

# 6SQ7 - 12SQ7

## Description and Rating

### DUPLEX-DIODE TRIODE

The 6SQ7 and 12SQ7 are metal duplex-diode high-mu triodes which are identical except for heater ratings. Each type is intended primarily for use as a combined detector, amplifier, and automatic-volume-control tube in radio receivers. The triode section incorporates a high amplification factor and is capable of providing a relatively large undistorted output voltage from a very small input signal.

#### GENERAL

Cathode - Coated Unipotential			
Heater Voltage, A-C or D-C . . . . .	6SQ7	12SQ7	Volts
Heater Current . . . . .	6.3	12.6	
Envelope - MT-8, Metal Shell	0.3	0.15	Ampere
Base - B8-21, Small Wafer Octal 8-Pin			
Mounting Position - Any			

Direct Interelectrode Capacitances *			
Grid to Diode 1 Plate, maximum . . . . .	0.03		$\mu\mu\text{f}$
Diode Input, Each Section . . . . .	2.6		$\mu\mu\text{f}$

#### MAXIMUM RATINGS

##### DESIGN-CENTER VALUES

Plate Voltage . . . . .	300		Volts
Positive D-C Grid Voltage . . . . .	0		Volts
Plate Dissipation . . . . .	0.5		Watt
Heater-Cathode Voltage			
Heater Positive with Respect to Cathode . . . . .	90		Volts
Heater Negative with Respect to Cathode . . . . .	90		Volts
Diode Current for Continuous Operation, Each Diode	1.0		Milliamperes

#### CHARACTERISTICS AND TYPICAL OPERATION

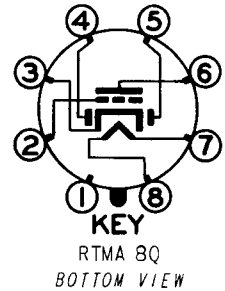
##### CLASS A<sub>1</sub> AMPLIFIER

Plate Voltage . . . . .	100	250	Volts
Grid Voltage . . . . .	-1	-2	Volts
Amplification Factor . . . . .	100	100	
Plate Resistance, approximate . . . . .	110000	85000	Ohms
Transconductance . . . . .	925	1175	Micromhos
Plate Current . . . . .	0.5	1.1	Milliamperes

Average Diode Current, Each Diode			
With 10 Volts D-C Applied . . . . .	2.0		Milliamperes

\* With pin 1 connected to pin 3.

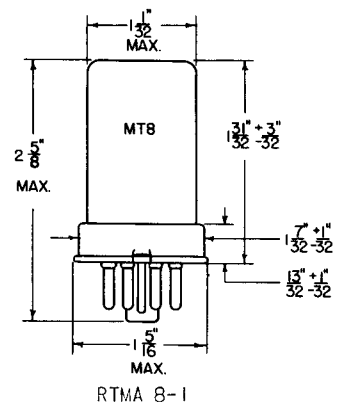
#### BASING DIAGRAM



#### TERMINAL CONNECTIONS

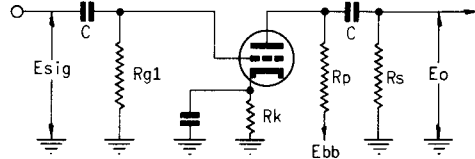
- Pin 1 - Shell
- Pin 2 - Triode Grid
- Pin 3 - Cathode
- Pin 4 - Diode Number 2 Plate
- Pin 5 - Diode Number 1 Plate
- Pin 6 - Triode Plate
- Pin 7 - Heater
- Pin 8 - Heater

