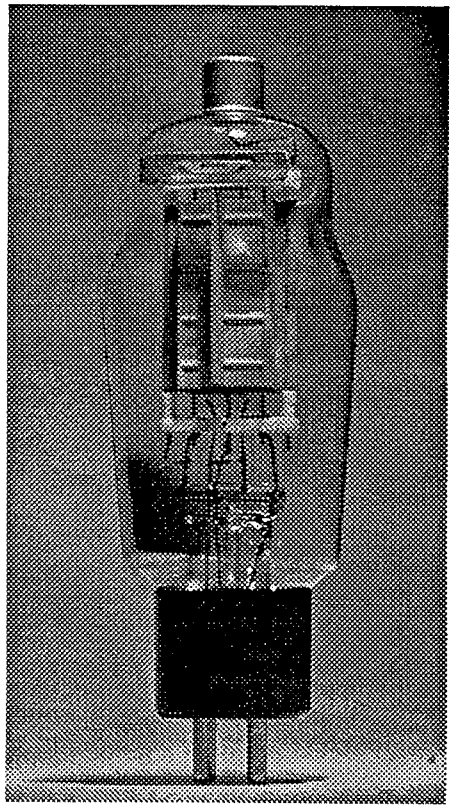
NATIONAL

NL-811A

September 1992

The NL-811A is a three-electrode tube designed for use as a class B audio-frequency power amplifier and modulator It is well suited also for class C telephony telegraphy, and self-rectifying service. In class B service and in unmodulated class C service, the NL-811A has a maximum plate dissipation of 65 watts (ICAS). Because of its high perveance, the NL-811A operates at high efficiency and with low driving power A pair of NL-811A's in class B audio-frequency service with a plate input of 470 watts (ICAS) requires a driving power of only 4.4 watts, and can modulate 100 per cent a radio-frequency amplifier having an input of 680 watts.

In class C telegraph service under ICAS conditions, two NL-811A s can be operated with a plate input of 520 watts and with the exceptionally low driving power at the tubes of only about 14 watts. The NL-811A may be operated at maximum ratings in all classes of rf service at frequencies as high as 30 megacycles and with reduced ratings up to 100 megacycles. Design features of the NL-811A include a large zirconium coated plate with radiating fins to give remarkably effective heat dissipation, heavy internal leads to grid and plate with resultant low radio-frequency losses, and a low-loss micanol base.



TECHNICAL INFORMATION

GENERAL

Electrical Data

Filament Voltage (ac or dc)	6.3 ±0.3	Volts
Filament Current, at E_f=6.3V	4	Amperes
Amplification Factor	160	
Direct Interelectrode Capacitances (With no External Shield)		
Grid - Plate	5.6	μμf
Grid - Filament	5.9	μμf
Plate - Filament	0.7	μμf

Mechanical Data

Mounting Position Vertical, Base down; horizontal with pins 1 and 4 in vertical plane
Cap - Medium No. CI-5
Base - Medium
Shell Small 4-pin, micanol with bayonet No. A4-10

NATIONAL ELECTRONICS
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TECHNICAL INFORMATION (CONT'D)

MAXIMUM RATINGS AND TYPICAL OPERATING CONDITIONS
AUDIO FREQUENCY POWER AMPLIFIER AND MODULATOR - CLASS B

Maximum ratings, absolute values	CCS	ICAS	
Dc plate voltage	1150 max	1500	max Volts
Maximum signal Dc plate current	175 max	175	max Volts
Maximum signal Dc plate input	165 max	235	max watts
Dc grid current	45 max	65	max watts

Typical operation		CCS		ICAS		
Dc plate voltage	750	1250	1000	1250	1500	Volts
Dc grid voltage	0	0	0	0	-4.5	Volts
Peak A-F grid-to-grid voltage	197	145	185	175	170	Volts
Zero signal Dc plate current	32	50	44	54	32	mA
Maximum signal Dc plate current	350	260	350	350	313	mA
Effective load resistance, plate to plate	5100	12400	7400	9200	12400	Ohms
Maximum signal driving power approximate	9.7	3.8	7.5	6	4.4	watts
Maximum signal power output, approximate	178	235	248	310	340	watts

PLATE-MODULATED RADIO-FREQUENCY POWER AMPLIFIER: CLASS C TELEPHONY
Carner conditions per tube for use with a maximum modulation factor of 1.0.

Maximum ratings, absolute values	CCS	ICAS	
Dc plate voltage	1000	1250	max Volts
Dc grid voltage	-200	-200	max Volts
Dc plate current	125	150	max mA
Dc grid current	50	50	max mA
Plate input	115	175	max watts
Plate dissipation	30	45	max watts

Typical operation			
Dc plate voltage	1000	1250	Volts
Dc grid voltage	-55	-120	Volts
From a grid resistor of	1200	2700	Ohms
Peak R-F grid voltage	150	250	Volts
Dc plate current	115	140	mA
Dc grid current, approximate	45	45	mA
Driving Power approximate	6.1	10	watts
Power output, approximate	88	135	watts

RADIO-FREQUENCY POWER AMPLIFIER AND OSCILLATOR - CLASS C TELEGRAPHY
Key-down conditions per tube without amplitude modulation.

Maximum ratings, absolute values	CCS	ICAS	
Dc plate voltage··	1250	1500	max Volts
Dc grid voltage	-200	-200	max Volts
Dc plate current	175	175	max mA
Dc grid current	50	50	max mA
Plate input	175	260	max watts
Plate dissipation	45	65	max watts

Typical operation	CCS	ICAS	
Dc plate voltage	1250	1500	Volts
Dc grid voltage	-50	-70	Volts
From a grid resistor of	1100	1750	Ohms
Peak R-F grid voltage	270	330	Volts
Dc plate current	140	173	mA
Dc grid current, approximate	45	40	mA
Driving Power approximate	5.7	7 1	watts
Power output, approximate	135	200	watts

SELF-RECTIFYING AMPLIFIER - CLASS C

Maximum ratings, absolute values	CCS	
Ac plate voltage (rms)	1750	max Volts
Dc grid voltage	-125	max Volts
Dc plate current	65	max mA
Dc grid current	25	max mA
Plate input	125	max watts
Plate dissipation	45	max watts

Typical operation in push-pull circuit at 27 megacycles unless otherwise specified, values are for two tubes		
Ac plate voltage (rms)	1750	Volts
Dc grid voltage	-70	Volts
From a grid resistor of	1500	Ohms
Dc plate current	130	mA
Dc grid current, approximate	46	mA
Driving Power approximate	12	watts
Power output, approximate	175	watts
Useful power output, approximate 75% circuit efficiency	130	watts

AMPLIFIER - CLASS C

With separate, rectified, unfiltered, single-phase, full-wave plate supply

Maximum ratings, absolute values	CCS	
Dc plate voltage	1125	max Volts
Dc grid voltage	-125	max Volts
Dc plate current	160	max mA
Dc grid current	45	max mA
Plate input	175	max watts
Plate dissipation	130	max watts

Typical operation		
Dc plate voltage	1125	Volts
Dc grid voltage	-35	Volts
From a grid resistor of	1400	Ohms
Dc plate current	125	mA
Dc grid current, approximate	25	mA
Driving Power approximate	3	watts
Power output, approximate	135	watts

AVERAGE PLATE CHARACTERISTICS

E_f = 6.3 VOLTS D-C