

Peak Negative-Pulse Grid-No.1 Voltage	330	volts
Peak Cathode Current	1400	mA
Average Cathode Current	400	mA
Grid-No.2 Input	5	watts
Plate Dissipation■■	33	watts
Bulb Temperature (At hottest point)	250	°C

MAXIMUM CIRCUIT VALUES

Grid-No.1-Circuit Resistance:		
For cathode-bias operation	1	megohm
For grid-leak-bias operation	10	megohms
For fixed-bias operation	0.47	megohm

Pulse duration must not exceed 15% of one horizontal scanning cycle (10 microseconds).

† Grid No.2 connected to plate.

†† This value can be measured by a method involving a recurrent waveform such that the maximum ratings of the tube will not be exceeded.

■ In this service, a positive value may be applied to grid No.3 to minimize "snivets" interference; a typical value for this voltage is 30 volts.

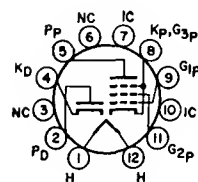
■■ A bias resistor or other means is required to protect the tube in absence of excitation.

Refer to chart at end of section.

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Refer to chart at end of section.

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12FS

DIODE—BEAM POWER TUBE

38HE7

Duodecar type used in television receiver applications. The diode unit is used for damper service and the beam power unit for horizontal-deflection amplifier service. Outlines section, 15D; requires duodecar 12-contact socket. Heater: volts (ac/dc), 37.8; amperes, 0.45; warm-up time, 11 seconds; maximum heater-cathode volts, ± 200 peak, 100 average.

Beam Power Unit As Class A₁ Amplifier

CHARACTERISTICS

	Pentode Connection			Triode** Connection	
Plate Voltage	5000	50	130	130	volts
Grid-No.2 (Screen-Grid) Voltage	130	130	130	130	volts
Grid-No.1 (Control-Grid) Voltage	—	0	-22	-22	volts
Plate Resistance (Approx.)	—	—	6200	—	ohms
Transconductance	—	—	8800	—	μmbos
Plate Current	—	450	60	—	mA
Grid-No.2 Current	—	40	2.8	—	mA
Grid-No.1 Voltage (Approx.) for plate current of 1 mA	-80	—	-39	—	volts
Amplification Factor	—	—	—	4.2	

** Grid No.2 tied to plate.

Beam Power Unit as Horizontal-Deflection Amplifier

For operation in a 525-line, 30-frame system

MAXIMUM RATINGS (Design-Maximum Ratings)

Plate Voltage	500	volts
Peak Positive-Pulse Plate Voltage#	5000	volts
Peak Negative-Pulse Plate Voltage	0	volts
Grid-No.2 Voltage	150	volts
DC Grid-No.1 Voltage, Negative-bias value	55	volts
Peak Negative-Pulse Grid-No.1 Voltage	330	volts
Average Cathode Current	230	mA
Peak Cathode Current	800	mA
Plate Dissipation†	10	watts
Grid-No.2 Input	3.5	watts

MAXIMUM CIRCUIT VALUE

Grid-No.1-Circuit Resistance	1	megohm
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† A bias resistor or other means is required to protect the tube in absence of excitation.

Damper Service—Diode Unit

For operation in a 525-line, 30-frame system

MAXIMUM RATINGS (Design-Maximum Values)

Peak Inverse Plate Voltage#	4200	volts
Peak Plate Current	1200	mA
Average Plate Current	200	mA
Heater-Cathode Voltage:		
Peak value	+200 —4200	volts
Average value	+100 —500	volts
Bulb Temperature (at hottest point)	200	°C

CHARACTERISTICS, Instantaneous Value

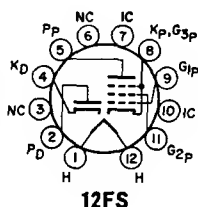
Tube Voltage Drop for plate current of 350 mA	21	volts
# Pulse duration must not exceed 15% of a horizontal scanning cycle (10 microseconds).		

38HK7

53HK7

DIODE—BEAM POWER TUBE

Duodecar type used in television receiver applications. The diode unit is used for damper service and the beam power unit for horizontal-deflection amplifier service. Outlines section, 15D; requires duodecar 12-contact socket. Type 53HK7 is identical with 38HK7 except for heater ratings.



Heater Voltage (ac/dc)	38HK7 37.8	53HK7 53.2	volts
Heater Current	0.45	0.315	ampere
Heater Warm-up Time (Average)	11	11	seconds
Heater-Cathode Voltage:			
Peak value	±200 max	±200 max	volt
Average value	100 max	100 max	volts
Direct Interelectrode Capacitances (Approx.):			
Diode Unit:			
Plate to Cathode and Heater		10	pF
Cathode to Plate and Heater		9	pF
Heater to Cathode		2	pF
Beam Power Unit:			
Grid No.1 to Plate		0.38	pF
Grid No.1 to Cathode, Heater, Grid No.2, and Grid No.3		19	pF
Plate to Cathode, Heater, Grid No.2, and Grid No.3		8	pF

Beam Power Unit as Class A₁ Amplifier

CHARACTERISTICS	Triode**		Pentode Connection		
	Connection				
Plate Voltage	130	3500	50	130	volts
Grid-No.2 (Screen-Grid) Voltage	130	130	130	130	volts
Grid-No.1 (Control-Grid) Voltage	-22	—	0	-22	volts
Amplification Factor	4.2	—	—	—	
Plate Resistance	—	—	—	6200	ohms
Transconductance	—	—	—	8800	μmhos
Plate Current	—	—	450	60	mA
Grid-No.2 Current	—	—	40	2.8	mA
Grid-No.1 Voltage (Approx.) for plate current of 1 mA	—	-66	—	-39	volts

MAXIMUM CIRCUIT VALUE

Grid-No.1-Circuit Resistance	1	megohm
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** Grid No.2 tied to plate.

Beam Power Unit as Horizontal-Deflection Amplifier

For operation in a 525-line, 30-frame system

MAXIMUM RATINGS (Design-Maximum Values)

Plate Voltage	500	volts
Peak Positive-Pulse Plate Voltage	5000	volts
Peak Negative-Pulse Plate Voltage	0	volts
Grid-No.2 Voltage	150	volts
DC Grid-No.1 Voltage, Negative-bias value	55	volts
Peak Negative-Pulse Grid-No.1 Voltage	330	volts
Average Cathode Current	230	mA
Peak Cathode Current	800	mA
Plate Dissipation†	10	watts
Grid-No.2 Input	3.5	watts