

12FU

DUAL PENTODE

8BM11

Duodecar type used as if amplifier in television receivers. Unit No.1 is a semiremote-cutoff pentode, and unit No. 2 is a sharp-cutoff pentode. **Outlines section, 8B;** requires duodecar 12-contact socket. **Heater:** volts (ac/dc), 8.4; amperes, 0.45; maximum heater-cathode volts,  $\pm 200$  peak, 100 average.

Class A Amplifier

MAXIMUM RATINGS (Design-Maximum Values)

Plate Voltage	160
Grid-No.3 (Suppressor-Grid) Voltage	0
Grid-No.2 (Screen-Grid) Voltage	160
Grid-No.1 (Control-Grid) Voltage, Positive-bias value	0
Plate Dissipation	2.2
Grid-No.2 Input	0.55

Unit No.1	Unit No.2	
160	160	volts
0	0	volts
160	160	volts
0	0	volts
2.2	2.2	watts
0.55	0.55	watt

CHARACTERISTICS

Plate Supply Voltage	125
Grid No.3	Connected to cathode at socket
Grid-No.2 Voltage	125
Cathode-Bias Resistor	56
Plate Resistance (Approx.)	220000
Transconductance	8800
Plate Current	14
Grid-No.2 Current	3.6
Grid-No.1 Voltage (Approx.) for plate current of 20 $\mu$ A	—
Grid-No.1 Voltage (Approx.) for transconductance of 50 $\mu$ mho	—16.5

Unit No.1	Unit No.2	
125	125	volts
125	125	volts
56	120	ohms
220000	300000	ohms
8800	8500	$\mu$ mhos
14	9	mA
3.6	2.5	mA
—	—5.5	volts
—16.5	—	volts

MAXIMUM CIRCUIT VALUES

Grid-No.1-Circuit Resistance, for cathode-bias operation

1	0.25	megohm
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Refer to type 6BN8.

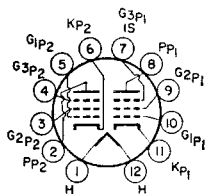
8BN8

Refer to chart at end of section.

8BN11

Refer to type 6BQ5.

8BQ5



12DM

SEMIREMOTE-CUTOFF DUAL PENTODE

8BQ11

11BQ11, 16BQ11

Duodecar type used as intermediate-frequency amplifier in television receivers. **Outlines section, 8B;** requires duodecar 12-contact socket. Types 11BQ11 and 16BQ11 are identical with type 8BQ11 except for heater ratings.

	8BQ11	11BQ11	16BQ11	
Heater Voltage (ac/dc)	8.4	11.2	16	volts
Heater Current	0.6	0.45	0.315	ampere
Heater Warm-up Time (Average)	11	11	11	seconds
Heater-Cathode Voltage:				
Peak value	$\pm 200$ max	$\pm 200$ max	$\pm 200$ max	volts
Average value	100 max	100 max	100 max	volts

Direct Interelectrode Capacitances:

	Unit No.1	Unit No.2	
Grid No.1 to Plate	0.022	0.024	pF
Grid No.1 to Cathode, Heater, Grid No.2, Grid No.3, and Internal Shield	10	—	pF
Plate to Cathode, Heater, Grid No.2, Grid No.3, and Internal Shield	2.8	—	pF
Grid No.1 to Cathode, Heater, Grid No.2, Grid No.3, Grid No.3 of Unit No.1, and Internal Shield	—	11	pF

Plate to Cathode, Heater, Grid No.2, Grid No.3, Grid No.3 of Unit No.1, and Internal Shield	2.8	pF
Plate of Unit No.1 to Plate of Unit No.2	0.015	pF
Grid No.1 of Unit No.1 to Plate of Unit No.2	0.002	pF
Grid No.1 of Unit No.2 to Plate of Unit No.1	0.008	pF
Grid No.1 of Unit No.1 to Grid No.1 of Unit No.2	0.002	pF

### Class A<sub>1</sub> Amplifier

MAXIMUM RATINGS (Design-Maximum Values)	Unit No.1	Unit No.2	
Plate Voltage			
Grid-No.3 (Suppressor-Grid) Voltage	330	330	volts
Grid-No.2 (Screen-Grid) Supply Voltage	0	0	volts
Grid-No.2 Voltage	330	330	volts
Grid-No.1 (Control-Grid) Voltage, Positive-bias value	See curve page 300		
Plate Dissipation	0	0	volts
Grid-No.2 Input:	3.1	3.1	watts
For grid-No.2 voltages up to 165 volts	0.65	0.65	watt
For grid-No.2 voltages between 165 and 330 volts	See curve page 300		

### CHARACTERISTICS

Plate Supply Voltage	125	125	volts
Grid No.3	Connected to cathode at socket		
Grid-No.2 Voltage	125	125	volts
Cathode-Bias Resistor	56	56	ohms
Plate Resistance (Approx.)	0.2	0.2	megohm
Transconductance	10500	13000	μmhos
Plate Current	11	11	mA
Grid-No.2 Current	3.5	3.8	mA
Grid-No.1 Voltage (Approx.) for plate current of 20 μA	—	—3	volts
Grid-No.1 Voltage (Approx.) for transconductance of 50 μmho	—15	—	volts

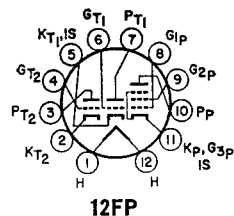
### MAXIMUM CIRCUIT VALUES

Grid-No.1-Circuit Resistance, for cathode-bias operation	1	0.25	megohm
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# 8BU11

## MEDIUM-MU TWIN TRIODE— SHARP-CUTOFF PENTODE

Duodecar type used in television receiver applications. Outlines section, 8C; requires duodecar 12-contact socket. Heater: volts (ac/dc), 7.8; amperes, 0.6; warm-up time, 11 seconds, maximum heater-cathode volts, ±200 peak, 100 average.



12FP

### Class A<sub>1</sub> Amplifier

MAXIMUM RATINGS (Design-Maximum Values)	Each		
	Pentode Unit	Triode Unit	
Plate Voltage	330	330	volts
Grid-No.2 (Screen-Grid) Supply Voltage	330	—	volts
Grid-No.2 Voltage	See curve page 300		
Grid-No.1 (Control-Grid) Voltage, Positive-bias value	0	0	volts
Plate Dissipation	2.5	1.8	watts
Grid-No.2 Input:	0.55	—	watt
For grid-No.2 voltages up to 165 volts	See curve page 300		
For grid-No.2 voltages between 165 and 330 volts	See curve page 300		
<b>CHARACTERISTICS</b>			
Plate Supply Voltage	125	125	volts
Grid-No.2 Voltage	125	—	volts
Grid-No.1 Voltage	—1	—	volts
Cathode-Bias Resistor	—	68	ohms
Amplification Factor	—	43	
Plate Resistance (Approx.)	200000	50000	ohms
Transconductance	7500	8600	μmhos
Plate Current	12	13.5	mA
Grid-No.2 Current	4	—	mA
Grid Voltage (Approx.) for plate current of 100 μA	—	—8	volts
Grid-No.1 Voltage (Approx.) for plate current of 30 μA	—8	—	volts
<b>MAXIMUM CIRCUIT VALUES</b>			
Grid-No.1-Circuit Resistance:			
For fixed-bias operation	0.5	0.5	megohm
For cathode-bias operation	1	1	megohm