#### PHYSICAL DIMENSIONS



### CLASS A RESISTANCE-COUPLED AMPLIFIER

Rp Meg.	Rs Meg.	Rg1 Meg.	Ebb = 90 Volts			Ebb = 180 Volts			Ebb = 300 Volts		
			Rk	Gain	Eo	Rk	Gain	Eo	Rk	Gain	Eo
0.10	0.10	0.1	4300	22	5.0	2400	29	15	2000	31	28
0.10	0.24	0.1	4700	27	7.0	2700	35	20	2200	38	37
0.24	0.24	0.1	7500	31	7.5	4300	42	20	3300	46	36
0.24	0.51	0.1	8200	40	10	4700	50	26	3900	52	50
0.51	0.51	0.1	13000	39	9.5	7500	53	24	5600	58	47
0.51	1.0	0.1	15000	43	11	8200	58	31	6200	62	56
0.24	0.24	10	0	39	4.5	0	45	19	0	49	38
0.24	0.51	10	0	45	6.5	0	52	24	0	57	48
0.51	0.51	10	0	48	7.0	0	59	22	0	62	42
0.51	1.0	10	0	52	8.5	0	62	25	0	66	55

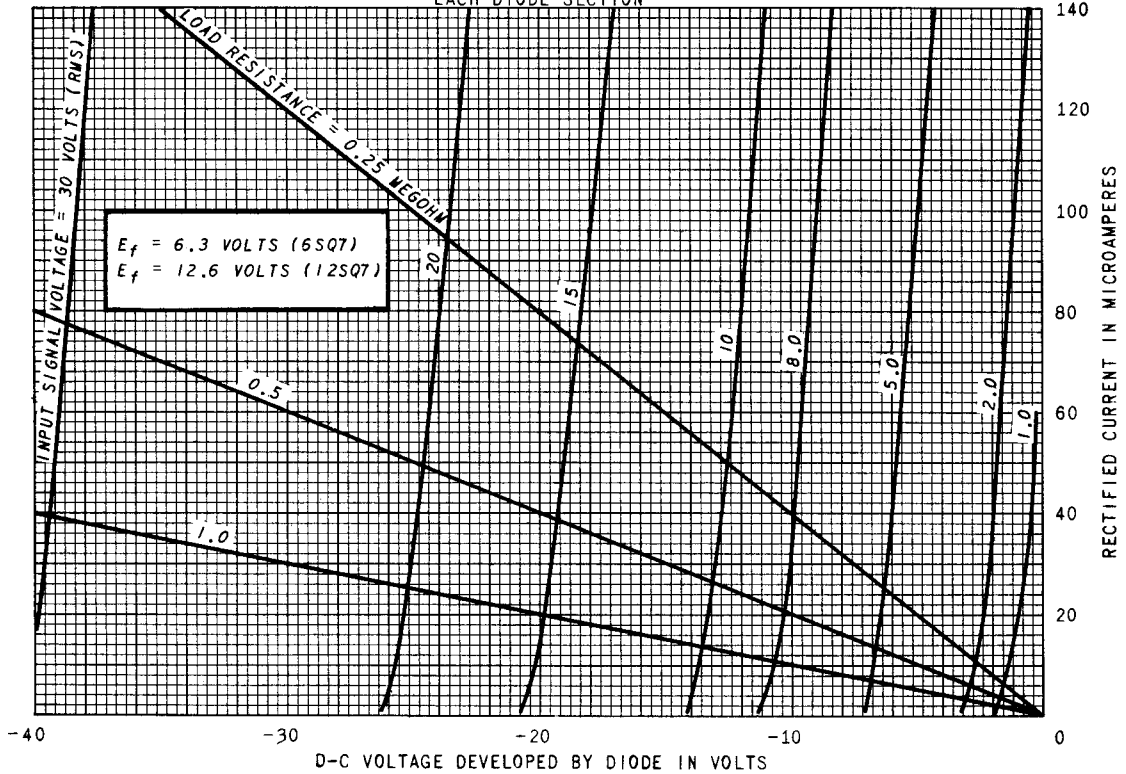


Note: Coupling capacitors (C) should be selected to give desired frequency response. Rk should be adequately by-passed.

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.

