

11E15

H.F. DOUBLE TRODE

Indirectly heated

TENTATIVE**GENERAL**

The 11E15 is an internally neutralised h.f. double tetrode. It is intended for use as a push-pull amplifier or frequency trebler at frequencies up to 500 Mc/s.

RATING‡

Heater Voltage	V_h	12.6	6.3 V
Heater Current	I_h	0.9	1.8 A
Maximum Operating Frequency	$f_{(max)}$	500	Mc/s
Maximum Permissible Temperature of hottest part of bulb		200	°C
Maximum Permissible Temperature of the base pins		180	°C

‡All limiting values are Absolute, not Design Centres.

RATING—Absolute values

As Class "C" r.f. push-pull power amplifier for c.w. telegraphy or f.m. telephony.

Maximum Anode Voltage	$V_a(max)$	600*	V
Maximum Screen Grid Voltage	$V_{g2(max)}$	300	V
Maximum Negative Control Grid Voltage	$V_{g1(max)}$	-100	V
Maximum Heater/Cathode Voltage	$V_{h-k(max)}$	100	V
Maximum Anode Dissipation	$P_a(max)$	20†	W
Maximum Screen Grid Dissipation	$P_{g2(max)}$	3.5†	W
Maximum Control Grid Dissipation	$P_{g1(max)}$	1.0†	W
Maximum Peak Cathode Current	$i_k(pk)max$	700†	mA
Maximum Mean Cathode Current	$I_k(av)max$	120†	mA
Maximum Control Grid/Cathode Resistance (fixed bias)	$R_{g1-k(max)}$	50†	kΩ

Continued

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Maximum Control Grid Cathode Resistance (automatic bias)	$R_{g1-k(max)}$	100† k Ω
Maximum Mean Control Grid Current	$I_{g1(av)max}$	5.0† mA

* For natural cooling $V_{a(max)}=600V$ up to 150 Mc/s but is limited to 280V at 500 Mc/s. For forced air cooling $V_{a(max)}=600V$ up to 280 Mc/s but is limited to 500V at 500 Mc/s.

† Each section.

RATING—Absolute values

Class "B" a.f. power amplifier or modulator.

Maximum Anode Voltage	$V_{a(max)}$	600	V
Maximum Screen Grid Voltage	$V_{g2(max)}$	300	V
Maximum Negative Control Grid Voltage	$V_{g1(max)}$	-100	V
Maximum Heater Cathode Voltage	$V_{h-k(max)}$	100	V
Maximum Anode Dissipation	$P_{a(max)}$	20†	W
Maximum Screen Grid Dissipation	$P_{g2(max)}$	3.5†	W
Maximum Control Grid Dissipation	$P_{g1(max)}$	1.0†	W
Maximum Peak Cathode Current	$i_{k(pk)max}$	450†	mA
Maximum Mean Cathode Current	$I_{k(av)max}$	140†	mA
Maximum Control Grid Cathode Resistance (fixed bias)	$R_{g1-k(max)}$	50†	k Ω
Maximum Control Grid Cathode Resistance (automatic bias)	$R_{g1-k(max)}$	100†	k Ω

† Each section.

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TENTATIVE**RATING—Absolute values**

As Class "C" r.f. power amplifier with anode and screen modulation (carrier condition for use with modulation factor 1).

Maximum Anode Voltage	$V_a(\max)$	600*	V
Maximum Screen Grid Voltage	$V_{g2}(\max)$	300	V
Maximum Negative Control Grid Voltage	$V_{g1}(\max)$	-175	V
Maximum Heater/Cathode Voltage	$V_{h-k}(\max)$	100	V
Maximum Anode Dissipation	$P_a(\max)$	14†	W
Maximum Screen Grid Dissipation	$P_{g2}(\max)$	2.3†	W
Maximum Control Grid Dissipation	$P_{g1}(\max)$	1.0†	W
Maximum Peak Cathode Current	$i_k(pk)\max$	1.0†	A
Maximum Mean Cathode Current	$I_k(av)\max$	120†	mA
Maximum Control Grid/Cathode Resistance (fixed bias)	$R_{g1-k}(\max)$	50†	k Ω
Maximum Control Grid/Cathode Resistance (automatic bias)	$R_{g1-k}(\max)$	100†	k Ω
Maximum Mean Control Grid Current	$I_{g1}(\av)\max$	5.0†	mA

* For natural cooling $V_a(\max)=600V$ up to 150 Mc/s but is limited to 280V at 500 Mc/s. For forced air cooling $V_a(\max)=600V$ up to 250 Mc/s but is limited to 480V at 500 Mc/s.

† Each section.

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TENTATIVE**RATING**—Absolute values

Frequency Trebler.

Maximum Anode Voltage	$V_a(\text{max})$	750	V
Maximum Screen Grid Voltage	$V_{g2}(\text{max})$	300	V
Maximum Negative Control Grid Voltage	$V_{g1}(\text{max})$	-175	V
Maximum Heater, Cathode Voltage	$V_{h-k}(\text{max})$	100	V
Maximum Anode Dissipation	$P_a(\text{max})$	20†	W
Maximum Screen Grid Dissipation	$P_{g2}(\text{max})$	3.5†	W
Maximum Control Grid Dissipation	$P_{g1}(\text{max})$	1.0†	W
Maximum Peak Cathode Current	$i_k(\text{pk})\text{max}$	700†	mA
Maximum Mean Cathode Current	$i_k(\text{av})\text{max}$	100†	mA
Maximum Control Grid Cathode Resistance (fixed bias)	$R_{g1-k}(\text{max})$	50†	k Ω
Maximum Control Grid Cathode Resistance (automatic bias)	$R_{g1-k}(\text{max})$	100†	k Ω
Maximum Mean Control Grid Current	$i_{g1}(\text{av})\text{max}$	5.0†	mA

† Each section

INTER-ELECTRODE CAPACITANCES

Anode Grid 1*†	c_{a-g1}	0.06	pF
Grid 1/All other electrodes†	$c_{g1-\text{all}}$	10.5	pF
Anode/All other electrodes†	$c_{a-\text{all}}$	3.2	pF
Input Capacitance‡	c_{in}	6.7	pF
Output Capacitance‡	c_{out}	2.1	pF

* Internally neutralised for push pull operation.

† Each section.

‡ 2 sections in push pull.

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TENTATIVE**CHARACTERISTICS**

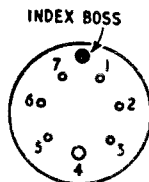
Mutual Conductance	gm	4.5†‡ mA/V
Inner Amplification Factor	μ_{g1-g2}	8.0†‡

† Each section.

‡ At $V_a=300V$, $V_{g2}=250V$, $I_a=30mA$.**DIMENSIONS**

Maximum Overall Length	103 mm
Maximum Diameter	47 mm
Maximum Seated Height	91 mm
Approximate Net Weight	2.3 ozs

MOUNTING POSITION—Unrestricted, but when mounted horizontally anode pins should be in a horizontal plane.

CAPS—Wire 2 mm dia.**BASE**—B7A

Viewed from free end of pins

CONNECTIONS

Pin 1	Heater	h
Pin 2	Control Grid, Section 1	g1'
Pin 3	Screen Grid	g2' g2"
Pin 4	Cathode, Beam Plates, Shield	k, bp, s
Pin 5	Heater Centre Tap	hct
Pin 6	Control Grid, Section 2	g1"
Pin 7	Heater	h
Cap No. 1	Anode, Section 1	a'
Cap No. 2	Anode, Section 2	a"