# TUNG-SOL

## PENTODE

MINIATURE TYPE

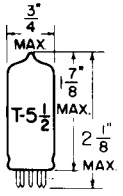
COATED UNIPOTENTIAL CATHODE

HEATER

12.6* VOLTS 0.15 AMP.

AC OR DC

ANY MOUNTING POSITION




**GLASS BULB**


**BOTTOM VIEW**

MINIATURE BUTTON
7 PIN BASE

7BK

THE 12AF6 IS A MINIATURE PENTODE INTENDED FOR USE AS A RADIO-FREQUENCY OR INTERMEDIATE-FREQUENCY AMPLIFIER IN AUTOMOBILE RADIO RECEIVERS. THE TUBE IS SPECIALLY DESIGNED TO OPERATE WITH PLATE AND SCREEN VOLTAGES SUPPLIED DIRECTLY FROM A 12-VOLT STORAGE BATTERY.

### DIRECT INTERELECTRODE CAPACITANCES

WITHOUT EXTERNAL SHIELD

| | | |
|---|---|---|
| GRID #1 TO PLATE, (MAX.) | 0.006 | μμf |
| INPUT | 5.5 | μμf |
| OUTPUT | 4.8 | μμf |

### RATINGS

INTERPRETED ACCORDING TO DESIGN CENTER SYSTEM

| | | |
|---|---|---|
| HEATER VOLTAGE | 12.6 | VOLTS |
| MAXIMUM PLATE VOLTAGE | 16 | VOLTS |
| MAXIMUM SCREEN VOLTAGE | 16 | VOLTS |
| MAXIMUM POSITIVE DC GRID #1 VOLTAGE | 0 | VOLTS |
| MAXIMUM HEATER-CATHODE VOLTAGE | | |
| HEATER POSITIVE WITH RESPECT TO CATHODE | 16 | VOLTS |
| HEATER NEGATIVE WITH RESPECT TO CATHODE | 16 | VOLTS |
| MAXIMUM GRID #1 CIRCUIT RESISTANCE | 2.2 | MEGOHMS |

*WHEN USED IN AUTOMOTIVE SERVICE FROM A 12-VOLT SOURCE, UNDER NO CIRCUMSTANCES SHOULD THE HEATER VOLTAGE BE LESS THAN 10.0 VOLTS OR MORE THAN 15.9 VOLTS. THESE EXTREME VARIATIONS IN HEATER VOLTAGE MAY BE TOLERATED FOR SHORT PERIODS; HOWEVER, OPERATION AT OR NEAR THESE ABSOLUTE LIMITS IN HEATER VOLTAGE NECESSARILY INVOLVES SACRIFICE IN PERFORMANCE AT LOW HEATER VOLTAGE AND IN LIFE EXPECTANCY AT HIGH HEATER VOLTAGE. EQUIPMENT RELIABILITY CAN BE SIGNIFICANTLY INCREASED WITH IMPROVED SUPPLY-VOLTAGE REGULATION.

DESIGN-MAXIMUM RATINGS ARE THE LIMITING VALUES EXPRESSED WITH RESPECT TO BOGIE TUBES AT WHICH SATISFACTORY TUBE LIFE CAN BE EXPECTED TO OCCUR. TO OBTAIN SATISFACTORY CIRCUIT PERFORMANCE, THEREFORE, THE EQUIPMENT DESIGNER MUST ESTABLISH THE CIRCUIT DESIGN SO THAT NO DESIGN-MAXIMUM VALUE IS EXCEEDED WITH A BOGIE TUBE UNDER THE WORST PROBABLE OPERATING CONDITIONS WITH RESPECT TO SUPPLY-VOLTAGE VARIATION, EQUIPMENT COMPONENT VARIATION, EQUIPMENT CONTROL ADJUSTMENT, LOAD VARIATION, AND ENVIRONMENTAL CONDITIONS.

