

ELECTRONIC TUBE REFERENCE

# 38HE7

Rectifier - Damper Diode electronic tube

CONSOLIDATED TECHNICAL DATA

2 SECTIONS

CONSTRUCTION

BEAMPOWER-DIODE

Combination television tube incorporating damper and horizontal-output functions, designed for line-deflection pulse service and sweep-energy recovery.

## GENERAL CHARACTERISTICS

|                     |                   |                      |               |
|---------------------|-------------------|----------------------|---------------|
| BASE DESIGNATION    | 12FS              | BASE PINS            | 12            |
| NOMINAL HEATER      | 37.8 V / 450 mA   | PARALLEL HEATER      | – / –         |
| HEATING             | Indirect          | SERIES OPERATION     | Not specified |
| CATHODE ARRANGEMENT | Separate cathodes | SECTION CONSTRUCTION | Dissimilar    |

## 12FS - TERMINAL PINOUT

| TERMINAL | SECTION | ELEMENT              | STATUS    |
|----------|---------|----------------------|-----------|
| PIN1     | –       | H – Heater           | CONNECTED |
| PIN2     | A       | P – Plate (Anode)    | CONNECTED |
| PIN4     | A       | K – Cathode          | CONNECTED |
| PIN5     | A       | P – Plate (Anode)    | CONNECTED |
| PIN7     | –       | –                    | IC        |
| PIN8     | B       | K – Cathode          | CONNECTED |
| PIN8     | –       | G3 – Suppressor Grid | CONNECTED |
| PIN9     | B       | G1 – Control Grid    | CONNECTED |
| PIN10    | –       | –                    | IC        |
| PIN11    | B       | G2 – Screen Grid     | CONNECTED |
| PIN12    | –       | H – Heater           | CONNECTED |

## SECTION RATINGS

| SECTION1 Diode                 |        |
|--------------------------------|--------|
| PEAK INVERSE VOLTAGE           | 4200 V |
| NOMINAL OUTPUT CURRENT         | 200 mA |
| PEAK FORWARD CURRENT           | 1.2 A  |
| FORWARD VOLTAGE DROP           | 21 V   |
| MAXIMUM HEATER-CATHODE VOLTAGE | 4200 V |
| WARM-UP TIME                   | 11 s   |
| <i>TV damper.</i>              |        |

| SECTION2 Beam Power                               |               |
|---------------------------------------------------|---------------|
| PLATE RESISTANCE                                  | 6200 $\Omega$ |
| TRANSCONDUCTANCE                                  | 0.0088 S      |
| AMPLIFICATION FACTOR                              | 4.2           |
| MAXIMUM PLATE VOLTAGE                             | 500 V         |
| MAXIMUM SCREEN VOLTAGE                            | 150 V         |
| MAXIMUM PLATE DISSIPATION                         | 10 W          |
| MAXIMUM SCREEN DISSIPATION                        | 3.5 W         |
| MAXIMUM CATHODE CURRENT                           | 230 mA        |
| MAXIMUM HEATER-CATHODE VOLTAGE                    | 200 V         |
| <i>Horizontal deflection; pulse plate 5000 V.</i> |               |

Duodecar diode plus beam-power tube used as a damper diode and horizontal-deflection amplifier in television receivers.



## SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

# 1961 Tung Sol

Published test conditions and operating points. Values on this page are preserved as reported by this source.

1961 TUNG SOL

## Section 1 · Diode

| OTHER                      |                 |                  |
|----------------------------|-----------------|------------------|
| PARAMETER                  | PUBLISHED VALUE | CONDITION / NOTE |
| Peak inverse plate voltage | 4200 V          | Damper           |
| DC output current          | 200 mA          | Damper           |

1961 TUNG SOL

## Section 2 · Beam Power

| OTHER                             |                 |                      |
|-----------------------------------|-----------------|----------------------|
| PARAMETER                         | PUBLISHED VALUE | CONDITION / NOTE     |
| DC plate-supply voltage           | 500 V           | HorizontalDeflection |
| Peak positive pulse plate voltage | 5000 V          | HorizontalDeflection |
| Grid 2 voltage                    | 150 V           | HorizontalDeflection |
| DC cathode current                | 230 mA          | HorizontalDeflection |



## SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

# 1966 Tung Sol Electronic Tubes 3 of 4

Published test conditions and operating points. Values on this page are preserved as reported by this source.

