

Description and Rating

RADIO-FREQUENCY-AMPLIFIER PENTODE

GENERAL DESCRIPTION

Principal Application: The type 12SJ7 is a sharp cut-off amplifier pentode designed for use as a biased detector or high-gain amplifier. As a biased

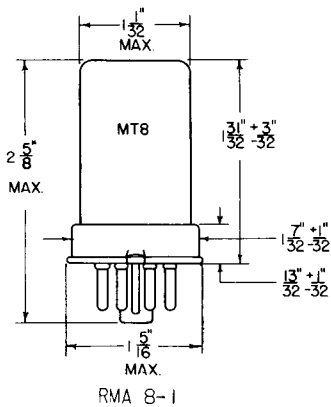
Cathode: Coated Unipotential
 Heater Voltage (A-C or D-C) 12.6 Volts
 Heater Current 0.15 Ampere
 Envelope: MT-8 Metal Shell
 Base: B6-21 Small Wafer Cctal 8-Pin Phenolic
 Mounting Position: Any

detector the 12SJ7 is capable of delivering a large audio-frequency output voltage of good quality with a fairly small radio-frequency signal input.

Direct Interelectrode Capacitances: *

Pentode Connection	
Grid to Plate (Max)	0.005 $\mu\mu\text{f}$
Input	6.0 $\mu\mu\text{f}$
Output	7.0 $\mu\mu\text{f}$
Triode Connection §	
Grid to Plate	2.8 $\mu\mu\text{f}$
Grid to Cathode	3.4 $\mu\mu\text{f}$
Plate to Cathode	11 $\mu\mu\text{f}$

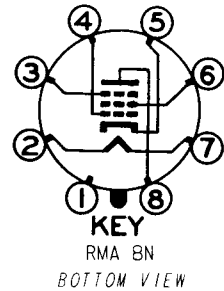
PHYSICAL DIMENSIONS



TERMINAL CONNECTIONS

- Pin 1 - Shell and Internal Shield
- Pin 2 - Heater
- Pin 3 - Grid Number 3 (Suppressor)
- Pin 4 - Grid Number 1
- Pin 5 - Cathode
- Pin 6 - Grid Number 2 (Screen)
- Pin 7 - Heater
- Pin 8 - Plate

BASING DIAGRAM



MAXIMUM RATINGS

	Pentode Connection		Triode Connection §		
	Design	Absolute	Design	Absolute	
Plate Voltage	300	330	250	275	Volts
Screen (Grid Number 2) Voltage	125	140	---	---	Volts
Screen Supply Voltage	300	330	---	---	Volts
Grid Bias Voltage	Never Positive		Never Positive		
Plate Dissipation	2.50	2.75	2.50	2.75	Watts
Screen Dissipation	0.40	0.44	---	---	Watt
D-C Heater-Cathode Voltage #	90	100	90	100	Volts

* Measured with shell and internal shield connected to cathode.
 § With grid number 2 and grid number 3 connected to plate.
 # Direct connection between heater and cathode is recommended.

CHARACTERISTICS AND TYPICAL OPERATION

CLASS A AMPLIFIER - PENTODE CONNECTION

Heater Voltage	12.6	12.6	Volts
Plate Voltage	100	250	Volts
Screen Grid Voltage	100	100	Volts
Suppressor Grid Voltage ^o	0	0	Volt
Control Grid Bias Voltage **	-3	-3	Volts
Plate Resistance (Approx)	0.7	1.0	Megohm
Transconductance	1575	1650	Micromhos
Grid Bias Voltage [∞]	-8	-8	Volts
Plate Current	2.9	3.0	Milliamperes
Screen Current	0.9	0.8	Milliampere

CLASS A AMPLIFIER - TRIODE CONNECTION §

Heater Voltage	12.6	12.6	Volts
Plate Voltage	180	250	Volts
Grid Bias Voltage **	-6	-8.5	Volts
Amplification Factor	19	19	
Plate Resistance	8250	7600	Ohms
Transconductance	2300	2500	Micromhos
Plate Current	6.0	9.2	Milliamperes

^o Connected to cathode at socket terminal.

** The d-c resistance in the grid circuit should not exceed 1.0 megohm under rated maximum conditions.

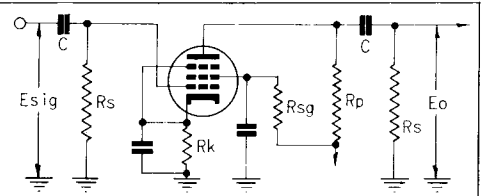
[∞] Approximate values for plate current of 10 microamperes.

§ With grid number 2 and grid number 3 connected to plate.

