

Low-noise traveling-wave amplifier for approximately 2.7-3.2 GHz receiver input and IF-amplifier service, providing roughly 24 dB gain with low noise figure.

GENERAL CHARACTERISTICS

|                     |                   |                      |               |
|---------------------|-------------------|----------------------|---------------|
| BASE DESIGNATION    | —                 | BASE PINS            | —             |
| NOMINAL HEATER      | 5.25 V / 3 A      | PARALLEL HEATER      | — / —         |
| HEATING             | Indirect          | SERIES OPERATION     | Not specified |
| CATHODE ARRANGEMENT | Separate cathodes | SECTION CONSTRUCTION | Similar       |

SECTION RATINGS

SECTION1 TravelingWave

No fixed ratings recorded.

Microwave/special-function section; schema has no directly applicable promoted electrode fields; published electrical data preserved in parameters.

Low noise travelling wave tube for use in the input stage of radar and other microwave receivers, and in i.f. amplifier service. The tube is contained in a metal canister and is fitted with coaxial input and output connectors. A separate focusing solenoid is required. Frequencyrange . . . . . 27t03.2 GHz  
Saturation outputpower . . . . . 15b mw Noisefactor . . . . . 40 db Low levelgain . . . . .  
. . . . . 24 db Recommended solenoid . . . . . N4Oo41

**SOURCE OPERATING CONDITIONS**

# 1971 English Electric Valve

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

**1971 ENGLISH ELECTRIC VALVE**
**Section 1 · TravelingWave**

| OTHER                                 |                 |                                                   |
|---------------------------------------|-----------------|---------------------------------------------------|
| PARAMETER                             | PUBLISHED VALUE | CONDITION / NOTE                                  |
| Frequencyrange                        | <b>3.2 GHz</b>  | Frequencyrange . . . . . 27t03.2 GHz              |
| Low levelgain                         | <b>24 db</b>    | Low levelgain . . . . . 24 db                     |
| Heater current                        | <b>3 A</b>      | Heater current . . . . . < . . . . . 03 A         |
| Heater starting current (peak)        | <b>40 S</b>     | Heater starting current (peak) S . . . . 40 A max |
| Collector voltage                     | <b>1100</b>     | Collector voltage 400 1100                        |
| Collector current                     | <b>200</b>      | Collector current - 200                           |
| Helix voltage                         | <b>500</b>      | Helix voltage . - 500                             |
| Grid 4 voltage                        | <b>500</b>      | Grid 4 voltage — 500                              |
| Grid 3 voltage                        | <b>150</b>      | Grid 3 voltage - 150                              |
| Grid 1 and 2 voltage                  | <b>20</b>       | Grid 1 and 2 voltage 20                           |
| Heater voltage                        | <b>5.25</b>     | Heater voltage 4.75 5.25                          |
| Heater voltage                        | <b>50</b>       | Heater voltage 50                                 |
| Collector current                     | <b>130</b>      | Collector current 130                             |
| Helix voltage (see notes 6 and 7)     | <b>375</b>      | Helix voltage (see notes 6 and 7) 375             |
| Magnetic field (see notes 9 and 10) - | <b>140</b>      | Magnetic field (see notes 9 and 10) - 140 mT      |
| Grid 4 current                        | <b>1</b>        | Grid 4 current less than 1 UA                     |
| Grid 3 current                        | <b>1 MA</b>     | Grid 3 current less than 1 MA                     |
| Grid 1 and 2 current                  | <b>50 MA</b>    | Grid 1 and 2 current 50 MA                        |
| Gain                                  | <b>24 db</b>    | Gain e e e 24 db                                  |
| Output power (saturated)              | <b>1.6</b>      | Output power (saturated) 1.6 mwW                  |
|                                       |                 |                                                   |

