

ELECTRONIC TUBE REFERENCE

TH590

Power - Tetrode (NOT beam) electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION
CONSTRUCTION
TETRODE

Vapor-cooled ceramic-metal tetrode designed for high-power linear amplifier service to approximately 1 GHz. Its cooling and UHF construction support substantial broadband RF output.

GENERAL CHARACTERISTICS

BASE DESIGNATION	—	BASE PINS	—
NOMINAL HEATER	5 V / 140 A	PARALLEL HEATER	— / —
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION1 Tetrode	
MAXIMUM PLATE DISSIPATION	20000 W
MAXIMUM SCREEN DISSIPATION	150 W
Published ratings/characteristics audited; detailed numeric data retained in parameter table.	

The TH590 is a vapor-cooled ceramic-metal tetrode for high-power linear amplifier service at frequencies up to approximately 1000 MHz.

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 · Tetrode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
amplifier opgi'ating up to	1000 MHz	amplifier opgi'ating up to 1000 MHz without grid current
Filament voltage { [1]	1 V	Filament voltage {1} - (2) \Y;
Filament voltage { [2]	2 V	Filament voltage {1} - (2) \Y;
([1]	1 V	(1) For heater voltage application, see instructions page 2
([2]	2 V	(1) For heater voltage application, see instructions page 2
(	2	(2) tn high frequency operation, the cathode is subjected to considerable back bombardment, which raises its temperature.
Maximum anode dissipation	20 kW	Maximum anode dissipation 20 kW In order to achieve long tube life, maximum operating
Maximum temperature of infet water	50	Maximum temperature of infet water 50 °C capability,the following instructions should be strictly observed.
Maximum temperature of outlet water	90	Maximum temperature of outlet water 90 °C
Published value [1]	1 V	1 - '_2 Vf (filament voltage) during 60 seconds;
Published value [2]	2 V	1 - '_2 Vf (filament voltage) during 60 seconds;
Published value [3]	60 V	1 - '_2 Vf (filament voltage) during 60 seconds;
of ceramic insulators { [1]	3 V	of ceramic insulators {3} 250 °C - Screen voltage;
of ceramic insulators { [2]	250 V	of ceramic insulators {3} 250 °C - Screen voltage;

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Net weight,"approximate	42 V	Net weight,"approximate 42 kg Driving voltage.
Published value	2	2 - SECURITY DEVICES AGAINST ANODE,SCREEN,
insulators ; this airflow must be established before application	1 A	insulators ; this airflow must be established before application 1 - Overcurrents due to unproper utilisation conditions :
of any electrode voltage application and maintained during the protection can be achieved by	2 V	of any electrode voltage application and maintained during the protection can be achieved by 2 relays inserted
Published value	3 V	3 minutes at least after heater voltage has been removed. in series, respectively in screen and anode circuits.
currents equal to	1.5 A	currents equal to 1.5 I _{max} . are attained, max. being
Published value	2 A	2 - Overcurrents due to stray oscillations or electrode
C.C.I.R. Standard for anode currents equal to	5 A	C.C.I.R. Standard for anode currents equal to 5 I _{max} ., I _{max} . being the
voltage supplies. Each of these	3 V	voltage supplies. Each of these 3 systems, acting on
grid bias with a total delay less than	30	grid bias with a total delay less than 30 microseconds.
D.C.anodevoltage	5.2 V	D.C.anodevoltage 5.2 kV
D.C.gridg2voltage	650 V	D.C.gridg2voltage 650 V
D.C.gridglwvoltage —	-250 V	D.C.gridglwvoltage —250 V
Peak cathode current	15 A	Peak cathode current 15 A
D.C.anodecurrent	5 A	D.C.anodecurrent 5 A
Anode dissipation o L	20 kW	Anode dissipation o L 20 kW
Grid g2 dissipation o	150 W	Grid g2 dissipation o 150 W
Frequency	1000 MHz	Frequency 1000 MHz
Frequency i	860 MHz	Frequency i 860 MHz
Filamentvoltage	43 V	Filamentvoltage. 43V
D.C.anodevoltage	4.5 V	D.C.anodevoltage 4.5 kV
DC.gridg2voltage	600 V	DC.gridg2voltage 600 V