1966 TUNG SOL ELECTRONIC TUBES 3 OF 4

## Section 1 · Diode

| OTHER                              |                 |                           |
|------------------------------------|-----------------|---------------------------|
| PARAMETER                          | PUBLISHED VALUE | CONDITION / NOTE          |
| RectifierMaximumPeakInverseVoltage | 4200 V          | Published datasheet value |

| PARAMETER                     | PUBLISHED VALUE | CONDITION / NOTE          |
|-------------------------------|-----------------|---------------------------|
| RectifierNominalOutputCurrent | 200 mA          | Published datasheet value |
| RectifierPeakForwardCurrent   | 1.2 A           | Published datasheet value |
| Heater Voltage                | 37.8 V          | Nominal heater rating     |
| Heater Current                | 450 mA          | Nominal heater rating     |

| CHARACTERISTIC                         |                 |                                          |
|----------------------------------------|-----------------|------------------------------------------|
| PARAMETER                              | PUBLISHED VALUE | CONDITION / NOTE                         |
| TubeVoltageDropAt350mA                 | 21 V            | PlateCurrent=350mA                       |
| InterelectrodeCapacitanceDataPublished | 1 boolean       | See supplied datasheet capacitance table |

1966 TUNG SOL ELECTRONIC TUBES 3 OF 4

## Section 2 · Beam Power

| CHARACTERISTIC                         |                 |                                          |
|----------------------------------------|-----------------|------------------------------------------|
| PARAMETER                              | PUBLISHED VALUE | CONDITION / NOTE                         |
| Transconductance                       | 8800 $\mu$ S    | Published datasheet value                |
| InterelectrodeCapacitanceDataPublished | 1 boolean       | See supplied datasheet capacitance table |

| OTHER                |                 |                           |
|----------------------|-----------------|---------------------------|
| PARAMETER            | PUBLISHED VALUE | CONDITION / NOTE          |
| MaxPlateVoltage      | 500 V           | Published datasheet value |
| MaxScreenVoltage     | 150 V           | Published datasheet value |
| MaxPlateDissipation  | 10 W            | Published datasheet value |
| MaxScreenDissipation | 3.5 W           | Published datasheet value |
| MaxCathodeCurrent    | 230 mA          | Published datasheet value |
| Heater Voltage       | 37.8 V          | Nominal heater rating     |
| Heater Current       | 450 mA          | Nominal heater rating     |



SOURCE DATA APPENDIX

# 1968 General Electric Co

Published test conditions and operating points. Values on this page are preserved as reported by this source.

1968 GENERAL ELECTRIC CO

## Section 1 · Diode

| OTHER                           |                 |                  |
|---------------------------------|-----------------|------------------|
| PARAMETER                       | PUBLISHED VALUE | CONDITION / NOTE |
| Steady-State Peak Plate Current | 1200 mA         | TVDamper         |

1968 GENERAL ELECTRIC CO

## Section 2 · Beam Power

| OTHER                             |                 |                      |
|-----------------------------------|-----------------|----------------------|
| PARAMETER                         | PUBLISHED VALUE | CONDITION / NOTE     |
| Peak Positive Pulse Plate Voltage | 5000 V          | HorizontalDeflection |



SOURCE DATA APPENDIX

# 1975 RCA RC30

Published test conditions and operating points. Values on this page are preserved as reported by this source.

1975 RCA RC30

## Section 1 · Diode

| OTHER                                       |                 |                                                              |
|---------------------------------------------|-----------------|--------------------------------------------------------------|
| PARAMETER                                   | PUBLISHED VALUE | CONDITION / NOTE                                             |
| 0.45; warm-up time,                         | 11 seconds      | Published in approved 38HE7 target datasheet entry; Section1 |
| Plate Voltage 5000 50 130                   | 130 V           | Published in approved 38HE7 target datasheet entry; Section1 |
| Grid-No.2 (Screen-Grid) Voltage 130 130 130 | 130 V           | Published in approved 38HE7 target datasheet entry; Section1 |
| Grid-No.1 (Control-Grid) Voltage .... 0 -22 | -22 V           | Published in approved 38HE7 target datasheet entry; Section1 |
|                                             |                 |                                                              |