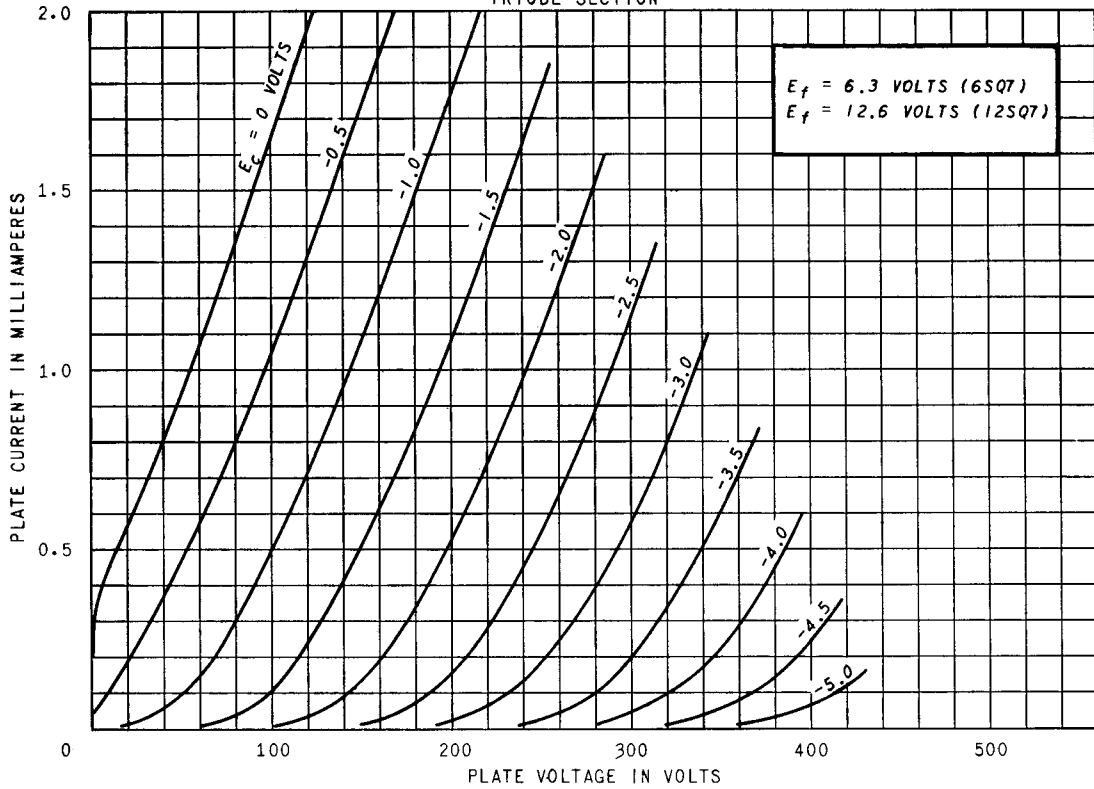
### OPERATION CHARACTERISTICS

EACH DIODE SECTION



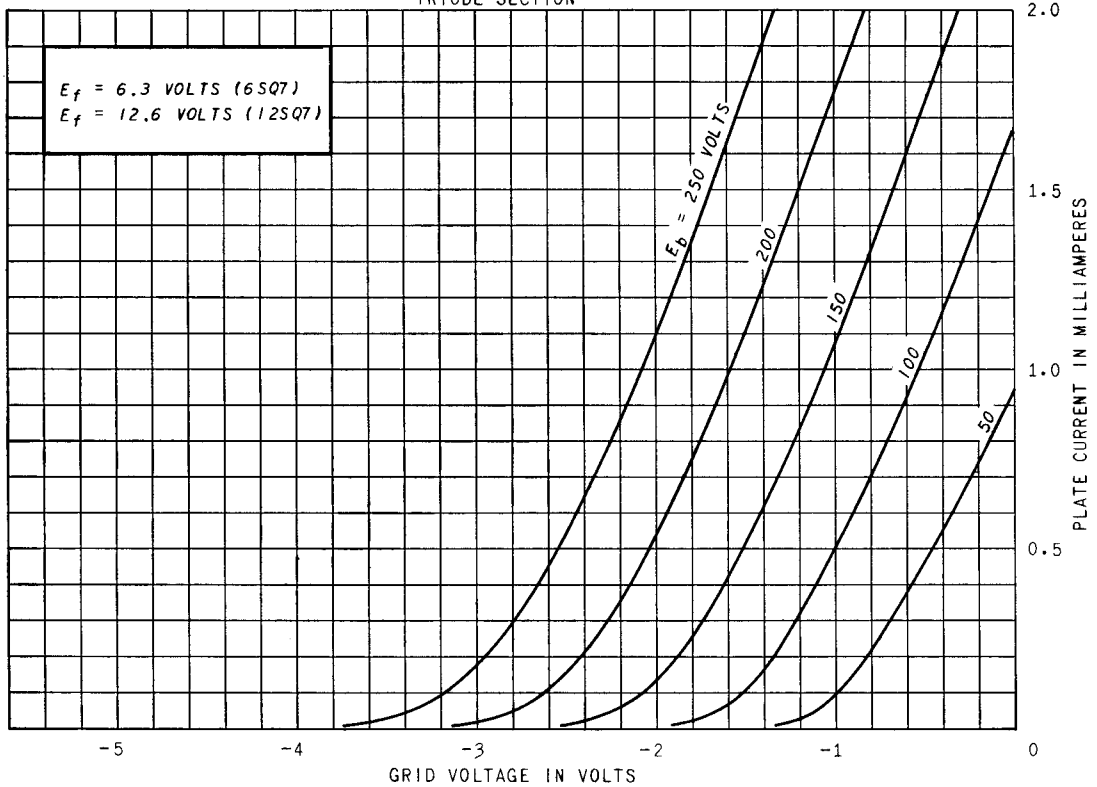
