

ELECTRONIC TUBE REFERENCE

# CMA1241

Specialized - Microwave Tube electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION  
CONSTRUCTION  
MICROWAVE

Rugged liquid-cooled crossed-field backward-wave oscillator covering approximately 0.80–1.06 GHz with permanent-magnet focusing and at least 750 W output.

## GENERAL CHARACTERISTICS

|                     |                   |                      |               |
|---------------------|-------------------|----------------------|---------------|
| BASE DESIGNATION    | –                 | BASE PINS            | –             |
| NOMINAL HEATER      | – / –             | PARALLEL HEATER      | – / –         |
| HEATING             | Indirect          | SERIES OPERATION     | Not specified |
| CATHODE ARRANGEMENT | Separate cathodes | SECTION CONSTRUCTION | Similar       |

## SECTION RATINGS

|                                                                                                            |
|------------------------------------------------------------------------------------------------------------|
| SECTION1 Microwave                                                                                         |
| No fixed ratings recorded.                                                                                 |
| Electrical ratings/characteristics audited; additional published numeric data retained in parameter table. |

The CMA1241 is a rugged compact electronically tunable cross-field backward-wave oscillator. It provides at least 750 W from 0.80 to 1.06 GHz and uses metal-ceramic construction, permanent-magnet focusing, and liquid cooling.

## SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

# 1972 Thomson CSF

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

1972 THOMSON CSF

## Section 1 · Microwave

| OTHER                                                           |                 |                                                                      |
|-----------------------------------------------------------------|-----------------|----------------------------------------------------------------------|
| PARAMETER                                                       | PUBLISHED VALUE | CONDITION / NOTE                                                     |
| output of at least                                              | <b>750</b>      | output of at least 750 W over the frequency range                    |
| Heatervoltage . . . . .<br>.....ccouiuiennnnn                   | <b>6.3 V</b>    | Heatervoltage . . . . .ccouiuiennnnn 6.3 V                           |
| Heater CUITENT . . . . . v<br>it e s e e s et e ia e ans<br>[1] | <b>2.5</b>      | Heater CUITENT . . . . . v it e s e e s et e ia e ans<br>2.5 - 6.0 A |
| Heater CUITENT . . . . . v<br>it e s e e s et e ia e ans<br>[2] | <b>6</b>        | Heater CUITENT . . . . . v it e s e e s et e ia e ans<br>2.5 - 6.0 A |
| OUtpULPOWEr . . . . . ittt                                      | <b>750 W</b>    | OUtpULPOWEr . . . . . ittt 750 - w                                   |
| FrequenCy range . . . . .<br>.....ooeeuennonn-n [1]             | <b>0.8 GHz</b>  | FrequenCy range . . . . .ooeeuennonn-n 0.80<br>1.06 GHz              |
| FrequenCy range . . . . .<br>.....ooeeuennonn-n [2]             | <b>1.06 GHz</b> | FrequenCy range . . . . .ooeeuennonn-n 0.80<br>1.06 GHz              |
| Anode to all other electrodes                                   | <b>20</b>       | Anode to all other electrodes . . . . . - 20 pF                      |
| Solevoltage [1]                                                 | <b>-0.7 V</b>   | Solevoltage . . . . . -0.7 -1.6 kV                                   |
| Solevoltage [2]                                                 | <b>-1.6 V</b>   | Solevoltage . . . . . -0.7 -1.6 kV                                   |
| Gridvoltage . . . . .<br>...t ' [1]                             | <b>0 V</b>      | Gridvoltage . . . . .t ' —0.1 -0.8 kV                                |
| Gridvoltage . . . . .<br>...t ' [2]                             | <b>1 V</b>      | Gridvoltage . . . . .t ' —0.1 -0.8 kV                                |
| Gridvoltage . . . . .<br>...t ' [3]                             | <b>-0.8 V</b>   | Gridvoltage . . . . .t ' —0.1 -0.8 kV                                |
| Grideurrent . . . . . e<br>[1]                                  | <b>-3</b>       | Grideurrent . . . . . e -3 +3 mA                                     |
| Grideurrent . . . . . e<br>[2]                                  | <b>3</b>        | Grideurrent . . . . . e -3 +3 mA                                     |