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
DC.gridglvoltage -	-70 V	DC.gridglvoltage —70 vV
D.C. anode current	24 A	D.C. anode current 24 A
Peak video power	2 kW	Peak video power 2 kW
Published value [1]	55.4	55.4 Bl Grid 2
Published value [2]	2	55.4 Bl Grid 2
l .]L Grid	1	l .]L Grid 1
rant grille jusqu'à une fréquence de	1000 MHz	rant grille jusqu'à une fréquence de 1000 MHz. Ces amplifi-
Tension filament ([1]	1 V	Tension filament (1) 51+2% \")
Tension filament ([2]	51 V	Tension filament (1) 51+2% \")
Tension filament ([3]	2 V	Tension filament (1) 51+2% \")
Courant filamentapprox	140 A	Courant filamentapprox. 140 A
Courant filament a ne pas dépasser a I'enclenchement	300 A	Courant filament a ne pas dépasser a I'enclenchement 300 A
Courant cathodique créte	25 A	Courant cathodique créte 25 A
cathode - anode	1	- cathode - anode 0,01 pF
([1]	1	(1) En fonctionnement 3 haute fréquence, la cathode est soumise a un important hombardement, ce qui a pour effet d'élever sa
([2]	3	(1) En fonctionnement 3 haute fréquence, la cathode est soumise a un important hombardement, ce qui a pour effet d'élever sa
Pour 'application des différentes tensions, voir instructions page	3 V	Pour 'application des différentes tensions, voir instructions page 3.
Dissipation anodique maximale e e	20 kW	Dissipation anodique maximale e e 20 kW
e débit d'air doit &tre établi avant I'application des différentes tensions et maintenu au moins	3 V	e débit d'air doit &tre établi avant I'application des différentes tensions et maintenu au moins 3 minutes après la coupure
Tension continue d'anode i e e e e e e	57 V	Tension continue d'anode i e e e e e e 5,7 kV

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Tension continue d' [1]	6 V	Tension continue d'6Cran G2 t e e e e 650 \
Tension continue d' [2]	650 V	Tension continue d'6Cran G2 t e e e e 650 \
Tension continue de grille gl i e	-250 V	Tension continue de grille gl i e ... —250 Vv
Courant cathodique Créte i e e e e	15 A	Courant cathodique Créte i e e e e 15 A
Courant continu d'anode t it e e e e e e e e	5 A	Courant continu d'anode t it e e e e e e e e e 5 A
Dissipation d'anode e e e e e e	20 kW	Dissipation d'anode e e e e e e 20 kW
Dissipation d' [1]	8 W	Dissipation d'8cran L. e e e e e e e e 150 w
Dissipation d' [2]	150 W	Dissipation d'8cran L. e e e e e e e e 150 w
Fréquence P A	1000 MHz	Fréquence P A 1000 MHz
Tension filament e e e e e e	50 V	Tension filament e e e e e e 5,0 \
Tension continue d'anode ot e e e e e	45 V	Tension continue d'anode ot e e e e e 4,5 kV
Tension continue d'Cran g2 e e	600 V	Tension continue d'Cran g2 e e 600 \Y
Tension continue de grille @ [1]	1 V	Tension continue de grille @1 i ittt e e e e e -70 \'
Tension continue de grille @ [2]	-70 V	Tension continue de grille @1 i ittt e e e e e -70 \'
Courant continu d/anode t ot ttt e e e e e e e e e e e e	2.4 A	Courant continu d/anode t ot ttt e e e e e e e e e e e e 2.4 A
PUISSANCE CrBte VIBO ittt e e e e e e e e e e e	2 kW	PUISSANCE CrBte VIBO ittt e e e e e e e e e e e e 2 kW
Published value [1]	1 V	- 1/2 V ϕ (tension de filament) pendant 60 secondes ;
Published value [2]	2 V	- 1/2 V ϕ (tension de filament) pendant 60 secondes ;
Published value [3]	60 V	- 1/2 V ϕ (tension de filament) pendant 60 secondes ;
La tension nominale Vf pendant	60 V	- La tension nominale Vf pendant 60 secondes ;

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
La tension nominale V; pendant	5 V	- La tension nominale V; pendant 5 secondes ;
et danode et enclenchant pour des courants d'amplitude	15 A	et danode et enclenchant pour des courants d'amplitude 1,5 I _{max} , I _{max} étant le courant normal
La protection doit se faire a l'aide de	3	La protection doit se faire a l'aide de 3 systemes de protection (grille, écran, anode) a temps de
réponse court et agissant pour un courant d'anode d'amplitude	5 A	réponse court et agissant pour un courant d'anode d'amplitude 5 I _{max} , I _{max} étant le courant normal
a	30 V	a 30 microsecondes, le court-circuit des tensions d'excitation, d'écran, d'anode et le cas échéant le
Published value	4	4tanode
Published value	0 V	0 Tension
Published value	187	187 cos : Utilisation anode en haut
Published value	2	2φ cas : Utilisation anode en bas

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