| PARAMETER                                                             | PUBLISHED VALUE                      | CONDITION / NOTE                                             |
|-----------------------------------------------------------------------|--------------------------------------|--------------------------------------------------------------|
| Plate Resistance (Approx.)                                            | <b>6200 <math>\Omega</math></b>      | Published in approved 38HE7 target datasheet entry; Section1 |
| Transconductance                                                      | <b>8800 <math>\mu\text{S}</math></b> | Published in approved 38HE7 target datasheet entry; Section1 |
| Plate Current 450                                                     | <b>60 mA</b>                         | Published in approved 38HE7 target datasheet entry; Section1 |
| Grid-No.2 Current 40                                                  | <b>2.8 mA</b>                        | Published in approved 38HE7 target datasheet entry; Section1 |
| Plate Voltage                                                         | <b>500 V</b>                         | Published in approved 38HE7 target datasheet entry; Section1 |
| Peak Positive-Pulse Plate Voltage*                                    | <b>5000 V</b>                        | Published in approved 38HE7 target datasheet entry; Section1 |
| Peak Negative-Pulse Plate Voltage                                     | <b>0 V</b>                           | Published in approved 38HE7 target datasheet entry; Section1 |
| Grid-No.2 Voltage                                                     | <b>150 V</b>                         | Published in approved 38HE7 target datasheet entry; Section1 |
| DC Grid-No.1 Voltage, Negative-bias value                             | <b>55 V</b>                          | Published in approved 38HE7 target datasheet entry; Section1 |
| Peak Negative-Pulse Grid-No.1 Voltage                                 | <b>330 V</b>                         | Published in approved 38HE7 target datasheet entry; Section1 |
| Average Cathode Current                                               | <b>230 mA</b>                        | Published in approved 38HE7 target datasheet entry; Section1 |
| Peak Cathode Current                                                  | <b>800 mA</b>                        | Published in approved 38HE7 target datasheet entry; Section1 |
| Grid-No.1-Circuit Resistance                                          | <b>1 M<math>\Omega</math></b>        | Published in approved 38HE7 target datasheet entry; Section1 |
| Peak Inverse Plate Voltage*                                           | <b>4200 V</b>                        | Published in approved 38HE7 target datasheet entry; Section1 |
| Average Plate Current                                                 | <b>200 mA</b>                        | Published in approved 38HE7 target datasheet entry; Section1 |
| Peak value 4-200                                                      | <b>-4200 V</b>                       | Published in approved 38HE7 target datasheet entry; Section1 |
| Tube Voltage Drop for plate current of                                | <b>350 mA</b>                        | Published in approved 38HE7 target datasheet entry; Section1 |
| Tube Voltage Drop for plate current of 350 mA                         | <b>21 V</b>                          | Published in approved 38HE7 target datasheet entry; Section1 |
| # Pulse duration must not exceed 15% of a horizontal scanning cycle ( | <b>10 microseconds</b>               | Published in approved 38HE7 target datasheet entry; Section1 |
|                                                                       |                                      |                                                              |

| PARAMETER                         | PUBLISHED VALUE   | CONDITION / NOTE                                             |
|-----------------------------------|-------------------|--------------------------------------------------------------|
| Heater Voltage (ac/dc) 37.8       | <b>53.2 V</b>     | Published in approved 38HE7 target datasheet entry; Section1 |
| Heater Current 0.45               | <b>315 mA</b>     | Published in approved 38HE7 target datasheet entry; Section1 |
| Heater Warm-up Time (Average) 11  | <b>11 seconds</b> | Published in approved 38HE7 target datasheet entry; Section1 |
| Plate to Cathode and Heater       | <b>10 pF</b>      | Published in approved 38HE7 target datasheet entry; Section1 |
| Cathode to Plate and Heater       | <b>9 pF</b>       | Published in approved 38HE7 target datasheet entry; Section1 |
| Peak Positive-Pulse Plate Voltage | <b>5000 V</b>     | Published in approved 38HE7 target datasheet entry; Section1 |