| PARAMETER                                                                  | PUBLISHED VALUE | CONDITION / NOTE                                                           |
|----------------------------------------------------------------------------|-----------------|----------------------------------------------------------------------------|
| input signal, vary grid 3 and grid 4 voltages alternately until the        | 4               | input signal, vary grid 3 and grid 4 voltages alternately until the        |
| are those which will operate the N1047M at the lowest noise factor for     | 1047            | are those which will operate the N1047M at the lowest noise factor for     |
| the adjustment above. Grid 3 and grid 4 voltages should be stabilized      | 4               | the adjustment above. Grid 3 and grid 4 voltages should be stabilized      |
| Grid 1 and 2 voltage is adjusted to give the correct collector current and | 2               | Grid 1 and 2 voltage is adjusted to give the correct collector current and |
| 06                                                                         | 6 A             | 06 A L JHELIX VOLTAGE OPTIMIZED                                            |
| COLLECTOR CURRENT 130pA                                                    | 130             | COLLECTOR CURRENT 130pA                                                    |
| [ 388                                                                      | 130 A           | [ 388 { [ T] COLLECTOR CURRENT 130 A                                       |
| T FREQUENCY 29GHz                                                          | 29              | T FREQUENCY 29GHz                                                          |
| g HELIX VOLTAGE 3B v                                                       | 3 v             | g HELIX VOLTAGE 3B v                                                       |
| COLLECTOR CURRENT 130 pA                                                   | 130             | COLLECTOR CURRENT 130 pA                                                   |
| FREQUENCY                                                                  | 2.9             | FREQUENCY 2.9GHz                                                           |
| ™ 660                                                                      | 660             | ™ 660 HELIX VOLTAGE OPTIMIZED                                              |
| FREQUENCY                                                                  | 2.9 GHz         | FREQUENCY 2.9 GHz                                                          |
| Grid 1 and 2                                                               | 2               | Grid 1 and 2                                                               |
| Grid 4                                                                     | 4               | Grid 4                                                                     |
| Grid 3                                                                     | 3               | Grid 3                                                                     |

| CHARACTERISTIC                           |                 |                                                |
|------------------------------------------|-----------------|------------------------------------------------|
| PARAMETER                                | PUBLISHED VALUE | CONDITION / NOTE                               |
| (Over the frequency range 2.7 to 3.2GHz} | 3.2             | (Over the frequency range 2.7 to 3.2GHz}       |
| Helix voltage (see notes 6 and 7)        | 400             | Helix voltage (see notes 6 and 7) 350 to 400 \ |
| Magnetic field (see notes 9 and 10)      | 7               | Magnetic field (see notes 9 and 10) . 140+7 mT |
| Heater current                           | 0.5             | Heater current 0.2 0.5                         |
| Helix current                            | 5 MA            | Helix current . 5 MA                           |
| Grid 4 current                           | 10 MA           | Grid 4 current 10 MA                           |
| Grid 3 current                           | 10 MA           | Grid 3 current 10 MA                           |

| PARAMETER                                                                | PUBLISHED VALUE | CONDITION / NOTE                                                          |
|--------------------------------------------------------------------------|-----------------|---------------------------------------------------------------------------|
| Grid 1 and 2 current                                                     | <b>100</b>      | Grid 1 and 2 current 100 LA                                               |
| Gain                                                                     | <b>27 db</b>    | Gain 21 27 db                                                             |
| Noise factor                                                             | <b>4.5 db</b>   | Noise factor ... 4.5 db                                                   |
| Output power (saturated)                                                 | <b>1</b>        | Output power (saturated) 1.0 - mwW                                        |
| 1. The time between the application of full heater voltage a             | <b>1</b>        | 1. The time between the application of full heater voltage and the appli- |
| helix                                                                    | <b>10</b>       | helix. Fluctuations in collector voltage should be less than +10%.        |
| time of at least 2 minutes, switch on the h.t. voltage with grid 1 and 2 | <b>2</b>        | time of at least 2 minutes, switch on the h.t. voltage with grid 1 and 2  |

## TUBE TINKER

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