

CHARACTERISTICS

Plate Voltage	100	250	volts
Grid Voltage	—1	—2	volts
Amplification Factor	100	100	
Plate Resistance (Approx.)	80000	62500	ohms
Transconductance	1250	1600	μ mhos
Plate Current	0.5	1.2	mA

Refer to chart at end of section.

6686

Refer to chart at end of section.

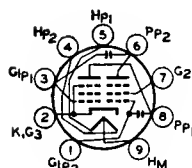
6688A

Refer to chart at end of section.

6887

Refer to chart at end of section.

6922/E88CC



9HL

TWIN-POWER PENTODE

6939

INDUSTRIAL
TYPE

Miniature type twin power-pentode intended for use in communications equipment as a push-pull rf power-amplifier or frequency-multiplier at frequencies up to 500 MHz. Outlines section, 6E; requires miniature 9-contact socket.

	Series	Parallel	
Heater arrangement			
Heater Voltage (ac/dc)	12.6 $\pm$ 10%	6.3 $\pm$ 10%	volts
Heater Current	0.3	0.6	ampere
Peak Heater-Cathode Voltage		$\pm$ 100 max.	volts
Bulb Temperature (At hottest point on bulb surface)		225 max.	$^{\circ}$ C
Direct Interelectrode Capacitances (Approx., Each Unit):			
Grid No.1 to Plate		0.15	pF
Grid No.1 to Cathode & Grid No.3, Grid No.2, and Heater		6.4	pF
Plate to Cathode & Grid No.3, Grid No.2, and Heater		1.6	pF
Transconductance (Each Unit) for dc plate volts = 150, dc grid-No.2 volts = 150, and dc plate mA = 25		10500	μ mhos
Mu-Factor, grid No.2 to grid No.1 (Each Unit) for dc plate volts = 150, dc grid No.2 volts = 150, and dc plate mA = 25		31	

Push-Pull RF Amplifier & Oscillator—Class C Telegraphy*
and

Push-Pull RF Power Amplifier—Class C FM Telephony

Values are on a per-tube basis unless otherwise specified

MAXIMUM RATINGS (Absolute-Maximum Values)

	Up to 500 MHz		
	CCS*	ICAS*	
DC Plate Voltage	250	250	volts
DC Grid-No.2 (Screen-Grid) Voltage	200	200	volts
DC Grid-No.1 (Control-Grid) Voltage	—100	—100	volts
DC Plate Current	90	100	mA
DC Grid-No.1 Current	6	8	mA
DC Cathode Current	190	120	mA
Plate Input	12	14	watts
Grid-No.2 Input	3	3.5	watts
Grid-No.1 Input	0.2	0.24	watt
Plate Dissipation	6	7.5	watts

TYPICAL OPERATION

	At 500 MHz		
DC Plate Voltage	180	200	volts
DC Grid-No.2 Voltage	180	200	volts
DC Grid-No.1 Voltage	—20	—20	volts
From grid resistor for each grid No.1 of	27000	27000	ohms
Peak-to-Peak RF Grid-No.1 Voltage	50	50	volts
DC Plate Current	55	60	mA
DC Grid-No.2 Current	12.5	14	mA
DC Grid-No.1 Current	1.5	1.5	mA
Driver Power Output (Approx.)	1.2	1.2	watts
Useful Power Output (Approx.)*	5	6	watts

Plate-Modulated Push-Pull RF Power Amplifier—Class C Telephony

Carrier conditions per tube for use with a maximum modulation factor of 1

Values are on a per-tube basis

MAXIMUM RATINGS (Absolute-Maximum Values)

	Up to 500 MHz		
	CCS*	ICAS*	
DC Plate Voltage	200	200	volts
DC Grid-No.2 (Screen-Grid) Voltage	200	200	volts
DC Grid-No.1 (Control-Grid) Voltage	-100	-100	volts
DC Plate Current	64	80	mA
DC Grid-No.1 Current	6	8	mA
DC Cathode Current	80	96	mA
Plate Input	8	10	watts
Grid-No.2 Input	2	2.3	watts
Grid-No.1 Input	0.2	0.24	watt
Plate Dissipation	4	5	watts

TYPICAL OPERATION

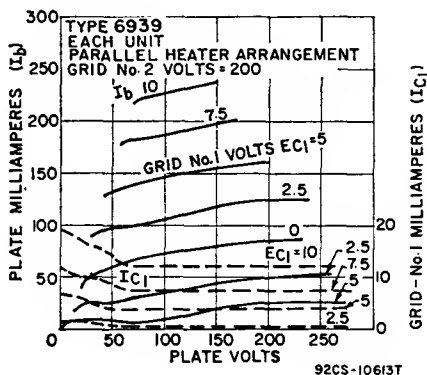
	At 500 MHz		
	CCS*	ICAS*	
DC Plate Voltage	180	180	volts
DC Grid-No.2 Voltage	180	180	volts
DC Grid-No.1 Voltage	-20	-20	volts
From grid resistor for each grid No.1 of	68000	27000	ohms
Peak-to-Peak RF Grid-No.1 Voltage	45	50	volts
DC Plate Current	40	55	mA
DC Grid-No.2 Current	9.5	12.5	mA
DC Grid-No.1 Current	0.6	1.5	mA
Driver Power Output (Approx.)	1	1.2	watts
Useful Power Output (Approx.)	3.5	5	watts