**AVERAGE PLATE CHARACTERISTICS**

TRIODE SECTION

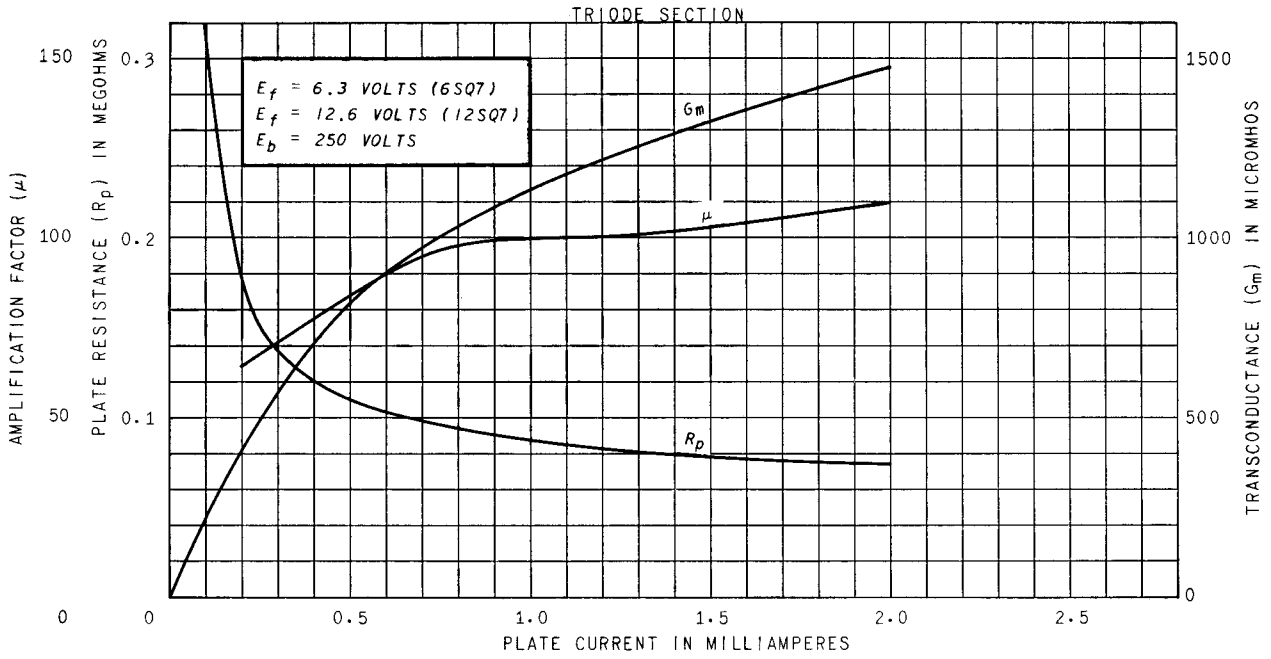


**AVERAGE TRANSFER CHARACTERISTICS**

