



ELECTRONIC TUBE REFERENCE

TH591

Power - Triode (over 1000V 100W) electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION

CONSTRUCTION

TRIODE

Ceramic-metal pulse power triode for operation to approximately 500 MHz. Very high peak RF output, tens of kilowatts of plate dissipation, and high-voltage capability suit demanding pulsed UHF systems.

GENERAL CHARACTERISTICS

BASE DESIGNATION	—	BASE PINS	—
NOMINAL HEATER	— / 190 A	PARALLEL HEATER	— / —
HEATING	Direct	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION 1 Triode	
TRANSCONDUCTANCE	0.13 S
AMPLIFICATION FACTOR	60
MAXIMUM PLATE VOLTAGE	18000 V
MAXIMUM PLATE DISSIPATION	60000 W
MAXIMUM GRID DISSIPATION	350 W
MAXIMUM CATHODE CURRENT	120 A
Published ratings/characteristics audited; detailed numeric data retained in parameter table.	

The TH591 is a ceramic-metal triode designed for pulse operation at frequencies up to 500 MHz. It can deliver very high peak output power and uses vapor cooling coupled to a distilled-water circuit.

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 · Triode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
pulse operation at frequency up to	500 MHz	pulse operation at frequency up to 500 MHz. It can deliver
Published value	190 kW	190 kW peak output power into the load. When used with
temperature of	100	temperature of 100 °C.
Filamentcurrent it i	190 A	Filamentcurrent it i 190 A
Maximum surge CUrrent e e	500 A	Maximum surge CUrrent ttt i e e 500 A
cathode-grid {(cold)	100	-cathode-grid {(cold) 100 pF
gridanode e	17	-gridanode e 17 pF
Transconductance ittt e et	130	Transconductance ittt ittt e et . 130 mA/V
Maximum temperature of envelope and electrode terminals	150	Maximum temperature of envelope and electrode terminals 150 °Cc
D.C. anode voltage . . e e e	18 V	D.C. anode voltage . . e e e 18 kV
D.C.gridvoltage c.. ittt ieiniinnennnnennnas	1000 V	D.C.gridvoltage c.. ittt ieiniinnennnnennnas 1000 Vv
Peak cathode current ttt	120 A	Peak cathode current ttt 120 A
Anode dissipation T	60 kW	Anode dissipation T 60. kW
Grid dissipation e	350 W	Grid dissipation e 350 w
FrequenCy o iiiiieit ettt	500 MHz	FrequenCy o iiiiieit ettt 500 MHz
D.C.anode voltage ciieiuimnunnennneens	15 V	D.C.anode voltage ciieiuimnunnennneens 15 kV

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
D.C.gridvoltage t	-260 V	D.C.gridvoltage t —260 V
D.C. anode current during pulse	20 A	D.C. anode current during pulse 20 A
D.C. grid current during pulse	7 A	D.C. grid current during pulse 7 A
Peak input power e	300 kW	Peak input power e 300 kW
Peak output power{ [1]	1 kW	Peak output power{1) e 190 kW
Peak output power{ [2]	190 kW	Peak output power{1) e 190 kW
Average dissipation power i	20 kW	Average dissipation power i 20 kW
Pulse duration t ittt e e e e,	4	Pulse duration t ittt e e e e, 4 ms
Operating frequency ttt it ittt s e e e	450 MHz	Operating frequency ttt it ittt s e e 450 MHz
(	1 W	(1) Useful power at tube output.
D.C.anodevoltage cuiinnernennnnnnnnenn	13 V	D.C.anodevoltage cuiinnernennnnnnnnenn 13 kV
DC.gridvoltage [1]	0 V	DC.gridvoltage 00iiuiievinncnnnnennns —250 V}
DC.gridvoltage [2]	-250 V	DC.gridvoltage 00iiuiievinncnnnnennns —250 V}
Peak driving power t i	16 kW	Peak driving power t i 16 kW
Peak outputpower { [1]	2 kW	Peak outputpower {2) e 135 kW
Peak outputpower { [2]	135 kW	Peak outputpower {2) e 135 kW
Average dissipation power e it	45 kW	Average dissipation power e it 45 kW
Pulse duration ttti e	4	Pulse duration ttti e 4 ms
(	2 W	(2) Useful power at tube output.
Published value	75.1	75.1 ANODE
GRID— T oy	12	GRID— T oy 12
FILAMENT-CATHODE // f ¢ [1]	3	FILAMENT-CATHODE // f ¢ 319.3-38.7

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
FILAMENT-CATHODE // f ϕ [2]	3	FILAMENT-CATHODE // f ϕ 319.3-38.7
FILAMENT-CATHODE // f ϕ [3]	-38.7	FILAMENT-CATHODE // f ϕ 319.3-38.7