| PARAMETER                                                    | PUBLISHED VALUE | CONDITION / NOTE                                                              |
|--------------------------------------------------------------|-----------------|-------------------------------------------------------------------------------|
| Anodevoltage                                                 | <b>2 V</b>      | Anodevoltage ... - 2.0 kV                                                     |
| Anodecurrent [1]                                             | <b>-3 A</b>     | Anodecurrent ... -3 +3 mA                                                     |
| Anodecurrent [2]                                             | <b>3 A</b>      | Anodecurrent ... -3 +3 mA                                                     |
| Linevoltage<br>.....ccoiirienennnnn.n<br>[1]                 | <b>2.5 V</b>    | Linevoltage .....ccoiirienennnnn.n 2.5 6.0 KV                                 |
| Linevoltage<br>.....ccoiirienennnnn.n<br>[2]                 | <b>6 V</b>      | Linevoltage .....ccoiirienennnnn.n 2.5 6.0 KV                                 |
| Linecurrent                                                  | <b>600 A</b>    | Linecurrent ... .. 600 mA                                                     |
| RF output connector ...<br>.....c.uceouounnn '<br>coaxial UG | <b>46</b>       | RF output connector ... .....c.uceouounnn '<br>coaxial UG 46/U                |
| (                                                            | <b>1 V</b>      | (1) - All voltages are referred to the cathode.                               |
| Coolant temperature . . max<br>[1]                           | <b>80</b>       | Coolant temperature . . max. 80 o Coolant<br>temperature . . max. 80 (o       |
| Coolant temperature . . max<br>[2]                           | <b>80</b>       | Coolant temperature . . max. 80 o Coolant<br>temperature . . max. 80 (o       |
| Warm-up time [1]                                             | <b>3 V</b>      | Warm-up time ... .. 3 - mn Sole voltage (3} . . . .<br>. -200 4200 \Y         |
| Warm-up time [2]                                             | <b>3 V</b>      | Warm-up time ... .. 3 - mn Sole voltage (3} . . . .<br>. -200 4200 \Y         |
| Warm-up time [3]                                             | <b>-200 V</b>   | Warm-up time ... .. 3 - mn Sole voltage (3} . . . .<br>. -200 4200 \Y         |
| Warm-up time [4]                                             | <b>4200 V</b>   | Warm-up time ... .. 3 - mn Sole voltage (3} . . . .<br>. -200 4200 \Y         |
| Heater voltage [1]                                           | <b>6 V</b>      | Heater voltage . ... .. 6.0 6.6 \ Grid voltage (3). .<br>. . . . -100 +100 Y, |
| Heater voltage [2]                                           | <b>6.6 V</b>    | Heater voltage . ... .. 6.0 6.6 \ Grid voltage (3). .<br>. . . . -100 +100 Y, |
| Heater voltage [3]                                           | <b>3 V</b>      | Heater voltage . ... .. 6.0 6.6 \ Grid voltage (3). .<br>. . . . -100 +100 Y, |
| Heater voltage [4]                                           | <b>-100 V</b>   | Heater voltage . ... .. 6.0 6.6 \ Grid voltage (3). .<br>. . . . -100 +100 Y, |
| Heater voltage [5]                                           | <b>100 V</b>    | Heater voltage . ... .. 6.0 6.6 \ Grid voltage (3). .<br>. . . . -100 +100 Y, |
| Heater surge current . . –<br>[1]                            | <b>12 V</b>     | Heater surge current . . — 12 A Anode voltage<br>(3) . . . . - 200 \Y}        |
|                                                              |                 |                                                                               |