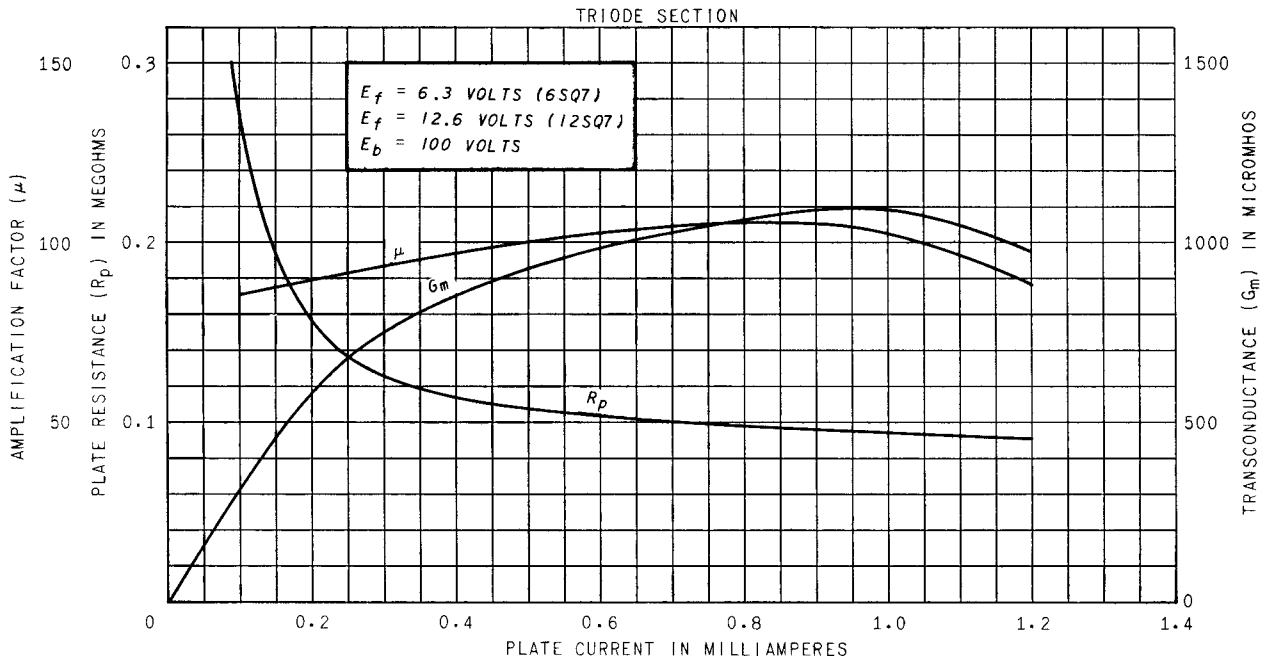
TRIODE SECTION



AVERAGE CHARACTERISTICS



AVERAGE CHARACTERISTICS



TUBE DEPARTMENT



Schenectady 5, N. Y.