CLASS A RESISTANCE-COUPLED AMPLIFIER

PENTODE CONNECTION

Rp Meg.	Rq1 Meg.	Rs Meg.	Ebb = 90 Volts				Ebb = 180 Volts				Ebb = 300 Volts			
			Rk	Rsg	Gain	Eo	Rk	Rsg	Gain	Eo	Rk	Rsg	Gain	Eo
0.10	*	0.10	820	0.27	40	19	620	0.33	48	49	430	0.43	55	69
0.10	*	0.24	820	0.27	57	25	680	0.39	67	56	470	0.47	78	90
0.24	*	0.24	1600	0.68	72	20	910	0.75	95	40	750	0.91	108	82
0.24	*	0.51	1800	0.75	100	22	910	0.82	130	48	750	1.00	142	86
0.51	*	0.51	3600	1.50	95	21	1800	1.60	153	42	1200	2.00	182	70
0.51	*	1.0	3900	1.60	128	25	2000	1.80	200	50	1400	2.00	222	95
0.24	10	0.24	---	0.82	74	5.5	---	0.82	118	24	---	0.91	133	44
0.24	10	0.51	---	0.91	108	12	---	1.00	160	38	---	1.00	180	59
0.51	10	0.51	---	1.60	100	8.0	---	1.80	182	29	---	1.80	200	46
0.51	10	1.0	---	1.80	134	13	---	2.00	228	40	---	2.00	256	60

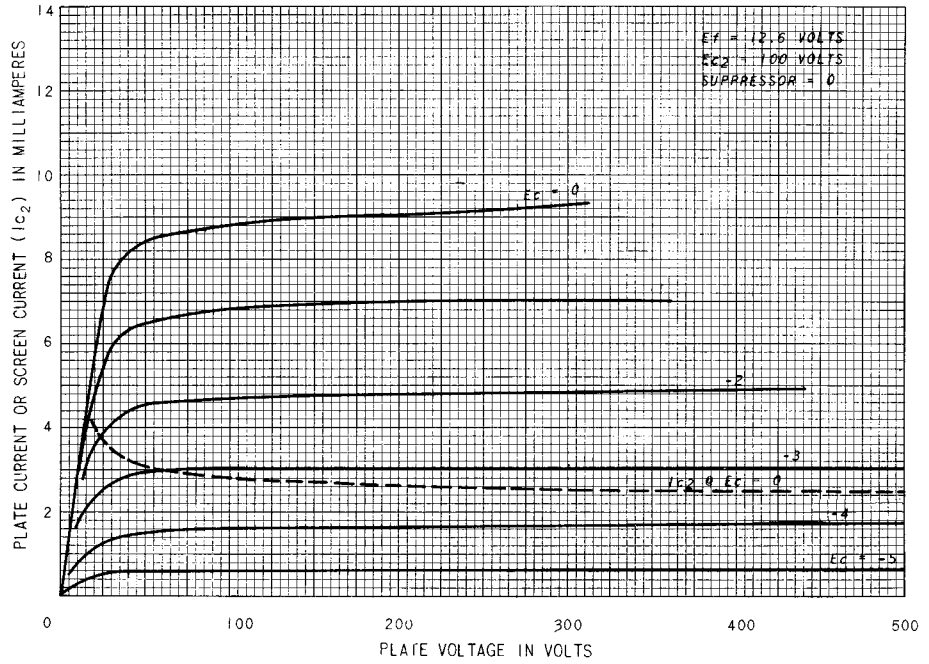


Note: Coupling capacitors (C) should be adjusted to give desired frequency response. Rk and Rsg should be adequately by-passed.

Notes: 1. Eo is maximum RMS voltage output for five percent (5%) total harmonic distortion. 2. Gain measured at 2.0 volts RMS output. 3. For zero-bias data generator impedance is negligible. * Value of Rq1 is non-critical.

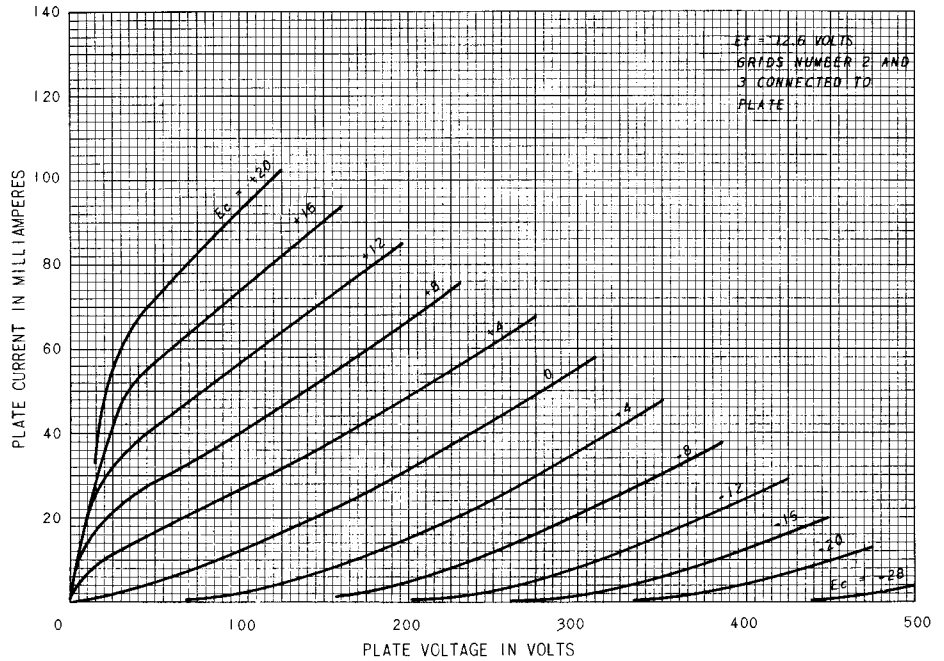
AVERAGE PLATE CHARACTERISTICS

PENTODE CONNECTION



AVERAGE PLATE CHARACTERISTICS

TRIODE CONNECTION



AVERAGE CHARACTERISTICS

