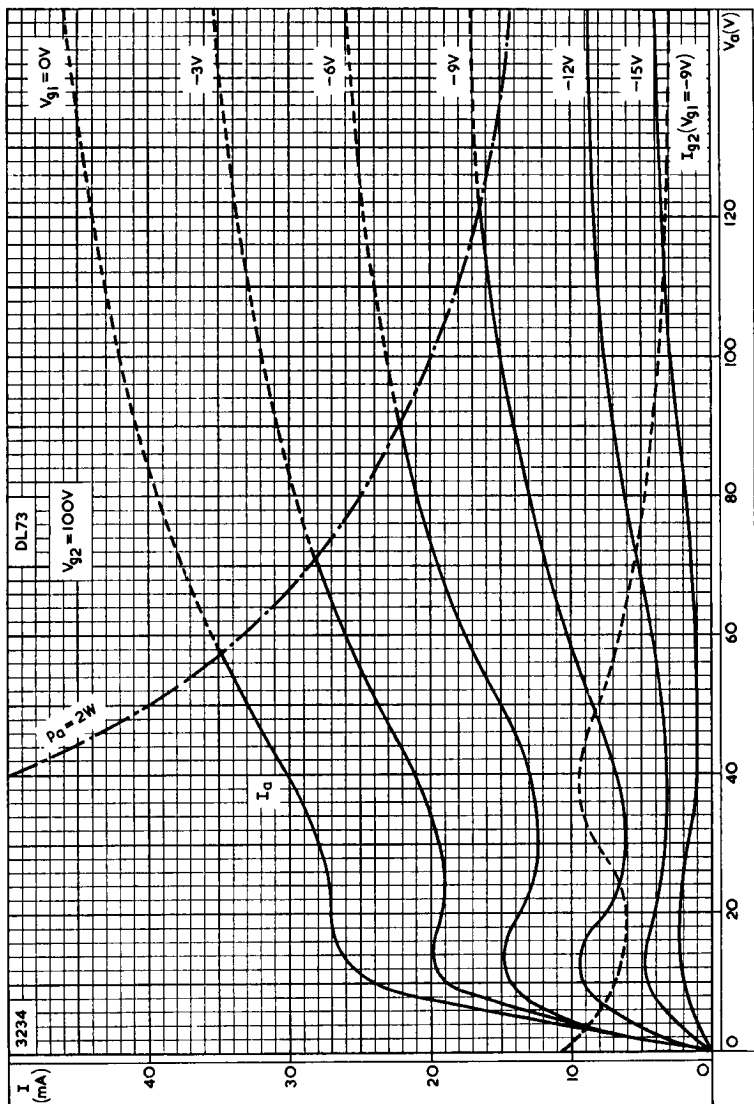
ANODE AND SCREEN-GRID CURRENTS, MUTUAL CONDUCTANCE AND ANODE IMPEDANCE PLOTTED AGAINST GRID VOLTAGE



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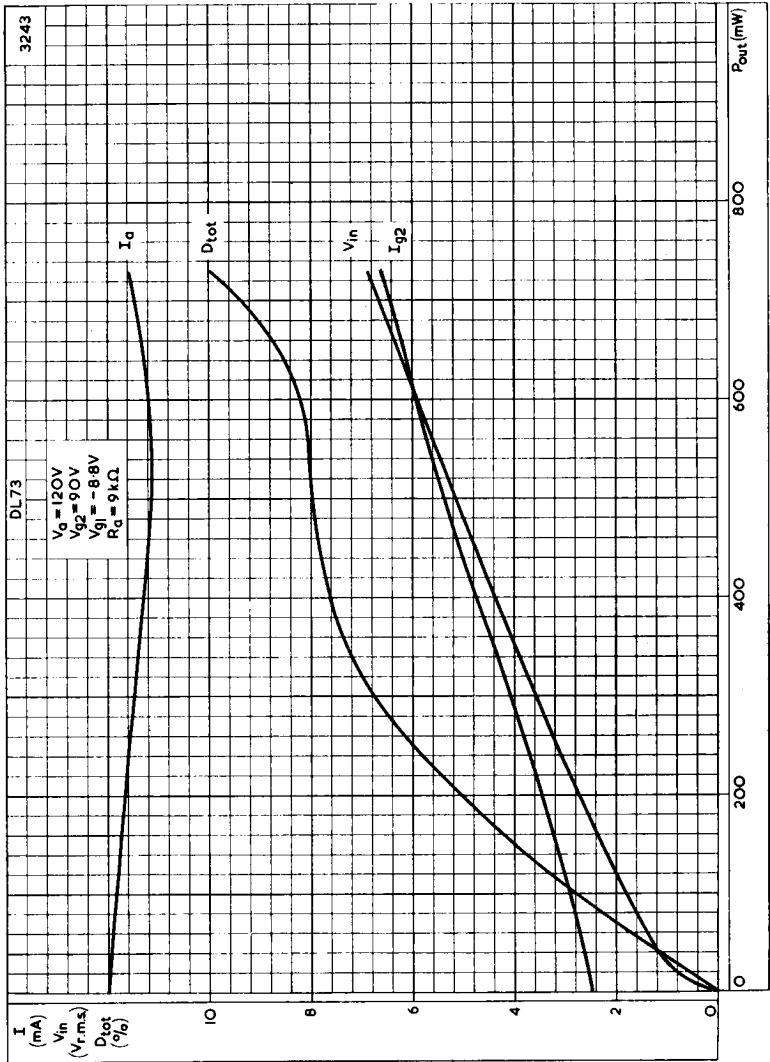


