

ELECTRONIC TUBE REFERENCE

F6868

Specialized - Traveling Wave electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION
CONSTRUCTION
TRAVELINGWAVE

Broadband 1.7-4 GHz traveling-wave power amplifier providing approximately 10 watts RF output with about 30 dB gain.

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 TravelingWave
No fixed ratings recorded.
Published maximum ratings and characteristics audited; remaining numeric data retained densely in parameter table.

The F6868 is a ten-watt continuous-wave traveling-wave amplifier with high gain and a helix slow-wave structure for broadband microwave amplification.

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1962 ITT

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

1962 ITT

Section 1 · TravelingWave

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
The F [1]	6868	The F-6868 is a 10 watt CW traveling wave amplifier tube having 30 db gain and
The F [2]	10	The F-6868 is a 10 watt CW traveling wave amplifier tube having 30 db gain and
The F [3]	30	The F-6868 is a 10 watt CW traveling wave amplifier tube having 30 db gain and
Published value [1]	1700 MHz	1700 to 4000 mc frequency range. It is constructed in a rugged metal envelope
Published value [2]	4000 MHz	1700 to 4000 mc frequency range. It is constructed in a rugged metal envelope
Heater Voltage [1]	6.3 V	Heater Voltage 6.3 (±10%) volts
Heater Voltage [2]	10 V	Heater Voltage 6.3 (±10%) volts
Heater Current	25 A	Heater Current 2,5 amperes
Maximum Anode Voltage (Note [1])	1 V	Maximum Anode Voltage (Note 1) 1500 volts
Maximum Anode Voltage (Note [2])	1500 V	Maximum Anode Voltage (Note 1) 1500 volts
Maximum Shell Current (Note [1])	2 A	Maximum Shell Current (Note 2) 5 ma
Maximum Shell Current (Note [2])	5 A	Maximum Shell Current (Note 2) 5 ma
Maximum Collector Voltage (Note [1])	3 V	Maximum Collector Voltage (Note 3) 1750 volts
Maximum Collector Voltage (Note [2])	1750 V	Maximum Collector Voltage (Note 3) 1750 volts
Maximum Collector Dissipation (Note [1])	4 W	Maximum Collector Dissipation (Note 4) 150 watts

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum Collector Dissipation (Note [2])	150 W	Maximum Collector Dissipation (Note 4) 150 watts
Maximum Control Electrode Voltage (Note [1])	5 V	Maximum Control Electrode Voltage (Note 5) -250 watts
Maximum Control Electrode Voltage (Note [2])	-250 V	Maximum Control Electrode Voltage (Note 5) -250 watts
Maximum Frequency	4000 MHz	Maximum Frequency 4000 mc
Minimum Frequency	1700 MHz	Minimum Frequency 1700 mc
Glass Temperature	160	Glass Temperature 160°C max.
Anode Voltage	1200 V	Anode Voltage 1200 volts
Shell Current	3 A	Shell Current 3 ma
Collector Voltage	1400 V	Collector Voltage 1400 volts
Collector Current	70 A	Collector Current 70 ma
Control Electrode Voltage	0 V	Control Electrode Voltage 0 volts
Power Output {see Curves}	10 W	Power Output {see Curves) 10 watts nominal
Gain (see Curves)	30	Gain (see Curves) 30 db nominal
Beam	10	Beam 1,0
(Input powers less than ~	10 W	(Input powers less than ~10 dbm)
Anode Voltage	1150 V	Anode Voltage 1150 wvolts
Shell Current	2.5 A	Shell Current 2.5 ma
Collector Voltage	1400 V	Collector Voltage 1400 wvolts
Collector Current	67 A	Collector Current 67 ma
Control Electrode Voltage	0 V	Control Electrode Voltage 0 wvolts
Gain (see Curves)	35	Gain (see Curves) 35 db nominal
Beam	1	Beam 1.0
Note	1 V	Note 1: All voltages shown are with respect to cathode. Anode and helix are
Note	2 A	Note 2: The shell current is the difference between the cathode current and
high voltage if the shell current exceeds	5 V	high voltage if the shell current exceeds 5 ma,
Note [1]	3	Note 3: It is generally desirable to operate the collector at 100 to 200 volts
Note [2]	100	Note 3: It is generally desirable to operate the collector at 100 to 200 volts