Frequency Tripler—Class C

Values are on a per-tube basis

MAXIMUM RATINGS (Absolute-Maximum Values)

	Up to 500 MHz		
	CCS*	ICAS*	
DC Plate Voltage	250	250	volts
DC Grid-No.2 (Screen-Grid) Voltage	200	200	volts
DC Grid-No.1 (Control-Grid) Voltage	-100	-100	volts
DC Plate Current	60	80	mA
DC Grid-No.1 Current	6	8	mA
DC Cathode Current	70	80	mA
Plate Input	8	10	watts
Grid-No.2 Input	3	3.5	watts
Grid-No.1 Input	0.2	0.24	watt
Plate Dissipation	6	7.5	watts



TYPICAL OPERATION

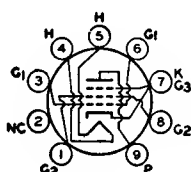
	Up to 500 MHz		
DC Plate Voltage	180	200	volts
DC Grid-No.2 Voltage (Approx.)	180	190	volts
Through resistor of	1200	1200	ohms
DC Grid-No.1 Voltage	-74	-74	volts
From grid resistor for each grid No.1 of	82000	82000	ohms
Peak-to-Peak RF Grid-No.1 Voltage	165	165	volts
DC Plate Current	40	46	mA
DC Grid-No.2 Current	9.7	11	mA
DC Grid-No.1 Current	1.8	1.8	mA
Driver Power Output (Approx.)	1.1	1.1	watts
Useful Power Output (Approx.) [‡]	1.8	2.2	watts

• Key-down conditions per tube without amplitude modulation. Amplitude modulation essentially negative may be used if the positive peak of the audio-frequency envelope does not exceed 115% of the carrier conditions.

* Continuous Commercial Service.

♦ Intermittent Commercial and Amateur Service.

‡ This value of useful power is measured at load of output circuit.



9EU

BEAM POWER TUBE

6973

Miniature type used as power amplifier in compact high-fidelity audio equipment. Outlines section, 6G; requires miniature 9-contact socket.

Heater Voltage (ac/dc)	6.3	volts
Heater Current	0.45	ampere
Heater-Cathode Voltage:		
Peak value	±200 max	volts
Average value	100 max	volts
Direct Interelectrode Capacitances:		
Grid-No.1 to Plate	0.4 max	pF
Grid No.1 to Cathode, Heater, Grid No.2, and Grid No.3	9	pF
Plate to Cathode Heater, Grid No.2, and Grid No.3	6	pF

Class A₁ Amplifier

CHARACTERISTICS

Plate Voltage	250	volts
Grid-No.2 (Screen-Grid) Voltage	250	volts
Grid-No.1 (Control-Grid) Voltage	-15	volts
Plate Resistance (Approx.)	73000	ohms
Transconductance	4800	μmhos
Plate Current	46	mA
Grid-No.2 Current	3.5	mA
Grid-No.1 Voltage (Approx.) for plate current of 100 μA	-40	volts

Push-Pull Class AB₁ Amplifier

MAXIMUM RATINGS (Design-Maximum Values)

Plate Voltage	440	volts
Grid-No.2 Voltage	330	volts
Plate Dissipation	12	watts
Grid-No.2 Input	2	watts
Bulb Temperature (At hottest point)	250	°C

TYPICAL OPERATION (Values are for two tubes)

	Fixed Bias			Cathode Bias		
Plate Supply Voltage	250	350	400	300	310	volts
Grid-No.2 Supply Voltage	250	280	290	300	310	volts
Grid-No.1 Voltage	-15	-22	-25	—	—	volts
Cathode-Bias Resistor	—	—	—	230	270	ohms
Peak AF Grid-No.1-to-						
Grid-No.1 Voltage	30	44	50	48	55	volts
Zero-Signal Plate Current	92	58	50	80	77	mA
Maximum-Signal Plate Current	105	106	107	96	92	mA
Zero-Signal Grid-No.2 Current	7	3.5	2.5	6	5	mA
Maximum-Signal Grid-No.2 Current	16	14	13.7	14	14	mA
Effective Load Resistance						
(Plate-to-plate)	8000	7500	8000	5500	6000	ohms
Total Harmonic Distortion	2	1.5	2	2	4	per cent
Maximum-Signal Power Output	12.5	20	24	15	17	watts