

9LK

BEAM POWER TUBE

7551

INDUSTRIAL
TYPE

Miniature type for use as a class C radio-frequency amplifier, oscillator, and frequency-multiplier up to 175 MHz in mobile communications equipment. Outlines section, 6E; requires miniature 9-contact socket. Curves shown under type 7558 also apply to the 7551.

Heater Voltage (ac/dc)	13.5 $\pm$ 1.5	volts
Heater Current	0.36	ampere
Peak Heater-Cathode Voltage	$\pm$ 100 max.	volts
Direct Interelectrode Capacitances:		
Grid No.1 to Plate	0.15 max.	pF
Grid No.1 to Cathode, Grid No.3, Grid No.2 and Heater	10	pF
Plate to Cathode, Grid No.3, Grid No.2 and Heater	5.5	pF
Bulb Temperature (At hottest point on bulb surface)	225 max.	$^{\circ}$ C

MAXIMUM CIRCUIT VALUE

Grid-No.1-Circuit Resistance—CCS or ICAS operation	0.1	megohm
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Class A₁ Amplifier

CHARACTERISTICS

Heater Voltage	13.5	volts
Plate Voltage	250	volts
Grid No.3	Connected to cathode at socket	
Grid-No.2 Voltage	250	volts
Grid-No.1 Voltage	$-$ 18	volts
Mu-Factor, Grid No.2 to Grid No.1	8.7	
Transconductance	5300	μ mhos
Plate Current	40	mA
Grid-No.2 Current	3	mA

AF Power Amplifier & Modulator—Class AB₁[†]MAXIMUM CCS[•] RATINGS (Absolute-Maximum Values)

DC Plate Voltage	375	volts
Grid No.3 (Suppressor Grid)	0	volt
DC Grid-No.2 (Screen-Grid) Voltage	300	volts
Max.-Signal DC Plate Current [■]	70	mA
Max.-Signal Plate Input [■]	21	watts
Max.-Signal Grid-No.2 Input [■]	2	watts
Plate Dissipation [■]	10	watts

TYPICAL CCS PUSH-PULL OPERATION

Values are for 2 tubes

Heater Voltage	13.5	volts
DC Plate Voltage	300	volts
Grid No.3	Connected to cathode at socket	
DC Grid-No.2 Voltage [§]	250	volts
DC Grid-No.1 Voltage [§]	$-$ 21	volts
Peak AF Grid-No.1-to-Grid-No.1 Voltage	40	volts
Zero-Signal DC Plate Current	40	mA
Max.-Signal DC Plate Current	125	mA
Zero-Signal DC Grid-No.2 Current	2	mA
Max.-Signal DC Grid-No.2 Current	14	mA
Effective Load Resistance (Plate to plate)	5000	ohms
Max.-Signal Driving Power	0	watts
Total Harmonic Distortion	5	%
Max.-Signal Power Output (Approx.)	20.5	watts

RF Power Amplifier & Oscillator—Class C Telegraphy[‡]
and

RF Power Amplifier—Class C FM Telephony

MAXIMUM RATINGS (Absolute-Maximum Values)

	Up to 175 MHz CCS [•]	ICAS ^{••}	
DC Plate Voltage	375	375	volts
Grid No.3 (Suppressor Grid)	0	0	volt

DC Grid-No.2 (Screen-Grid) Voltage	300	300	volts
DC Grid-No.1 (Control-Grid) Voltage	-125	-125	volts
DC Plate Current	70	80	mA
DC Grid-No.2 Current	15	15	mA
DC Grid-No.1 Current	5	5	mA
Plate Input	21	24	watts
Grid-No.2 Input	2	2	watts
Plate Dissipation	10	12	watts

TYPICAL OPERATION**As amplifier at 175 MHz**

	CCS●	ICAS●●	
Heater Voltage	13.5	13.5	volts
DC Plate Voltage	250	300	volts
Grid No.3	Connected to cathode at socket		
DC Grid-No.2 Voltage□□	200	200	volts
DC Grid-No.1 Voltage⊕⊕	-40	-42	volts
Peak RF Grid-No.1 Voltage	47	52	volts
DC Plate Current	60	70	mA
DC Grid-No.2 Current	3.7	3.7	mA
DC Grid-No.1 Current (Approx.)	1.5	2.1	mA
Driver Power Output (Approx.)▲▲	1	1	watts
Useful Power Output (Approx.)*	6.5	8.5	watts

Plate-Modulated RF Power Amplifier—Class C Telephony

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

MAXIMUM RATINGS (Absolute-Maximum Values)

	Up to 175 MHz		
	CCS●	ICAS●●	
DC Plate Voltage	300	300	volts
Grid No.3 (Suppressor Grid)	0	0	volt
DC Grid-No.2 (Screen-Grid) Voltage	300	300	volts
DC Grid-No.1 (Control-Grid) Voltage	—125	—125	volts
DC Plate Current	60	70	mA
DC Grid-No.2 Current	10	10	mA
DC Grid-No.1 Current	5	5	mA
Plate Input	15	17.5	watts
Grid-No.2 Input	1.4	1.4	watts
Plate Dissipation	7	8	watts