| CHARACTERISTIC                              |                                 |                                                              |
|---------------------------------------------|---------------------------------|--------------------------------------------------------------|
| PARAMETER                                   | PUBLISHED VALUE                 | CONDITION / NOTE                                             |
| current of                                  | <b>1 mA</b>                     | Published in approved 38HE7 target datasheet entry; Section1 |
| current of 1 mA -80                         | <b>-39 V</b>                    | Published in approved 38HE7 target datasheet entry; Section1 |
| Plate Voltage 130 3500 50                   | <b>130 V</b>                    | Published in approved 38HE7 target datasheet entry; Section1 |
| Grid-No.2 (Screen-Grid) Voltage 130 130 130 | <b>130 V</b>                    | Published in approved 38HE7 target datasheet entry; Section1 |
| Grid-No.1 (Control-Grid) Voltage -22 0      | <b>-22 V</b>                    | Published in approved 38HE7 target datasheet entry; Section1 |
| Plate Resistance                            | <b>6200 <math>\Omega</math></b> | Published in approved 38HE7 target datasheet entry; Section1 |
| Transconductance                            | <b>8800 <math>\mu</math>S</b>   | Published in approved 38HE7 target datasheet entry; Section1 |
| Plate Current 450                           | <b>60 mA</b>                    | Published in approved 38HE7 target datasheet entry; Section1 |
| Grid-No.2 Current 40                        | <b>2.8 mA</b>                   | Published in approved 38HE7 target datasheet entry; Section1 |
| current of 1 mA -66                         | <b>-39 V</b>                    | Published in approved 38HE7 target datasheet entry; Section1 |

| CAPACITANCE       |                 |                                                              |
|-------------------|-----------------|--------------------------------------------------------------|
| PARAMETER         | PUBLISHED VALUE | CONDITION / NOTE                                             |
| Heater to Cathode | <b>2 pF</b>     | Published in approved 38HE7 target datasheet entry; Section1 |
|                   |                 |                                                              |

| PARAMETER                                              | PUBLISHED VALUE | CONDITION / NOTE                                             |
|--------------------------------------------------------|-----------------|--------------------------------------------------------------|
| Grid No.1 to Cathode, Heater, Grid No.2, and Grid No.3 | <b>19 pF</b>    | Published in approved 38HE7 target datasheet entry; Section1 |
| Plate to Cathode, Heater, Grid No.2, and Grid No.3     | <b>8 pF</b>     | Published in approved 38HE7 target datasheet entry; Section1 |

1975 RCA RC30

## Section 2 · Beam Power

| OTHER                                       |                                 |                                                              |
|---------------------------------------------|---------------------------------|--------------------------------------------------------------|
| PARAMETER                                   | PUBLISHED VALUE                 | CONDITION / NOTE                                             |
| 0.45; warm-up time,                         | <b>11 seconds</b>               | Published in approved 38HE7 target datasheet entry; Section2 |
| Plate Voltage 5000 50 130                   | <b>130 V</b>                    | Published in approved 38HE7 target datasheet entry; Section2 |
| Grid-No.2 (Screen-Grid) Voltage 130 130 130 | <b>130 V</b>                    | Published in approved 38HE7 target datasheet entry; Section2 |
| Grid-No.1 (Control-Grid) Voltage .... 0 -22 | <b>-22 V</b>                    | Published in approved 38HE7 target datasheet entry; Section2 |
| Plate Resistance (Approx.)                  | <b>6200 <math>\Omega</math></b> | Published in approved 38HE7 target datasheet entry; Section2 |
| Transconductance                            | <b>8800 <math>\mu</math>S</b>   | Published in approved 38HE7 target datasheet entry; Section2 |
| Plate Current 450                           | <b>60 mA</b>                    | Published in approved 38HE7 target datasheet entry; Section2 |
| Grid-No.2 Current 40                        | <b>2.8 mA</b>                   | Published in approved 38HE7 target datasheet entry; Section2 |
| Plate Voltage                               | <b>500 V</b>                    | Published in approved 38HE7 target datasheet entry; Section2 |
| Peak Positive-Pulse Plate Voltage*          | <b>5000 V</b>                   | Published in approved 38HE7 target datasheet entry; Section2 |
| Peak Negative-Pulse Plate Voltage           | <b>0 V</b>                      | Published in approved 38HE7 target datasheet entry; Section2 |
| Grid-No.2 Voltage                           | <b>150 V</b>                    | Published in approved 38HE7 target datasheet entry; Section2 |
| DC Grid-No.1 Voltage, Negative-bias value   | <b>55 V</b>                     | Published in approved 38HE7 target datasheet entry; Section2 |
| Peak Negative-Pulse Grid-No.1 Voltage       | <b>330 V</b>                    | Published in approved 38HE7 target datasheet entry; Section2 |
| Average Cathode Current                     | <b>230 mA</b>                   | Published in approved 38HE7 target datasheet entry; Section2 |