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Note [3]	200	Note 3: It is generally desirable to operate the collector at 100 to 200 volts
collector and shell should be limited to	300	collector and shell should be limited to 300 volts maximum,
Note	4	Note 4: Forced air cooling of collector is required for average collector
power in excess of	10 W	power in excess of 10 watts., As the collector power is increased,
Note	5	Note 5: This electrode is a remote cutoff grid, suitable for use as a gain
small negative voltage on this electrode ([1]	-5 V	small negative voltage on this electrode (-5 to -10 volts) as this
small negative voltage on this electrode ([2]	-10 V	small negative voltage on this electrode (-5 to -10 volts) as this
([1]	2 V	(2) Turn on cooling air, solenoid voltage (adjust to approximately 1000 gauss),
([2]	1000 V	(2) Turn on cooling air, solenoid voltage (adjust to approximately 1000 gauss),
(	3 V	(3) Raise high voltage to desired value, readjusting magnetic field if necessary
(	4 V	(4) After initial set up as above, tube voltages may be applied simultaneous-
voltage., Observance of the	5 V	voltage., Observance of the 5 ma maximum limit for shell current is
Published value	2	2 set for maximum gain at
Published value	10	10 vs. Frequency
Published value [1]	2	2 2 HEATER-CATHODE
Published value [2]	2	2 2 HEATER-CATHODE
~	10	~ 10 HEATER
A) HEATER voLTAGE (	6.3 V	A) HEATER voLTAGE (6.3 vouTts).
D) COLLECTOR VOLTAGE (}	150 V	D) COLLECTOR VOLTAGE (}150 VOLTS WITH RESPECT TO SHELL).
Published value [1]	3 A	3.0 MA. [T 1S POSSIBLE FOR HELIX CURRENT TO READ NEGATIVE WITHOUT
Published value [2]	1 A	3.0 MA. [T 1S POSSIBLE FOR HELIX CURRENT TO READ NEGATIVE WITHOUT
Published value [1]	5	5. R.F. INPUT TO THE TUBE SHOULD BE LIMITED TO 1.0 wATT AND R.F. outpPuTr

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Published value [2]	1	5. R.F. INPUT TO THE TUBE SHOULD BE LIMITED TO 1.0 wATT AND R.F. outpPuTr
Published value	6 V	6. THE CATHODE VOLTAGE MAY BE ADJUSTED FOR OPTIMUM POWER OUTPUT AT THE
Published value [1]	1	1. NEVER OPERATE THE F-6868 wiTHOUT PROPER COOLING OF THE COLLECTOR: 50
Published value [2]	6868	1. NEVER OPERATE THE F-6868 wiTHOUT PROPER COOLING OF THE COLLECTOR: 50
Published value [3]	50	1. NEVER OPERATE THE F-6868 wiTHOUT PROPER COOLING OF THE COLLECTOR: 50
Published value [1]	3 A	3. NeVER OPERATE THE F-6868 wiTH HELIX CURRENT IN EXCESS OF 3.0 MA. UNDER
Published value [2]	6868 A	3. NeVER OPERATE THE F-6868 wiTH HELIX CURRENT IN EXCESS OF 3.0 MA. UNDER
Published value [3]	3 A	3. NeVER OPERATE THE F-6868 wiTH HELIX CURRENT IN EXCESS OF 3.0 MA. UNDER
MOST CONDITIONS HELIX CURRENT Will BE [1]	1 A	MOST CONDITIONS HELIX CURRENT Will BE 1.0 MA OR LESS., IT IS IMPORTANT
MOST CONDITIONS HELIX CURRENT Will BE [2]	1 A	MOST CONDITIONS HELIX CURRENT Will BE 1.0 MA OR LESS., IT IS IMPORTANT
HEATER ©0	10	HEATER ©O 10 I
0 - Bi1As SupPLY " HELIX CURRENT [1]	0 mA	O - Bi1As SupPLY " HELIX CURRENT 0-100 MA
0 - Bi1As SupPLY " HELIX CURRENT [2]	-100 A	O - Bi1As SupPLY " HELIX CURRENT 0-100 MA
Published value	9	9 COLLECTOR SuPPly
Pin	2	Pin 2 « Heater CATHODE
Pin	10 A	Pin 10 - HeaTER B. HELIX CURRENT OVERLOAD

TUBE TINKER

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