| PARAMETER                      | PUBLISHED VALUE | CONDITION / NOTE                                                    |
|--------------------------------|-----------------|---------------------------------------------------------------------|
| Heater surge current . . – [2] | <b>3 V</b>      | Heater surge current . . — 12 A Anode voltage (3) . . . . - 200 \Y} |
| Heater surge current . . – [3] | <b>200 V</b>    | Heater surge current . . — 12 A Anode voltage (3) . . . . - 200 \Y} |
| Load VSWR ( [1]                | <b>2 V</b>      | Load VSWR (2). ... .. - 3:1 . Line voltage. . . . . — 6.2 KV        |
| Load VSWR ( [2]                | <b>3 V</b>      | Load VSWR (2). ... .. - 3:1 . Line voltage. . . . . — 6.2 KV        |
| Load VSWR ( [3]                | <b>1 V</b>      | Load VSWR (2). ... .. - 3:1 . Line voltage. . . . . — 6.2 KV        |
| Load VSWR ( [4]                | <b>6.2 V</b>    | Load VSWR (2). ... .. - 3:1 . Line voltage. . . . . — 6.2 KV        |
| Ambient temperature [1]        | <b>-40 A</b>    | Ambient temperature . —40 +110 C Linecurrent ..... — 650 mA         |
| Ambient temperature [2]        | <b>110 A</b>    | Ambient temperature . —40 +110 C Linecurrent ..... — 650 mA         |
| Ambient temperature [3]        | <b>650 A</b>    | Ambient temperature . —40 +110 C Linecurrent ..... — 650 mA         |
| Heater voltage [1]             | <b>6.3 GHz</b>  | Heater voltage . ... .. 6.3 \ Oscillating frequency : 0.80 1.06 GHz |
| Heater voltage [2]             | <b>0.8 GHz</b>  | Heater voltage . ... .. 6.3 \ Oscillating frequency : 0.80 1.06 GHz |
| Heater voltage [3]             | <b>1.06 GHz</b> | Heater voltage . ... .. 6.3 \ Oscillating frequency : 0.80 1.06 GHz |
| Heater current                 | <b>5.3 A</b>    | Heater current . . . . . 5.3 A                                      |
| Sole voltage [1]               | <b>-1 V</b>     | Sole voltage . . . . . -1.0 kV Anode voltage . . . . . 1.60 1.65 kV |
| Sole voltage [2]               | <b>1.6 V</b>    | Sole voltage . . . . . -1.0 kV Anode voltage . . . . . 1.60 1.65 kV |
| Sole voltage [3]               | <b>1.65 V</b>   | Sole voltage . . . . . -1.0 kV Anode voltage . . . . . 1.60 1.65 kV |
| Gridvoltage [1]                | <b>-0.4 V</b>   | Gridvoltage . . . . . —0.4 kV Line voltage. . . . . 3.1 5.8 kV      |
| Gridvoltage [2]                | <b>3.1 V</b>    | Gridvoltage . . . . . —0.4 kV Line voltage. . . . . 3.1 5.8 kV      |
| Gridvoltage [3]                | <b>5.8 V</b>    | Gridvoltage . . . . . —0.4 kV Line voltage. . . . . 3.1 5.8 kV      |
| Gridcurrent [1]                | <b>0 mA</b>     | Gridcurrent. . . . . 0 mA Solecurrent.' . . . . . -40 -110 mA       |
|                                |                 |                                                                     |

| PARAMETER       | PUBLISHED VALUE | CONDITION / NOTE                                                 |
|-----------------|-----------------|------------------------------------------------------------------|
| Gridcurrent [2] | <b>-40 A</b>    | Gridcurrent. . . . . 0 mA Solecurrent.' . . . .<br>-40 -110 mA   |
| Gridcurrent [3] | <b>-110 A</b>   | Gridcurrent. . . . . 0 mA Solecurrent.' . . . .<br>-40 -110 mA   |
| Linecurrent [1] | <b>600 W</b>    | Linecurrent. . . . . 600 mA Output power . . . . .<br>850 1000 w |
| Linecurrent [2] | <b>850 W</b>    | Linecurrent. . . . . 600 mA Output power . . . . .<br>850 1000 w |
| Linecurrent [3] | <b>1000 W</b>   | Linecurrent. . . . . 600 mA Output power . . . . .<br>850 1000 w |

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