| PARAMETER                                                             | PUBLISHED VALUE        | CONDITION / NOTE                                             |
|-----------------------------------------------------------------------|------------------------|--------------------------------------------------------------|
| Peak Cathode Current                                                  | <b>800 mA</b>          | Published in approved 38HE7 target datasheet entry; Section2 |
| Grid-No.1-Circuit Resistance                                          | <b>1 MΩ</b>            | Published in approved 38HE7 target datasheet entry; Section2 |
| Peak Inverse Plate Voltage*                                           | <b>4200 V</b>          | Published in approved 38HE7 target datasheet entry; Section2 |
| Average Plate Current                                                 | <b>200 mA</b>          | Published in approved 38HE7 target datasheet entry; Section2 |
| Peak value 4-200                                                      | <b>-4200 V</b>         | Published in approved 38HE7 target datasheet entry; Section2 |
| Tube Voltage Drop for plate current of                                | <b>350 mA</b>          | Published in approved 38HE7 target datasheet entry; Section2 |
| Tube Voltage Drop for plate current of 350 mA                         | <b>21 V</b>            | Published in approved 38HE7 target datasheet entry; Section2 |
| # Pulse duration must not exceed 15% of a horizontal scanning cycle ( | <b>10 microseconds</b> | Published in approved 38HE7 target datasheet entry; Section2 |
| Heater Voltage (ac/dc) 37.8                                           | <b>53.2 V</b>          | Published in approved 38HE7 target datasheet entry; Section2 |
| Heater Current 0.45                                                   | <b>315 mA</b>          | Published in approved 38HE7 target datasheet entry; Section2 |
| Heater Warm-up Time (Average) 11                                      | <b>11 seconds</b>      | Published in approved 38HE7 target datasheet entry; Section2 |
| Plate to Cathode and Heater                                           | <b>10 pF</b>           | Published in approved 38HE7 target datasheet entry; Section2 |
| Cathode to Plate and Heater                                           | <b>9 pF</b>            | Published in approved 38HE7 target datasheet entry; Section2 |
| Peak Positive-Pulse Plate Voltage                                     | <b>5000 V</b>          | Published in approved 38HE7 target datasheet entry; Section2 |

| CHARACTERISTIC                              |                 |                                                              |
|---------------------------------------------|-----------------|--------------------------------------------------------------|
| PARAMETER                                   | PUBLISHED VALUE | CONDITION / NOTE                                             |
| current of                                  | <b>1 mA</b>     | Published in approved 38HE7 target datasheet entry; Section2 |
| current of 1 mA -80                         | <b>-39 V</b>    | Published in approved 38HE7 target datasheet entry; Section2 |
| Plate Voltage 130 3500 50                   | <b>130 V</b>    | Published in approved 38HE7 target datasheet entry; Section2 |
| Grid-No.2 (Screen-Grid) Voltage 130 130 130 | <b>130 V</b>    | Published in approved 38HE7 target datasheet entry; Section2 |
|                                             |                 |                                                              |

| PARAMETER                                 | PUBLISHED VALUE                      | CONDITION / NOTE                                             |
|-------------------------------------------|--------------------------------------|--------------------------------------------------------------|
| Grid-No.1 (Control-Grid)<br>Voltage -22 0 | <b>-22 V</b>                         | Published in approved 38HE7 target datasheet entry; Section2 |
| Plate Resistance                          | <b>6200 <math>\Omega</math></b>      | Published in approved 38HE7 target datasheet entry; Section2 |
| Transconductance                          | <b>8800 <math>\mu\text{S}</math></b> | Published in approved 38HE7 target datasheet entry; Section2 |
| Plate Current 450                         | <b>60 mA</b>                         | Published in approved 38HE7 target datasheet entry; Section2 |
| Grid-No.2 Current 40                      | <b>2.8 mA</b>                        | Published in approved 38HE7 target datasheet entry; Section2 |
| current of 1 mA -66                       | <b>-39 V</b>                         | Published in approved 38HE7 target datasheet entry; Section2 |

| CAPACITANCE                                               |                 |                                                              |
|-----------------------------------------------------------|-----------------|--------------------------------------------------------------|
| PARAMETER                                                 | PUBLISHED VALUE | CONDITION / NOTE                                             |
| Heater to Cathode                                         | <b>2 pF</b>     | Published in approved 38HE7 target datasheet entry; Section2 |
| Grid No.1 to Cathode,<br>Heater, Grid No.2, and Grid No.3 | <b>19 pF</b>    | Published in approved 38HE7 target datasheet entry; Section2 |
| Plate to Cathode, Heater,<br>Grid No.2, and Grid No.3     | <b>8 pF</b>     | Published in approved 38HE7 target datasheet entry; Section2 |

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