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**TUNG-SOL**

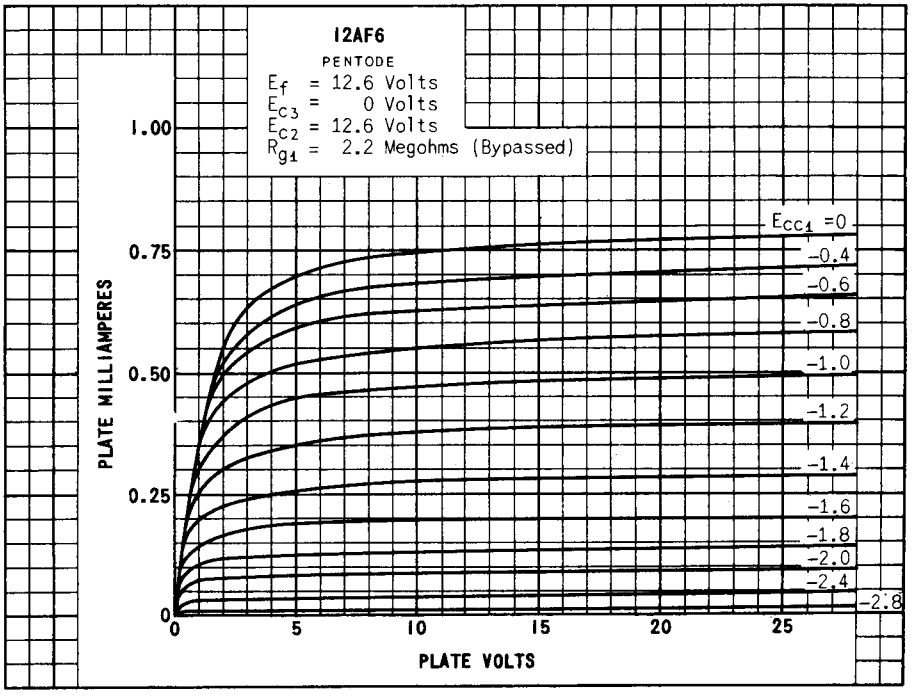
CONTINUED FROM PRECEDING PAGE

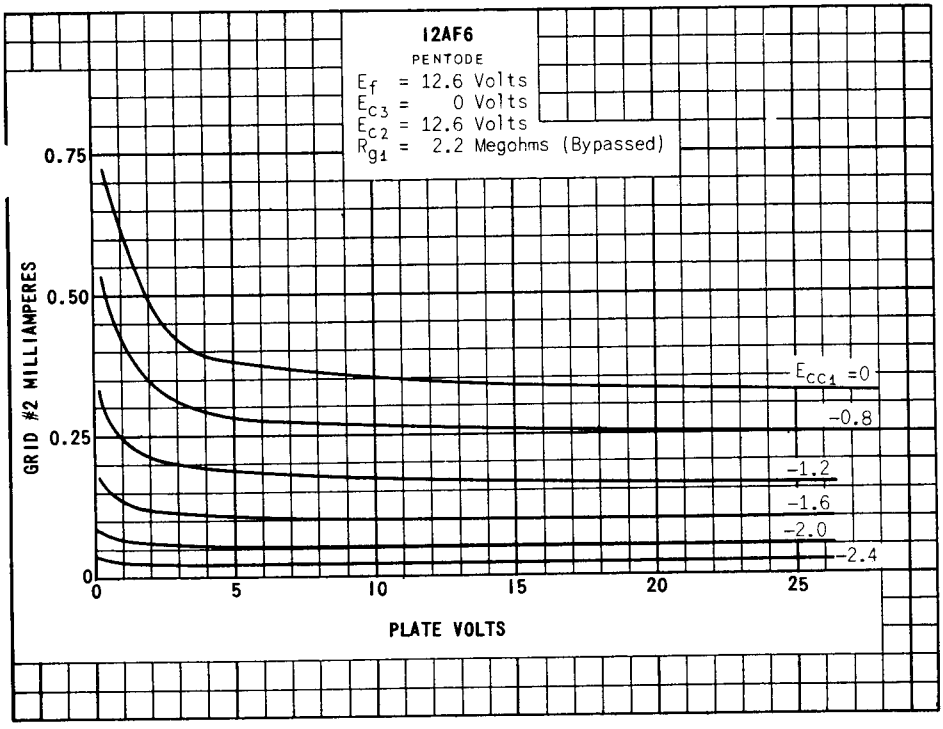
## TYPICAL OPERATING CONDITIONS AND CHARACTERISTICS
CLASS $A_1$ AMPLIFIER

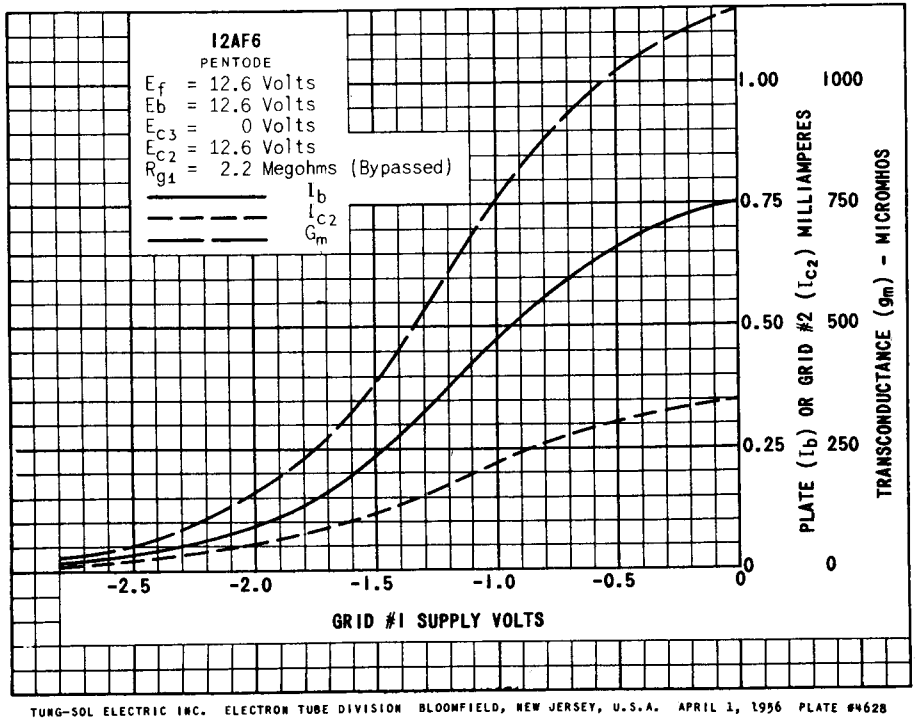
| | | |
|---|---|---|
| HEATER VOLTAGE | 12.6 | VOLTS |
| HEATER CURRENT | 0.15 | AMP. |
| PLATE VOLTAGE | 12.6 | VOLTS |
| SUPPRESSOR VOLTAGE | 0 | VOLTS |
| SCREEN VOLTAGE | 12.6 | VOLTS |
| GRID #1 SUPPLY VOLTAGE | 0 | VOLTS |
| GRID #1 RESISTOR (BYPASSED) | 2.2 | MEGOHMS |
| PLATE RESISTANCE (APPROX.) | → 0.35 | MEGOHMS |
| TRANSCONDUCTANCE | → 1500 | μMHOS |
| PLATE CURRENT | → 1.1 | MA. |
| SCREEN CURRENT | → 0.45 | MA. |
