

SPECIAL VALVES

Radiation-cooled R.F. Triode

Code: 3C/800E

The 3C/800E is designed for use in r.f. heating applications and may be operated up to 50 MHz.

CATHODE

Directly heated thoriated tungsten filament

Filament voltage	6.3	V
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Filament current (Note 1)	32.5	A
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Maximum usable emission	4.0	A
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Note 1 —The filament is suitable for direct switching without additional current limitations and will withstand voltage fluctuations of $\pm 5\%$.

CHARACTERISTICS

Mutual conductance	{ At $V_a = 4.0kV$ $I_a = 190mA$ }	5.0	mA/V
Amplification factor		22	

INTERELECTRODE CAPACITANCES

Anode to grid	6.5	pF
Grid to filament	2.0	pF
Anode to filament	0.25	pF

AIR-COOLING REQUIREMENTS

Forced-air cooling is recommended for all conditions of service.

An air-flow of 50 ft³/min (1.42 m³/min) directed vertically upwards on to the filament and grid pins is adequate.

Maximum temperature of seals	220	°C
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Maximum temperature of bulb	350	°C
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MECHANICAL DATA

Dimensions As shown in outline drawing

Mounting position Vertical, base downwards (Note 2)

Note 2.—When the valve is operating at the higher frequencies it is essential that connection be made to both grid pins to reduce current taken by each pin. The valve should be protected against excessive vibration and shock.

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MAXIMUM RATINGS AND TYPICAL OPERATING CONDITIONS **RADIO FREQUENCY**

Class C. Power Oscillator (with d.c. anode supply)

Maximum Ratings

Maximum direct anode voltage	6.0	kV
Maximum direct anode current	750	mA
Maximum direct anode dissipation	800	W
Maximum direct grid voltage	-1.25	kV
Maximum direct grid current	300	mA
Maximum direct grid dissipation	120	W
Maximum grid to filament resistor	10	k Ω
Maximum duty factor	1.0	
Maximum frequency for above ratings	50	MHz

Typical Operating Conditions

Direct anode voltage	3.0	5.0	kV
Direct anode current (Note 3)	700 (220)	700 (220)	mA
Direct anode dissipation	546	788	W
Direct grid current (Note 3)	240 (400)	225 (370)	mA
Grid to filament resistor	1.5	2.5	k Ω
Anode efficiency	74	77.5	%
Power output	1.55	2.7	kW
Duty factor	1.0	1.0	

Class C. Power Oscillator (anode supply from single-phase, full-wave rectifier without smoothing filter)

Maximum Ratings

Maximum direct anode voltage	5.4	kV
Maximum direct anode current	670	mA
Maximum direct anode dissipation	800	W
Maximum direct grid voltage	-1.25	kV
Maximum direct grid current (Note 3)	270	mA
Maximum direct grid dissipation	120	W
Maximum grid to filament resistor	10	k Ω
Maximum duty factor	1.0	
Maximum frequency for above ratings	50	MHz

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Typical Operating Conditions

Direct anode voltage	3.15	4.5	kV
Direct anode current (Note 3)	600 (190)	600 (190)	mA
Direct anode dissipation	620	750	W
Direct grid current (Note 3)	180 (300)	150 (250)	mA
Grid to filament resistor	1.5	2.5	k Ω
Anode efficiency	73	77	%
Power output	1.7	2.55	kW
Duty factor	1.0	1.0	

Class C. Power Oscillator (anode supply from three-phase half-wave rectifier)

Maximum Ratings

Maximum direct anode voltage	6.0	kV
Maximum direct anode current	750	mA
Maximum direct anode dissipation	800	W
Maximum direct grid voltage	—1.25	kV
Maximum direct grid current	300	mA
Maximum direct grid dissipation	120	W
Maximum grid to filament resistor	10	k Ω
Maximum duty factor	1.0	
Maximum frequency for above ratings	50	MHz

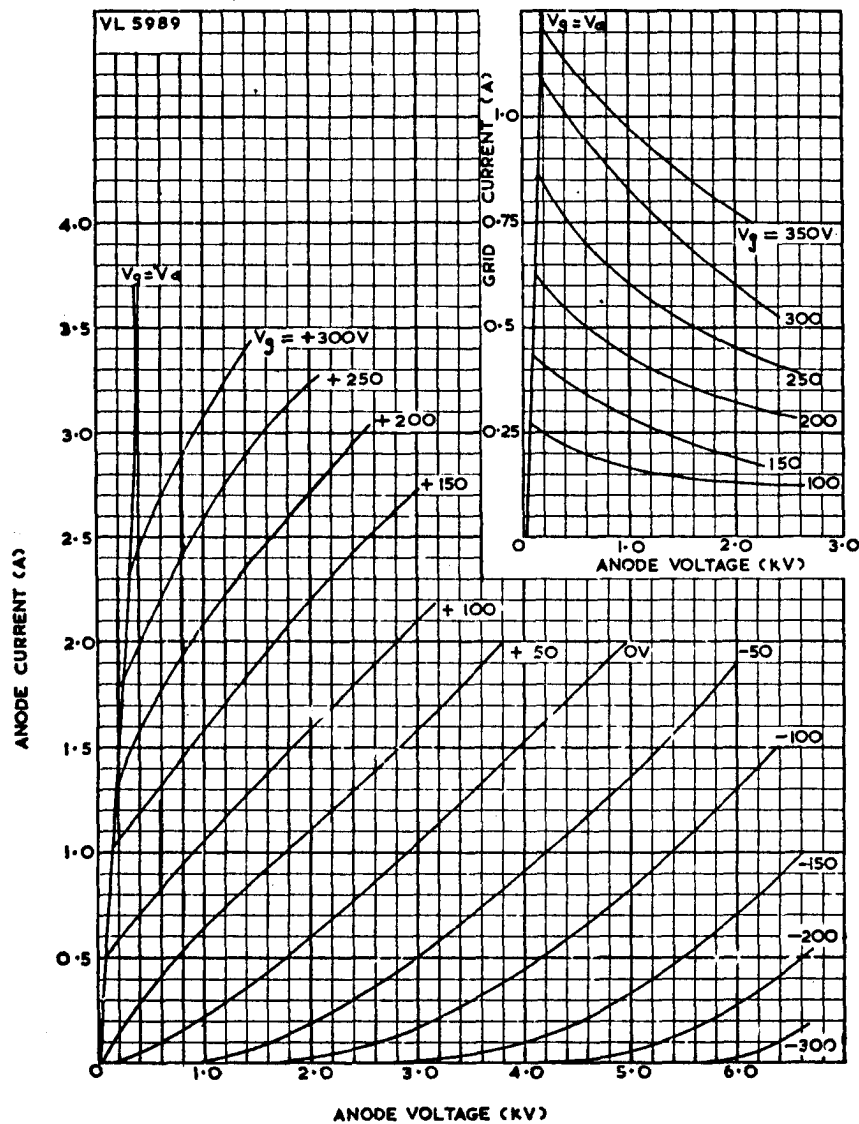
Typical Operating Conditions

Direct anode voltage	5.0	kV
Direct anode current (Note 3)	700 (220)	mA
Direct anode dissipation	780	W
Direct grid current (Note 3)	160 (270)	mA
Grid to filament resistor	2.5	k Ω
Anode efficiency	78	%
Power output	2.7	kW
Duty factor	1.0	

Note 3.—Subject to wide variation dependent upon the impedance of the load circuit.
Typical off-load figures are shown in brackets.

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