TYPICAL OPERATION**At 175 MHz**

	CCS●	ICAS●●	
Heater Voltage	13.5	13.5	volts
DC Plate Voltage	250	250	volts
Grid No.3	Connected to cathode at socket		
DC Grid-No.2 Voltage▲	250	250	volts
DC Grid-No.1 Voltage★	-70	-75	volts
From a grid-No.1 resistor of	33000	33000	ohms
RF Grid-No.1 Voltage	75	80	volts
DC Plate Current	60	70	mA
DC Grid-No.2 Current	2.5	3	mA
DC Grid-No.1 Current (Approx.)	2.1	2.3	mA
Driving Power (Approx.)▲▲	1	1	watt
Useful Power Output*	6.5	7.5	watts

Frequency Multiplier**MAXIMUM RATINGS (Absolute-Maximum Values)**

	CCS●	ICAS●●	
DC Plate Voltage	375	375	volts
Grid No.3 (Suppressor Grid)	0	0	volt
DC Grid-No.2 (Screen-Grid) Voltage	300	300	volts
DC Grid-No.1 (Control-Grid) Voltage	-125	-125	volts
DC Plate Current	50	60	mA
DC Grid-No.2 Current	15	15	mA
DC Grid-No.1 Current	5	5	mA
Plate Input	13	15	watts
Grid-No.2 Input	2	2	watts
Plate Dissipation	10	12	watts

TYPICAL OPERATION**As doubler to 175 MHz**

	CCS●	ICAS●●	
Heater Voltage	13.5	13.5	volts
DC Plate Voltage	250	250	volts
Grid No.3	Connected to cathode at socket		
DC Grid-No.2 Voltage	200	250	volts
DC Grid-No.1 Voltage⊕⊕	-53	-66	volts
From a grid-No.1 resistor of	53000	44000	ohms
Peak RF Grid-No.1 Voltage	60	74	volts

DC Plate Current	50	60	mA
DC Grid-No.2 Current	2.6	3.5	mA
DC Grid-No.1 Current (Approx.)	1	1.5	mA
Driving Power (Approx.)▲▲	0.4	0.6	watt
Useful Power Output*	3	4.5	watts

As tripler to 175 MHz

Heater Voltage	13.5	13.5	volts
DC Plate Voltage	200	250	volts
Grid No.3	Connected to cathode at socket		
DC Grid No.2 Voltage	200	250	volts
DC Grid-No.1 Voltage⊕⊕	—90	—120	volts
From a grid-No.1 resistor of	50000	70000	ohms
Peak RF Grid-No.1 Voltage	105	130	volts
DC Plate Current	50	60	mA
DC Grid-No.2 Current	3	3.9	mA
DC Grid-No.1 Current (Approx.)	1.85	1.7	mA
Driving Power (Approx.)▲▲	0.4	0.6	watt
Useful Power Output*	1.4	2.3	watts

♦ Subscript 1 indicates that grid-No.1 current does not flow during any part of the input cycle.

● Continuous Commercial Service.

●● Intermittent Commercial and Amateur Service.

■ Averaged over any audio-frequency cycle of sine-wave form.

† 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.

§ Obtained preferably from a fixed supply.

□ Obtained preferably from a separate source or from the plate-voltage supply with a voltage divider. If a series resistor is used, it should be adjustable to obtain the desired operating plate current after initial tuning adjustments are completed.

⊕⊕ Obtained from a grid-No.1 resistor or from a combination of grid-No.1 resistor with either fixed supply or cathode resistor.

▲▲ Driver stage is required to supply tube losses and rf-circuit losses. The driver stage should be designed to provide an excess of power above the indicated values to take care of variations in line voltage, components, initial tube characteristics, and tube characteristics during life.

* Measured at load.

▲ Obtained preferably from a separate source modulated along with the plate supply, or from the modulated plate supply through a series resistor. It is recommended that this resistor be adjustable to obtain the desired operating plate current after initial tuning adjustments are made.

★ Obtained from a grid-No.1 resistor or from a combination of grid-No.1 resistor with either fixed supply or cathode resistor. The combination of grid-No.1 resistor and fixed supply has the advantage of not only protecting the tube from damage through loss of excitation but also of minimizing distortion by bias-supply compensation.

Special Ratings & Performance Data

HEATER-CYCLING LIFE PERFORMANCE

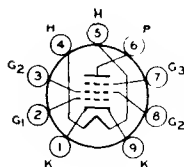
Cycles of Intermittent Operation	2000 min.	cycles
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LOW-FREQUENCY VIBRATION PERFORMANCE

RMS Output Voltage	200 max.	mV
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BEAM POWER TUBE

7558

INDUSTRIAL
TYPE

9LK

Miniature type for use as a class C radio-frequency amplifier, oscillator, and frequency-multiplier up to 175 MHz in mobile communications equipment. Outlines section, 6E; requires miniature 9-contact socket. This type is identical with type 7551 except for heater voltage and current. Special ratings and performance data for the 7551 do not apply to the 7558.

Heater Voltage	6.3 ±5%	volts
Heater Current	0.8	ampere