| GRID #1 VOLTAGE (APPROX.) $G_m$ =40 μMHOS | −2.7 | VOLTS |
| GRID #1 VOLTAGE (APPROX.)MEASURED * WITH GRID #1 TIED TO GRID #3, $R_{g1}$ = O, $G_m$ =1O μMHOS | −3.5 | VOLTS |

* INDICATES AN ADDITION.

→ INDICATES A CHANGE.




12AF6
PENTODE
Ef = 12.6 Volts
Ec3 = 0 Volts
Ec2 = 12.6 Volts
Rg1 = 2.2 Megohms (Bypassed)
GRID #2 MILLIAMPERES
0.75
0.50
0.25
0
0
5
10
15
20
25
PLATE VOLTS
Ecc1 =0
-0.8
-1.2
-1.6
-2.0
-2.4


12AF6
PENTODE
Ef = 12.6 Volts
Eb = 12.6 Volts
Ec3 = 0 Volts
Ec2 = 12.6 Volts
Rg1 = 2.2 Megohms (Bypassed)
Ib
Ic2
Gm
1.00
0.75
0.50
0.25
0
1000
750
500
250
0
PLATE (Ib) OR GRID #2 (Ic2) MILLIAMPERES
TRANSCONDUCTANCE (gm) - MICROMHOS
-2.5
-2.0
-1.5
-1.0
-0.5
0
GRID #1 SUPPLY VOLTS