ANODE CURRENT PLOTTED AGAINST ANODE VOLTAGE

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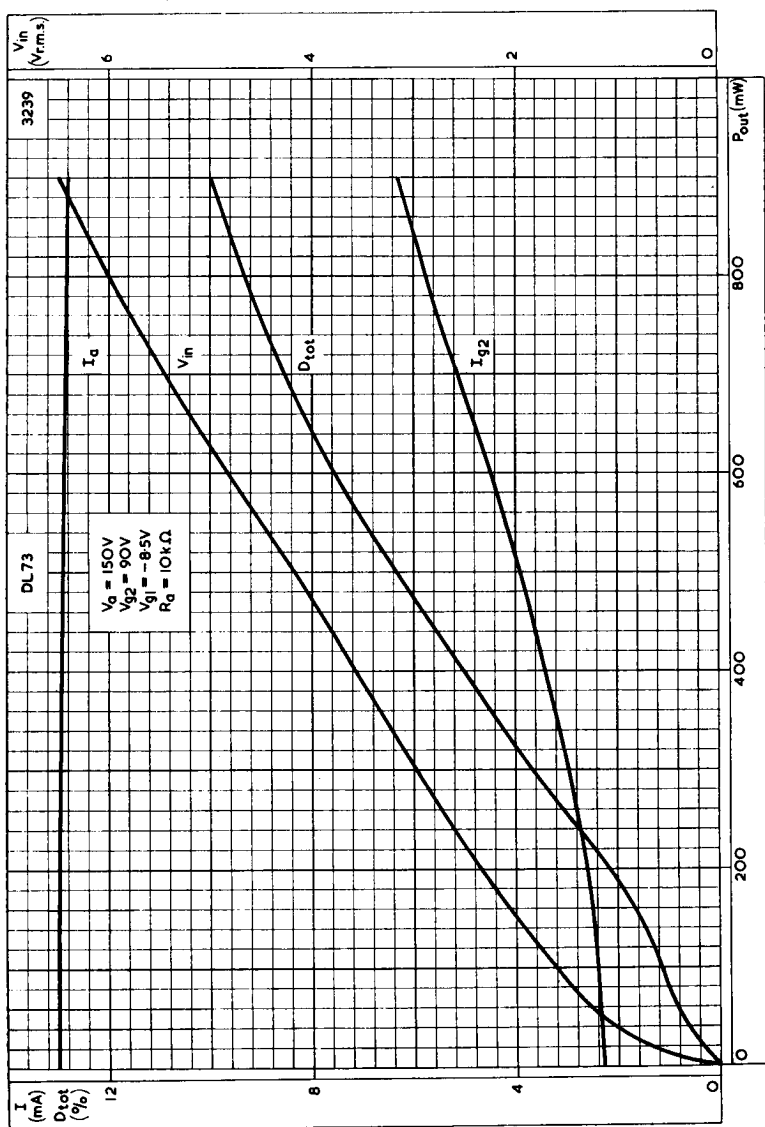


PERFORMANCE OF SINGLE DL73 AS CLASS 'A' AMPLIFIER  
 $V_a = 120V$

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PERFORMANCE OF SINGLE DL73 AS CLASS 'A' AMPLIFIER  
 $V_b = 150V$